Wolf Creek
Nuclear Operating Corporation

Dustin T. Hamman
Director Nuclear and Regulatory Affairs

April 27, 2024
000443

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Docket No. 50-482: 2023 Annual Radiological Environmental Operating Report

Commissioners and Staff:

The purpose of this letter is to submit the enclosed Annual Radiological Environmental Operating Report, which is being submitted pursuant to Wolf Creek Generating Station (WCGS) Technical Specification 5.6.2. This report covers radiological environmental monitoring for WCGS for the period of January 1, 2023, through December 31, 2023.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4204.

Sincerely,

Dustin T. Hamman

DTH/jkt

Enclosure: Wolf Creek Generating Station 2023 Annual Radiological Environmental Operating Report

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Enclosure to 000443

2023
Annual Radiological Environmental Operating Report

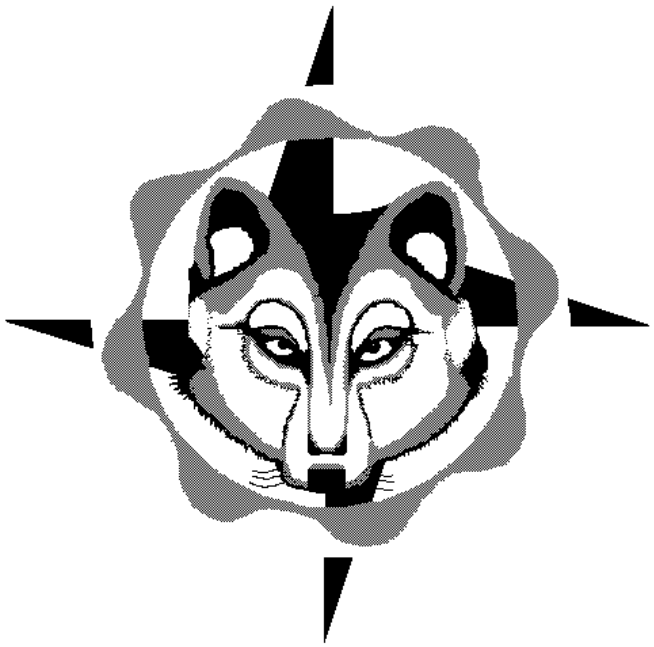
(156 pages including this page)

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

2023 ANNUAL RADIOLOGICAL

ENVIRONMENTAL OPERATING REPORT



2023

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EXECUTIVE SUMMARY

Plant-related activation, corrosion, or fission products were not detected during 2023 in air particulate filters, radioiodine canisters, ground water, drinking water, broadleaf vegetation, shoreline sediment, crops, bottom sediment, aquatic vegetation, terrestrial vegetation or soil samples. Activation, corrosion or fission products attributable to plant operation were detected during 2023 in surface water, fish, turkey, and deer samples.

Nuclides detected in Radiological Environmental Monitoring Program (REMP) samples were below applicable Nuclear Regulatory Commission (NRC) reporting levels.

Based upon the REMP results, it was concluded station operations had no significant radiological impact on the health and safety of the public or the environment.

INTRODUCTION

The 2023 Annual Radiological Environmental Operating Report for Wolf Creek Generating Station (WCGS) covers the period from January 1 through December 31, 2023. WCGS is in Coffey County, Kansas, approximately five miles northeast of Burlington, Kansas.

Fuel loading commenced at WCGS on March 12, 1985. The operational phase of the REMP began with initial criticality on May 22, 1985, and the first detectable quantities of radioactivity were reported in plant effluents in June 1985.

This report contains a description of the REMP conducted by Wolf Creek Nuclear Operating Corporation (WCNOC), a discussion of monitoring program results, the revisions or changes to the program, program deviations, the Interlaboratory Comparison Program and a comparison to the Radioactive Effluent Release Program. The Interlaboratory Comparison Program results, a summary of results in the NRC Branch Technical Position specified format, the individual sample results, and the Land Use Census Report are included as appendices.

I. PROGRAM DESCRIPTION

Radiological environmental monitoring samples were collected according to the schedule in WCGS procedure AP 07B-004, *Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)*. Radiological environmental monitoring program samples were collected by the WCGS Environmental Management group and were analyzed by Environmental, Inc. Landauer, Inc. processed the environmental optically stimulated luminescence (OSL) dosimeters. Table 1 identifies the exposure pathway/sample type, number of samples and sample locations, sample collection frequency, and the type and frequency of analysis. Table 2 lists the sample location identifiers, distances and directions from the plant. Samples in addition to those required by AP 07B-004 were also obtained and analyzed.

The following is a description of the sampling and analysis program by individual pathways.

A. Airborne Pathway

Low volume air sampling pumps with digital flow meters continuously sampled air through 47 mm glass fiber particulate filters and radioiodine canisters, respectively. The air particulate filters and radioiodine canisters were collected weekly. Gross beta analysis was performed weekly on the air particulate filters. Gamma isotopic analysis was also performed quarterly on

the air particulate filters. Radioiodine canisters were analyzed weekly for I-131.

Air samples were collected from six locations. The indicator locations sampled included 2, 18, 32, 37 and 49. A control location near the intersection of 20th Road and Yearling Road (location 53) was also sampled. Indicator sample locations are shown in Figure 1 and the control sample location is shown in Figure 5.

B. Direct Radiation Pathway

Optically stimulated luminescence (OSL) dosimeters were used continuously at 44 locations during the sample year to measure direct radiation. The OSLs were typically positioned roughly 3 to 4 feet above the ground in plastic thermostat boxes. Three OSLs were placed at each designated location. The OSLs were changed out quarterly and analyzed quarterly for gamma dose. Transit dose was measured and subtracted from the ambient dose. Indicator OSL sample locations are illustrated in Figure 2 and control sample locations are shown in Figure 5. Control sample locations were 39 (Beto Junction) and 53 (near the intersection of 20th Road and Yearling Road).

C. Waterborne Pathway

Gamma isotopic analysis was performed on the water samples. In addition to gamma isotopic analysis, analysis for I-131 was performed monthly on drinking water and quarterly on ground water samples. Gross beta analysis was performed monthly on drinking water samples. Tritium analysis was performed monthly for surface water and quarterly for drinking water. Tritium analysis was also performed quarterly on ground water samples. Four surface water samples from the Coffey County Lake Spillway (SP) location and four surface water samples from the John Redmond Reservoir (JRR) location were also analyzed for Fe-55. The waterborne pathway sample locations are shown in Figures 3 and 5.

Monthly grab samples of surface water were collected from the John Redmond Reservoir (JRR) control location and from the Coffey County Lake Spillway (SP) indicator location.

Quarterly grab samples of ground water were collected from seven wells. Six locations (C-10, C-49, F-1, G-2, J-1 and J-2) located hydrologically down gradient from the site were used as indicator sample locations. Location B-12 located hydrologically up gradient from the site was used as a control location.

Drinking water was sampled at the water treatment facilities in the towns of Iola (indicator sample location IO-DW) and Burlington (control sample location BW-15). The Iola facility is located downstream of the Neosho River-Wolf Creek confluence and the Burlington facility is located upstream of the Neosho River-Wolf Creek confluence. Composite samples were obtained monthly from automatic samplers at each location. The automatic drinking water samples collected approximately 27 milliliters of water every two hours.

Shoreline sediments were sampled semiannually. Gamma isotopic analyses were performed on the shoreline sediment samples. Shoreline sediment sample locations were the Coffey County Lake discharge cove (DC) indicator location and the John Redmond Reservoir (JRR) control location.

D. Ingestion Pathway

Milk was not collected during the sample year. The Land Use Census did not identify any locations producing milk for human consumption within five miles of the plant.

Fish were sampled semiannually from the indicator sample location Coffey County Lake (CCL) and from the tail waters of John Redmond Reservoir (JRR) control sample location. These sample locations are identified in Figure 4. Gamma isotopic analyses were performed on the boneless meat portions of the fish. Several species of game fish and rough fish were sampled. Fish were also analyzed for tritium.

Broadleaf vegetation samples were collected monthly when available during the growing season. Indicator (A-3, B-1, H-2 and Q-6) location gardens (Figure 4) and a control (D-2) location garden (Figure 5) were sampled. Gamma isotopic analyses were performed on these samples.

Irrigated crop samples were obtained from indicator location (NR-D1) and non-irrigated samples from indicator location (NR-D2) downstream of the confluence of Wolf Creek and the Neosho River. Irrigated crops were also sampled from control location (NR-U1). Gamma isotopic analysis was performed on each sample. Crop sample locations are identified on Figure 5.

E. Additional Samples Collected (not required by AP 07B-004)

Bottom sediment samples were collected semiannually from indicator sample locations at the Discharge Cove (DC), and the control sample location at John Redmond Reservoir (JRR). Three other bottom sediment samples were collected from Makeup Discharge Structure (MUDS), Environmental Education Area (EEA), and Stringtown Cemetery (SC). Gamma isotopic analyses were performed on the bottom sediment samples. Two samples collected from indicator location (DC) were also analyzed for Fe-55. No samples were analyzed for Ni-63, Sr-89 and Sr-90 activity (Hard to Detect Metals). One shoreline sediment sample was collected from indicator sample location at Stringtown Cemetery as part of a cooperative sampling effort with the Kansas Department of Health and Environment (KDHE). The sample locations are identified on Figure 3.

Aquatic vegetation was collected from indicator locations at the Makeup Discharge Structure (MUDS), Environmental Education Area (EEA) and Stringtown Cemetery (SC). Gamma isotopic analyses were performed on the aquatic vegetation samples. These samples were collected as part of a cooperative sampling effort with the KDHE. The sample locations are identified on Figure 3.

Terrestrial vegetation (grass) was sampled from the Environmental Education Area (EEA) and the Makeup Discharge Structure (MUDS) indicator sample locations. Gamma isotopic analysis was performed on the grass samples. These samples were collected as part of a cooperative sampling effort with the KDHE. The sample locations are identified on Figure 4.

Soil was sampled from the Makeup Discharge Structure (MUDS). Gamma isotopic analysis was performed on the soil sample. This sample was collected as part of a cooperative sampling effort with the KDHE. The sample locations are identified on Figure 4.

Turkey was sampled from indicator sample location J3.5. Gamma isotopic analysis and tritium analysis were performed on the turkey sample. This sample was collected as part of a cooperative sampling effort with the KDHE. The sample location is identified on Figure 4.

Deer was sampled from indicator sample location Q2.4. Gamma isotopic analysis and tritium analysis were performed on the deer sample. This sample was collected as part of a cooperative sampling effort with the KDHE. The sample location is identified on Figure 4.

II. DISUSSION OF RESULTS

Analysis results for pathways are summarized in Appendix B using the format described in Radiological Assessment Branch Technical Position, Revision 1, November 1979 (NRC Generic Letter 79-065). Results for individual samples are listed in Appendix C.

A. Airborne Pathway

Chart 1 graphically illustrates weekly gross beta results for the sample year. Chart 2 represents the gross beta historical airborne smoothed averages of indicator sample locations and control sample locations. Charts 1 and 2 demonstrate how closely the indicator and control sample locations tracked together. Chart 2 reveals a seasonal cyclic trend; the gross beta values peak in the winter months (December or January) and decrease to a low point in the spring months (May or June). This trend is expected and is attributed to seasonal meteorological changes, i.e., changes in prevailing winds and precipitation.

The gross beta results of 2023 were compared to pre-operational monitoring results of 1983 and 1984. The weekly gross beta analyses range for 1983 and 1984 was 0.0064 to 0.084 pCi/m^3. The 2023 weekly gross beta analyses range for indicator locations was 0.015 to 0.051 pCi/m^3. The 2023 weekly gross beta analyses range was within the 1983 and 1984 pre-operational range. Additionally, the annual mean for indicator locations for 2023 (0.030 pCi/m^3) was lower than the annual mean for 1983 (0.032 pCi/m^3).

The gross beta results for the indicator locations were also compared to the control location. The annual mean for indicator locations for 2023 (0.030 pCi/m^3) was the same as the controlled location (0.030 pCi/m^3). The indicators' location with the highest gross beta annual mean was 49, the annual mean of this location was (0.030 pCi/m^3). This is the same annual mean as the controlled location (0.030 pCi/m^3).

Naturally occurring Be-7 activity was detected, as was the case during pre-operational monitoring. In 1984, the range for Be-7 detected activity was 0.024 to 0.211 pCi/m^3 for indicator locations and the annual mean for indicator locations was 0.069 pCi/m^3. In 2023, the range for Be-7 detected activity was 0.058 to 0.112 pCi/m^3 for indicator locations and the annual mean for indicator locations was 0.084 pCi/m^3. The control location annual mean for Be-7 detected activity (0.077 pCi/m^3) was lower than the annual mean of the indicator locations (0.084 pCi/m^3). The indicator location with the highest annual mean of detected Be-7 activity was location 32 (0.091 pCi/ m^3).

I-131 activity was not detected in the weekly analysis of radioiodine canisters at any location.

The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2023 in air particulate filters and radioiodine canisters. No unusual trends were noted.

B. Direct Radiation Pathway

Quarterly OSL dosimeter results for each location are shown in Table 3. Measured values have been converted to a standardized 90-day quarter.

The annual mean of indicator sample locations in 2023 was 19.0 mR per standardized 90-day quarter. The annual mean of the control sample locations in 2023 was 19.0 mR per standardized 90-day quarter.

For pre-operational comparison, in 1981, the annual mean of indicator sample locations was 18.9 mR per standardized 90-day quarter and the annual mean for the control sample locations was 17.1 mR per standardized 90-day quarter. It should be noted WCGS changed from thermoluminescence dosimeters (TLD) to optically stimulated luminescence (OSL) dosimeters in 2008.

The indicator sample location with the highest annual mean was location 22 (22.5 mR per standardized 90-day quarter) which is slightly higher than the annual mean of the control sample locations (19.0 mR per standardized 90-day quarter).

Based upon Condition Report 00027489, improvements were made in measuring and subtracting transit dose in 2010. As expected, the OSL results increased during 2010 based on how transit dosimeters are handled. Condition Report 00128355 was written to reduce data elimination based on standard deviation starting in Quarter 3 of 2018. Chart 3 displays how closely the indicator and control location OSL dosimeter results are since 2018. In 2023 no change in trend was noted due to this change.

Chart 4 displays the TLD nearsite sample locations (1, 2, 7-9, 11-14, 18, 26, 27, 29, 30, 37, and 38) and the control sample locations (locations 39 and 48) for the preoperational years through 2007. The dip in the graph in 2021 was due to the dosimeters not being picked up by UPS for delivery to vendor lab

C. Waterborne Pathway

(1) Surface Water

Tritium, attributable to WCGS operation, was detected in surface water samples collected from the Coffey County Lake spillway (SP) indicator sample location. The annual mean for detected tritium activity at the SP location was 13,003 pCi/L and the range was 12,098 to 14,167 pCi/L. The detected tritium activity was below the 30,000 pCi/L AP 07B-004 reporting level. Chart 5 illustrates the yearly average of surface water tritium data for the SP location. Chart 5 indicates the average tritium concentration of the SP location stayed the same through out the year. No Tritium activity was detected in the controlled sample, John Redmond Reservoir (JRR).

During pre-operational radiological environmental monitoring, measured radiological activity was not detected in surface water samples.

The AP 07B-004 required lower limits of detection were met. Radionuclides were not detected by the gamma isotopic analyses or by Fe-55 analyses.

Tritium was the only activity detected during 2023 in surface water samples and no unusual trends were noted.

(2) Ground Water

The AP 07B-004 required lower limits of detection were met for I-131, tritium and gamma isotopic analyses. Radioactivity was not detected in any ground water samples. No unusual trends were noted. Plant-related activation, corrosion or fission products were not detected during 2023 in ground water samples.

(3) Drinking Water

Gross beta activity was detected in drinking water samples collected from the indicator sample location and in samples collected from the control sample location. The annual mean of the indicator sample location gross beta activity (3.674 pCi/L) was slightly higher when compared to the annual mean of the control sample location gross beta activity (2.750 pCi/L). The 2023 annual means of gross beta activity for both the indicator and control sample locations were lower than those of the pre-operational monitoring year of 1984. In 1984, the annual mean of the indicator sample location gross beta activity was 7.5 pCi/L and the annual mean of the control sample location gross beta activity was 6.4 pCi/L.

Chart 6 illustrates the drinking water gross beta results for the last five years and how closely the gross beta results compared for the indicator and control sample locations. The spike in March is suspect to vendor error. Compared to both historical and current trends, Wolf Creek has never had a result that high.

No tritium was detected in the indicator sample location during 2023. No release limits were exceeded, and results were well below required detection limits. No other radionuclides were detected by the gamma isotopic analyses of the indicator or control location samples.

The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2023 in drinking water samples. The only unusual trend was the abnormal gross beta result in March.

(4) Shoreline Sediment

Naturally occurring K-40 was detected in shoreline sediment samples collected from the DC (indicator sample location), JRR (control sample location), and EEA (Environmental Education Area. K-40 was also detected during pre-operational shoreline sediment monitoring.

No other radionuclides were detected in the DC, EEA, SC, or JRR shoreline sediment samples during 2023. The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2023 in shoreline sediment samples and no unusual trends were noted.

D. Ingestion Pathway

(1) Milk

Milk was not collected during the sample year since no indicator locations within five miles of the plant were identified during the 2023 Land Use Census.

(2) Fish

Naturally occurring K-40 activity was detected in fish samples obtained from the Coffey County Lake (CCL) indicator sample location and in fish samples obtained from the JRR control sample location. K-40 activity was also detected during pre-operational fish monitoring.

Fish samples were also analyzed for tritium. Fish samples collected from Coffey County Lake had tritium activity detected annual mean (9,197 pCi/kg). The detected tritium activity was attributable to plant operation. An adult consuming 21 kilograms of fish, at the maximum measured tritium concentration (10,538 pCi/kg), would receive a committed effective dose equivalent of 0.014 mRem.

Tritium activity was not detected in the control location samples collected from JRR.

No other radionuclides were detected in fish samples during 2023. The AP 07B-004 required lower limits of detection were met, and no unusual trends were noted.

(3) Broadleaf Vegetation

Gamma analyses of broadleaf vegetation samples obtained from indicator and control sample locations detected naturally occurring Be-7 and K-40. Be-7 and K-40 activity were also detected pre-operationally.

No other radionuclides were detected in broadleaf vegetation samples collected during the year. The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2023 in broadleaf vegetation samples and no unusual trends were noted.

(4) Crop Samples

Gamma analysis detected naturally occurring K-40 activity to be present in the samples collected from the indicator sample locations and in the samples collected from the control sample location. K-40 activity was also detected during pre-operational crop monitoring. K-40 was the only activity detected in the crop samples.

The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2023 in crop samples and no unusual trends were noted.

E. Additional Samples Collected (not required by AP 07B-004)

(1) Bottom Sediment

Gamma analysis detected naturally occurring K-40 activity to be present in the samples collected from the indicator sample locations and in the samples collected from the control sample location. K-40 activity was also detected during pre-operational bottom sediment monitoring.

Cs-137 activity was detected in pre-operational samples. The Cs-137 activity detected in 2023 indicator sample location bottom sediment samples was within the pre-operational range. Cs-137 activity detected in 1981 and 1982 was in the range of 79 to 953 pCi/kg. The decay corrected range of pre-operational Cs-137 activity detected is approximately 29 to 361 pCi/kg.

The detected Cs-137 activity in the sample collected from the indicator sample locations was likely due to fallout since the measured activity is within the decay corrected range of pre-operational Cs-137 detected activity.

Chart 7 plots the Cs-137 detected activity from the discharge cove indicator sample location and JRR control sample location bottom sediment samples. The detected Cs-137 activity measured from the discharge cove location reflects a decreasing trend. The Chart 7 trendline indicates Cs-137 activity detected at the JRR control location has also been decreasing. Chart 7 also displays that in recent years, the detected Cs-137 activity for the JRR and DC sample locations overlap.

Fe-55 activity was not detected in the two samples obtained from indicator sample locations.

No other radionuclides were detected in bottom sediment samples. Plant-related activation, corrosion, or fission products were not detected during 2023 in bottom sediment samples and no unusual trends were noted.

(2) Aquatic Vegetation

Gamma analyses of aquatic vegetation samples obtained from indicator sample locations detected naturally occurring Be-7 and K-40. Be-7 and K-40 activity were also detected during pre-operational monitoring.

No other radionuclides were detected in aquatic vegetation samples. Plant-related activation, corrosion, or fission products were not detected during 2023 in aquatic vegetation samples and no unusual trends were noted.

(3) Terrestrial Vegetation

Naturally occurring Be-7 and K-40 activity were detected in the terrestrial vegetation indicator location samples. No other radionuclides were detected in terrestrial vegetation. Plant-related activation, corrosion or fission products were not detected during 2023 in terrestrial vegetation and no unusual trends were noted.

(4) Soil

Naturally occurring K-40 activity was detected in the soil sample that was collected from the indicator location. K-40 activity was also detected during pre-operational soil monitoring.

Cs-137 activity was also in one sample location in 2023. The detectable value is (169 pCi/kg). The detected Cs-137 activity range from February of 1985 was 255 to 2,160 pCi/kg. The decay corrected range of pre-operational Cs-137 activity detected in soil is approximately 97 to 820 pCi/kg. The detected Cs-137 activity in soil sampled in 2023 is below and within the decay corrected pre-operational range.

Plant-related activation, corrosion, or fission products were not detected during 2023 in soil samples and no unusual trends were noted.

(5) Turkey (Ingestion Pathway)

Naturally occurring K-40 activity was detected in the turkey sample obtained from the indicator location.

Tritium activity (738.0 pCi/kg) was detected in the turkey sample. The detected tritium activity was attributable to plant operation.

An adult consuming 72.6 kilograms of turkey meat, at the measured tritium concentration 738.0 pCi/kg), would receive a committed effective dose equivalent of 0.003 mRem.

No other radionuclides were detected in the turkey sample. No unusual trends identified

(6) Deer (Ingestion Pathway)

Naturally occurring K-40 activity was detected in the deer sample obtained from the indicator location.

Tritium activity (2,189 pCi/kg) was also detected in the deer sample. The detected tritium activity was attributable to plant operation.

An adult consuming 72.6 kilograms of deer meat, at the measured tritium concentration (2,1889 pCi/kg), would receive a committed effective dose equivalent of 0.010 mRem.

No other radionuclides were detected in the deer sample. No unusual trends were identified.

III. PROGRAM REVISIONS/CHANGES

No revisions or changes were made to AP 07B-004, *Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)* during 2023.

IV. PROGRAM DEVIATIONS

Air Samples

There was no air sample locations that failed to meet the requirement for "continuous sampler operation" in 2023. As described in footnote (1) of procedure AP 07B-004, *Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)*, Table 5-1, deviations are permitted from the required sampling schedule due to malfunction of sampling equipment and other legitimate reasons.

Ground Water Protection

The following information is being provided in association with the Nuclear Energy Institute (NEI) Groundwater Protection Industry Initiative:

Describe offsite ground water or surface water sample results that exceeded the REMP reporting criteria that were voluntarily communicated to State/Local officials during the calendar year – None.

V. INTERLABORATORY COMPARISON PROGRAM

Environmental, Inc., Midwest Laboratory merged to Microbac Laboratories Inc. in 2023. We continued our contract with them to perform radiological analysis of environmental samples for WCNOC. The laboratory participated in the intercomparison studies administered by Environmental Resource Associates, Inc. Appendix A is the Interlaboratory Comparison Program Results for Microbac Laboratories Inc. Intercomparison results, in-house spikes, blanks, duplicates and mixed analyte performance evaluation program results are also contained in Appendix A.

VI. COMPARISON TO THE RADIOACTIVE EFFLUENT RELEASE PROGRAM

As described in the section discussing radioisotopes found in fish from Coffey County Lake, dose that may be received as a result of tritium released from WCGS is comparable with the theoretical doses calculated by the Radioactive Effluent Release Program.

The theoretical doses calculated by the Radioactive Effluent Release Program assume a person drinks the water from Coffey County Lake and eats the fish from Coffey County Lake. Based upon these assumptions the dose to man from both pathways was calculated to be 0.092 mRem for 2023.

Using sample data obtained from the REMP, an adult drinking 2 liters per day of surface water from Coffey County Lake, using the average tritium activity (10,538 pCi/L), would receive a committed effective dose equivalent of 0.594 mRem per year. For an adult eating 21 kg of fish per year from Coffey County Lake, using the average tritium activity (9,197 pCi/kg), would receive a committed effective dose equivalent of 0.012 mRem per year. Based upon the REMP results, the dose from both pathways was calculated to be 0.606 mRem per year.

It should be noted Coffey County Lake is not used as a drinking water source. Calculating the dose to man for tritium detected in the Coffey County Lake surface water is for comparison purposes only.

The tritium dose values are being compared on a qualitative basis. It is not expected that the annual doses, as calculated in the Radioactive Effluent Release Report, would compare directly to those calculated from the REMP. The Radioactive Effluent Release Report provides a “snapshot” of potential dose resulting from the year's releases. The REMP data indicates the accumulated result of releasing tritium into the lake since the start of plant operation.

VII. Condition reports on REMP for 2023

REMP Air Pump 8402 (CR# 10022545)
REMP Sample Locations (CR# 10024444)
REMP Sample Location #49 (CR# 10025683)
REMP Drinking Water Sampler (CR# 10026184)
REMP Air Sample Location #49 (CR# 10026768)
REMP Drinking Water Sampler (CR# 10027563)
REMP Digital Air Flow Calibrator (CR# 10028737)
REMP Drinking Water Sampler (CR# 10028881)

TABLE 1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM DESCRIPTION
(SAMPLE COLLECTION SPECIFIED BY AP 07B-004)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
AIRBORNE	**(See Figures 1 & 5)**		
Radioiodine and Particulates	Samples from six locations	Continuous sampler operation with sample collection weekly, or more frequently if required, by dust loading.	Analyze radioiodine canister weekly for I-131
	Samples from locations near the site boundary in three sectors having the highest calculated annual average D/Q and one supplemental location (Locations 2, 18, 37, and 49 on Figure 1)		Analyze particulate filter weekly for gross beta activity; perform quarterly gamma isotopic analysis composite (by location)
	Sample from the vicinity of a community having the highest calculated annual average D/Q (Location 32 on Figure 1, New Strawn)		
	Sample from a control location 9.5 to 18.5 miles distant in a low ranked D/Q sector (Location 53 on Figure 5)		

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
DIRECT RADIATION	**(See Figures 2 & 5)**		
	39 routine monitoring stations with two or more dosimeters measuring dose continuously, placed as follows: An inner ring of stations, one in each meteorological sector 0-3 mile range from the site (Locations 1, 7, 9, 11-13, 18, 26, 27, 29, 30, 37, 38, 46, 49, 55, & 54 on Figure 2). An outer ring of stations, one in each meteorological sector in the 3 to 5 mile range from the site (Locations 4, 5, 15-17, 19, 22-25, 32, 34-36, 50 & 51 on Figure 2). Four sectors [A, B, G & J] contain an additional station (Locations 2, 8, 14 & 20). The balance of the stations to be placed in special interest areas such as population centers (Locations 23, 32 & 52), nearby residences	Quarterly	Gamma dose quarterly

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
DIRECT RADIATION (cont.)	(many locations are near a residence), schools (Locations 23 & 52), Wilson Cadman Wildlife Education Area (44), CCL Public Fishing Area (46) and in two areas to serve as control stations 10-20 miles distant from the site (Locations 39 and 53 on Figure 5).		
WATERBORNE	(See Figure 3)		
Surface	One sample upstream (Location JRR on Figure 3) and one sample downstream (Location SP on Figure 3).	Monthly grab sample	Monthly gamma isotopic analysis and composite for tritium analysis quarterly
Ground	Samples from one or two sources only if likely to be affected. Indicator samples at locations hydrologically down-gradient of the site (Locations C-10, C-49, F-1, G-2, J-1 and J-2 on Figure 3); control sample at a location hydrologically upgradient of the site (Location B-12 on Figure 3).	Quarterly grab sample	Quarterly gamma isotopic analysis and tritium analysis

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
WATERBORNE (cont.)			
Drinking	Sample of municipal water supply at an indicator location downstream of the Neosho River-Wolf Creek confluence (Location IO-DW on Figure 5); control sample from location upstream of the Neosho River-Wolf Creek confluence (Location BW-15 on Figure 3).	Monthly Composite	Monthly gamma isotopic analysis and gross beta analysis of composite sample. Quarterly tritium analysis of composites.
Shoreline Sediment	One sample from the vicinity of Coffey County Lake discharge cove (Location DC on Figure 3); control sample from John Redmond Reservoir (Location JRR on Figure 3).	Semiannually	Semiannual gamma isotopic analysis
INGESTION	(See Figures 4 & 5)		
Milk	Samples from milking animals at three indicator locations within 5 miles of the site having the highest dose potential (currently there are no locations producing milk for human consumption within 5 miles of the site); one sample from a control location greater than 10 miles from the site if indicator locations are sampled.	Semimonthly April to November; monthly December-March	Gamma isotopic analysis and I-131 analysis of each sample

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
INGESTION (cont.)			
Fish	Indicator samples of 1 to 3 recreationally important species from Coffey County Lake; control samples of similar species from John Redmond Reservoir spillway (Figure 4).	Semiannually	Gamma isotopic analysis on edible portions
Broadleaf Vegetation	Samples of available broadleaf vegetation from two indicator locations (using the criteria from the "Land Use Census" section) with highest calculated annual average D/Q (Locations A-3 and Q-6 and alternate locations B-1, H-2, N-1 and R-2 on Figure 4); sample of similar broadleaf vegetation from a control location 9.5 to 18.5 miles distant in a low ranked D/Q sector (Location D-2 on Figure 5).	Monthly when available	Gamma isotopic analysis on edible portions
Irrigated Crops	Sample of crops irrigated with water from the Neosho River downstream of the Neosho River - Wolf Creek confluence (locations will vary from year to year, e.g., Location NR-D1 and NR-D2 on Figure 5).	At time of harvest	Gamma isotopic analysis on edible portions

TABLE 2
SAMPLE LOCATION IDENTIFIERS, DISTANCES (Miles) AND DIRECTIONS (Sectors)

Sample Type	Location Identifier	Distance from Reactor	Direction	Sector
Air Particulates and Radioiodine	2	2.7	N	A
	18	3.0	SSE	H
	32	3.1	WNW	P
	37	2.0	NNW	R
	49	0.8	NNE	B
	53	10.8	ENE	D
Dosimeters	1	1.4	N	A
	2	2.7	N	A
	4	4.0	NNE	B
	5	4.1	NE	C
	7	2.1	NE	C
	8	1.7	NNE	B
	9	2.0	ENE	D
	11	1.7	E	E
	12	1.9	ESE	F
	13	1.6	SE	G
	14	2.5	SE	G
	15	4.6	ESE	F
	16	4.3	E	E
	17	3.7	SE	G
	18	3.0	SSE	H
	19	3.9	SSE	H
	20	3.3	S	J
	22	3.9	SSW	K
	23	4.3	SW	L
	24	4.1	WSW	M
	25	3.4	W	N
	26	2.4	WSW	M
	27	2.2	SW	L
	29	2.7	SSW	K
	30	2.5	W	N
	32	3.1	WNW	P
	34	4.4	NW	Q
	35	4.6	NNW	R
	36	4.2	N	A
	37	2.0	NNW	R
	38	1.2	NW	Q
	39	13.1	N	A
	41	0.8	NNW	R
	42	0.8	SSE	H
	43	0.7	WNW	P
	44	3.0	NNW	R

TABLE 2 (Cont.)
SAMPLE LOCATION IDENTIFIERS, DISTANCES (Miles) AND DIRECTIONS (Sectors)

Sample Type	Location Identifier	Distance from Reactor	Direction	Sector
Dosimeters	46	1.6	WNW	P
	49	0.8	NNE	B
	50	3.6	ENE	D
	51	4.3	S	J
	52	3.6	SW	L
	53	10.8	ENE	D
	54	0.18	S	K
	55	0.25	SSW	L
Surface Water	JRR	3.7	W	N
	SP	3.2	SSE	H
Ground Water	B-12	1.9	NNE	B
	C-10	2.7	W	N
	C-49	2.8	SW	L
	F-1	2.5	ESE	F
	G-2	3.6	SE	G
	J-1	3.8	S	J
	J-2	4.3	S	J
Drinking Water	BW-15	3.9	SW	L
	IO-DW	26.1	SSE	H
Shoreline Sediment	DC	0.8	WNW	P
	EEA	3.0	NNW	R
	JRR	3.6	W	N
	SC	0.8	NNW	R
Fish	CCL	0.6	E to NNW	E to R
	JRR	3.7	W	N
Food/Garden	A-3	2.6	N	A
	B-1	0.8	NNE	B
	D-2	14.8	ENE	D
	H-2	3.0	SSE	H
	Q-6	2.4	NW	Q
Crops	NR-D1	8.9	S	J
	NR-D2	11.5	S	J
	NR-U1	4.0	SSW	K
Bottom Sediment	DC	0.9	WNW	P
	EEA	3.0	NNW	R
	ESW	0.5	E	E
	JRR	3.7	W	N
	MUDS	1.5	WNW	P
	UHS	0.6	E	E
Aquatic Vegetation	DC ALT	1.5	NW	Q
	EEA	3.0	NNW	R
	MUDS	1.5	WNW	P
	SC	0.8	NNW	R

TABLE 2 (Cont.)
SAMPLE LOCATION IDENTIFIERS, DISTANCES (Miles) AND DIRECTIONS (Sectors)

Sample Type	Location Identifier	Distance from Reactor	Direction	Sector
Terrestrial Vegetation	EEA	3.0	NNW	R
	MUDS	1.5	WNW	P
Soil	EEA	3.0	NNW	R
	MUDS	1.5	WNW	P
Meat (Turkey)	J3.5	3.5	S	J
Meat (Deer)	Q2.4	2.4	WNW	Q

TABLE 3
OSL Dosimeter Results
(mR/Standardized 90-day Quarter)

Location	Qtr. 1 (mR)	Qtr. 2 (mR)	Qtr. 3 (mR)	Qtr. 4 (mR)	Total Annual Exposure (mR)
1	18.2	21.6	22.0	18.4	80.2
2	17.9	17.4	21.7	18.7	75.7
4	18.9	18.0	23.0	18.7	78.6
5	17.3	16.4	18.4	16.4	68.5
7	16.6	17.4	22.0	16.7	72.7
8	18.6	19.9	22.4	19.4	80.3
9	17.9	13.4	17.1	17.4	65.8
11	17.6	19.0	21.0	18.4	76.0
12	19.2	20.3	21.7	20.4	81.6
13	19.6	20.3	24.6	20.7	85.2
14	18.3	18.7	20.4	18.1	75.5
15	19.6	18.7	22.3	20.0	80.6
16	16.2	17.4	21.0	18.4	73.0
17	18.3	19.0	18.7	19.0	75.0
18	18.3	17.0	20.4	20.0	75.7
19	18.6	20.3	21.4	21.4	81.7
20	16.9	20.3	21.0	19.7	77.9
22	19.6	24.2	23.3	22.7	89.8
23	19.3	19.3	19.7	19.0	77.3
24	19.6	21.6	21.7	21.0	83.9
25	15.9	17.7	17.7	16.1	67.4
26	16.2	17.7	20.0	17.4	71.3
27	19.3	17.0	22.0	18.4	76.7
29	14.6	16.4	18.4	14.8	64.2
30	19.6	17.7	21.7	19.7	78.7
32	17.2	16.4	17.1	17.4	68.1
34	19.2	21.6	21.4	20.7	82.9
35	17.2	18.3	24.3	18.4	78.2
36	18.6	18.0	22.0	21.7	80.3
37	17.6	16.7	20.4	17.1	71.8
38	20.6	20.0	23.3	20.4	84.3
39	17.9	20.0	23.0	20.7	81.6
41	13.2	12.8	13.1	13.1	52.2
42	12.2	13.4	10.5	13.8	49.9
43	18.6	20.6	21.0	18.0	78.2
44	17.6	18.3	20.4	19.0	75.3
46	16.9	14.7	16.7	16.4	64.7
49	19.2	19.3	25.0	19.4	82.9
50	19.2	19.3	22.7	19.4	80.6
51	19.2	23.2	23.3	20.4	86.1
52	19.6	19.6	21.7	21.4	86.2
53	18.9	19.6	20.4	21.7	84.2
54	19.6	20.6	23.7	19.4	83.3
55	16.6	17.4	17.7	17.1	68.8

FIGURE 1

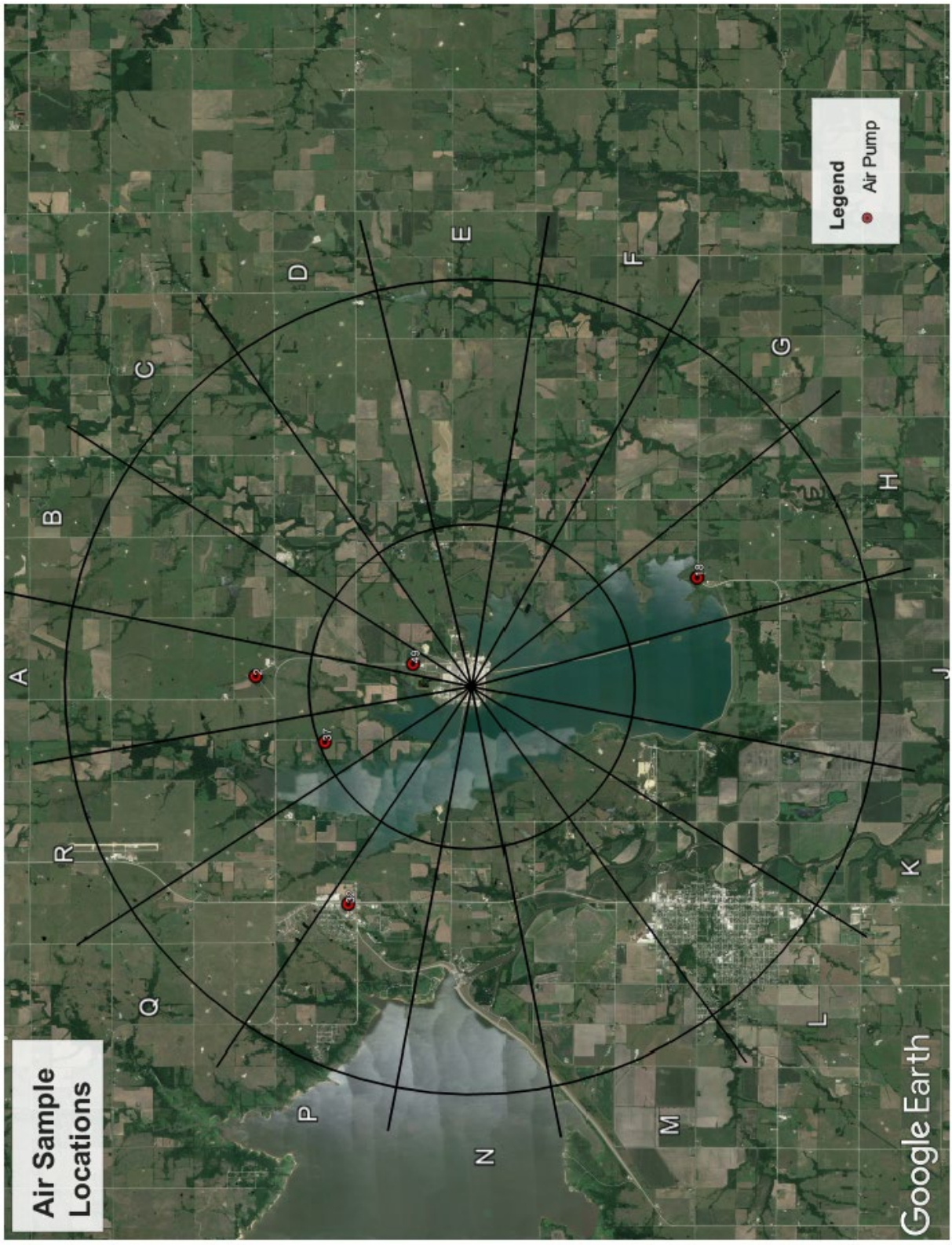
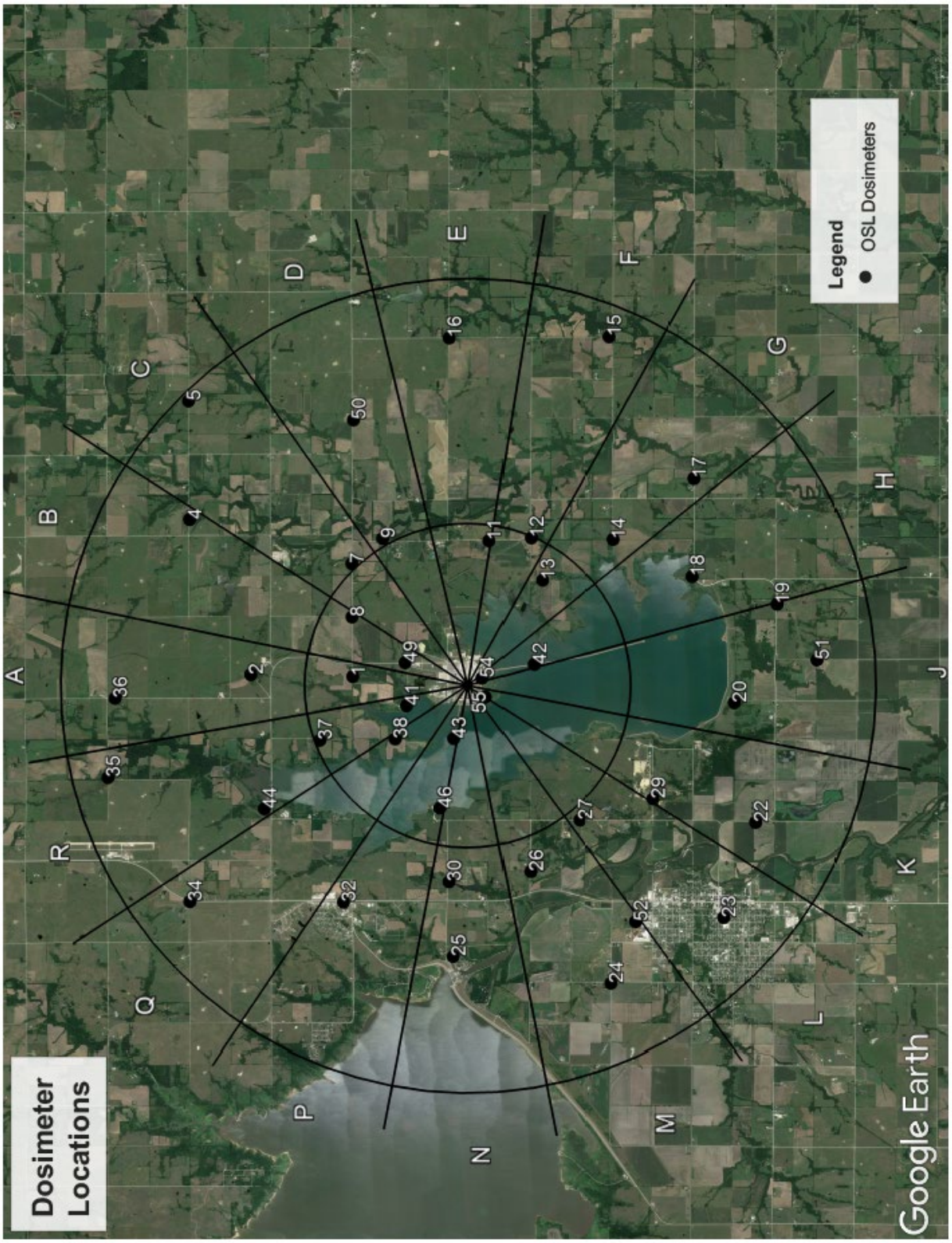

Air Sample Locations
Legend
Air Pump
A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
Google Earth

FIGURE 2


Dosimeter Locations
Legend
OSL Dosimeters
Google Earth
A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
1
2
4
5
7
8
9
11
12
13
14
15
16
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51
52
54
55

FIGURE 3

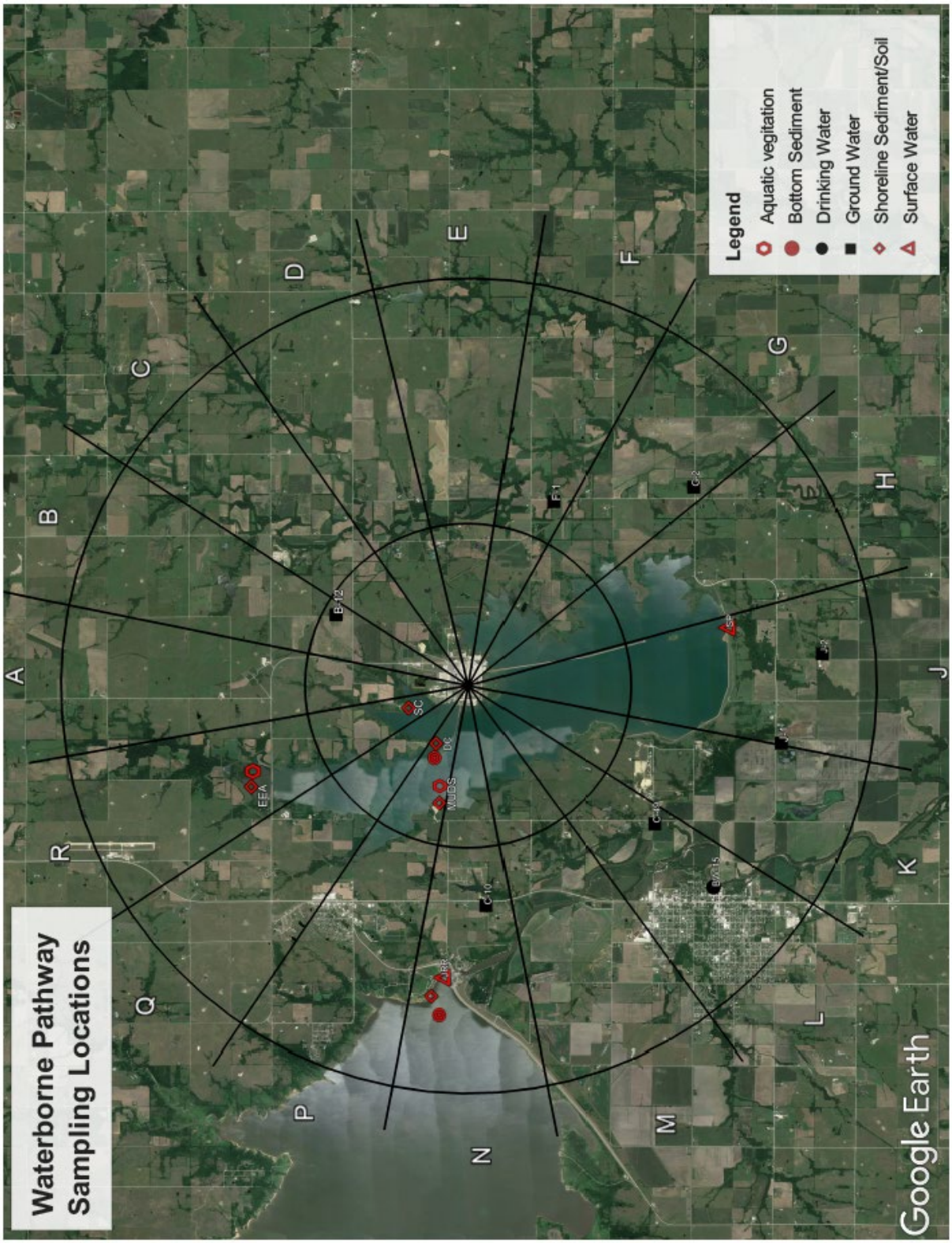

Waterborne Pathway
Sampling Locations
Legend
Aquatic vegitation
Bottom Sediment
Drinking Water
Ground Water
Shoreline Sediment/Soil
Surface Water
A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
EFA
SC
DC
MDS
B-12
F-1
G-2
C-10
G-15
Google Earth

FIGURE 4

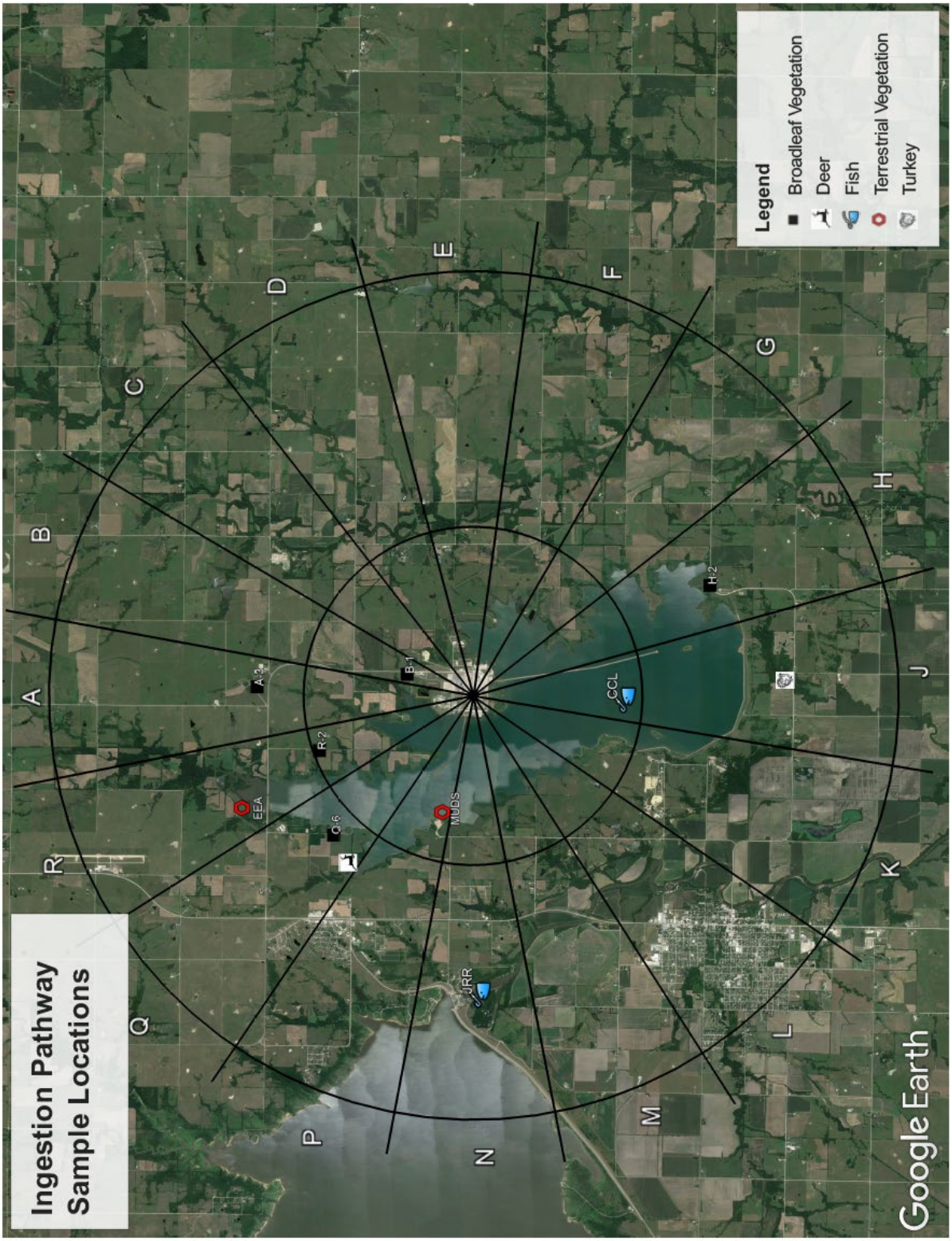

Ingestion Pathway
Sample Locations
Legend
Broadleaf Vegetation
Deer
Fish
Terrestrial Vegetation
Turkey
A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
A-3
B-1
R-2
Q-6
EEA
MUDS
CCL
H-2
JRR
Google Earth

FIGURE 5

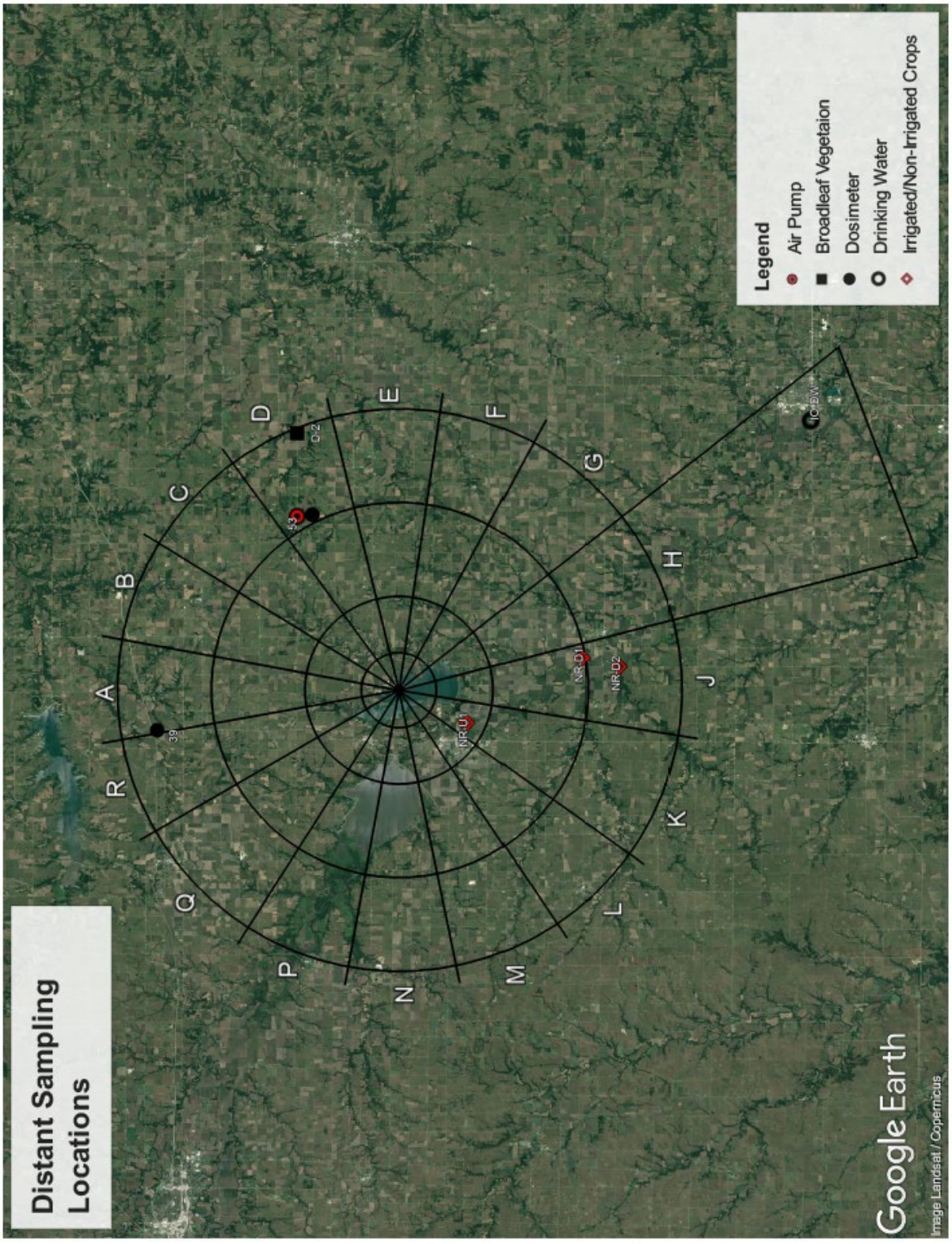

Distant Sampling Locations
Legend
Air Pump
Broadleaf Vegetaion
Dosimeter
Drinking Water
Irrigated/Non-Irrigated Crops
A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
NRD1
NRD2
NRU
D2
43
39
TOPEW
Google Earth
Image Landsat / Copernicus

CHART 1

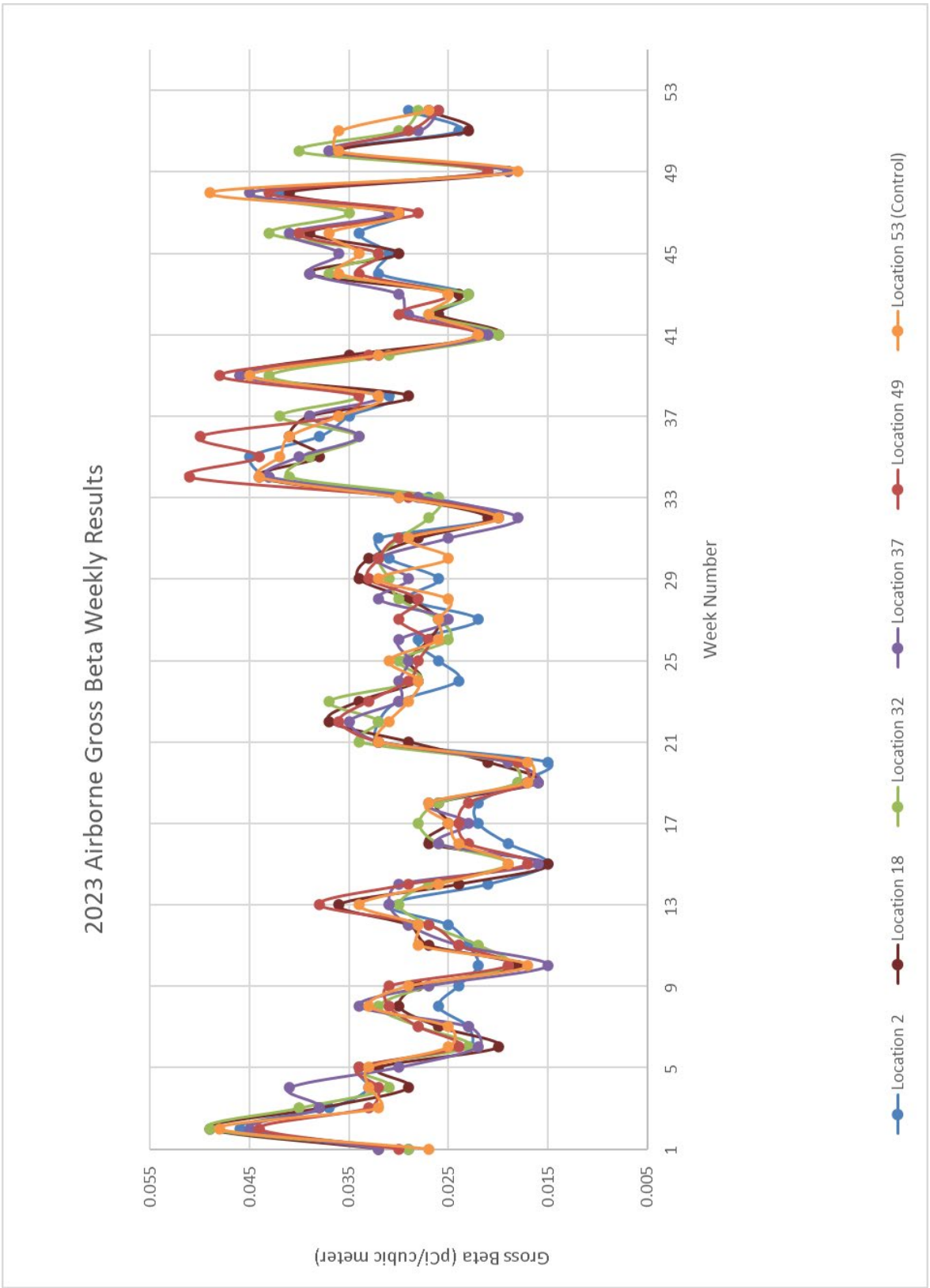

2023 Airborne Gross Beta Weekly Results
Gross Beta (pCi/cubic meter)
0.055
0.045
0.035
0.025
0.015
0.005
1
5
9
13
17
21
25
29
33
37
41
45
49
53
Week Number
Location 2
Location 18
Location 32
Location 37
Location 49
Location 53 (Control)

CHART 2

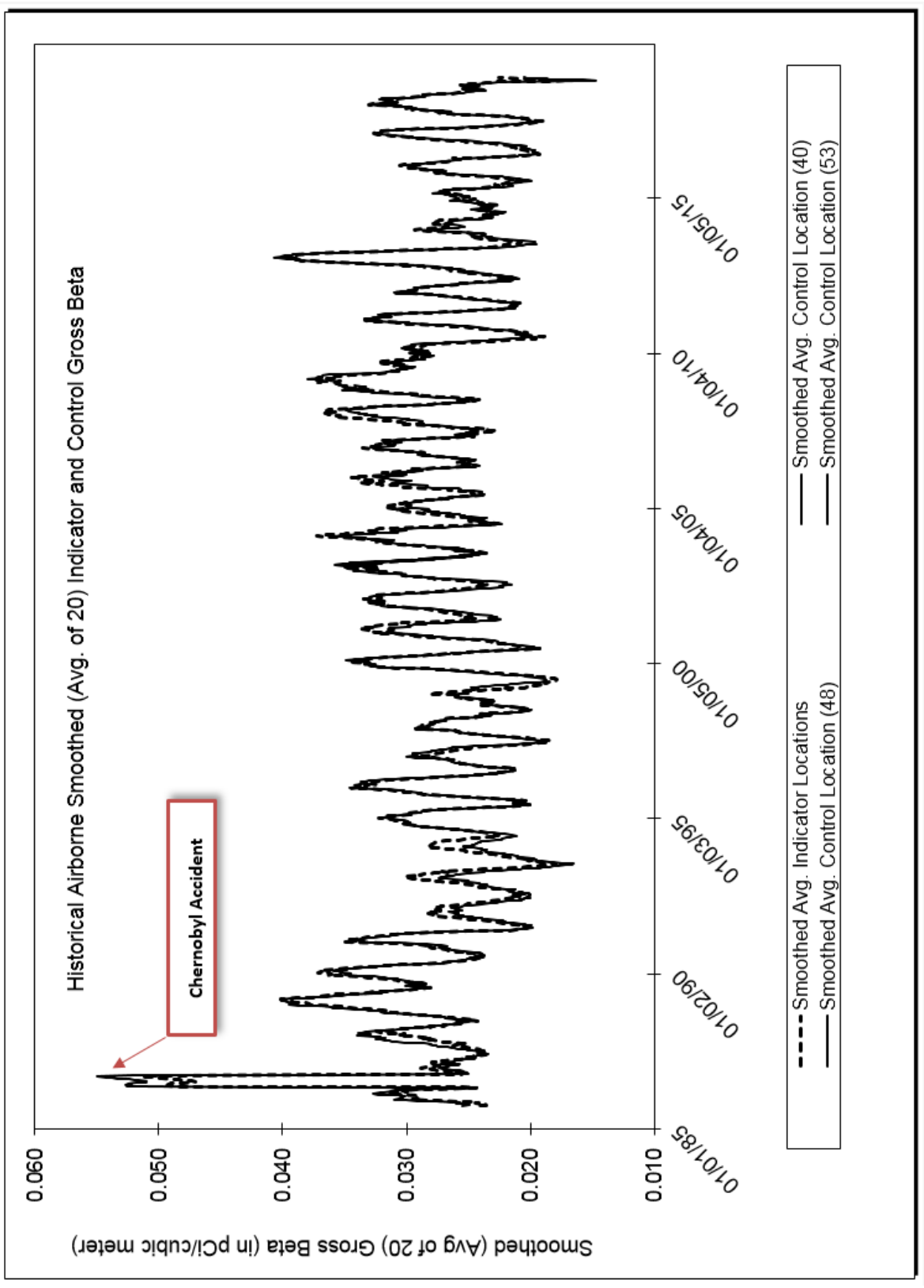

Historical Airborne Smoothed (Avg. of 20) Indicator and Control Gross Beta
Chernobyl Accident
Smoothed (Avg of 20) Gross Beta (in pCi/cubic meter)
0.060
0.050
0.040
0.030
0.020
0.010
01/01/85
01/02/90
01/03/95
01/05/00
01/04/05
01/04/10
01/05/15
Smoothed Avg. Indicator Locations
Smoothed Avg. Control Location (48)
Smoothed Avg. Control Location (40)
Smoothed Avg. Control Location (53)

CHART 3

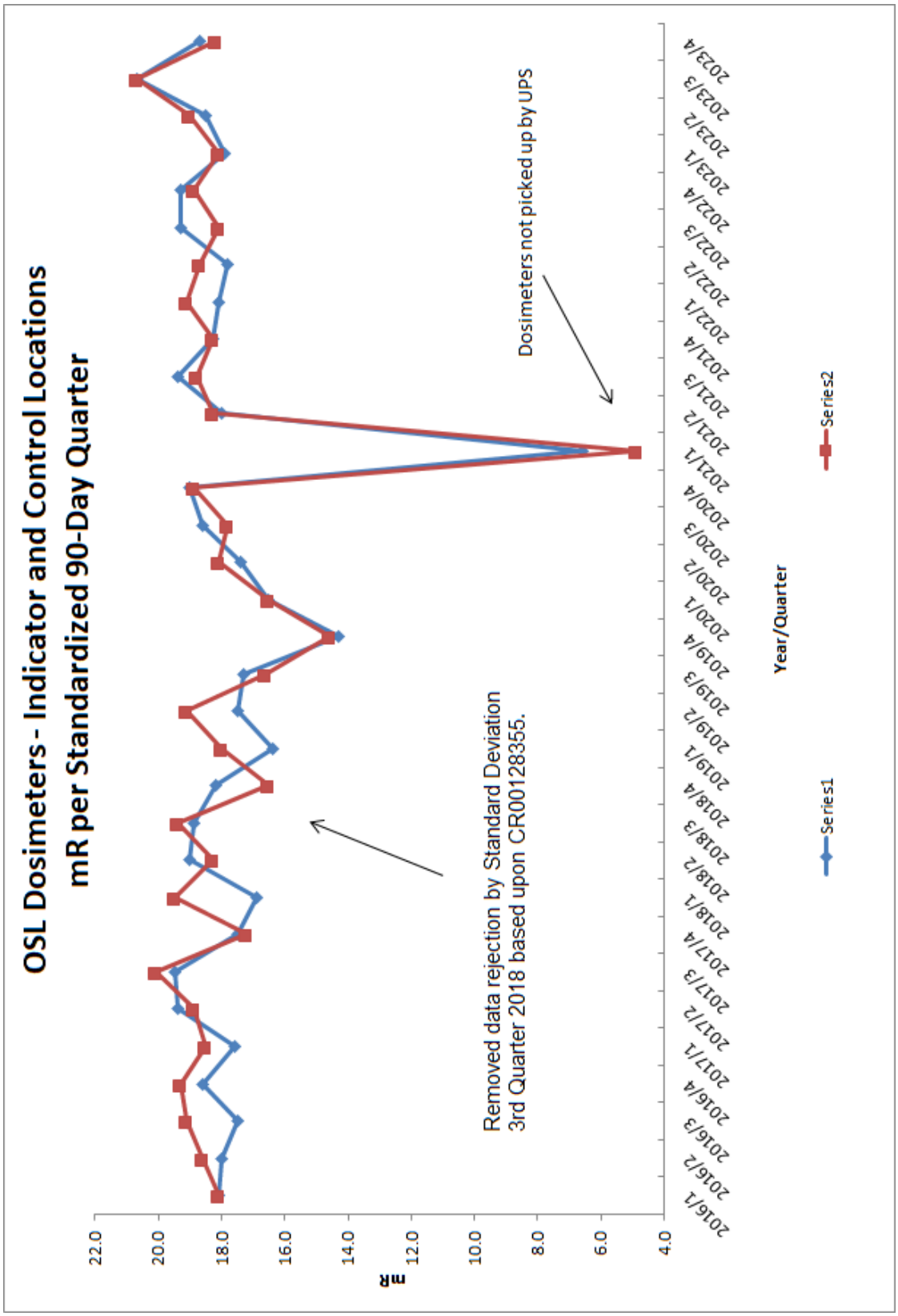

OSL Dosimeters - Indicator and Control Locations
mR per Standardized 90-Day Quarter
Dosimeters not picked up by UPS
Removed data rejection by Standard Deviation
3rd Quarter 2018 based upon CR00128355.
mR
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
Year/Quarter
2016/1
2016/2
2016/3
2016/4
2017/1
2017/2
2017/3
2017/4
2018/1
2018/2
2018/3
2018/4
2019/1
2019/2
2019/3
2019/4
2020/1
2020/2
2020/3
2020/4
2021/1
2021/2
2021/3
2021/4
2022/1
2022/2
2022/3
2022/4
2023/1
2023/2
2023/3
2023/4
Series1
Series2

CHART 4

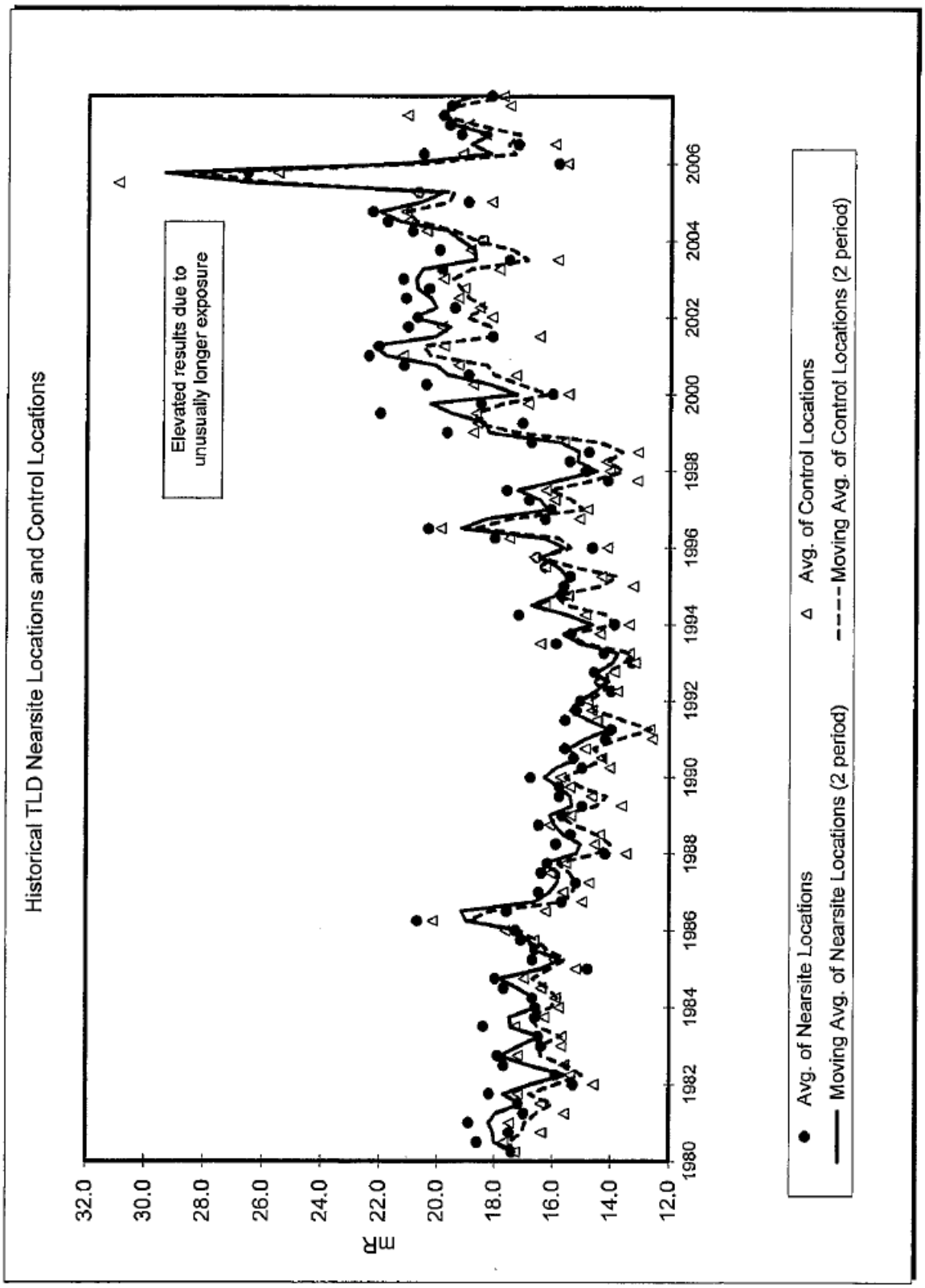

Historical TLD Nearsite Locations and Control Locations
Elevated results due to unusually longer exposure
mR
32.0
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Avg. of Nearsite Locations
Moving Avg. of Nearsite Locations (2 period)
Avg. of Control Locations
Moving Avg. of Control Locations (2 period)

CHART 5

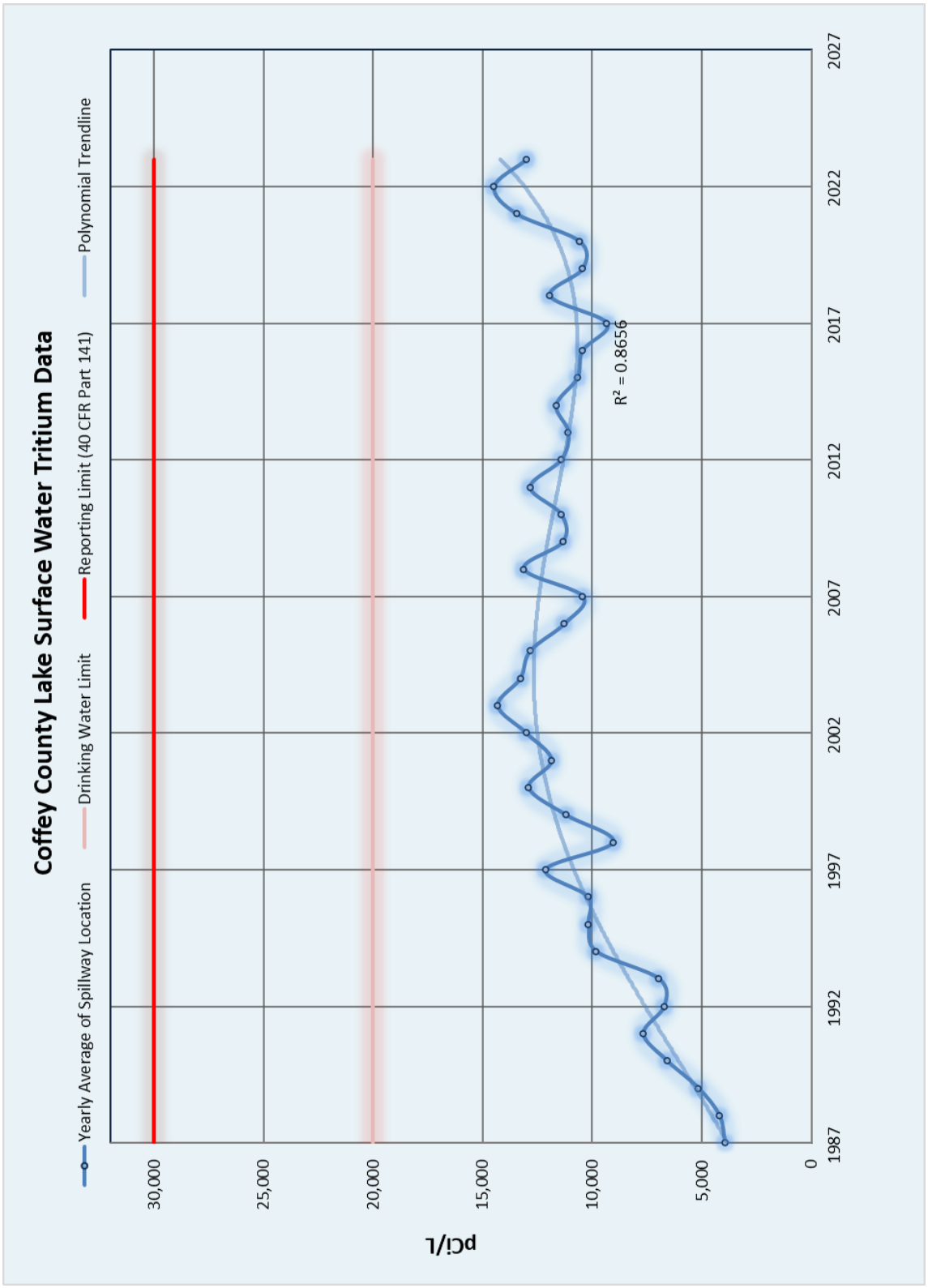

Coffey County Lake Surface Water Tritium Data
Yearly Average of Spillway Location
Drinking Water Limit
Reporting Limit (40 CFR Part 141)
Polynomial Trendline
R² = 0.8656
pCi/L
30,000
25,000
20,000
15,000
10,000
5,000
0
1987
1992
1997
2002
2007
2012
2017
2022
2027

CHART 6

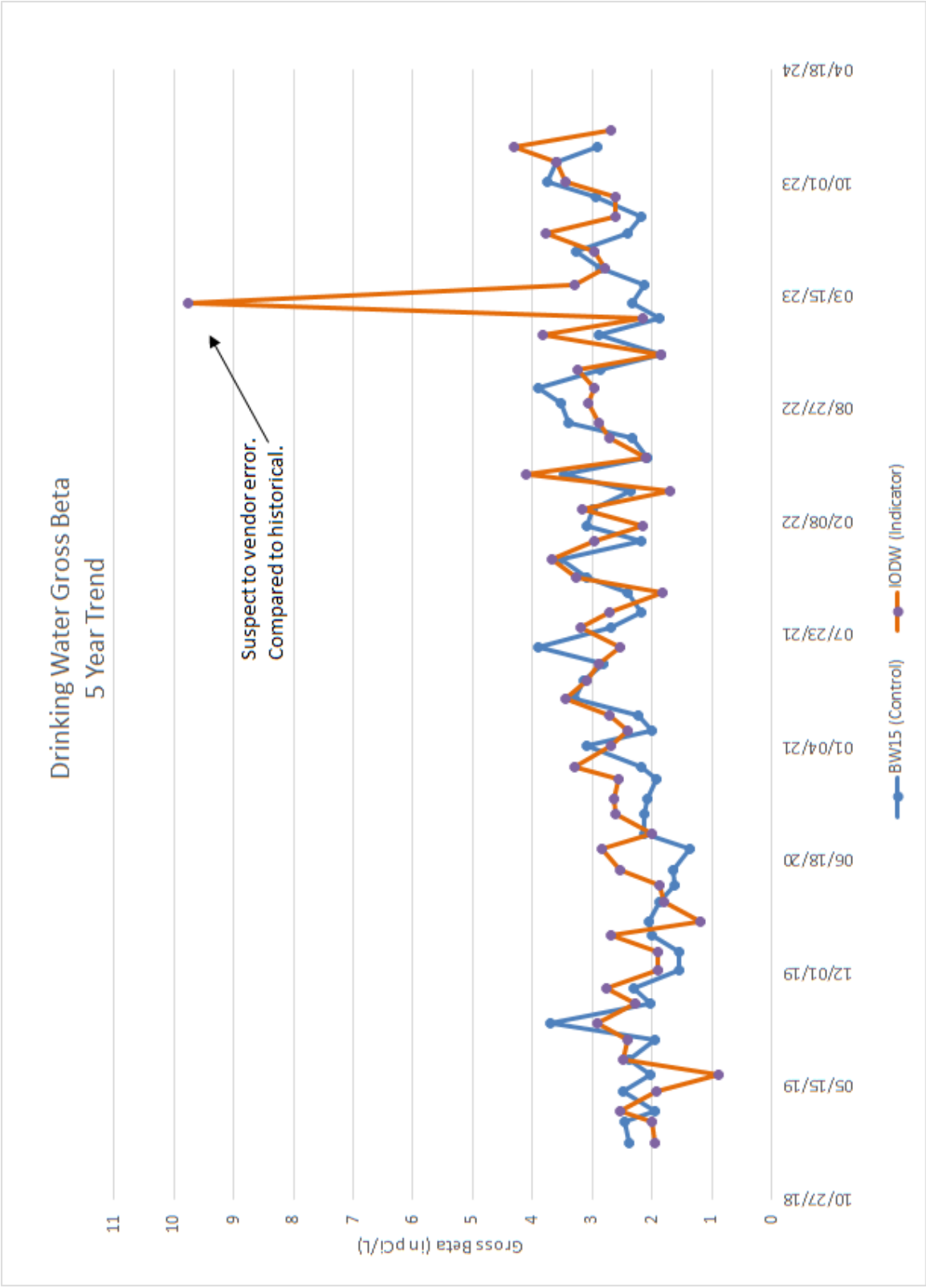
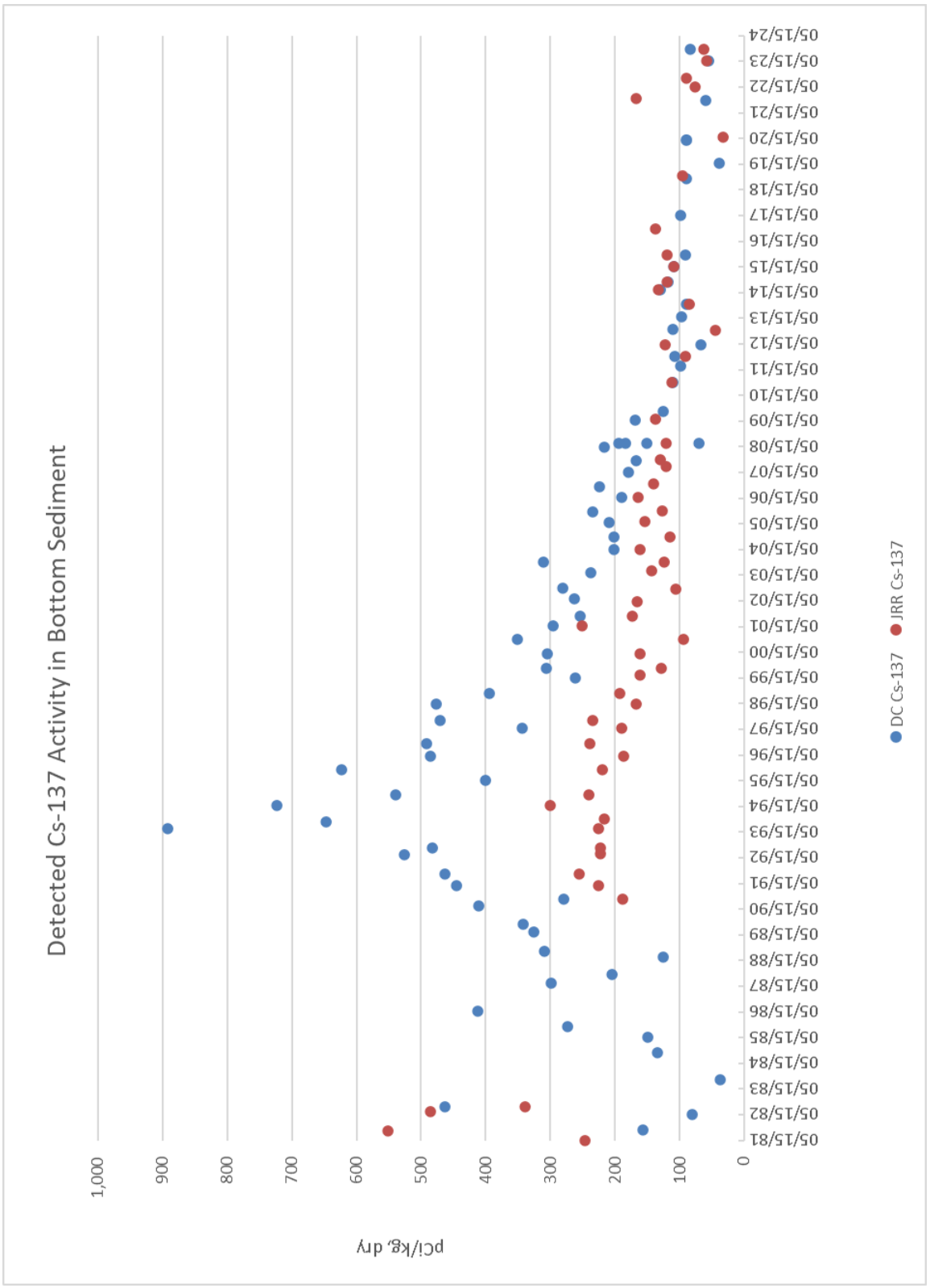

Drinking Water Gross Beta
5 Year Trend
Suspect to vendor error.
Compared to historical.
Gross Beta (in pCi/L)
0
1
2
3
4
5
6
7
8
9
10
11
10/27/18
05/15/19
12/01/19
06/18/20
01/04/21
07/23/21
02/08/22
08/27/22
03/15/23
10/01/23
04/18/24
BW15 (Control)
IODW (Indicator)

CHART 7


Detected Cs-137 Activity in Bottom Sediment
pCi/kg, dry
1,000
900
800
700
600
500
400
300
200
100
0
05/15/24
05/15/23
05/15/22
05/15/21
05/15/20
05/15/19
05/15/18
05/15/17
05/15/16
05/15/15
05/15/14
05/15/13
05/15/12
05/15/11
05/15/10
05/15/09
05/15/08
05/15/07
05/15/06
05/15/05
05/15/04
05/15/03
05/15/02
05/15/01
05/15/00
05/15/99
05/15/98
05/15/97
05/15/96
05/15/95
05/15/94
05/15/93
05/15/92
05/15/91
05/15/90
05/15/89
05/15/88
05/15/87
05/15/86
05/15/85
05/15/84
05/15/83
05/15/82
05/15/81
DC Cs-137
JRR Cs-137

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APPENDIX A

INTERLABORATORY AND INTRALABORATORY COMPARISON PROGRAM RESULTS

NOTE: Appendix A is updated four times a year. The complete appendix is included in March, June, September and December monthly progress reports only.

January, 2023 through December, 2023

Appendix A

Interlaboratory/ Intralaboratory Comparison Program Results

Microbac Laboratories Inc. has participated in interlaboratory comparison (crosscheck) programs since the formulation of its quality control program in December 1971. These programs are operated by agencies which supply environmental type samples containing concentrations of radionuclides known to the issuing agency but not to participant laboratories. The purpose of such a program is to provide an independent check on a laboratory's analytical procedures and to alert it of any possible problems.

Participant laboratories measure the concentration of specified radionuclides and report them to the issuing agency. Several months later, the agency reports the known values to the participant laboratories and specifies control limits. Results consistently higher or lower than the known values or outside the control limits indicate a need to check the instruments or procedures used.

Results in Table A-1 were obtained through participation in the RAD PT Study Proficiency Testing Program administered by Environmental Resource Associates, serving as a replacement for studies conducted previously by the U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

Table A-2 lists results for thermoluminescent dosimeters (TLDs), via irradiation and evaluation by the University of Wisconsin-Madison Radiation Calibration Laboratory at the University of Wisconsin Medical Radiation Research Center.

Table A-3 lists results of the analyses on intralaboratory "spiked" samples for the past twelve months. All samples are prepared using NIST traceable sources. Data for previous years available upon request.

Table A-4 lists results of the analyses on intralaboratory "blank" samples for the past twelve months. Data for previous years available upon request.

Table A-5 lists analytical results from the intralaboratory "duplicate" program for the past twelve months. Acceptance is based on each result being within 25% of the mean of the two results or the two sigma uncertainties of each result overlap.

The results in Table A-6 were obtained through participation in the Mixed Analyte Performance Evaluation Program.

Results in Table A-7 were obtained through participation in the MRAD PT Study Proficiency Testing Program administered by Environmental Resource Associates, serving as a replacement for studies conducted previously by the Environmental Measurement Laboratory Quality Assessment Program (EML).

Attachment A lists the laboratory acceptance criteria for various analyses.

Out-of-limit results are explained directly below the result.

Attachment A

ACCEPTANCE CRITERIA FOR INTRALABORATORY "SPIKED" SAMPLES

Analysis	Ratio of lab result to known value.
Gamma Emitters	0.8 to 1.2
Strontium-89, Strontium-90	0.8 to 1.2
Potassium-40	0.8 to 1.2
Gross alpha	0.5 to 1.5
Gross beta	0.8 to 1.2
Tritium	0.8 to 1.2
Radium-226, Radium-228	0.7 to 1.3
Plutonium	0.8 to 1.2
Iodine-129, Iodine-131	0.8 to 1.2
Nickel-63, Technetium-99, Uranium-238	0.7 to 1.3
Iron-55	0.8 to 1.2
Other Analyses	0.8 to 1.2

TABLE A-1. Interlaboratory Comparison Crosscheck program, Environmental Resource Associates (ERA)[a].
RAD study

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result	ERA Value	Acceptance Limits	Acceptance
RAD-132 Study						
ERDW-162	2/23/2023	Ba-133	33.0 ± 3.5	30.5	24.2 - 34.6	Pass
ERDW-162	2/23/2023	Cs-134	30.7 ± 3.0	28.2	21.9 - 31.1	Pass
ERDW-162	2/23/2023	Cs-137	191 ± 7	190	171 - 211	Pass
ERDW-162	2/23/2023	Co-60	110 ± 4	110	99.0 - 123	Pass
ERDW-162	2/23/2023	Zn-65	109 ± 8	105	94.5 - 125	Pass
ERDW-162	2/23/2023	Gr. Alpha	25.3 ± 0.2	30.0	15.3 - 39.2	Pass
ERDW-162	2/23/2023	G. Beta	15.0 ± 0.1	16.5	9.25 - 24.8	Pass
ERDW-162	2/23/2023	Ra-226	7.58 ± 0.52	8.26	6.21 - 9.71	Pass
ERDW-162	2/23/2023	Ra-228	7.44 ± 1.53	7.17	4.51 - 9.20	Pass
ERDW-162	2/23/2023	H-3	22,600 ± 467	21,600	18,900 - 23,800	Pass
RAD-134 Study						
ERDW-1956	7/10/2023	Ba-133	64.1 ± 4.7	66.5	55.4 - 73.2	Pass
ERDW-1956	7/10/2023	Cs-134	97.0 ± 4.8	90.8	74.5 - 99.9	Pass
ERDW-1956	7/10/2023	Cs-137	179 ± 8	163	147 - 181	Pass
ERDW-1956	7/10/2023	Co-60	26.6 ± 2.9	20.7	17.5 - 25.6	Fail [b]
ERDW-1956	7/10/2023	Zn-65	318 ± 12	290	261 - 339	Pass
ERDW-50167	7/10/2023	Gr. Alpha	34.3 ± 1.9	47.9	24.9 - 60.3	Pass
ERDW-50167	7/10/2023	G. Beta	27.4 ± 1.2	28.6	18.2 - 36.4	Pass
ERDW-50171	7/10/2023	Ra-226	19.3 ± 0.9	17.4	12.9 - 19.9	Pass
ERDW-50171	7/10/2023	Ra-228	7.11 ± 1.59	7.16	4.50 - 9.18	Pass
ERDW-50173	7/10/2023	H-3	10,500 ± 326	9,860	8,570 - 10,800	Pass
ERDW-50169	7/10/2023	I-131	23.9 ± 1.2	24.4	20.2 - 28.9	Pass

[a] Results obtained by Microbac Laboratories Inc. - Northbrook as a participant in the crosscheck program for proficiency testing in drinking water conducted by Environmental Resource Associates (ERA).

[b] The Cobalt-60 result did not meet ERA acceptance criteria. The sample was reanalyzed and passed for all analytes. (Co-60 reanalysis result was 21.2 ± 3.0 pCi/L). No cause for the earlier failure could be determined.

TABLE A-2. Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards).[a]

			mrem		
Lab Code	Irradiation Date	Description	Delivered Dose	Reported[b] Dose	Performance[c] Quotient (P)	
Microbac Laboratories, Inc.		Group 1				
2022-23-3	11/29/2023	Spike 1	93.0	90.0	-0.03	
2022-23-3	11/29/2023	Spike 2	93.0	88.5	-0.05	
2022-23-3	11/29/2023	Spike 3	93.0	89.0	-0.04	
2022-23-3	11/29/2023	Spike 4	93.0	89.5	-0.04	
2022-23-3	11/29/2023	Spike 5	93.0	88.1	-0.05	
2022-23-3	11/29/2023	Spike 6	93.0	95.1	0.02	
2022-23-3	11/29/2023	Spike 7	93.0	90.8	-0.02	
2022-23-3	11/29/2023	Spike 8	93.0	90.8	-0.02	
2022-23-3	11/29/2023	Spike 9	93.0	92.3	-0.01	
2022-23-3	11/29/2023	Spike 10	93.0	89.0	-0.04	
2022-23-3	11/29/2023	Spike 11	93.0	84.9	-0.09	
2022-23-3	11/29/2023	Spike 12	93.0	90.8	-0.02	
2022-23-3	11/29/2023	Spike 13	93.0	92.0	-0.01	
2022-23-3	11/29/2023	Spike 14	93.0	87.7	-0.06	
2022-23-3	11/29/2023	Spike 15	93.0	88.8	-0.05	
2022-23-3	11/29/2023	Spike 16	93.0	88.6	-0.05	
2022-23-3	11/29/2023	Spike 17	93.0	84.2	-0.09	
2022-23-3	11/29/2023	Spike 18	93.0	88.6	-0.05	
2022-23-3	11/29/2023	Spike 19	93.0	86.4	-0.07	
2022-23-3	11/29/2023	Spike 20	93.0	88.3	-0.05	
Mean (Spike 1-20)				89.2	-0.04	Pass[d]
Standard Deviation (Spike 1-20)				2.5	0.03	Pass[d]

a TLD's were irradiated by the University of Wisconsin-Madison Radiation Calibration Laboratory following ANSI N13.37 protocol from a known air kerma rate. TLD's were read and the results were submitted by Microbac Laboratories, Inc. to the University of Wisconsin-Madison Radiation Calibration Laboratory for comparison to the delivered dose.

b Reported dose was converted from exposure (R) to Air Kerma (cGy) using a conversion of 0.876. Conversion from air kerma to ambient dose equivalent for Cs-137 at the reference dose point $H^*(10)K_a = 1.20$. mrem/cGy = 1000.

c Performance Quotient (P) is calculated as ((reported dose - conventionally true value) ÷ conventionally true value) where the conventionally true value is the delivered dose.

d Acceptance is achieved when neither the absolute value of the mean of the P values, nor the standard deviation of the P values exceed 0.15.

TABLE A-2. Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards).[a]

			mrem		
Lab Code	Irradiation Date	Description	Delivered Dose	Reported[b] Dose	Performance[c] Quotient (P)
Microbac Laboratories, Inc.		Group 2			
2022-23-4	11/29/2023	Spike 21	176.0	170.1	-0.03
2022-23-4	11/29/2023	Spike 22	176.0	166.8	-0.05
2022-23-4	11/29/2023	Spike 23	176.0	156.3	-0.11
2022-23-4	11/29/2023	Spike 24	176.0	163.1	-0.07
2022-23-4	11/29/2023	Spike 25	176.0	166.8	-0.05
2022-23-4	11/29/2023	Spike 26	176.0	168.0	-0.05
2022-23-4	11/29/2023	Spike 27	176.0	159.8	-0.09
2022-23-4	11/29/2023	Spike 28	176.0	160.4	-0.09
2022-23-4	11/29/2023	Spike 29	176.0	165.4	-0.06
2022-23-4	11/29/2023	Spike 30	176.0	166.2	-0.06
2022-23-4	11/29/2023	Spike 31	176.0	159.9	-0.09
2022-23-4	11/29/2023	Spike 32	176.0	161.4	-0.08
2022-23-4	11/29/2023	Spike 33	176.0	165.8	-0.06
2022-23-4	11/29/2023	Spike 34	176.0	163.9	-0.07
2022-23-4	11/29/2023	Spike 35	176.0	167.9	-0.05
2022-23-4	11/29/2023	Spike 36	176.0	157.4	-0.11
2022-23-4	11/29/2023	Spike 37	176.0	165.6	-0.06
2022-23-4	11/29/2023	Spike 38	176.0	161.3	-0.08
2022-23-4	11/29/2023	Spike 39	176.0	165.9	-0.06
2022-23-4	11/29/2023	Spike 40	176.0	159.4	-0.09
Mean (Spike 21-40)				163.6	-0.07 Pass[d]
Standard Deviation (Spike 21-40)				3.9	0.02 Pass[d]

a TLD's were irradiated by the University of Wisconsin-Madison Radiation Calibration Laboratory following ANSI N13.37 protocol from a known air kerma rate. TLD's were read and the results were submitted by Microbac Laboratories, Inc. to the University of Wisconsin-Madison Radiation Calibration Laboratory for comparison to the delivered dose.

b Reported dose was converted from exposure (R) to Air Kerma (cGy) using a conversion of 0.876. Conversion from air kerma to ambient dose equivalent for Cs-137 at the reference dose point $H^*(10)K_a = 1.20$. mrem/cGy = 1000.

c Performance Quotient (P) is calculated as ((reported dose - conventionally true value) ÷ conventionally true value) where the conventionally true value is the delivered dose.

d Acceptance is achieved when neither the absolute value of the mean of the P values, nor the standard deviation of the P values exceed 0.15.

TABLE A-3. Intralaboratory "Spiked" Samples

Lab Code[b]	Date	Concentration[a] Analysis	Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
SPDW-26	1/5/2023	Ra-228	11.8 ± 1.9	13.4	9.4 - 17.4	Pass	0.88
SPDW-50002	1/11/2023	H-3	21,747 ± 452	22,100	17,680 - 26,520	Pass	0.98
SPDW-50004	1/20/2023	H-3	21,861 ± 458	22,100	17,680 - 26,520	Pass	0.99
SPDW-50006	1/5/2023	Ra-226	11.3 ± 0.3	12.3	8.6 - 16.0	Pass	0.92
SPDW-50034	1/27/2023	Ra-226	12.6 ± 0.4	12.3	8.6 - 16.0	Pass	1.02
LCS-SO-012723	8/1/2020	Cs-134	17.1 ± 0.2	19.2	15.4 - 23.0	Pass	0.89
LCS-SO-012723	8/1/2020	Zn-65	13.8 ± 1.7	14.1	11.3 - 16.9	Pass	0.98
LCS-SO-012723	8/1/2020	Co-60	26.4 ± 0.2	27.0	21.6 - 32.4	Pass	0.98
LCS-SO-012723	8/1/2020	Co-57	30.7 ± 0.1	30.9	24.7 - 37.1	Pass	0.99
LCS-SO-012723	8/1/2020	Mn-54	17.7 ± 0.8	16.5	13.2 - 19.8	Pass	1.07
LCS-SO-012723	8/1/2020	K-40	18.4 ± 0.7	16.8	13.4 - 20.2	Pass	1.10
SPDW-50010	1/31/2023	Ra-228	9.7 ± 1.3	13.4	9.4 - 17.4	Pass	0.72
SPDW-50008	2/3/2023	H-3	21,961 ± 459	22,100	17,680 - 26,520	Pass	0.99
SPDW-50016	2/10/2023	H-3	22,137 ± 462	22,100	17,680 - 26,520	Pass	1.00
SPDW-50012	2/24/2023	Sr-90	18.6 ± 1.2	17.1	13.7 - 20.5	Pass	1.09
SPDW-50032	2/16/2023	Ra-228	13.1 ± 1.9	13.4	9.4 - 17.4	Pass	0.98
SPDW-50018	2/16/2023	Gr. Alpha	19.1 ± 1.3	23.5	11.8 - 28.2	Pass	0.81
SPDW-50018	2/16/2023	Gr. Beta	133 ± 2	141	112 - 169	Pass	0.94
SPDW-50021	2/17/2023	H-3	21,843 ± 459	22,100	17,680 - 26,520	Pass	0.99
SPDW-50047	2/24/2023	Ra-226	12.8 ± 0.4	12.3	8.6 - 16.0	Pass	1.04
SPDW-50049	3/17/2023	H-3	22,120 ± 465	22,100	17,680 - 26,520	Pass	1.00
SPDW-50056	3/24/2023	H-3	21,911 ± 463	22,100	17,680 - 26,520	Pass	0.99
SPDW-50060	3/16/2023	Ra-226	12.9 ± 0.4	12.3	8.6 - 16.0	Pass	1.05
SPDW-50097	4/13/2023	Ra-226	11.7 ± 0.5	12.3	8.6 - 16.0	Pass	0.95
SPDW-50068	4/14/2023	H-3	22,656 ± 482	22,100	17,680 - 26,520	Pass	1.03
SPDW-50081	4/25/2023	H-3	21,594 ± 461	22,100	17,680 - 26,520	Pass	0.98
SPDW-50131	5/3/2023	Ra-226	11.4 ± 0.3	12.3	8.6 - 16.0	Pass	0.93
SPDW-50104	5/12/2023	H-3	21,513 462	22,100	17,680 - 26,520	Pass	0.97
SPDW-50117	5/26/2023	H-3	22,069 468	22,100	17,680 - 26,520	Pass	1.00
SPDW-50182	6/8/2023	Ra-226	10.4 ± 0.3	12.3	8.6 - 16.0	Pass	0.85
SPDW-50137	6/12/2023	H-3	21,898 ± 456	22,100	17,680 - 26,520	Pass	0.99
SPDW-50138	6/12/2023	H-3	21,898 ± 456	22,100	17,680 - 26,520	Pass	0.99
SPDW-50153	6/26/2023	H-3	21,672 ± 456	22,100	17,680 - 26,520	Pass	0.98
SPDW-50153	6/26/2023	H-3	21,672 ± 456	22,100	17,680 - 26,520	Pass	0.98
SPDW-50259	7/19/2023	Ra-226	10.5 ± 0.3	12.3	8.6 - 16.0	Pass	0.85
SPDW-50219	8/15/2023	Sr-90	17.5 ± 1.1	17.1	13.7 - 20.5	Pass	1.02
SPDW-50291	8/28/2023	Ra-226	11.0 ± 0.3	12.3	8.6 - 16.0	Pass	0.89
SPDW-50249	8/22/2023	Gr. Alpha	16.7 ± 1.4	23.5	11.8 - 28.2	Pass	0.71
SPDW-50249	8/22/2023	Gr. Beta	128 ± 2	141	112 - 169	Pass	0.91
SPDW-50252	8/18/2023	H-3	21,628 ± 459	22,100	17,680 - 26,520	Pass	0.98
SPDW-50257	8/25/2023	H-3	22,152 ± 469	22,100	17,680 - 26,520	Pass	1.00

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m3), charcoal (pCi/charcoal canister), and solid samples (pCi/kg).
[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).
[c] Results are based on single determinations.
[d] Acceptance criteria are listed in Attachment A of this report.

TABLE A-3. Intralaboratory "Spiked" Samples

Lab Code[b]	Date	Analysis	Concentration[a] Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
LCS-09/12/23	8/1/2020	Cs-134	17,533 ± 346	19,170	15,336 - 23,004	Pass	0.91
LCS-09/12/23	8/1/2020	Co-60	27,480 ± 347	26,055	20,844 - 31,266	Pass	1.05
LCS-09/12/23	8/1/2020	K-40	20,183 1268	18,468	14,774 - 22,162	Pass	1.09
SPDW-50270	9/6/2023	H-3	22,287 ± 469	22,100	17,680 - 26,520	Pass	1.01
SPDW-50283	9/25/2023	H-3	21,062 ± 444	22,100	17,680 - 26,520	Pass	0.95
SPDW-50291	8/28/2023	Ra-226	11.0 ± 0	12.3	8.6 - 16.0	Pass	0.89
SPDW-50316	10/3/2023	H-3	21,406 ± 454	22,100	17,680 - 26,520	Pass	0.97
SPW-50330	11/17/2023	H-3	21,143 ± 543	22,100	17,680 - 26,520	Pass	0.96
LCS-SO-112823	8/1/2020	Cs-134	17.2 ± 0.2	19.2	15.4 - 23.0	Pass	0.90
LCS-SO-112823	8/1/2020	Zn-65	14.9 ± 3.1	14.1	11.3 - 16.9	Pass	1.06
LCS-SO-112823	8/1/2020	Co-60	26.0 ± 0.3	27.0	21.6 - 32.4	Pass	0.96
LCS-SO-112823	8/1/2020	Co-57	29.3 ± 0.9	30.9	24.7 - 37.1	Pass	0.95
LCS-SO-112823	8/1/2020	Mn-54	17.5 ± 1.3	16.5	13.2 - 19.8	Pass	1.06
LCS-SO-112823	8/1/2020	K-40	18.0 ± 0.7	16.8	13.4 - 20.2	Pass	1.07
SPW-3908	12/18/2023	NI-63	2,032 ± 27	1,788	1,430 - 2,146	Pass	1.14
SPW-3910	12/18/2023	Fe-55	269 ± 24	232	186 - 0,278	Pass	1.16
SPDW-50378	12/19/2023	H-3	21,102 ± 452	22,100	17,680 - 26,520	Pass	0.95
SPDW-50388	12/28/2023	H-3	20,540 ± 445	22,100	17,680 - 26,520	Pass	0.93
SPDW-50393	12/19/2023	Ra-226	11.6 ± 0.3	12.3	8.6 - 16.0	Pass	0.94

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m3), charcoal (pCi/charcoal canister), and solid samples (pCi/kg).
[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).
[c] Results are based on single determinations.
[d] Acceptance criteria are listed in Attachment A of this report.

TABLE A-4. Intralaboratory "Blank" Samples

Lab Code[b]	Sample Type	Date	Analysis[c]	Concentration[a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[d]	Criteria (4.66 σ)
SPW-25	Water	1/5/2023	Ra-228	0.98	0.74 ± 0.54	2
SPDW-50000	Water	1/6/2023	I-131	0.36	-0.10 ± 0.16	1
SPDW-50001	Water	1/11/2023	H-3	157	13 ± 74	200
SPDW-50003	Water	1/20/2023	H-3	161	98 ± 85	200
SPDW-50005	Water	1/5/2023	Ra-226	0.02	0.00 ± 0.03	2
SPDW-50033	Water	1/27/2023	Ra-226	0.03	-0.01 ± 0.03	2
SPDW-50009	Water	1/31/2023	Ra-228	1.40	0.69 ± 0.75	2
SPDW-50007	Water	2/3/2023	H-3	160	17 ± 80	200
SPDW-50015	Water	2/10/2023	H-3	159	91 ± 84	200
SPDW-50011	Water	2/9/2023	Sr-89	0.62	0.24 ± 0.49	5
SPDW-50011	Water	2/9/2023	Sr-90	0.66	-0.02 ± 0.30	1
SPDW-50018	Water	2/16/2023	Gr. Alpha	0.62	0.01 ± 0.44	2
SPDW-50018	Water	2/16/2023	Gr. Beta	0.78	-0.10 ± 0.54	4
SPDW-50020	Water	2/17/2023	H-3	154	122 ± 80	200
SPDW-50031	Water	2/16/2023	Ra-228	0.82	0.42 ± 0.43	2
SPDW-50046	Water	2/24/2023	Ra-226	0.03	0.05 ± 0.04	2
SPDW-50044	Water	3/13/2023	I-131	0.15	-0.06 ± 0.08	1
SPDW-50048	Water	3/17/2023	H-3	163	80 ± 80	200
SPDW-50055	Water	3/24/2023	H-3	169	63 ± 82	200
SPDW-50059	Water	3/16/2023	Ra-226	0.04	-0.02 ± 0.03	2
SPDW-50063	Water	3/28/2023	Ra-226	0.06	-0.01 ± 0.05	2
SPDW-50067	Water	4/14/2023	H-3	173	92 ± 87	200
SPDW-50069	Water	4/17/2023	I-131	0.11	-0.05 ± 0.08	1
SPDW-50102	Water	5/15/2023	I-131	0.15	-0.01 ± 0.08	1
SPDW-50103	Water	5/12/2023	H-3	161	67 ± 80	200
SPDW-50116	Water	5/26/2023	H-3	161	122 ± 87	200
SPDW-50137	Water	6/12/2023	H-3	157	125 ± 80	200
SPDW-50154	Water	6/26/2023	H-3	157	105 ± 80	200
SPDW-50181	Water	6/8/2023	Ra-226	0.04	-0.07 ± 0.03	2
SPDW-50218	Water	8/15/2023	Sr-89	0.66	-0.07 ± 0.48	5
SPDW-50218	Water	8/15/2023	Sr-90	0.55	0.02 ± 0.26	1
SPDW-50248	Water	8/22/2024	Gr. Alpha	0.57	-0.03 ± 0.40	2
SPDW-50248	Water	8/22/2024	Gr. Beta	0.70	0.28 ± 0.50	4
SPDW-50256	Water	8/25/2023	H-3	161	75 ± 84	200
SPDW-50258	Water	7/19/2023	Ra-226	0.06	-0.25 ± 0.04	2
SPDW-50270	Water	9/6/2023	H-3	160	90 ± 81	200
SPDW-50282	Water	9/25/2023	H-3	163	53 ± 79	200
SPDW-50290	Water	8/28/2023	Ra-226	0.05	0.00 ± 0.04	2

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m^3), charcoal (pCi/charcoal canister), and solid samples (pCi/g).

[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).

[c] I-131(G); iodine-131 as analyzed by gamma spectroscopy.

[d] Activity reported is a net activity result.

TABLE A-4. Intralaboratory "Blank" Samples

Lab Code[b]	Sample Type	Date	Analysis[c]	Concentration[a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[d]	Criteria (4.66 σ)
SPDW-50311	Water	10/16/2023	I-131	0.25	0.06 ± 0.14	1
SPDW-50312	Water	10/3/2023	Ra-226	0.04	0.06 ± 0.09	2
SPDW-50315	Water	10/27/2023	H-3	169	5 ± 79	200
SPDW-50329	Water	11/17/2023	H-3	170	51 ± 82	200
SPDW-50379	Water	11/17/2023	Ra-226	0.05	0.09 ± 0.04	2
SPDW-50346	Water	12/5/2023	H-3	0.10	-0.12 ± 0.07	1
SPDW-50347	Water	12/5/2023	Ra-228	1.27	-0.07 ± 0.62	2
SPW-3907	Water	12/18/2023	Ni-63	149	0 ± 91	200
SPW-3909	Water	12/18/2023	Fe-55	435	7 ± 265	2000
SPDW-50377	Water	12/19/2023	H-3	173	-42 ± 78	200
SPDW-50387	Water	12/28/2023	H-3	171	-21 ± 79	200

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m^3), charcoal (pCi/charcoal canister), and solid samples (pCi/g).

[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).

[c] I-131(G); iodine-131 as analyzed by gamma spectroscopy.

[d] Activity reported is a net activity result.

TABLE A-5. Intralaboratory "Duplicate" Samples

			Concentration[a]			
Lab Codeb	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
WW-65,66	1/10/2023	Gr. Beta	15.4 ± 2.0	17.2 ± 2.1	16.3 ± 1.5	Pass
WW-107,108	1/18/2023	H-3	153 ± 88	132 ± 87	143 ± 62	Pass
SG-187,188	1/30/2023	Gr. Alpha	28.1 ± 3.9	22.0 ± 3.5	25.1 ± 2.6	Pass
SG-187,188	1/30/2023	Gr. Beta	22.3 ± 1.8	22.2 ± 1.8	22.3 ± 1.3	Pass
SG-187,188	1/30/2023	Pb-214	4.08 ± 0.16	3.38 ± 0.09	3.73 ± 0.09	Pass
SG-187,188	1/30/2023	Ac-228	3.88 ± 0.28	3.98 ± 0.14	3.93 ± 0.16	Pass
SWU-201,202	1/31/2023	H-3	171 ± 89	234 ± 92	203 ± 64	Pass
SW-243,244	2/7/2023	H-3	358 ± 98	262 ± 93	310 ± 68	Pass
PW-266,267	2/6/2023	Ra-226	0.61 ± 0.18	0.37 ± 0.20	0.49 ± 0.13	Pass
DW-50028.50029	2/27/2023	Ra-226	0.68 ± 0.13	0.76 ± 0.13	0.72 ± 0.09	Pass
DW-50028.50029	2/27/2023	Ra-228	2.26 ± 0.65	1.20 ± 0.65	1.73 ± 0.46	Pass
DW-50052,50053	2/27/2023	Ra-228	0.48 ± 0.57	1.19 ± 0.65	0.84 ± 0.43	Pass
DW-50035,50036	2/28/2023	Gr. Alpha	3.68 ± 1.42	4.00 ± 1.29	3.84 ± 0.96	Pass
DW-50035,50036	2/28/2023	Gr. Beta	2.50 ± 0.64	1.99 ± 0.64	2.25 ± 0.45	Pass
LW-518,519	3/8/2023	Gr. Beta	1.71 ± 0.64	1.38 ± 0.64	1.55 ± 0.45	Pass
SG-571,572	3/8/2023	Pb-214	7.80 ± 0.46	8.20 ± 0.35	8.00 ± 0.29	Pass
SG-571,572	3/8/2023	Ac-228	11.9 ± 0.8	11.4 ± 0.6	11.7 ± 0.5	Pass
SG-571.572	3/8/2023	Gr. Alpha	86.5 ± 10.6	89.6 ± 11.0	88.1 ± 7.6	Pass
DW-50052,50053	3/17/2023	Gr. Alpha	9.16 ± 1.02	14.7 ± 1.2	11.9 ± 0.8	Pass
DW-50052,50053	3/17/2023	Gr. Beta	6.03 ± 0.71	7.58 ± 0.75	6.81 ± 0.52	Pass
CF-700,701	3/22/2023	K-40	2.91 ± 0.32	3.30 ± 0.36	3.11 ± 0.24	Pass
SW-679,680	3/27/2023	H-3	14,480 ± 389	14,487 ± 389	14,484 ± 275	Pass
SG-974,975	4/4/2023	Gr. Alpha	12.0 ± 2.1	12.1 ± 2.1	12.1 ± 1.5	Pass
DW-50074,50075	4/21/2023	Ra-226	1.63 ± 0.22	1.56 ± 0.28	1.60 ± 0.18	Pass
DW-50074,50075	4/21/2023	Ra-228	3.41 ± 0.98	2.14 ± 0.80	2.78 ± 0.63	Pass
U-1038,1039	4/20/2023	Gr. Beta	6.14 ± 1.71	6.46 ± 2.19	6.30 ± 1.39	Pass
WW-1101,1102	4/25/2023	H-3	358 ± 96	334 ± 95	346 ± 68	Pass
DW-50092,50093	5/1/2023	Ra-226	1.00 ± 0.22	1.46 ± 0.19	1.23 ± 0.15	Pass
DW-50092,50093	5/1/2023	Ra-228	1.11 ± 0.73	1.57 ± 0.82	1.34 ± 0.55	Pass
WW-1122,1123	5/2/2023	H-3	307 ± 93	229 ± 89	268 ± 64	Pass
WW-1269,1270	5/17/2023	H-3	366 ± 100	214 ± 92	290 ± 68	Pass
DW-50110,50111	5/29/2023	Ra-226	6.27 ± 0.40	4.77 ± 0.26	5.52 ± 0.24	Pass
DW-50110,50111	5/29/2023	Ra-228	2.81 ± 0.97	3.53 ± 0.98	3.17 ± 0.69	Pass
SW-1356,1357	5/30/2023	H-3	380 ± 94	257 ± 88	319 ± 64	Pass
WW-1398,1399	5/24/2023	H-3	571 ± 103	613 ± 105	592 ± 74	Pass
SG-1377,1378	5/30/2023	Pb-214	1.07 ± 0.14	1.19 ± 0.15	1.13 ± 0.10	Pass
SG-1377,1378	5/30/2023	Ac-228	1.23 ± 0.28	1.11 ± 0.23	1.17 ± 0.18	Pass

TABLE A-5. Intralaboratory "Duplicate" Samples

			Concentration[a]			
Lab Codeb	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
DW-50124,50125	6/5/2023	Ra-226	0.25 ± 0.08	0.24 ± 0.09	0.25 ± 0.06	Pass
AP-060523A/B	6/5/2023	Gr. Beta	0.023 ± 0.003	0.0236 ± 0.003	0.023 ± 0.002	Pass
DW-50126,50127	6/5/2023	Gr. Alpha	2.50 ± 1.17	3.87 ± 1.39	3.19 ± 0.91	Pass
WW-1441,1442	6/6/2023	Gr. Beta	2.55 ± 0.64	1.91 ± 0.67	2.23 ± 0.46	Pass
SW-1483,1484	6/8/2023	H-3	281 ± 90	281 ± 90	281 ± 64	Pass
CF-1546,1547	6/12/2023	K-40	7.77 ± 0.34	7.48 ± 0.48	7.63 ± 0.29	Pass
AP-061223A/B	6/12/2023	Gr. Beta	0.031 ± 0.005	0.030 ± 0.005	0.031 ± 0.004	Pass
S-1567,1568	6/14/2023	K-40	9.75 ± 0.71	9.80 ± 0.77	9.78 ± 0.52	Pass
WW-1630,1631	6/6/2023	H-3	319 ± 93	236 ± 89	278 ± 64	Pass
F-1945,1946	6/26/2023	K-40	3.81 ± 0.34	3.22 ± 0.54	3.52 ± 0.32	Pass
DW-50157,50158	6/26/2023	Gr. Beta	0.93 ± 0.59	1.09 ± 0.06	1.01 ± 0.30	Pass
AP-062823A/B	6/28/2023	Gr. Beta	0.026 ± 0.004	0.021 ± 0.003	0.024 ± 0.003	Pass
AP-070323A/B	7/3/2023	Gr. Beta	0.028 ± 0.003	0.026 ± 0.003	0.027 ± 0.002	Pass
DW-50160,50161	7/5/2023	Ra-226	2.63 ± 0.32	2.77 ± 0.27	2.70 ± 0.21	Pass
DW-50160,50161	7/5/2023	Ra-228	2.46 ± 0.78	2.51 ± 0.81	2.49 ± 0.56	Pass
AP-071123A/B	7/11/2023	Gr. Beta	0.025 ± 0.003	0.027 ± 0.003	0.026 ± 0.002	Pass
DW-50188,50189	7/21/2023	Ra-226	3.07 ± 0.30	2.63 ± 0.20	2.85 ± 0.18	Pass
DW-50188,50189	7/21/2023	Ra-228	5.28 ± 0.92	5.08 ± 0.90	5.18 ± 0.64	Pass
DW-50197,50198	7/24/2023	Gr. Alpha	5.82 ± 1.50	5.78 ± 1.30	5.80 ± 0.99	Pass
DW-50200,50201	7/24/2023	Ra-226	2.51 ± 0.24	4.07 ± 0.29	3.29 ± 0.19	Pass
DW-50200,50201	7/24/2023	Ra-228	7.04 ± 1.13	6.55 ± 1.09	6.80 ± 0.79	Pass
SG-2199,2200	7/25/2023	Pb-214	1.18 ± 0.22	1.03 ± 0.19	1.11 ± 0.15	Pass
SG-2199,2200	7/25/2023	Ac-228	1.74 ± 0.32	1.86 ± 0.42	1.80 ± 0.26	Pass
AP-072623A/B	7/26/2023	Gr. Beta	0.021 ± 0.003	0.021 ± 0.003	0.021 ± 0.002	Pass
AP-080223A/B	8/2/2023	Gr. Beta	0.015 ± 0.003	0.016 ± 0.003	0.016 ± 0.002	Pass
SG-2315,2316	8/3/2023	Gr. Alpha	59.5 ± 6.7	48.2 ± 6.1	53.9 ± 4.5	Pass
SG-2315,2316	8/3/2023	Gr. Beta	39.8 ± 2.9	34.4 ± 2.6	37.1 ± 1.9	Pass
AP-080723A/B	8/7/2024	Gr. Beta	0.025 ± 0.005	0.025 ± 0.005	0.025 ± 0.004	Pass
DW-50200,50201	8/9/2023	Ra-228	1.88 ± 0.71	1.29 ± 0.70	1.59 ± 0.50	Pass
AP-081423A/B	8/14/2023	Gr. Beta	0.030 ± 0.003	0.028 ± 0.003	0.029 ± 0.002	Pass
AP-082123A/B	8/21/2023	Gr. Beta	0.020 ± 0.003	0.022 ± 0.003	0.021 ± 0.002	Pass
DW-50262,50263	8/24/2023	Ra-228	2.62 ± 0.87	1.46 ± 0.52	2.04 ± 0.51	Pass
DW-50262,50263	8/24/2023	Ra-228	2.62 ± 0.87	2.80 ± 0.67	2.71 ± 0.55	Pass
AP-082823A/B	8/28/2023	Gr. Beta	0.023 ± 0.003	0.028 ± 0.003	0.026 ± 0.002	Pass
DW-50268,50269	8/29/2023	Gr. Alpha	0.87 ± 0.69	0.97 ± 0.81	0.92 ± 0.53	Pass
SG-2660,2661	9/4/2023	Gr. Alpha	68.5 ± 7.1	51.0 ± 6.3	59.8 ± 4.7	Pass
SG-2660,2661	9/4/2023	Pb-214	13.7 ± 0.5	14.2 ± 0.5	14.0 ± 0.4	Pass
SG-2660,2661	9/4/2023	Ac-228	14.4 ± 0.8	14.3 ± 0.9	14.4 ± 0.6	Pass
AP-090523A/B	9/5/2023	Gr. Beta	0.023 ± 0.003	0.023 ± 0.003	0.023 ± 0.002	Pass
AP-091223A/B	9/12/2023	Gr. Beta	0.024 ± 0.002	0.025 ± 0.002	0.025 ± 0.001	Pass

TABLE A-5. Intralaboratory "Duplicate" Samples

			Concentration[a]			
Lab Codeb	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
W-2776,2777	9/18/2023	Gr. Alpha	1.86 ± 1.73	0.99 ± 1.64	1.43 ± 1.19	Pass
W-2776,2777	9/18/2023	Ra-226	0.43 ± 0.10	0.55 ± 0.27	0.49 ± 0.14	Pass
W-2776,2777	9/18/2023	Ra-228	1.71 ± 1.07	3.33 ± 1.12	2.52 ± 0.77	Pass
AP-092023A/B	9/20/2023	Gr. Beta	0.039 ± 0.004	0.042 ± 0.004	0.041 ± 0.003	Pass
DW-50296,50297	9/27/2023	Ra-226	0.51 ± 0.09	0.54 ± 0.20	0.53 ± 0.11	Pass
AP-092823A/B	9/28/2023	Gr. Beta	0.030 ± 0.004	0.034 ± 0.004	0.032 ± 0.003	Pass
S-3136,3137	10/11/2023	Pb-214	1.93 ± 0.06	1.84 ± 0.08	1.89 ± 0.05	Pass
S-3135,3136	10/11/2023	Ac-228	4.06 ± 0.17	3.84 ± 0.19	3.95 ± 0.13	Pass
SG-3511,3512	10/10/2023	Gr. Alpha	59.0 ± 6.2	68.5 ± 6.6	63.8 ± 4.5	Pass
SG-3511,3512	10/10/2023	Gr. Beta	52.1 ± 2.9	54.6 ± 3.0	53.4 ± 2.1	Pass
SG-3511,3512	10/10/2023	Pb-214	9.67 ± 0.25	9.57 ± 0.29	9.62 ± 0.19	Pass
SG-3511,3512	10/10/2023	Ac-228	8.99 ± 0.43	8.79 ± 0.53	8.89 ± 0.34	Pass
SG-3521,3522	11/8/2023	Gr. Alpha	57.3 ± 7.3	70.9 ± 7.6	64.1 ± 5.3	Pass
SG-3521,3522	11/8/2023	Pb-214	11.2 ± 0.2	11.7 ± 0.2	11.5 ± 0.1	Pass
SG-3521,3522	11/8/2023	Ac-228	13.0 ± 0.4	13.4 ± 0.5	13.2 ± 0.3	Pass
DW-50335,50336	11/17/2023	Gr. Alpha	3.70 ± 1.00	3.46 ± 0.90	3.58 ± 0.67	Pass
DW-50335,50336	11/17/2023	Gr. Beta	1.73 ± 0.63	2.07 ± 0.06	1.90 ± 0.32	Pass
W-3647,3648	11/20/2023	H-3	2,815 ± 181	2,829 ± 182	2,822 ± 128	Pass
DW-50358,50359	12/4/2023	Gr. Beta	2.53 ± 0.61	1.66 ± 0.62	2.10 ± 0.43	Pass
DW-50349,50350	12/4/2023	Ra-226	0.04 ± 0.11	0.32 ± 0.10	0.18 ± 0.07	Pass
DW-50349,50350	12/4/2023	Ra-228	1.37 ± 0.48	1.57 ± 0.47	1.47 ± 0.34	Pass
DW-50365,50366	12/11/2023	Gr. Alpha	1.4 ± 0.79	1.95 ± 0.91	1.675 ± 0.60	Pass
DW-50365,50366	12/11/2023	Gr. Beta	3.18 ± 0.62	3.18 ± 0.66	3.18 ± 0.45	Pass
DW-50374,50375	12/13/2023	Gr. Alpha	0.89 ± 0.60	0.54 ± 0.67	0.715 ± 0.45	Pass
W-4035.4036	12/31/2023	H-3	157,638 ± 1,218	159,848 ± 1,227	158,743 ± 864	Pass
W-4035.4036	12/31/2023	Ni-63	2,410 ± 78	2,337 ± 78	2,373 ± 55	Pass
W-4035.4036	12/31/2023	Sr-90	49.8 ± 5.2	42.7 ± 4.8	46.3 ± 3.5	Pass

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration[a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	Acceptance Range [c]	Acceptance
MAAP-544	2/1/2023	Gross Alpha	1.23 ± 0.10	0.97	0.29 - 1.65	Pass
MAAP-544	2/1/2023	Gross Beta	1.67 ± 0.06	1.49	0.75 - 2.24	Pass
MADW-543	2/1/2023	Gross Alpha	0.843 ± 0.074	1.19	0.36 - 2.02	Pass
MADW-543	2/1/2023	Gross Beta	0.578 ± 0.093	5.94	2.97 - 8.91	Fail [d]
MASO-540	2/1/2023	Cs-134	2.33 ± 2.77	0	NA [c]	Pass
MASO-540	2/1/2023	Cs-137	1.22 ± 2.41	0	NA [c]	Pass
MASO-540	2/1/2023	Co-57	585 ± 4	698	489 - 907	Pass
MASO-540	2/1/2023	Co-60	727 ± 8	795	557 - 1034	Pass
MASO-540	2/1/2023	Mn-54	1180 ± 10	1230	861 - 1599	Pass
MASO-540	2/1/2023	Zn-65	846 ± 11	990	693 - 1287	Pass
MASO-540	2/1/2023	K-40	526 ± 23	574	402 - 746	Pass
MADW-545	2/1/2023	Cs-134	9.17 ± 0.17	9.6	6.7 - 12.5	Pass
MADW-545	2/1/2023	Cs-137	9.38 ± 0.29	8.7	6.1 - 11.3	Pass
MADW-545	2/1/2023	Co-57	-0.01 ± 0.08	0.0	NA [c]	Pass
MADW-545	2/1/2023	Co-60	7.47 ± 0.18	7.24	5.07 - 9.41	Pass
MADW-545	2/1/2023	Mn-54	12.3 ± 0.3	11.3	7.9 - 14.7	Pass
MADW-545	2/1/2023	Zn-65	15.7 ± 0.5	15.3	10.7 - 19.9	Pass
MADW-545	2/1/2023	K-40	1.23 ± 1.52	0	NA [c]	Pass
MADW-545	2/1/2023	Sr-90	-0.0035 ± 0.0172	0	NA [c]	Pass
MAAP-538	2/1/2023	Cs-134	1.12 ± 0.04	1.52	1.06 - 1.98	Pass
MAAP-538	2/1/2023	Cs-137	0.56 ± 0.07	0.630	0.441 - 0.819	Pass
MAAP-538	2/1/2023	Co-57	0.62 ± 0.30	0.661	0.463 - 0.859	Pass
MAAP-538	2/1/2023	Co-60	0.89 ± 0.07	1.05	0.74 - 1.37	Pass
MAAP-538	2/1/2023	Mn-54	2.02 ± 0.09	2.14	1.50 - 2.78	Pass
MAAP-538	2/1/2023	Zn-65	2.13 ± 0.14	2.25	1.58 - 2.93	Pass
MAAP-538	2/1/2023	Sr-90	0.004 ± 0.061	0	NA [c]	Pass
MASO-540	2/1/2023	Cs-134	2.33 ± 2.77	0	NA [c]	Pass
MASO-540	2/1/2023	Cs-137	1.22 ± 2.41	0	NA [c]	Pass
MASO-540	2/1/2023	Co-57	585 ± 4	698	489 - 907	Pass
MASO-540	2/1/2023	Co-60	727 ± 8	795	557 - 1034	Pass
MASO-540	2/1/2023	Mn-54	1180 ± 10	1230	861 - 1599	Pass
MASO-540	2/1/2023	Zn-65	846 ± 11	990	693 - 1287	Pass
MASO-540	2/1/2023	K-40	526 ± 23	574	402 - 746	Pass

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration[a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	Acceptance Range [c]	Acceptance
MADW-545	2/1/2023	Cs-134	9.17 ± 0.17	9.6	6.7 - 12.5	Pass
MADW-545	2/1/2023	Cs-137	9.38 ± 0.29	8.7	6.1 - 11.3	Pass
MADW-545	2/1/2023	Co-57	-0.01 ± 0.08	0.0	NA [c]	Pass
MADW-545	2/1/2023	Co-60	7.47 ± 0.18	7.24	5.07 - 9.41	Pass
MADW-545	2/1/2023	Mn-54	12.3 ± 0.3	11.3	7.9 - 14.7	Pass
MADW-545	2/1/2023	Zn-65	15.7 ± 0.5	15.3	10.7 - 19.9	Pass
MADW-545	2/1/2023	K-40	1.23 ± 1.52	0	NA [c]	Pass
MADW-545	2/1/2023	Sr-90	-0.0035 ± 0.0172	0	NA [c]	Pass
MAAP-538	2/1/2023	Cs-134	1.12 ± 0.04	1.52	1.06 - 1.98	Pass
MAAP-538	2/1/2023	Cs-137	0.56 ± 0.07	0.630	0.441 - 0.819	Pass
MAAP-538	2/1/2023	Co-57	0.62 ± 0.30	0.661	0.463 - 0.859	Pass
MAAP-538	2/1/2023	Co-60	0.89 ± 0.07	1.05	0.74 - 1.37	Pass
MAAP-538	2/1/2023	Mn-54	2.02 ± 0.09	2.14	1.50 - 2.78	Pass
MAAP-538	2/1/2023	Zn-65	2.13 ± 0.14	2.25	1.58 - 2.93	Pass
MAAP-538	2/1/2023	Sr-90	0.004 ± 0.061	0	NA [c]	Pass
MAVE-545	2/1/2023	Cs-134	7.45 ± 0.39	7.60	5.32 - 9.88	Pass
MAVE-545	2/1/2023	Cs-137	0.010 ± 0.084	0	NA [c]	Pass
MAVE-545	2/1/2023	Co-57	6.83 ± 0.17	6.93	4.85 - 9.01	Pass
MAVE-545	2/1/2023	Co-60	6.89 ± 0.17	6.51	4.56 - 8.46	Pass
MAVE-545	2/1/2023	Mn-54	9.08 ± 0.28	8.03	5.62 - 10.44	Pass
MAVE-545	2/1/2023	Zn-65	7.83 ± 0.39	7.43	5.20 - 9.66	Pass
MAAP-2761	8/1/2023	Gross Alpha	0.16 ± 0.04	0.255	0.077 - 0.434	Pass
MAAP-2761	8/1/2023	Gross Beta	1.16 ± 0.07	0.927	0.464 - 1.391	Pass
MADW-2753	8/1/2023	Gross Alpha	1.20 ± 0.06	1.59	0.48 - 2.70	Pass
MADW-2753	8/1/2023	Gross Beta	14.7 ± 0.1	16.27	8.14 - 24.41	Pass
MASO-2757	8/1/2023	Cs-134	612 ± 8	693	485 - 901	Pass
MASO-2757	8/1/2023	Cs-137	1900 ± 20	1810	1267 - 2353	Pass
MASO-2757	8/1/2023	Co-57	1020 ± 20	1060	742 - 1378	Pass
MASO-2757	8/1/2023	Co-60	901 ± 10	898	629 - 1167	Pass
MASO-2757	8/1/2023	Mn-54	6.53 ± 3.22	0	NA [c]	Pass
MASO-2757	8/1/2023	Zn-65	1270 ± 30	1160	812 - 1508	Pass
MASO-2757	8/1/2023	K-40	702 ± 54	574	402 - 746	Pass

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration[a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	Acceptance Range [c]	Acceptance
MADW-2751	8/1/2023	Cs-134	8.88 ± 0.18	11.3	7.9 - 14.7	Pass
MADW-2751	8/1/2023	Cs-137	7.95 ± 0.30	8.7	6.1 - 11.3	Pass
MADW-2751	8/1/2023	Co-57	16.5 ± 0.3	19.3	13.5 - 25.1	Pass
MADW-2751	8/1/2023	Co-60	0.09 ± 0.06	0	NA [c]	Pass
MADW-2751	8/1/2023	Mn-54	11.6 ± 0.3	12.7	8.9 - 16.5	Pass
MADW-2751	8/1/2023	Zn-65	17.9 ± 0.6	19.1	13.4 - 24.8	Pass
MADW-2751	8/1/2023	K-40	1.56 ± 1.60	0	NA [c]	Pass
MAAP-2755	8/1/2023	Cs-134	1.30 ± 0.10	1.60	1.12 - 2.08	Pass
MAAP-2755	8/1/2023	Cs-137	0.04 ± 0.03	0	NA [c]	Pass
MAAP-2755	8/1/2023	Co-57	1.47 ± 0.05	1.63	1.14 - 2.12	Pass
MAAP-2755	8/1/2023	Co-60	0.04 ± 0.09	0	NA [c]	Pass
MAAP-2755	8/1/2023	Mn-54	1.59 ± 0.09	1.57	1.10 - 2.04	Pass
MAAP-2755	8/1/2023	Zn-65	1.71 ± 0.14	1.89	1.32 - 2.46	Pass
MAAP-2755	8/1/2023	Sr-90	0.533 ± 0.040	0.614	0.430 - 0.796	Pass
MAVE-2759	8/1/2023	Cs-134	4.25 ± 0.14	4.96	3.49 - 6.47	Pass
MAVE-2759	8/1/2023	Cs-137	0.025 ± 0.050	0	NA [c]	Pass
MAVE-2759	8/1/2023	Co-57	4.28 ± 0.13	4.24	2.97 - 5.51	Pass
MAVE-2759	8/1/2023	Co-60	2.49 ± 0.11	2.79	1.95 - 3.63	Pass
MAVE-2759	8/1/2023	Mn-54	2.45 ± 0.16	2.6	1.8 - 3.3	Pass
MAVE-2759	8/1/2023	Zn-65	0.058 - 0.107	0	NA [c]	Pass

[a] Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

[b] Laboratory codes as follows: MAW (water), MADW (water), MAAP (air filter), MASO (soil) and MAVE (vegetation).

[c] MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP. A known value of "zero" indicates an analysis was included in the testing series as a "false positive". MAPEP does not provide an acceptance range.

[d] A decimal point was misplaced in a unit conversion. If the conversion was was done properly the result: 5.78 ± 0.93 Bq/L woud have been within MAPEP's acceptance range.

TABLE A-7. Interlaboratory Comparison Crosscheck Program, Environmental Resource Associates (ERA)[a].

MRAD-38 Study

Lab Code [b]	Concentration [a]					
	Date	Analysis	Laboratory Result	ERA Value [c]	Acceptance Limits [d]	Acceptance
ERAP-599	3/20/2023	Cs-134	139	153	99 - 188	Pass
ERAP-599	3/20/2023	Cs-137	970	892	733 - 1170	Pass
ERAP-599	3/20/2023	Co-60	474	467	397 - 593	Pass
ERAP-599	3/20/2023	Mn-54	< 3.3	< 35.0	0.00 - 35.0	Pass
ERAP-599	3/20/2023	Zn-65	1280	1110	910 - 1700	Pass
ERAP-599	3/20/2023	Sr-90	143	137	87 - 187	Pass
ERAP-598	3/20/2023	Gross Alpha	72.7	76.8	40.1 - 127	Pass
ERAP-598	3/20/2023	Gross Beta	35.0	32.8	19.9 - 49.6	Pass

[a] Results obtained by Microbac Laboratories, Inc. as a participant in the crosscheck program for proficiency testing administered by Environmental Resource Associates, serving as a replacement for studies conducted previously by the Environmental Measurements Laboratory Quality Assessment Program (EML).

[b] Laboratory code ERAP (air filter). Results are reported in units of (pCi/Filter).

[c] The ERA Assigned values for the air filter standards are equal to 100% of the parameter present in the standard as determined by the gravimetric and/or volumetric measurements made during standard preparation as applicable.

[d] The acceptance limits are established per the guidelines contained in the Department of Energy (DOE) report EML-564, Analysis of Environmental Measurements Laboratory (EML) Quality Assessment Program (QAP) Data Determination of Operational Criteria and Control Limits for Performance Evaluation Purposes or ERA's SOP for the generation of Performance Acceptance Limits.

Appendix B

Summary Tables in the format of NRC Radiological Assessment Branch Technical Position
Revision 1, November 1979

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: Wolf Creek Generating Station Docket No.: 50-482

Location of Facility: Coffey County, Kansas Reporting Period: Annual 2023

Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	 ** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
Air Particulate (pCi/m^3)	Gross Beta (311)	0.01	0.030 (260/260) (0.015 - 0.051)	49 0.8 miles NNE	0.030, (52/52) (0.015 - 0.051)	Station 53 0.030 (52/52) (0.017 - 0.049)	0
Air Radioiodine (pCi/m^3)	Gamma (24) Be-7	-	0.084 (20/20) (0.058 - 0.112)	37 2.0 miles NNW	0.091 (4/4) (0.058 – 0.090)	0.077 (4/4) (0.064 – 0.086)	0
	I-131 (313)	0.07	- (0/260)	N/A	N/A	Station 53 - (0/53)	0
Direct Radiation Dosimeters (mR per std. 90-day Qtr.)	Gamma Dose (176)	-	19.0 (160/160) (10.5 – 24.2)	22 3.9 miles SSW	22.5 (4/4) (16.6 – 23.7)	Stations 39 & 53 19.0 (8/8) (16.6 – 23.7)	0
Surface Water (pCi/l)	Gamma (24)		- (0/12)	N/A	N/A	JRR - (0/12)	0
	Tritium (24)	30,000	13,003 (12/12) (12,098 - 14,167)	SP 3.2 miles SSE	13,003 (12/12) (12,098 - 14,167)	-(0/12)	0
	Fe-55 (8)	-	- (0/4)	N/A	N/A	- (0/4)	0
Ground Water (pCi/l)	I-131 (32)	1	- (0/28)	N/A	N/A	B-12 - (0/4)	0
	Gamma (32)		- (0/28)	N/A	N/A	- (0/4)	0
	Tritium (32)	20,000	- (0/28)	N/A	N/A	- (0/4)	0

** Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: Wolf Creek Generating Station Docket No.: 50-482

Location of Facility: Coffey County, Kansas Reporting Period: Annual 2023

Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
Drinking Water (pCi/l)	I-131 (24)	1	- (0/12)	N/A	N/A	BW-15 - (0/12)	0
	Gross Beta (24)	4	3.6 (12/12) (2.2 – 9.7)	IO-DW 26.1 miles SSE	3.6 (12/12) (2.2 – 9.7)	2.8 (12/12) (1.8 - 3.8)	0
	Gamma (24)		- (0/12)	N/A	N/A	- (0/12)	0
	Tritium (8)	2,000	(0/4)	N/A	- (0/4)	- (0/4)	0
Shoreline Sediment (pCi/kg dry)	Gamma (7)					JRR	
	K-40	-	8,572 (6/6) (5,126 – 12,845)	EEA 3.0 miles NNW	12,845 (1/1) (12,845 -12,845)	10,693 (2/2) (10,684 – 10,702)	0
	Cs-137	-	(0-7)	N/A	N/A	(0-2)	0
Fish – Flesh (pCi/kg wet)	Gamma (23)					JRR	
	K-40	-	3,279 (8/8) (2,877 – 3,811)	CCL 0.6 miles E to NNW	3,279 (8/8) (2,877 – 3,811)	3,116(11/11) (2,638- 3,543)	0
	Tritium (22)	-	9,197 (8/8) (7,338 – 10,538)	CCL 0.6 miles E to NNW	9,197 (8/8) (7,338 – 10,538)	- (0/11)	0

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RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: Wolf Creek Generating Station Docket No.: 50-482

Location of Facility: Coffey County, Kansas Reporting Period: Annual 2023

Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
Food and Garden (pCi/kg wet)	Gamma (21)					D-2	
	Be-7	-	849 (17/17) (430 – 1,603)	H-2 3.0 miles SSE	1,128(3/3) (511 – 1,603)	767 (4/4) (477 – 1,233)	0
	K-40	-	5,553 (17/17) (3,766 – 7,281)	H-2 3.0 miles SSE	5,810 (3/3) (4,249 – 7,282)	5,274 (4/4) (4,543 – 5,789)	0
Crops (pCi/kg wet)	Gamma (4)					NR-U1	
	K-40	-	10,479 (2/2) (3,511-17,446)	NR-D2 11.5 miles S	17,446 (1-1) (17,446-17,446)	9,213 (2-2) (3,365-15,062)	0
Bottom Sediment (pCi/kg dry)	Gamma (6)					JRR	
	K-40	-	10,652 (4/4) (9,515-15,709)	DC 0.9 miles WNW	11,433 (2/2) (11,265-11,600)	15,257 (2/2) (16,047 – 17,567)	0
	Cs-137	-	56 (4/4) (15 – 84)	DC 0.9 miles WNW	70 (2/2) (55-84.1)	59.9- (2/2) (57.6-62.2)	0
	Fe-55 (2)	-	18,412- (2/2) (16,675-20,149)	DC 0.9 miles WNW	18,412- (2/2) (16,675-20,149)	No Control	0

** Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: Wolf Creek Generating Station Docket No.: 50-482

Location of Facility: Coffey County, Kansas Reporting Period: Annual 2023

Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
Aquatic Vegetation (pCi/kg wet)	Gamma (4)					No Control	
	Be-7	-	254 (4/4) (184 - 394)	MUDS 1.5 miles WNW	288 (2/2) (183 - 394)	-	0
	K-40	-	3,506 (4/4) (2,067- 6,699)	EEA 3.0 miles NNW	6,699 (1/1) (6,699 – 6,699)	-	0
	Cs-137	-	- (0/4)	N/A	N/A	-	0
Terrestrial Vegetation (pCi/kg wet)	Gamma (2)					No Control	
	Be-7	-	1,776 (2/2) (1,482 – 2,070)	MUDS 1.5 miles WNW	2,070 (1/1) (2,070 – 2,070)	-	0
	K-40	-	5,725 (2/2) (3,669 – 7,782)	EEA 3.0 miles NNW	7,782 (1/1) (7,782-7,782)	-	0
Soil (pCi/kg dry)	Gamma (1)					No Control	
	K-40	-	9,725 (1/1) (9,725-9,725)	MUDS 1.5 miles WNW	9,725 (1/1) (9,725-9,725)	-	0
	Cs-137	-	169 (1/1) (169-169)	MUDS 1.5 miles WNW	169 (1/1) (169-169)	-	0
Meat (pCi/kg wet)	Gamma (2)					No Control	
Deer/Turkey	K-40	-	2,559 (2/2) (1,998 – 3,120)	Q2.4 (Deer) 2.4 miles WNW	3,120(1/1) (3,120 – 3,120)	-	0

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RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Location of Facility: Coffey County, Kansas Reporting Period: Annual 2023

Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
	Tritium	-	1,464 (2/2) (738-2,186)	Q2.4 (Deer) 2.4 miles WNW	2,189 (1/1) (2,189 – 2,189)	No Control	0

** Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f)

APPENDIX C

INDIVIDUAL SAMPLE RESULTS

Air Particulate Filters and Radioiodine Canisters

Location: 002

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
27-Dec-22	03-Jan-23	281	0.038 +/- 0.005	< 0.025	
03-Jan-23	09-Jan-23	263	0.029 +/- 0.005	< 0.013	
03-Jan-23	09-Jan-23	263	0.030 +/- 0.005		Duplicate
09-Jan-23	16-Jan-23	305	0.046 +/- 0.005	< 0.011	
16-Jan-23	23-Jan-23	302	0.037 +/- 0.005	< 0.015	
23-Jan-23	30-Jan-23	304	0.033 +/- 0.005	< 0.015	
30-Jan-23	06-Feb-23	289	0.034 +/- 0.005	< 0.012	
06-Feb-23	13-Feb-23	267	0.023 +/- 0.005	< 0.020	
13-Feb-23	20-Feb-23	296	0.023 +/- 0.004	< 0.012	
20-Feb-23	27-Feb-23	309	0.026 +/- 0.004	< 0.012	
27-Feb-23	06-Mar-23	308	0.024 +/- 0.004	< 0.012	
06-Mar-23	13-Mar-23	303	0.022 +/- 0.004	< 0.012	
13-Mar-23	20-Mar-23	301	0.023 +/- 0.004	< 0.014	
20-Mar-23	28-Mar-23	331	0.025 +/- 0.004	< 0.013	
28-Mar-23	03-Apr-23	250	0.031 +/- 0.005	< 0.021	
03-Apr-23	10-Apr-23	305	0.021 +/- 0.004	< 0.017	
10-Apr-23	17-Apr-23	296	0.015 +/- 0.004	< 0.011	
17-Apr-23	24-Apr-23	299	0.019 +/- 0.004	< 0.014	
24-Apr-23	01-May-23	296	0.022 +/- 0.005	< 0.015	
01-May-23	08-May-23	293	0.022 +/- 0.004	< 0.012	
08-May-23	16-May-23	340	0.018 +/- 0.004	< 0.011	
08-May-23	16-May-23	340	0.013 +/- 0.004		Duplicate
16-May-23	22-May-23	249	0.015 +/- 0.005	< 0.013	
30-May-23	05-Jun-23	267	0.032 +/- 0.005	< 0.020	
05-Jun-23	12-Jun-23	302	0.030 +/- 0.005	< 0.007	
05-Jun-23	12-Jun-23	302	0.030 +/- 0.005		Duplicate
12-Jun-23	19-Jun-23	297	0.024 +/- 0.004	< 0.018	
19-Jun-23	27-Jun-23	350	0.026 +/- 0.004	< 0.013	
27-Jun-23	03-Jul-23	254	0.028 +/- 0.005	< 0.037	
03-Jul-23	10-Jul-23	300	0.022 +/- 0.004	< 0.017	
10-Jul-23	17-Jul-23	299	0.029 +/- 0.005	< 0.035	
17-Jul-23	24-Jul-23	303	0.026 +/- 0.004	< 0.031	
24-Jul-23	31-Jul-23	302	0.031 +/- 0.005	< 0.041	
31-Jul-23	07-Aug-23	286	0.032 +/- 0.005	< 0.019	
07-Aug-23	14-Aug-23	295	0.020 +/- 0.005	< 0.023	
14-Aug-23	21-Aug-23	291	0.027 +/- 0.005	< 0.013	
21-Aug-23	29-Aug-23	342	0.043 +/- 0.005	< 0.014	
29-Aug-23	05-Sep-23	296	0.045 +/- 0.005	< 0.014	
29-Aug-23	05-Sep-23	296	0.040 +/- 0.005		Duplicate
05-Sep-23	11-Sep-23	260	0.038 +/- 0.005	< 0.030	
11-Sep-23	18-Sep-23	299	0.035 +/- 0.004	< 0.017	

Air Particulate Filters and Radioiodine Canisters

Location: 002

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
18-Sep-23	25-Sep-23	289	0.031	+/-	0.005	<	0.011	
18-Sep-23	25-Sep-23	289	0.032	+/-	0.005			Duplicate
25-Sep-23	02-Oct-23	294	0.045	+/-	0.005	<	0.007	
02-Oct-23	09-Oct-23	303	0.032	+/-	0.005	<	0.011	
09-Oct-23	16-Oct-23	299	0.021	+/-	0.004	<	0.011	
16-Oct-23	23-Oct-23	292	0.026	+/-	0.004	<	0.020	
23-Oct-23	30-Oct-23	308	0.023	+/-	0.004	<	0.009	
30-Oct-23	06-Nov-23	300	0.032	+/-	0.005	<	0.010	
06-Nov-23	13-Nov-23	305	0.031	+/-	0.005	<	0.014	
13-Nov-23	21-Nov-23	339	0.034	+/-	0.004	<	0.012	
21-Nov-23	27-Nov-23	258	0.030	+/-	0.005	<	0.013	
27-Nov-23	04-Dec-23	252	0.042	+/-	0.006	<	0.010	
04-Dec-23	11-Dec-23	295	0.021	+/-	0.004	<	0.012	
04-Dec-23	11-Dec-23	295	0.019	+/-	0.004			Duplicate
11-Dec-23	18-Dec-23	299	0.037	+/-	0.005	<	0.013	
18-Dec-23	27-Dec-23	378	0.024	+/-	0.004	<	0.014	
27-Dec-23	02-Jan-24	264	0.029	+/-	0.005	<	0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 018

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
27-Dec-22	03-Jan-23	286	0.029 +/- 0.005	< 0.025	
03-Jan-23	09-Jan-23	262	0.032 +/- 0.005	< 0.013	
09-Jan-23	16-Jan-23	298	0.049 +/- 0.005	< 0.011	
09-Jan-23	16-Jan-23	298	0.047 +/- 0.005		Duplicate
16-Jan-23	23-Jan-23	301	0.038 +/- 0.005	< 0.015	
23-Jan-23	30-Jan-23	300	0.029 +/- 0.005	< 0.015	
30-Jan-23	06-Feb-23	294	0.032 +/- 0.005	< 0.012	
06-Feb-23	13-Feb-23	305	0.020 +/- 0.004	< 0.017	
13-Feb-23	20-Feb-23	295	0.026 +/- 0.005	< 0.012	
20-Feb-23	27-Feb-23	298	0.030 +/- 0.005	< 0.013	
27-Feb-23	06-Mar-23	302	0.028 +/- 0.005	< 0.012	
06-Mar-23	13-Mar-23	305	0.018 +/- 0.004	< 0.011	
13-Mar-23	20-Mar-23	297	0.027 +/- 0.004	< 0.015	
20-Mar-23	28-Mar-23	332	0.029 +/- 0.004	< 0.013	
20-Mar-23	28-Mar-23	332	0.029 +/- 0.004		Duplicate
28-Mar-23	03-Apr-23	241	0.036 +/- 0.006	< 0.022	
03-Apr-23	10-Apr-23	279	0.024 +/- 0.005	< 0.018	
10-Apr-23	17-Apr-23	292	0.015 +/- 0.004	< 0.011	
17-Apr-23	24-Apr-23	294	0.027 +/- 0.005	< 0.015	
17-Apr-23	24-Apr-23	294	0.025 +/- 0.005		Duplicate
24-Apr-23	01-May-23	292	0.025 +/- 0.005	< 0.015	
01-May-23	08-May-23	292	0.026 +/- 0.005	< 0.012	
08-May-23	16-May-23	342	0.016 +/- 0.004	< 0.011	
16-May-23	22-May-23	252	0.021 +/- 0.005	< 0.012	
30-May-23	05-Jun-23	255	0.037 +/- 0.005	< 0.021	
05-Jun-23	12-Jun-23	293	0.034 +/- 0.005	< 0.007	
12-Jun-23	19-Jun-23	300	0.028 +/- 0.004	< 0.017	
12-Jun-23	19-Jun-23	300	0.029 +/- 0.005		Duplicate
19-Jun-23	27-Jun-23	332	0.029 +/- 0.004	< 0.013	
27-Jun-23	03-Jul-23	249	0.027 +/- 0.005	< 0.037	
03-Jul-23	10-Jul-23	298	0.026 +/- 0.004	< 0.017	
10-Jul-23	17-Jul-23	292	0.029 +/- 0.005	< 0.036	
17-Jul-23	24-Jul-23	294	0.034 +/- 0.005	< 0.032	
24-Jul-23	31-Jul-23	295	0.033 +/- 0.005	< 0.042	
31-Jul-23	07-Aug-23	283	0.028 +/- 0.005	< 0.021	
07-Aug-23	14-Aug-23	298	0.021 +/- 0.005	< 0.022	
14-Aug-23	21-Aug-23	290	0.030 +/- 0.005	< 0.013	
14-Aug-23	21-Aug-23	290	0.029 +/- 0.005		Duplicate
21-Aug-23	29-Aug-23	343	0.044 +/- 0.005	< 0.014	
29-Aug-23	05-Sep-23	306	0.038 +/- 0.005	< 0.014	
05-Sep-23	11-Sep-23	260	0.041 +/- 0.005	< 0.029	

Air Particulate Filters and Radioiodine Canisters

Location: 018

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
11-Sep-23	18-Sep-23	297	0.039	+/-	0.005	<	0.018	
18-Sep-23	25-Sep-23	293	0.029	+/-	0.005	<	0.010	
25-Sep-23	02-Oct-23	296	0.046	+/-	0.005	<	0.007	
02-Oct-23	09-Oct-23	299	0.035	+/-	0.005	<	0.011	
02-Oct-23	09-Oct-23	299	0.029	+/-	0.005			Duplicate
09-Oct-23	16-Oct-23	303	0.020	+/-	0.004	<	0.011	
16-Oct-23	23-Oct-23	290	0.026	+/-	0.004	<	0.021	
23-Oct-23	30-Oct-23	307	0.024	+/-	0.004	<	0.009	
30-Oct-23	06-Nov-23	293	0.039	+/-	0.005	<	0.010	
06-Nov-23	13-Nov-23	312	0.030	+/-	0.005	<	0.014	
13-Nov-23	21-Nov-23	344	0.039	+/-	0.005	<	0.012	
21-Nov-23	27-Nov-23	261	0.030	+/-	0.005	<	0.013	
27-Nov-23	04-Dec-23	294	0.041	+/-	0.005	<	0.008	
04-Dec-23	11-Dec-23	301	0.019	+/-	0.004	<	0.012	
11-Dec-23	18-Dec-23	298	0.036	+/-	0.005	<	0.013	
18-Dec-23	27-Dec-23	375	0.023	+/-	0.004	<	0.014	
18-Dec-23	27-Dec-23	375	0.026	+/-	0.004			Duplicate
27-Dec-23	02-Jan-24	262	0.027	+/-	0.005	<	0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 032

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
27-Dec-22	03-Jan-23	287	0.034	+/-	0.005	<	0.025	
03-Jan-23	09-Jan-23	265	0.029	+/-	0.005	<	0.013	
09-Jan-23	16-Jan-23	300	0.049	+/-	0.005	<	0.011	
16-Jan-23	23-Jan-23	310	0.040	+/-	0.005	<	0.015	
23-Jan-23	30-Jan-23	300	0.031	+/-	0.005	<	0.015	
30-Jan-23	06-Feb-23	293	0.034	+/-	0.005	<	0.012	
06-Feb-23	13-Feb-23	302	0.023	+/-	0.005	<	0.018	
13-Feb-23	20-Feb-23	300	0.028	+/-	0.005	<	0.012	
20-Feb-23	27-Feb-23	314	0.032	+/-	0.005	<	0.012	
27-Feb-23	06-Mar-23	305	0.027	+/-	0.004	<	0.012	
06-Mar-23	13-Mar-23	308	0.019	+/-	0.004	<	0.011	
13-Mar-23	20-Mar-23	296	0.022	+/-	0.004	<	0.015	
20-Mar-23	28-Mar-23	334	0.027	+/-	0.004	<	0.013	
28-Mar-23	03-Apr-23	243	0.030	+/-	0.005	<	0.022	
03-Apr-23	10-Apr-23	305	0.027	+/-	0.005	<	0.017	
03-Apr-23	10-Apr-23	305	0.025	+/-	0.005			Duplicate
10-Apr-23	17-Apr-23	294	0.019	+/-	0.004	<	0.011	
17-Apr-23	24-Apr-23	304	0.026	+/-	0.005	<	0.014	
24-Apr-23	01-May-23	295	0.028	+/-	0.005	<	0.015	
01-May-23	08-May-23	296	0.026	+/-	0.005	<	0.011	
08-May-23	16-May-23	345	0.018	+/-	0.004	<	0.011	
16-May-23	22-May-23	256	0.019	+/-	0.005	<	0.012	
30-May-23	05-Jun-23	258	0.032	+/-	0.005	<	0.021	
05-Jun-23	12-Jun-23	302	0.037	+/-	0.005	<	0.007	
12-Jun-23	19-Jun-23	305	0.028	+/-	0.004	<	0.017	
19-Jun-23	27-Jun-23	343	0.030	+/-	0.004	<	0.013	
27-Jun-23	03-Jul-23	252	0.025	+/-	0.005	<	0.037	
03-Jul-23	10-Jul-23	299	0.026	+/-	0.004	<	0.017	
10-Jul-23	17-Jul-23	292	0.030	+/-	0.005	<	0.036	
17-Jul-23	24-Jul-23	296	0.031	+/-	0.005	<	0.032	
24-Jul-23	31-Jul-23	296	0.032	+/-	0.005	<	0.042	
31-Jul-23	07-Aug-23	289	0.030	+/-	0.005	<	0.019	
07-Aug-23	14-Aug-23	284	0.027	+/-	0.005	<	0.024	
07-Aug-23	14-Aug-23	284	0.021	+/-	0.005			Duplicate
14-Aug-23	21-Aug-23	299	0.026	+/-	0.004	<	0.012	
21-Aug-23	29-Aug-23	341	0.041	+/-	0.005	<	0.014	
21-Aug-23	29-Aug-23	341	0.041	+/-	0.005			Duplicate
29-Aug-23	05-Sep-23	306	0.039	+/-	0.005	<	0.014	
05-Sep-23	11-Sep-23	260	0.034	+/-	0.005	<	0.029	
11-Sep-23	18-Sep-23	251	0.042	+/-	0.005	<	0.021	
18-Sep-23	25-Sep-23	250	0.034	+/-	0.005	<	0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 032

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
25-Sep-23	02-Oct-23	298	0.043 +/- 0.005	< 0.007	
02-Oct-23	09-Oct-23	307	0.031 +/- 0.005	< 0.011	
09-Oct-23	16-Oct-23	307	0.020 +/- 0.004	< 0.011	
16-Oct-23	23-Oct-23	291	0.027 +/- 0.005	< 0.021	
23-Oct-23	30-Oct-23	381	0.023 +/- 0.004	< 0.009	
30-Oct-23	06-Nov-23	297	0.037 +/- 0.005	< 0.010	
06-Nov-23	13-Nov-23	307	0.032 +/- 0.005	< 0.014	
13-Nov-23	21-Nov-23	342	0.043 +/- 0.005	< 0.012	
21-Nov-23	27-Nov-23	264	0.035 +/- 0.005	< 0.012	
27-Nov-23	04-Dec-23	296	0.045 +/- 0.005	< 0.008	
04-Dec-23	11-Dec-23	297	0.021 +/- 0.004	< 0.012	
11-Dec-23	18-Dec-23	303	0.040 +/- 0.005	< 0.013	
18-Dec-23	27-Dec-23	376	0.030 +/- 0.004	< 0.014	
27-Dec-23	02-Jan-24	266	0.028 +/- 0.005	< 0.012	
27-Dec-23	02-Jan-24	266	0.022 +/- 0.005		Duplicate

Air Particulate Filters and Radioiodine Canisters

Location: 037

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
27-Dec-22	03-Jan-23	295	0.036	+/-	0.005	<	0.024	
03-Jan-23	09-Jan-23	265	0.032	+/-	0.005	<	0.013	
09-Jan-23	16-Jan-23	307	0.045	+/-	0.005	<	0.011	
16-Jan-23	23-Jan-23	304	0.038	+/-	0.005	<	0.015	
16-Jan-23	23-Jan-23	304	0.035	+/-	0.005			Duplicate
23-Jan-23	30-Jan-23	302	0.041	+/-	0.005	<	0.015	
30-Jan-23	06-Feb-23	303	0.030	+/-	0.005	<	0.011	
06-Feb-23	13-Feb-23	314	0.022	+/-	0.004	<	0.017	
13-Feb-23	20-Feb-23	180	0.023	+/-	0.007	<	0.020	
20-Feb-23	27-Feb-23	304	0.034	+/-	0.005	<	0.012	
27-Feb-23	06-Mar-23	306	0.027	+/-	0.004	<	0.012	
06-Mar-23	13-Mar-23	305	0.015	+/-	0.004	<	0.011	
13-Mar-23	20-Mar-23	298	0.024	+/-	0.004	<	0.014	
20-Mar-23	28-Mar-23	336	0.029	+/-	0.004	<	0.013	
28-Mar-23	03-Apr-23	386	0.031	+/-	0.004	<	0.014	
03-Apr-23	10-Apr-23	302	0.030	+/-	0.005	<	0.017	
10-Apr-23	17-Apr-23	298	0.016	+/-	0.004	<	0.011	
17-Apr-23	24-Apr-23	298	0.026	+/-	0.005	<	0.014	
24-Apr-23	01-May-23	298	0.023	+/-	0.005	<	0.015	
01-May-23	08-May-23	295	0.027	+/-	0.005	<	0.011	
08-May-23	16-May-23	345	0.016	+/-	0.004	<	0.011	
16-May-23	22-May-23	255	0.019	+/-	0.005	<	0.012	
30-May-23	05-Jun-23	259	0.035	+/-	0.005	<	0.021	
05-Jun-23	12-Jun-23	300	0.030	+/-	0.005	<	0.007	
12-Jun-23	19-Jun-23	300	0.030	+/-	0.005	<	0.017	
19-Jun-23	27-Jun-23	339	0.029	+/-	0.004	<	0.013	
27-Jun-23	03-Jul-23	253	0.030	+/-	0.005	<	0.037	
03-Jul-23	10-Jul-23	301	0.025	+/-	0.004	<	0.017	
10-Jul-23	17-Jul-23	299	0.032	+/-	0.005	<	0.035	
17-Jul-23	24-Jul-23	299	0.029	+/-	0.004	<	0.032	
24-Jul-23	31-Jul-23	297	0.032	+/-	0.005	<	0.041	
31-Jul-23	07-Aug-23	268	0.025	+/-	0.005	<	0.019	
31-Jul-23	07-Aug-23	268	0.025	+/-	0.005			Duplicate
07-Aug-23	14-Aug-23	299	0.018	+/-	0.004	<	0.022	
14-Aug-23	21-Aug-23	295	0.028	+/-	0.005	<	0.012	
21-Aug-23	29-Aug-23	342	0.043	+/-	0.005	<	0.014	
29-Aug-23	05-Sep-23	302	0.040	+/-	0.005	<	0.014	
05-Sep-23	11-Sep-23	260	0.034	+/-	0.005	<	0.029	
11-Sep-23	18-Sep-23	300	0.039	+/-	0.005	<	0.017	
18-Sep-23	25-Sep-23	296	0.032	+/-	0.005	<	0.010	
25-Sep-23	02-Oct-23	297	0.046	+/-	0.005	<	0.007	

Air Particulate Filters and Radioiodine Canisters

Location: 037

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
02-Oct-23	09-Oct-23	302	0.032 +/- 0.005	< 0.011	
09-Oct-23	16-Oct-23	305	0.021 +/- 0.004	< 0.011	
16-Oct-23	23-Oct-23	294	0.029 +/- 0.005	< 0.020	
23-Oct-23	30-Oct-23	308	0.030 +/- 0.005	< 0.009	
30-Oct-23	06-Nov-23	298	0.039 +/- 0.005	< 0.010	
06-Nov-23	13-Nov-23	307	0.036 +/- 0.005	< 0.014	
13-Nov-23	21-Nov-23	339	0.041 +/- 0.005	< 0.012	
21-Nov-23	27-Nov-23	262	0.031 +/- 0.005	< 0.013	
27-Nov-23	04-Dec-23	298	0.045 +/- 0.005	< 0.008	
04-Dec-23	11-Dec-23	303	0.019 +/- 0.004	< 0.012	
11-Dec-23	18-Dec-23	302	0.037 +/- 0.005	< 0.013	
18-Dec-23	27-Dec-23	375	0.028 +/- 0.004	< 0.014	
27-Dec-23	02-Jan-24	267	0.026 +/- 0.005	< 0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 049

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
27-Dec-22	03-Jan-23	293	0.036	+/-	0.005	<	0.024	
03-Jan-23	09-Jan-23	265	0.030	+/-	0.005	<	0.013	
09-Jan-23	16-Jan-23	303	0.044	+/-	0.005	<	0.011	
16-Jan-23	23-Jan-23	302	0.033	+/-	0.005	<	0.015	
23-Jan-23	30-Jan-23	302	0.032	+/-	0.005	<	0.015	
30-Jan-23	06-Feb-23	297	0.034	+/-	0.005	<	0.012	
06-Feb-23	13-Feb-23	301	0.024	+/-	0.005	<	0.018	
13-Feb-23	20-Feb-23	303	0.028	+/-	0.005	<	0.012	
20-Feb-23	27-Feb-23	310	0.031	+/-	0.005	<	0.012	
27-Feb-23	06-Mar-23	307	0.031	+/-	0.005	<	0.012	
06-Mar-23	13-Mar-23	304	0.019	+/-	0.004	<	0.011	
13-Mar-23	20-Mar-23	298	0.024	+/-	0.004	<	0.014	
13-Mar-23	20-Mar-23	298	0.028	+/-	0.004			Duplicate
20-Mar-23	28-Mar-23	325	0.027	+/-	0.004	<	0.014	
28-Mar-23	03-Apr-23	250	0.038	+/-	0.006	<	0.021	
03-Apr-23	10-Apr-23	306	0.029	+/-	0.005	<	0.016	
10-Apr-23	17-Apr-23	297	0.017	+/-	0.004	<	0.011	
10-Apr-23	17-Apr-23	297	0.017	+/-	0.004			Duplicate
17-Apr-23	24-Apr-23	296	0.023	+/-	0.005	<	0.015	
24-Apr-23	01-May-23	293	0.024	+/-	0.005	<	0.015	
01-May-23	08-May-23	292	0.023	+/-	0.005	<	0.012	
08-May-23	16-May-23	346	0.017	+/-	0.004	<	0.011	
16-May-23	22-May-23	253	0.018	+/-	0.005	<	0.012	
30-May-23	05-Jun-23	257	0.036	+/-	0.005	<	0.021	
05-Jun-23	12-Jun-23	297	0.033	+/-	0.005	<	0.007	
12-Jun-23	19-Jun-23	302	0.029	+/-	0.004	<	0.017	
19-Jun-23	27-Jun-23	340	0.028	+/-	0.004	<	0.013	
27-Jun-23	03-Jul-23	253	0.027	+/-	0.005	<	0.037	
03-Jul-23	10-Jul-23	283	0.030	+/-	0.005	<	0.018	
10-Jul-23	17-Jul-23	301	0.028	+/-	0.005	<	0.035	
17-Jul-23	24-Jul-23	296	0.033	+/-	0.005	<	0.032	
24-Jul-23	31-Jul-23	297	0.032	+/-	0.005	<	0.041	
31-Jul-23	07-Aug-23	272	0.030	+/-	0.005	<	0.024	
07-Aug-23	14-Aug-23	294	0.020	+/-	0.005	<	0.023	
14-Aug-23	21-Aug-23	297	0.029	+/-	0.005	<	0.012	
21-Aug-23	29-Aug-23	241	0.051	+/-	0.007	<	0.020	
29-Aug-23	05-Sep-23	293	0.044	+/-	0.005	<	0.014	
05-Sep-23	11-Sep-23	260	0.050	+/-	0.005	<	0.029	
11-Sep-23	18-Sep-23	295	0.036	+/-	0.005	<	0.018	
18-Sep-23	25-Sep-23	300	0.034	+/-	0.005	<	0.010	
25-Sep-23	02-Oct-23	298	0.048	+/-	0.005	<	0.007	

Air Particulate Filters and Radioiodine Canisters

Location: 049

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
02-Oct-23	09-Oct-23	308	0.033	+/-	0.005	<	0.011	
09-Oct-23	16-Oct-23	303	0.022	+/-	0.004	<	0.011	
16-Oct-23	23-Oct-23	289	0.030	+/-	0.005	<	0.021	
23-Oct-23	30-Oct-23	309	0.025	+/-	0.004	<	0.009	
30-Oct-23	06-Nov-23	291	0.034	+/-	0.005	<	0.010	
30-Oct-23	06-Nov-23	291	0.036	+/-	0.005			Duplicate
06-Nov-23	13-Nov-23	308	0.032	+/-	0.005	<	0.014	
06-Nov-23	13-Nov-23	308	0.034	+/-	0.005			Duplicate
13-Nov-23	21-Nov-23	342	0.040	+/-	0.005	<	0.012	
21-Nov-23	27-Nov-23	262	0.028	+/-	0.005	<	0.013	
27-Nov-23	04-Dec-23	289	0.043	+/-	0.005	<	0.008	
04-Dec-23	11-Dec-23	303	0.021	+/-	0.004	<	0.012	
11-Dec-23	18-Dec-23	301	0.036	+/-	0.005	<	0.013	
18-Dec-23	27-Dec-23	377	0.029	+/-	0.004	<	0.014	
27-Dec-23	02-Jan-24	268	0.026	+/-	0.005	<	0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 053

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
27-Dec-22	03-Jan-23	283	0.041	+/-	0.005	<	0.025	
03-Jan-23	09-Jan-23	259	0.027	+/-	0.005	<	0.014	
09-Jan-23	16-Jan-23	296	0.048	+/-	0.005	<	0.012	
16-Jan-23	23-Jan-23	298	0.032	+/-	0.005	<	0.015	
23-Jan-23	30-Jan-23	304	0.033	+/-	0.005	<	0.015	
30-Jan-23	06-Feb-23	294	0.033	+/-	0.005	<	0.012	
06-Feb-23	13-Feb-23	304	0.025	+/-	0.005	<	0.017	
13-Feb-23	20-Feb-23	295	0.025	+/-	0.005	<	0.012	
20-Feb-23	27-Feb-23	310	0.033	+/-	0.005	<	0.012	
27-Feb-23	06-Mar-23	304	0.029	+/-	0.005	<	0.012	
06-Mar-23	13-Mar-23	305	0.017	+/-	0.004	<	0.011	
13-Mar-23	20-Mar-23	298	0.028	+/-	0.004	<	0.014	
20-Mar-23	28-Mar-23	339	0.028	+/-	0.004	<	0.013	
28-Mar-23	03-Apr-23	248	0.034	+/-	0.006	<	0.022	
03-Apr-23	10-Apr-23	306	0.026	+/-	0.005	<	0.016	
10-Apr-23	17-Apr-23	297	0.019	+/-	0.004	<	0.011	
17-Apr-23	24-Apr-23	300	0.024	+/-	0.005	<	0.014	
24-Apr-23	01-May-23	297	0.025	+/-	0.005	<	0.015	
24-Apr-23	01-May-23	297	0.022	+/-	0.005			Duplicate
01-May-23	08-May-23	293	0.027	+/-	0.005	<	0.012	
08-May-23	16-May-23	342	0.017	+/-	0.004	<	0.011	
16-May-23	22-May-23	253	0.017	+/-	0.005	<	0.012	
16-May-23	22-May-23	253	0.017	+/-	0.005			Duplicate
30-May-23	05-Jun-23	257	0.031	+/-	0.005	<	0.021	
05-Jun-23	12-Jun-23	296	0.029	+/-	0.005	<	0.007	
12-Jun-23	19-Jun-23	301	0.028	+/-	0.004	<	0.017	
19-Jun-23	27-Jun-23	340	0.031	+/-	0.004	<	0.013	
27-Jun-23	03-Jul-23	255	0.026	+/-	0.005	<	0.036	
27-Jun-23	03-Jul-23	255	0.023	+/-	0.005			Duplicate
03-Jul-23	10-Jul-23	299	0.026	+/-	0.004	<	0.017	
10-Jul-23	17-Jul-23	298	0.025	+/-	0.005	<	0.035	
17-Jul-23	24-Jul-23	304	0.032	+/-	0.005	<	0.031	
24-Jul-23	31-Jul-23	295	0.025	+/-	0.005	<	0.042	
31-Jul-23	07-Aug-23	274	0.029	+/-	0.005	<	0.024	
07-Aug-23	14-Aug-23	295	0.020	+/-	0.005	<	0.023	
14-Aug-23	21-Aug-23	297	0.030	+/-	0.005	<	0.012	
21-Aug-23	29-Aug-23	350	0.044	+/-	0.005	<	0.014	
29-Aug-23	05-Sep-23	302	0.042	+/-	0.005	<	0.014	
05-Sep-23	11-Sep-23	250	0.041	+/-	0.005	<	0.029	
11-Sep-23	18-Sep-23	295	0.036	+/-	0.005	<	0.018	
18-Sep-23	25-Sep-23	296	0.032	+/-	0.005	<	0.010	

Air Particulate Filters and Radioiodine Canisters

Location: 053

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
25-Sep-23	02-Oct-23	296	0.045	+/-	0.005	<	0.007	
02-Oct-23	09-Oct-23	303	0.032	+/-	0.005	<	0.011	
09-Oct-23	16-Oct-23	305	0.021	+/-	0.004	<	0.011	
16-Oct-23	23-Oct-23	288	0.027	+/-	0.005	<	0.021	
23-Oct-23	30-Oct-23	312	0.025	+/-	0.004	<	0.009	
30-Oct-23	06-Nov-23	295	0.036	+/-	0.005	<	0.010	
06-Nov-23	13-Nov-23	305	0.034	+/-	0.005	<	0.014	
13-Nov-23	21-Nov-23	342	0.037	+/-	0.005	<	0.012	
21-Nov-23	27-Nov-23	258	0.030	+/-	0.005	<	0.013	
27-Nov-23	04-Dec-23	297	0.049	+/-	0.005	<	0.008	
04-Dec-23	11-Dec-23	299	0.018	+/-	0.004	<	0.012	
11-Dec-23	18-Dec-23	299	0.036	+/-	0.005	<	0.013	
11-Dec-23	18-Dec-23	299	0.034	+/-	0.005			Duplicate
18-Dec-23	27-Dec-23	382	0.036	+/-	0.004	<	0.014	
27-Dec-23	02-Jan-24	263	0.027	+/-	0.005	<	0.012	

Quarterly Air Particulates - Gamma

Location: 002

03-Apr-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.082	+/-	0.016
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.002
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.002

03-Jul-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.093	+/-	0.018
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.004
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Oct-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.089	+/-	0.017
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Jan-24

Nuclide	Concentration (pCi/m3)		
BE-7	0.067	+/-	0.012
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.002
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 018

03-Apr-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.077	+/-	0.015
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.002
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

03-Jul-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.087	+/-	0.018
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Oct-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.095	+/-	0.014
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.002
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Jan-24

Nuclide	Concentration (pCi/m3)		
BE-7	0.075	+/-	0.012
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.002
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 032

03-Apr-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.076	+/-	0.013
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

03-Jul-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.106	+/-	0.017
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Oct-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.112	+/-	0.017
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Jan-24

Nuclide	Concentration (pCi/m3)		
BE-7	0.068	+/-	0.015
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.000
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 037

03-Apr-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.073	+/-	0.012
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

03-Jul-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.089	+/-	0.017
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Oct-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.090	+/-	0.013
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Jan-24

Nuclide	Concentration (pCi/m3)		
BE-7	0.058	+/-	0.012
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 049

03-Apr-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.079	+/-	0.014
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

03-Jul-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.093	+/-	0.019
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.002
CS-134		<	0.001
CS-137		<	0.001

02-Oct-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.098	+/-	0.010
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Jan-24

Nuclide	Concentration (pCi/m3)		
BE-7	0.074	+/-	0.014
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.002
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 053

03-Apr-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.079	+/-	0.013
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

03-Jul-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.080	+/-	0.016
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Oct-23

Nuclide	Concentration (pCi/m3)		
BE-7	0.086	+/-	0.012
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

02-Jan-24

Nuclide	Concentration (pCi/m3)		
BE-7	0.064	+/-	0.014
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Jan-23	SURFACE WATER	MN-54	<	4.9	
11-Jan-23	SURFACE WATER	CO-58	<	4.7	
11-Jan-23	SURFACE WATER	FE-59	<	7.7	
11-Jan-23	SURFACE WATER	CO-60	<	9.3	
11-Jan-23	SURFACE WATER	ZN-65	<	7.5	
11-Jan-23	SURFACE WATER	ZR-NB-95	<	3.6	
11-Jan-23	SURFACE WATER	I-131	<	6.5	
11-Jan-23	SURFACE WATER	CS-134	<	5.6	
11-Jan-23	SURFACE WATER	CS-137	<	8.8	
11-Jan-23	SURFACE WATER	BA-LA-140	<	5.1	
11-Jan-23	SURFACE WATER	H-3	<	161.0	
21-Feb-23	SURFACE WATER	MN-54	<	2.9	
21-Feb-23	SURFACE WATER	CO-58	<	3.1	
21-Feb-23	SURFACE WATER	FE-59	<	3.8	
21-Feb-23	SURFACE WATER	CO-60	<	7.2	
21-Feb-23	SURFACE WATER	ZN-65	<	6.7	
21-Feb-23	SURFACE WATER	ZR-NB-95	<	3.6	
21-Feb-23	SURFACE WATER	I-131	<	5.3	
21-Feb-23	SURFACE WATER	CS-134	<	3.7	
21-Feb-23	SURFACE WATER	CS-137	<	6.3	
21-Feb-23	SURFACE WATER	BA-LA-140	<	2.3	
21-Feb-23	SURFACE WATER	H-3	<	154.0	
21-Feb-23	SURFACE WATER	FE-55	<	115.0	
20-Mar-23	SURFACE WATER	MN-54	<	2.5	
20-Mar-23	SURFACE WATER	CO-58	<	2.9	
20-Mar-23	SURFACE WATER	FE-59	<	4.5	
20-Mar-23	SURFACE WATER	CO-60	<	6.1	
20-Mar-23	SURFACE WATER	ZN-65	<	4.6	
20-Mar-23	SURFACE WATER	ZR-NB-95	<	4.0	
20-Mar-23	SURFACE WATER	I-131	<	1.8	
20-Mar-23	SURFACE WATER	CS-134	<	3.2	
20-Mar-23	SURFACE WATER	CS-137	<	4.9	
20-Mar-23	SURFACE WATER	BA-LA-140	<	2.6	
20-Mar-23	SURFACE WATER	H-3	<	164.0	
12-Apr-23	SURFACE WATER	MN-54	<	3.4	
12-Apr-23	SURFACE WATER	CO-58	<	3.5	
12-Apr-23	SURFACE WATER	FE-59	<	5.1	
12-Apr-23	SURFACE WATER	CO-60	<	8.3	

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
12-Apr-23	SURFACE WATER	ZN-65	<	7.4	
12-Apr-23	SURFACE WATER	ZR-NB-95	<	1.8	
12-Apr-23	SURFACE WATER	I-131	<	4.5	
12-Apr-23	SURFACE WATER	CS-134	<	4.2	
12-Apr-23	SURFACE WATER	CS-137	<	6.7	
12-Apr-23	SURFACE WATER	BA-LA-140	<	3.9	
12-Apr-23	SURFACE WATER	H-3	<	161.0	
10-May-23	SURFACE WATER	MN-54	<	4.8	
10-May-23	SURFACE WATER	CO-58	<	4.5	
10-May-23	SURFACE WATER	FE-59	<	4.6	
10-May-23	SURFACE WATER	CO-60	<	3.6	
10-May-23	SURFACE WATER	ZN-65	<	4.3	
10-May-23	SURFACE WATER	ZR-NB-95	<	5.9	
10-May-23	SURFACE WATER	I-131	<	7.9	
10-May-23	SURFACE WATER	CS-134	<	5.0	
10-May-23	SURFACE WATER	CS-137	<	2.8	
10-May-23	SURFACE WATER	BA-LA-140	<	5.1	
10-May-23	SURFACE WATER	H-3	<	170.0	
19-Jun-23	SURFACE WATER	MN-54	<	5.0	
19-Jun-23	SURFACE WATER	CO-58	<	5.5	
19-Jun-23	SURFACE WATER	FE-59	<	10.5	
19-Jun-23	SURFACE WATER	CO-60	<	5.1	
19-Jun-23	SURFACE WATER	ZN-65	<	14.2	
19-Jun-23	SURFACE WATER	ZR-NB-95	<	5.5	
19-Jun-23	SURFACE WATER	I-131	<	7.8	
19-Jun-23	SURFACE WATER	CS-134	<	7.7	
19-Jun-23	SURFACE WATER	CS-137	<	7.2	
19-Jun-23	SURFACE WATER	BA-LA-140	<	4.8	
19-Jun-23	SURFACE WATER	H-3	<	162.0	
18-Jul-23	SURFACE WATER	MN-54	<	6.0	
18-Jul-23	SURFACE WATER	CO-58	<	5.2	
18-Jul-23	SURFACE WATER	FE-59	<	7.3	
18-Jul-23	SURFACE WATER	CO-60	<	5.9	
18-Jul-23	SURFACE WATER	ZN-65	<	8.4	
18-Jul-23	SURFACE WATER	ZR-NB-95	<	4.2	
18-Jul-23	SURFACE WATER	I-131	<	7.6	
18-Jul-23	SURFACE WATER	CS-134	<	6.5	
18-Jul-23	SURFACE WATER	CS-137	<	7.9	

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
18-Jul-23	SURFACE WATER	BA-LA-140	<	3.4	
18-Jul-23	SURFACE WATER	H-3	<	162.0	
28-Aug-23	SURFACE WATER	MN-54	<	3.4	
28-Aug-23	SURFACE WATER	CO-58	<	1.9	
28-Aug-23	SURFACE WATER	FE-59	<	5.5	
28-Aug-23	SURFACE WATER	CO-60	<	6.5	
28-Aug-23	SURFACE WATER	ZN-65	<	2.3	
28-Aug-23	SURFACE WATER	ZR-NB-95	<	2.0	
28-Aug-23	SURFACE WATER	I-131	<	4.0	
28-Aug-23	SURFACE WATER	CS-134	<	3.6	
28-Aug-23	SURFACE WATER	CS-137	<	5.4	
28-Aug-23	SURFACE WATER	BA-LA-140	<	2.8	
28-Aug-23	SURFACE WATER	H-3	<	160.0	
28-Aug-23	SURFACE WATER	FE-55	<	152.0	
25-Sep-23	SURFACE WATER	MN-54	<	2.7	
25-Sep-23	SURFACE WATER	CO-58	<	2.4	
25-Sep-23	SURFACE WATER	FE-59	<	5.1	
25-Sep-23	SURFACE WATER	CO-60	<	8.9	
25-Sep-23	SURFACE WATER	ZN-65	<	5.9	
25-Sep-23	SURFACE WATER	ZR-NB-95	<	2.8	
25-Sep-23	SURFACE WATER	I-131	<	7.1	
25-Sep-23	SURFACE WATER	CS-134	<	5.1	
25-Sep-23	SURFACE WATER	CS-137	<	8.7	
25-Sep-23	SURFACE WATER	BA-LA-140	<	3.2	
25-Sep-23	SURFACE WATER	H-3	<	163.0	
18-Oct-23	SURFACE WATER	MN-54	<	5.1	
18-Oct-23	SURFACE WATER	CO-58	<	2.0	
18-Oct-23	SURFACE WATER	FE-59	<	7.8	
18-Oct-23	SURFACE WATER	CO-60	<	8.2	
18-Oct-23	SURFACE WATER	ZN-65	<	6.2	
18-Oct-23	SURFACE WATER	ZR-NB-95	<	2.4	
18-Oct-23	SURFACE WATER	I-131	<	5.6	
18-Oct-23	SURFACE WATER	CS-134	<	5.5	
18-Oct-23	SURFACE WATER	CS-137	<	9.6	
18-Oct-23	SURFACE WATER	BA-LA-140	<	2.5	
18-Oct-23	SURFACE WATER	H-3	<	169.0	
28-Nov-23	SURFACE WATER	MN-54	<	2.4	
28-Nov-23	SURFACE WATER	MN-54	<	3.1	Duplicate

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	SURFACE WATER	CO-58	<	2.7	Duplicate
28-Nov-23	SURFACE WATER	CO-58	<	2.7	
28-Nov-23	SURFACE WATER	FE-59	<	5.9	Duplicate
28-Nov-23	SURFACE WATER	FE-59	<	2.8	
28-Nov-23	SURFACE WATER	CO-60	<	4.4	
28-Nov-23	SURFACE WATER	CO-60	<	1.8	Duplicate
28-Nov-23	SURFACE WATER	ZN-65	<	2.9	Duplicate
28-Nov-23	SURFACE WATER	ZN-65	<	5.8	
28-Nov-23	SURFACE WATER	ZR-NB-95	<	4.0	Duplicate
28-Nov-23	SURFACE WATER	ZR-NB-95	<	3.1	
28-Nov-23	SURFACE WATER	I-131	<	1.8	
28-Nov-23	SURFACE WATER	I-131	<	4.2	Duplicate
28-Nov-23	SURFACE WATER	CS-134	<	3.4	Duplicate
28-Nov-23	SURFACE WATER	CS-134	<	2.3	
28-Nov-23	SURFACE WATER	CS-137	<	4.4	
28-Nov-23	SURFACE WATER	CS-137	<	3.7	Duplicate
28-Nov-23	SURFACE WATER	BA-LA-140	<	3.2	Duplicate
28-Nov-23	SURFACE WATER	BA-LA-140	<	1.4	
28-Nov-23	SURFACE WATER	H-3	<	173.0	
28-Nov-23	SURFACE WATER	H-3	<	173.0	Duplicate
12-Dec-23	SURFACE WATER	MN-54	<	3.7	Duplicate
12-Dec-23	SURFACE WATER	MN-54	<	2.6	
12-Dec-23	SURFACE WATER	CO-58	<	2.6	
12-Dec-23	SURFACE WATER	CO-58	<	2.8	Duplicate
12-Dec-23	SURFACE WATER	FE-59	<	8.5	
12-Dec-23	SURFACE WATER	FE-59	<	6.2	Duplicate
12-Dec-23	SURFACE WATER	CO-60	<	4.2	
12-Dec-23	SURFACE WATER	CO-60	<	6.9	Duplicate
12-Dec-23	SURFACE WATER	ZN-65	<	8.7	
12-Dec-23	SURFACE WATER	ZN-65	<	5.2	Duplicate
12-Dec-23	SURFACE WATER	ZR-NB-95	<	4.5	
12-Dec-23	SURFACE WATER	ZR-NB-95	<	3.7	Duplicate
12-Dec-23	SURFACE WATER	I-131	<	5.0	
12-Dec-23	SURFACE WATER	I-131	<	3.2	Duplicate
12-Dec-23	SURFACE WATER	CS-134	<	4.5	
12-Dec-23	SURFACE WATER	CS-134	<	3.8	Duplicate
12-Dec-23	SURFACE WATER	CS-137	<	3.0	
12-Dec-23	SURFACE WATER	CS-137	<	6.5	Duplicate

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
12-Dec-23	SURFACE WATER	BA-LA-140	<	3.6	
12-Dec-23	SURFACE WATER	BA-LA-140	<	2.3	Duplicate
12-Dec-23	SURFACE WATER	H-3	<	171.0	
12-Dec-23	SURFACE WATER	H-3	<	171.0	Duplicate

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Jan-23	SURFACE WATER	MN-54	<	3.6	
11-Jan-23	SURFACE WATER	CO-58	<	2.8	
11-Jan-23	SURFACE WATER	FE-59	<	7.1	
11-Jan-23	SURFACE WATER	CO-60	<	7.0	
11-Jan-23	SURFACE WATER	ZN-65	<	5.6	
11-Jan-23	SURFACE WATER	ZR-NB-95	<	4.9	
11-Jan-23	SURFACE WATER	I-131	<	5.9	
11-Jan-23	SURFACE WATER	CS-134	<	4.2	
11-Jan-23	SURFACE WATER	CS-137	<	5.8	
11-Jan-23	SURFACE WATER	BA-LA-140	<	4.6	
11-Jan-23	SURFACE WATER	H-3	13,715 +/-	366.0	
21-Feb-23	SURFACE WATER	MN-54	<	2.7	
21-Feb-23	SURFACE WATER	CO-58	<	1.4	
21-Feb-23	SURFACE WATER	FE-59	<	4.4	
21-Feb-23	SURFACE WATER	CO-60	<	2.8	
21-Feb-23	SURFACE WATER	ZN-65	<	6.9	
21-Feb-23	SURFACE WATER	ZR-NB-95	<	2.5	
21-Feb-23	SURFACE WATER	I-131	<	2.9	
21-Feb-23	SURFACE WATER	CS-134	<	2.6	
21-Feb-23	SURFACE WATER	CS-137	<	3.7	
21-Feb-23	SURFACE WATER	BA-LA-140	<	1.2	
21-Feb-23	SURFACE WATER	H-3	13,720 +/-	366.0	
21-Feb-23	SURFACE WATER	FE-55	<	113.0	
20-Mar-23	SURFACE WATER	MN-54	<	2.6	
20-Mar-23	SURFACE WATER	CO-58	<	2.9	
20-Mar-23	SURFACE WATER	FE-59	<	3.9	
20-Mar-23	SURFACE WATER	CO-60	<	2.3	
20-Mar-23	SURFACE WATER	ZN-65	<	3.9	
20-Mar-23	SURFACE WATER	ZR-NB-95	<	2.3	
20-Mar-23	SURFACE WATER	I-131	<	1.8	
20-Mar-23	SURFACE WATER	CS-134	<	2.3	
20-Mar-23	SURFACE WATER	CS-137	<	2.8	
20-Mar-23	SURFACE WATER	BA-LA-140	<	1.9	
20-Mar-23	SURFACE WATER	H-3	14,055 +/-	374.0	
12-Apr-23	SURFACE WATER	MN-54	<	1.6	
12-Apr-23	SURFACE WATER	CO-58	<	0.8	
12-Apr-23	SURFACE WATER	FE-59	<	2.7	
12-Apr-23	SURFACE WATER	CO-60	<	3.1	

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
12-Apr-23	SURFACE WATER	ZN-65	<	2.7	
12-Apr-23	SURFACE WATER	ZR-NB-95	<	1.6	
12-Apr-23	SURFACE WATER	I-131	<	2.1	
12-Apr-23	SURFACE WATER	CS-134	<	1.5	
12-Apr-23	SURFACE WATER	CS-137	<	2.5	
12-Apr-23	SURFACE WATER	BA-LA-140	<	1.5	
12-Apr-23	SURFACE WATER	H-3	13,511 +/-	368.0	
10-May-23	SURFACE WATER	MN-54	<	4.7	
10-May-23	SURFACE WATER	CO-58	<	1.6	
10-May-23	SURFACE WATER	FE-59	<	7.8	
10-May-23	SURFACE WATER	CO-60	<	8.6	
10-May-23	SURFACE WATER	ZN-65	<	3.3	
10-May-23	SURFACE WATER	ZR-NB-95	<	4.9	
10-May-23	SURFACE WATER	I-131	<	10.0	
10-May-23	SURFACE WATER	CS-134	<	7.2	
10-May-23	SURFACE WATER	CS-137	<	4.9	
10-May-23	SURFACE WATER	H-3	14,167 +/-	385.0	
10-May-23	SURFACE WATER	NI-63	<	0.066	
10-May-23	SURFACE WATER	SR-90	<	0.501	
10-May-23	SURFACE WATER	FE-55	<	177.0	
10-May-23	SURFACE WATER	SR-89	<	0.585	
19-Jun-23	SURFACE WATER	MN-54	<	3.6	
19-Jun-23	SURFACE WATER	CO-58	<	3.0	
19-Jun-23	SURFACE WATER	FE-59	<	3.5	
19-Jun-23	SURFACE WATER	CO-60	<	7.1	
19-Jun-23	SURFACE WATER	ZN-65	<	5.4	
19-Jun-23	SURFACE WATER	ZR-NB-95	<	4.2	
19-Jun-23	SURFACE WATER	I-131	<	7.8	
19-Jun-23	SURFACE WATER	CS-134	<	3.9	
19-Jun-23	SURFACE WATER	CS-137	<	6.2	
19-Jun-23	SURFACE WATER	BA-LA-140	<	4.5	
19-Jun-23	SURFACE WATER	H-3	12,099 +/-	347.0	
18-Jul-23	SURFACE WATER	MN-54	<	2.8	
18-Jul-23	SURFACE WATER	CO-58	<	3.8	
18-Jul-23	SURFACE WATER	FE-59	<	2.5	
18-Jul-23	SURFACE WATER	CO-60	<	6.9	
18-Jul-23	SURFACE WATER	ZN-65	<	6.0	
18-Jul-23	SURFACE WATER	ZR-NB-95	<	3.4	

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
18-Jul-23	SURFACE WATER	I-131	<	6.0	
18-Jul-23	SURFACE WATER	CS-134	<	3.8	
18-Jul-23	SURFACE WATER	CS-137	<	6.7	
18-Jul-23	SURFACE WATER	BA-LA-140	<	3.7	
18-Jul-23	SURFACE WATER	H-3	12,098 +/-	348.0	
28-Aug-23	SURFACE WATER	MN-54	<	4.0	
28-Aug-23	SURFACE WATER	CO-58	<	2.1	
28-Aug-23	SURFACE WATER	FE-59	<	6.2	
28-Aug-23	SURFACE WATER	CO-60	<	7.4	
28-Aug-23	SURFACE WATER	ZN-65	<	3.4	
28-Aug-23	SURFACE WATER	ZR-NB-95	<	2.4	
28-Aug-23	SURFACE WATER	I-131	<	5.4	
28-Aug-23	SURFACE WATER	CS-134	<	4.3	
28-Aug-23	SURFACE WATER	CS-137	<	6.4	
28-Aug-23	SURFACE WATER	BA-LA-140	<	1.9	
28-Aug-23	SURFACE WATER	H-3	12,718 +/-	358.0	
28-Aug-23	SURFACE WATER	FE-55	<	145.0	
25-Sep-23	SURFACE WATER	MN-54	<	7.8	
25-Sep-23	SURFACE WATER	CO-58	<	3.8	
25-Sep-23	SURFACE WATER	FE-59	<	7.7	
25-Sep-23	SURFACE WATER	CO-60	<	6.2	
25-Sep-23	SURFACE WATER	ZN-65	<	6.7	
25-Sep-23	SURFACE WATER	ZR-NB-95	<	5.2	
25-Sep-23	SURFACE WATER	I-131	<	5.5	
25-Sep-23	SURFACE WATER	CS-134	<	6.9	
25-Sep-23	SURFACE WATER	CS-137	<	6.1	
25-Sep-23	SURFACE WATER	BA-LA-140	<	3.7	
25-Sep-23	SURFACE WATER	H-3	12,384 +/-	344.0	
28-Nov-23	SURFACE WATER	MN-54	<	3.2	
28-Nov-23	SURFACE WATER	CO-58	<	3.0	
28-Nov-23	SURFACE WATER	FE-59	<	7.0	
28-Nov-23	SURFACE WATER	CO-60	<	2.5	
28-Nov-23	SURFACE WATER	ZN-65	<	6.7	
28-Nov-23	SURFACE WATER	ZR-NB-95	<	3.3	
28-Nov-23	SURFACE WATER	I-131	<	3.2	
28-Nov-23	SURFACE WATER	CS-134	<	3.6	
28-Nov-23	SURFACE WATER	CS-137	<	2.7	
28-Nov-23	SURFACE WATER	BA-LA-140	<	2.2	

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	SURFACE WATER	H-3	12,670 +/-	355.0	
12-Dec-23	SURFACE WATER	MN-54	<	3.5	
12-Dec-23	SURFACE WATER	CO-58	<	3.1	
12-Dec-23	SURFACE WATER	FE-59	<	5.9	
12-Dec-23	SURFACE WATER	CO-60	<	8.1	
12-Dec-23	SURFACE WATER	ZN-65	<	5.2	
12-Dec-23	SURFACE WATER	ZR-NB-95	<	3.5	
12-Dec-23	SURFACE WATER	I-131	<	6.0	
12-Dec-23	SURFACE WATER	CS-134	<	4.3	
12-Dec-23	SURFACE WATER	CS-137	<	8.6	
12-Dec-23	SURFACE WATER	BA-LA-140	<	4.0	
12-Dec-23	SURFACE WATER	H-3	12,738 +/-	355.0	

Exposure Pathway - Waterborne
Ground Water
Location: B-12

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
15-Feb-23	OFFSITE GROUNDWATER	MN-54	<	4.5	
15-Feb-23	OFFSITE GROUNDWATER	CO-58	<	3.8	
15-Feb-23	OFFSITE GROUNDWATER	FE-59	<	10.6	
15-Feb-23	OFFSITE GROUNDWATER	CO-60	<	4.6	
15-Feb-23	OFFSITE GROUNDWATER	ZN-65	<	9.0	
15-Feb-23	OFFSITE GROUNDWATER	ZR-NB-95	<	3.1	
15-Feb-23	OFFSITE GROUNDWATER	I-131	<	0.31	
15-Feb-23	OFFSITE GROUNDWATER	CS-134	<	6.9	
15-Feb-23	OFFSITE GROUNDWATER	CS-137	<	3.9	
15-Feb-23	OFFSITE GROUNDWATER	BA-LA-140	<	5.5	
15-Feb-23	OFFSITE GROUNDWATER	H-3	<	315.0	
06-Jun-23	OFFSITE GROUNDWATER	MN-54	<	2.0	
06-Jun-23	OFFSITE GROUNDWATER	CO-58	<	2.4	
06-Jun-23	OFFSITE GROUNDWATER	FE-59	<	5.3	
06-Jun-23	OFFSITE GROUNDWATER	CO-60	<	6.3	
06-Jun-23	OFFSITE GROUNDWATER	ZN-65	<	6.8	
06-Jun-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.0	
06-Jun-23	OFFSITE GROUNDWATER	I-131	<	0.303	
06-Jun-23	OFFSITE GROUNDWATER	CS-134	<	2.9	
06-Jun-23	OFFSITE GROUNDWATER	CS-137	<	5.5	
06-Jun-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.7	
06-Jun-23	OFFSITE GROUNDWATER	H-3	<	157.0	
25-Sep-23	OFFSITE GROUNDWATER	MN-54	<	2.3	
25-Sep-23	OFFSITE GROUNDWATER	CO-58	<	2.5	
25-Sep-23	OFFSITE GROUNDWATER	FE-59	<	4.8	
25-Sep-23	OFFSITE GROUNDWATER	CO-60	<	9.8	
25-Sep-23	OFFSITE GROUNDWATER	ZN-65	<	5.7	
25-Sep-23	OFFSITE GROUNDWATER	ZR-NB-95	<	4.5	
25-Sep-23	OFFSITE GROUNDWATER	I-131	<	0.237	
25-Sep-23	OFFSITE GROUNDWATER	CS-134	<	5.4	
25-Sep-23	OFFSITE GROUNDWATER	CS-137	<	8.2	
25-Sep-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.2	
25-Sep-23	OFFSITE GROUNDWATER	H-3	<	163.0	
28-Nov-23	OFFSITE GROUNDWATER	MN-54	<	2.7	
28-Nov-23	OFFSITE GROUNDWATER	CO-58	<	2.5	
28-Nov-23	OFFSITE GROUNDWATER	FE-59	<	4.1	
28-Nov-23	OFFSITE GROUNDWATER	CO-60	<	6.6	
28-Nov-23	OFFSITE GROUNDWATER	ZN-65	<	6.1	

Exposure Pathway - Waterborne
Ground Water
Location: B-12

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	OFFSITE GROUNDWATER	ZR-NB-95	<	3.3	
28-Nov-23	OFFSITE GROUNDWATER	I-131	<	0.324	
28-Nov-23	OFFSITE GROUNDWATER	CS-134	<	3.8	
28-Nov-23	OFFSITE GROUNDWATER	CS-137	<	6.7	
28-Nov-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.2	
28-Nov-23	OFFSITE GROUNDWATER	H-3	<	173.0	

Exposure Pathway - Waterborne
Ground Water
Location: C-10

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
15-Feb-23	OFFSITE GROUNDWATER	MN-54	<	2.9	
15-Feb-23	OFFSITE GROUNDWATER	CO-58	<	2.2	
15-Feb-23	OFFSITE GROUNDWATER	FE-59	<	7.2	
15-Feb-23	OFFSITE GROUNDWATER	CO-60	<	2.7	
15-Feb-23	OFFSITE GROUNDWATER	ZN-65	<	3.0	
15-Feb-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.7	
15-Feb-23	OFFSITE GROUNDWATER	I-131	<	0.351	
15-Feb-23	OFFSITE GROUNDWATER	CS-134	<	3.6	
15-Feb-23	OFFSITE GROUNDWATER	CS-137	<	2.8	
15-Feb-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.7	
15-Feb-23	OFFSITE GROUNDWATER	H-3	<	219.0	
06-Jun-23	OFFSITE GROUNDWATER	MN-54	<	4.7	
06-Jun-23	OFFSITE GROUNDWATER	CO-58	<	3.2	
06-Jun-23	OFFSITE GROUNDWATER	FE-59	<	8.4	
06-Jun-23	OFFSITE GROUNDWATER	CO-60	<	3.8	
06-Jun-23	OFFSITE GROUNDWATER	ZN-65	<	7.7	
06-Jun-23	OFFSITE GROUNDWATER	ZR-NB-95	<	4.7	
06-Jun-23	OFFSITE GROUNDWATER	I-131	<	0.439	
06-Jun-23	OFFSITE GROUNDWATER	CS-134	<	5.3	
06-Jun-23	OFFSITE GROUNDWATER	CS-137	<	5.1	
06-Jun-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.9	
06-Jun-23	OFFSITE GROUNDWATER	H-3	<	157.0	
25-Sep-23	OFFSITE GROUNDWATER	MN-54	<	6.7	
25-Sep-23	OFFSITE GROUNDWATER	CO-58	<	9.0	
25-Sep-23	OFFSITE GROUNDWATER	FE-59	<	5.8	
25-Sep-23	OFFSITE GROUNDWATER	CO-60	<	5.1	
25-Sep-23	OFFSITE GROUNDWATER	ZN-65	<	8.9	
25-Sep-23	OFFSITE GROUNDWATER	ZR-NB-95	<	9.0	
25-Sep-23	OFFSITE GROUNDWATER	I-131	<	0.247	
25-Sep-23	OFFSITE GROUNDWATER	CS-134	<	8.7	
25-Sep-23	OFFSITE GROUNDWATER	CS-137	<	5.7	
25-Sep-23	OFFSITE GROUNDWATER	BA-LA-140	<	4.7	
25-Sep-23	OFFSITE GROUNDWATER	H-3	<	163.0	
28-Nov-23	OFFSITE GROUNDWATER	MN-54	<	6.6	
28-Nov-23	OFFSITE GROUNDWATER	CO-58	<	4.3	
28-Nov-23	OFFSITE GROUNDWATER	FE-59	<	7.1	
28-Nov-23	OFFSITE GROUNDWATER	CO-60	<	5.1	
28-Nov-23	OFFSITE GROUNDWATER	ZN-65	<	3.8	

Exposure Pathway - Waterborne
Ground Water
Location: C-10

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	OFFSITE GROUNDWATER	ZR-NB-95	<	4.0	
28-Nov-23	OFFSITE GROUNDWATER	I-131	<	0.304	
28-Nov-23	OFFSITE GROUNDWATER	CS-134	<	7.2	
28-Nov-23	OFFSITE GROUNDWATER	CS-137	<	5.5	
28-Nov-23	OFFSITE GROUNDWATER	BA-LA-140	<	5.9	
28-Nov-23	OFFSITE GROUNDWATER	H-3	<	173.0	

Exposure Pathway - Waterborne
Ground Water
Location: C-49

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
15-Feb-23	OFFSITE GROUNDWATER	MN-54	<	2.8	
15-Feb-23	OFFSITE GROUNDWATER	CO-58	<	2.5	
15-Feb-23	OFFSITE GROUNDWATER	FE-59	<	5.1	
15-Feb-23	OFFSITE GROUNDWATER	CO-60	<	7.4	
15-Feb-23	OFFSITE GROUNDWATER	ZN-65	<	4.1	
15-Feb-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.5	
15-Feb-23	OFFSITE GROUNDWATER	I-131	<	0.35	
15-Feb-23	OFFSITE GROUNDWATER	CS-134	<	3.8	
15-Feb-23	OFFSITE GROUNDWATER	CS-137	<	6.0	
15-Feb-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.9	
15-Feb-23	OFFSITE GROUNDWATER	H-3	<	219.0	
06-Jun-23	OFFSITE GROUNDWATER	MN-54	<	3.6	
06-Jun-23	OFFSITE GROUNDWATER	CO-58	<	2.0	
06-Jun-23	OFFSITE GROUNDWATER	FE-59	<	5.0	
06-Jun-23	OFFSITE GROUNDWATER	CO-60	<	3.0	
06-Jun-23	OFFSITE GROUNDWATER	ZN-65	<	6.9	
06-Jun-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.2	
06-Jun-23	OFFSITE GROUNDWATER	I-131	<	0.453	
06-Jun-23	OFFSITE GROUNDWATER	CS-134	<	3.5	
06-Jun-23	OFFSITE GROUNDWATER	CS-137	<	3.0	
06-Jun-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.9	
06-Jun-23	WELL WATER	H-3	<	164.0	
06-Jun-23	OFFSITE GROUNDWATER	H-3	164.0 +/-	83.0	
25-Sep-23	OFFSITE GROUNDWATER	MN-54	<	4.0	
25-Sep-23	OFFSITE GROUNDWATER	CO-58	<	3.5	
25-Sep-23	OFFSITE GROUNDWATER	FE-59	<	4.9	
25-Sep-23	OFFSITE GROUNDWATER	CO-60	<	9.2	
25-Sep-23	OFFSITE GROUNDWATER	ZN-65	<	3.1	
25-Sep-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.7	
25-Sep-23	OFFSITE GROUNDWATER	I-131	<	0.277	
25-Sep-23	OFFSITE GROUNDWATER	CS-134	<	5.6	
25-Sep-23	OFFSITE GROUNDWATER	CS-137	<	8.4	
25-Sep-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.4	
25-Sep-23	OFFSITE GROUNDWATER	H-3	<	163.0	
28-Nov-23	OFFSITE GROUNDWATER	MN-54	<	1.9	
28-Nov-23	OFFSITE GROUNDWATER	CO-58	<	2.8	
28-Nov-23	OFFSITE GROUNDWATER	FE-59	<	3.1	
28-Nov-23	OFFSITE GROUNDWATER	CO-60	<	1.7	

Exposure Pathway - Waterborne
Ground Water
Location: C-49

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	OFFSITE GROUNDWATER	ZN-65	<	5.6	
28-Nov-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.8	
28-Nov-23	OFFSITE GROUNDWATER	I-131	<	0.267	
28-Nov-23	OFFSITE GROUNDWATER	CS-134	<	3.6	
28-Nov-23	OFFSITE GROUNDWATER	CS-137	<	3.4	
28-Nov-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.3	
28-Nov-23	OFFSITE GROUNDWATER	H-3	<	173.0	

Exposure Pathway - Waterborne
Ground Water
Location: F-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
15-Feb-23	OFFSITE GROUNDWATER	MN-54	<	2.3	
15-Feb-23	OFFSITE GROUNDWATER	CO-58	<	2.9	
15-Feb-23	OFFSITE GROUNDWATER	FE-59	<	3.4	
15-Feb-23	OFFSITE GROUNDWATER	CO-60	<	1.5	
15-Feb-23	OFFSITE GROUNDWATER	ZN-65	<	4.2	
15-Feb-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.2	
15-Feb-23	OFFSITE GROUNDWATER	I-131	<	0.322	
15-Feb-23	OFFSITE GROUNDWATER	CS-134	<	2.2	
15-Feb-23	OFFSITE GROUNDWATER	CS-137	<	3.5	
15-Feb-23	OFFSITE GROUNDWATER	BA-LA-140	<	1.8	
15-Feb-23	OFFSITE GROUNDWATER	H-3	<	219.0	
06-Jun-23	OFFSITE GROUNDWATER	MN-54	<	2.3	
06-Jun-23	OFFSITE GROUNDWATER	CO-58	<	2.4	
06-Jun-23	OFFSITE GROUNDWATER	FE-59	<	4.1	
06-Jun-23	OFFSITE GROUNDWATER	CO-60	<	2.7	
06-Jun-23	OFFSITE GROUNDWATER	ZN-65	<	4.7	
06-Jun-23	OFFSITE GROUNDWATER	ZR-NB-95	<	3.0	
06-Jun-23	OFFSITE GROUNDWATER	I-131	<	0.324	
06-Jun-23	OFFSITE GROUNDWATER	CS-134	<	2.5	
06-Jun-23	OFFSITE GROUNDWATER	CS-137	<	3.0	
06-Jun-23	OFFSITE GROUNDWATER	BA-LA-140	<	1.7	
06-Jun-23	OFFSITE GROUNDWATER	H-3	<	157.0	
25-Sep-23	OFFSITE GROUNDWATER	MN-54	<	7.6	
25-Sep-23	OFFSITE GROUNDWATER	CO-58	<	8.0	
25-Sep-23	OFFSITE GROUNDWATER	FE-59	<	8.0	
25-Sep-23	OFFSITE GROUNDWATER	CO-60	<	4.9	
25-Sep-23	OFFSITE GROUNDWATER	ZN-65	<	11.8	
25-Sep-23	OFFSITE GROUNDWATER	ZR-NB-95	<	5.6	
25-Sep-23	OFFSITE GROUNDWATER	I-131	<	0.488	
25-Sep-23	OFFSITE GROUNDWATER	CS-134	<	8.7	
25-Sep-23	OFFSITE GROUNDWATER	CS-137	<	7.2	
25-Sep-23	OFFSITE GROUNDWATER	BA-LA-140	<	6.0	
25-Sep-23	OFFSITE GROUNDWATER	H-3	<	163.0	
28-Nov-23	OFFSITE GROUNDWATER	MN-54	<	2.0	
28-Nov-23	OFFSITE GROUNDWATER	CO-58	<	3.5	
28-Nov-23	OFFSITE GROUNDWATER	FE-59	<	8.0	
28-Nov-23	OFFSITE GROUNDWATER	CO-60	<	3.4	
28-Nov-23	OFFSITE GROUNDWATER	ZN-65	<	5.7	

Exposure Pathway - Waterborne
Ground Water
Location: F-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.4	
28-Nov-23	OFFSITE GROUNDWATER	I-131	<	0.286	
28-Nov-23	OFFSITE GROUNDWATER	CS-134	<	3.2	
28-Nov-23	OFFSITE GROUNDWATER	CS-137	<	4.3	
28-Nov-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.2	
28-Nov-23	OFFSITE GROUNDWATER	H-3	<	173.0	

Exposure Pathway - Waterborne
Ground Water
Location: G-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
15-Feb-23	OFFSITE GROUNDWATER	MN-54	<	3.5	
15-Feb-23	OFFSITE GROUNDWATER	CO-58	<	2.5	
15-Feb-23	OFFSITE GROUNDWATER	FE-59	<	4.1	
15-Feb-23	OFFSITE GROUNDWATER	CO-60	<	6.2	
15-Feb-23	OFFSITE GROUNDWATER	ZN-65	<	6.2	
15-Feb-23	OFFSITE GROUNDWATER	ZR-NB-95	<	4.9	
15-Feb-23	OFFSITE GROUNDWATER	I-131	<	0.327	
15-Feb-23	OFFSITE GROUNDWATER	CS-134	<	3.5	
15-Feb-23	OFFSITE GROUNDWATER	CS-137	<	5.3	
15-Feb-23	OFFSITE GROUNDWATER	BA-LA-140	<	4.2	
15-Feb-23	OFFSITE GROUNDWATER	H-3	<	219.0	
06-Jun-23	OFFSITE GROUNDWATER	MN-54	<	3.0	
06-Jun-23	OFFSITE GROUNDWATER	CO-58	<	2.4	
06-Jun-23	OFFSITE GROUNDWATER	FE-59	<	3.8	
06-Jun-23	OFFSITE GROUNDWATER	CO-60	<	2.7	
06-Jun-23	OFFSITE GROUNDWATER	ZN-65	<	5.2	
06-Jun-23	OFFSITE GROUNDWATER	ZR-NB-95	<	3.0	
06-Jun-23	OFFSITE GROUNDWATER	I-131	<	0.304	
06-Jun-23	OFFSITE GROUNDWATER	CS-134	<	2.5	
06-Jun-23	OFFSITE GROUNDWATER	CS-137	<	2.9	
06-Jun-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.3	
06-Jun-23	OFFSITE GROUNDWATER	H-3	<	157.0	
25-Sep-23	OFFSITE GROUNDWATER	MN-54	<	2.9	
25-Sep-23	OFFSITE GROUNDWATER	CO-58	<	4.0	
25-Sep-23	OFFSITE GROUNDWATER	FE-59	<	3.7	
25-Sep-23	OFFSITE GROUNDWATER	CO-60	<	7.5	
25-Sep-23	OFFSITE GROUNDWATER	ZN-65	<	13.0	
25-Sep-23	OFFSITE GROUNDWATER	ZR-NB-95	<	5.7	
25-Sep-23	OFFSITE GROUNDWATER	I-131	<	0.232	
25-Sep-23	OFFSITE GROUNDWATER	CS-134	<	4.8	
25-Sep-23	OFFSITE GROUNDWATER	CS-137	<	6.7	
25-Sep-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.2	
25-Sep-23	OFFSITE GROUNDWATER	H-3	<	163.0	
28-Nov-23	OFFSITE GROUNDWATER	MN-54	<	1.9	
28-Nov-23	OFFSITE GROUNDWATER	CO-58	<	2.6	
28-Nov-23	OFFSITE GROUNDWATER	FE-59	<	2.8	
28-Nov-23	OFFSITE GROUNDWATER	CO-60	<	1.3	
28-Nov-23	OFFSITE GROUNDWATER	ZN-65	<	4.5	

Exposure Pathway - Waterborne
Ground Water
Location: G-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.5	
28-Nov-23	OFFSITE GROUNDWATER	I-131	<	0.303	
28-Nov-23	OFFSITE GROUNDWATER	CS-134	<	2.6	
28-Nov-23	OFFSITE GROUNDWATER	CS-137	<	2.5	
28-Nov-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.3	
28-Nov-23	OFFSITE GROUNDWATER	H-3	<	173.0	

Exposure Pathway - Waterborne
Ground Water
Location: J-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
15-Feb-23	OFFSITE GROUNDWATER	MN-54	<	3.6	
15-Feb-23	OFFSITE GROUNDWATER	CO-58	<	2.9	
15-Feb-23	OFFSITE GROUNDWATER	FE-59	<	3.4	
15-Feb-23	OFFSITE GROUNDWATER	CO-60	<	1.3	
15-Feb-23	OFFSITE GROUNDWATER	ZN-65	<	5.1	
15-Feb-23	OFFSITE GROUNDWATER	ZR-NB-95	<	3.3	
15-Feb-23	OFFSITE GROUNDWATER	I-131	<	0.283	
15-Feb-23	OFFSITE GROUNDWATER	CS-134	<	3.6	
15-Feb-23	OFFSITE GROUNDWATER	CS-137	<	3.0	
15-Feb-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.5	
15-Feb-23	OFFSITE GROUNDWATER	H-3	<	219.0	
06-Jun-23	OFFSITE GROUNDWATER	MN-54	<	1.5	
06-Jun-23	OFFSITE GROUNDWATER	CO-58	<	2.4	
06-Jun-23	OFFSITE GROUNDWATER	FE-59	<	3.7	
06-Jun-23	OFFSITE GROUNDWATER	CO-60	<	2.3	
06-Jun-23	OFFSITE GROUNDWATER	ZN-65	<	4.9	
06-Jun-23	OFFSITE GROUNDWATER	ZR-NB-95	<	4.0	
06-Jun-23	OFFSITE GROUNDWATER	I-131	<	0.297	
06-Jun-23	OFFSITE GROUNDWATER	CS-134	<	2.6	
06-Jun-23	OFFSITE GROUNDWATER	CS-137	<	3.4	
06-Jun-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.7	
06-Jun-23	OFFSITE GROUNDWATER	H-3	<	157.0	
25-Sep-23	OFFSITE GROUNDWATER	MN-54	<	2.1	
25-Sep-23	OFFSITE GROUNDWATER	CO-58	<	3.8	
25-Sep-23	OFFSITE GROUNDWATER	FE-59	<	6.3	
25-Sep-23	OFFSITE GROUNDWATER	CO-60	<	6.2	
25-Sep-23	OFFSITE GROUNDWATER	ZN-65	<	6.2	
25-Sep-23	OFFSITE GROUNDWATER	ZR-NB-95	<	3.1	
25-Sep-23	OFFSITE GROUNDWATER	I-131	<	0.167	
25-Sep-23	OFFSITE GROUNDWATER	CS-134	<	3.8	
25-Sep-23	OFFSITE GROUNDWATER	CS-137	<	6.6	
25-Sep-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.2	
25-Sep-23	OFFSITE GROUNDWATER	H-3	<	163.0	
28-Nov-23	OFFSITE GROUNDWATER	MN-54	<	3.4	
28-Nov-23	OFFSITE GROUNDWATER	CO-58	<	3.4	
28-Nov-23	OFFSITE GROUNDWATER	FE-59	<	3.6	
28-Nov-23	OFFSITE GROUNDWATER	CO-60	<	6.6	
28-Nov-23	OFFSITE GROUNDWATER	ZN-65	<	7.4	

Exposure Pathway - Waterborne
Ground Water
Location: J-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.8	
28-Nov-23	OFFSITE GROUNDWATER	I-131	<	0.265	
28-Nov-23	OFFSITE GROUNDWATER	CS-134	<	4.8	
28-Nov-23	OFFSITE GROUNDWATER	CS-137	<	6.5	
28-Nov-23	OFFSITE GROUNDWATER	BA-LA-140	<	2.6	
28-Nov-23	OFFSITE GROUNDWATER	H-3	<	173.0	

Exposure Pathway - Waterborne
Ground Water
Location: J-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
15-Feb-23	OFFSITE GROUNDWATER	MN-54	<	5.2	
15-Feb-23	OFFSITE GROUNDWATER	CO-58	<	5.0	
15-Feb-23	OFFSITE GROUNDWATER	FE-59	<	6.2	
15-Feb-23	OFFSITE GROUNDWATER	CO-60	<	3.6	
15-Feb-23	OFFSITE GROUNDWATER	ZN-65	<	8.5	
15-Feb-23	OFFSITE GROUNDWATER	ZR-NB-95	<	4.5	
15-Feb-23	OFFSITE GROUNDWATER	I-131	<	0.309	
15-Feb-23	OFFSITE GROUNDWATER	CS-134	<	6.3	
15-Feb-23	OFFSITE GROUNDWATER	CS-137	<	3.6	
15-Feb-23	OFFSITE GROUNDWATER	BA-LA-140	<	4.6	
15-Feb-23	OFFSITE GROUNDWATER	H-3	<	219.0	
06-Jun-23	OFFSITE GROUNDWATER	MN-54	<	3.0	
06-Jun-23	OFFSITE GROUNDWATER	CO-58	<	3.1	
06-Jun-23	OFFSITE GROUNDWATER	FE-59	<	3.3	
06-Jun-23	OFFSITE GROUNDWATER	CO-60	<	2.4	
06-Jun-23	OFFSITE GROUNDWATER	ZN-65	<	6.3	
06-Jun-23	OFFSITE GROUNDWATER	ZR-NB-95	<	2.8	
06-Jun-23	OFFSITE GROUNDWATER	I-131	<	0.287	
06-Jun-23	OFFSITE GROUNDWATER	CS-134	<	3.5	
06-Jun-23	OFFSITE GROUNDWATER	CS-137	<	2.3	
06-Jun-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.3	
06-Jun-23	OFFSITE GROUNDWATER	H-3	<	157.0	
25-Sep-23	OFFSITE GROUNDWATER	MN-54	<	6.2	
25-Sep-23	OFFSITE GROUNDWATER	CO-58	<	6.1	
25-Sep-23	OFFSITE GROUNDWATER	FE-59	<	6.9	
25-Sep-23	OFFSITE GROUNDWATER	CO-60	<	7.2	
25-Sep-23	OFFSITE GROUNDWATER	ZN-65	<	4.4	
25-Sep-23	OFFSITE GROUNDWATER	ZR-NB-95	<	6.8	
25-Sep-23	OFFSITE GROUNDWATER	I-131	<	0.166	
25-Sep-23	OFFSITE GROUNDWATER	CS-134	<	7.4	
25-Sep-23	OFFSITE GROUNDWATER	CS-137	<	7.7	
25-Sep-23	OFFSITE GROUNDWATER	BA-LA-140	<	6.6	
25-Sep-23	OFFSITE GROUNDWATER	H-3	<	163.0	
28-Nov-23	OFFSITE GROUNDWATER	MN-54	<	1.9	
28-Nov-23	OFFSITE GROUNDWATER	CO-58	<	1.6	
28-Nov-23	OFFSITE GROUNDWATER	FE-59	<	3.8	
28-Nov-23	OFFSITE GROUNDWATER	CO-60	<	2.8	
28-Nov-23	OFFSITE GROUNDWATER	ZN-65	<	4.5	

Exposure Pathway - Waterborne
Ground Water
Location: J-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
28-Nov-23	OFFSITE GROUNDWATER	ZR-NB-95	<	3.1	
28-Nov-23	OFFSITE GROUNDWATER	I-131	<	0.261	
28-Nov-23	OFFSITE GROUNDWATER	CS-134	<	2.1	
28-Nov-23	OFFSITE GROUNDWATER	CS-137	<	3.0	
28-Nov-23	OFFSITE GROUNDWATER	BA-LA-140	<	3.2	
28-Nov-23	OFFSITE GROUNDWATER	H-3	<	173.0	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
04-Jan-23	MN-54	< 1.0	
04-Jan-23	CO-58	< 0.8	
04-Jan-23	FE-59	< 2.8	
04-Jan-23	CO-60	< 2.7	
04-Jan-23	ZN-65	< 2.5	
04-Jan-23	ZR-NB-95	< 1.2	
04-Jan-23	I-131	< 0.26	
04-Jan-23	CS-134	< 1.3	
04-Jan-23	CS-137	< 2.0	
04-Jan-23	BA-LA-140	< 1.2	
04-Jan-23	GROSS BETA	2.899 +/- 0.7	
02-Feb-23	MN-54	< 2.3	
02-Feb-23	CO-58	< 1.8	
02-Feb-23	FE-59	< 4.0	
02-Feb-23	CO-60	< 6.0	
02-Feb-23	ZN-65	< 3.1	
02-Feb-23	ZR-NB-95	< 2.0	
02-Feb-23	I-131	< 0.3	
02-Feb-23	CS-134	< 2.9	
02-Feb-23	CS-137	< 5.4	
02-Feb-23	BA-LA-140	< 2.1	
02-Feb-23	GROSS BETA	2.716 +/- 0.658	
02-Mar-23	MN-54	< 2.7	
02-Mar-23	CO-58	< 1.7	
02-Mar-23	FE-59	< 6.7	
02-Mar-23	CO-60	< 2.6	
02-Mar-23	ZN-65	< 6.2	
02-Mar-23	ZR-NB-95	< 2.2	
02-Mar-23	I-131	< 0.284	
02-Mar-23	CS-134	< 3.0	
02-Mar-23	CS-137	< 3.1	
02-Mar-23	BA-LA-140	< 4.1	
02-Mar-23	GROSS BETA	1.878 +/- 0.633	
04-Apr-23	MN-54	< 2.1	
04-Apr-23	CO-58	< 1.9	
04-Apr-23	FE-59	< 1.6	
04-Apr-23	CO-60	< 0.8	
04-Apr-23	ZN-65	< 2.5	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
04-Apr-23	ZR-NB-95	< 1.4	
04-Apr-23	I-131	< 0.401	
04-Apr-23	CS-134	< 1.7	
04-Apr-23	CS-137	< 1.4	
04-Apr-23	BA-LA-140	< 2.2	
04-Apr-23	GROSS BETA	2.337 +/- 0.673	
02-May-23	MN-54	< 4.0	
02-May-23	CO-58	< 2.5	
02-May-23	FE-59	< 4.5	
02-May-23	CO-60	< 7.3	
02-May-23	ZN-65	< 6.8	
02-May-23	ZR-NB-95	< 3.1	
02-May-23	I-131	< 0.261	
02-May-23	CS-134	< 3.7	
02-May-23	CS-137	< 6.1	
02-May-23	BA-LA-140	< 3.1	
02-May-23	GROSS BETA	2.122 +/- 0.617	
01-Jun-23	MN-54	< 3.0	
01-Jun-23	CO-58	< 1.7	
01-Jun-23	FE-59	< 2.7	
01-Jun-23	CO-60	< 6.9	
01-Jun-23	ZN-65	< 5.5	
01-Jun-23	ZR-NB-95	< 3.2	
01-Jun-23	I-131	< 0.306	
01-Jun-23	CS-134	< 3.4	
01-Jun-23	CS-137	< 5.6	
01-Jun-23	BA-LA-140	< 2.2	
01-Jun-23	GROSS BETA	2.859 +/- 0.661	
03-Jul-23	MN-54	< 2.3	
03-Jul-23	CO-58	< 1.8	
03-Jul-23	FE-59	< 4.5	
03-Jul-23	CO-60	< 7.6	
03-Jul-23	ZN-65	< 7.1	
03-Jul-23	ZR-NB-95	< 4.2	
03-Jul-23	I-131	< 0.321	
03-Jul-23	CS-134	< 4.2	
03-Jul-23	CS-137	< 6.7	
03-Jul-23	BA-LA-140	< 3.2	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
03-Jul-23	GROSS BETA	3.278 +/- 0.7	
03-Aug-23	MN-54	< 5.7	
03-Aug-23	CO-58	< 6.3	
03-Aug-23	FE-59	< 4.2	
03-Aug-23	CO-60	< 5.3	
03-Aug-23	ZN-65	< 10.1	
03-Aug-23	ZR-NB-95	< 5.9	
03-Aug-23	I-131	< 0.459	
03-Aug-23	CS-134	< 7.0	
03-Aug-23	CS-137	< 4.4	
03-Aug-23	BA-LA-140	< 3.1	
03-Aug-23	GROSS BETA	2.408 +/- 0.639	
05-Sep-23	MN-54	< 3.6	
05-Sep-23	CO-58	< 3.9	
05-Sep-23	FE-59	< 6.0	
05-Sep-23	CO-60	< 14.1	
05-Sep-23	ZN-65	< 6.1	
05-Sep-23	ZR-NB-95	< 5.5	
05-Sep-23	I-131	< 0.282	
05-Sep-23	CS-134	< 7.4	
05-Sep-23	CS-137	< 9.9	
05-Sep-23	BA-LA-140	< 4.6	
05-Sep-23	GROSS BETA	2.194 +/- 0.609	
04-Oct-23	MN-54	< 2.4	
04-Oct-23	CO-58	< 3.9	
04-Oct-23	FE-59	< 6.9	
04-Oct-23	CO-60	< 7.3	
04-Oct-23	ZN-65	< 6.4	
04-Oct-23	ZR-NB-95	< 5.0	
04-Oct-23	I-131	< 0.416	
04-Oct-23	CS-134	< 3.7	
04-Oct-23	CS-137	< 6.4	
04-Oct-23	BA-LA-140	< 3.7	
04-Oct-23	GROSS BETA	2.946 +/- 0.681	
06-Nov-23	MN-54	< 3.3	
06-Nov-23	CO-58	< 1.5	
06-Nov-23	FE-59	< 5.2	
06-Nov-23	CO-60	< 6.3	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
06-Nov-23	ZN-65	< 5.8	
06-Nov-23	ZR-NB-95	< 2.4	
06-Nov-23	I-131	< 0.327	
06-Nov-23	CS-134	< 4.2	
06-Nov-23	CS-137	< 6.4	
06-Nov-23	BA-LA-140	< 2.7	
06-Nov-23	GROSS BETA	3.748 +/- 0.712	
05-Dec-23	MN-54	< 2.7	
05-Dec-23	CO-58	< 1.9	
05-Dec-23	FE-59	< 6.0	
05-Dec-23	CO-60	< 1.8	
05-Dec-23	ZN-65	< 2.0	
05-Dec-23	ZR-NB-95	< 2.7	
05-Dec-23	I-131	< 0.315	
05-Dec-23	CS-134	< 3.6	
05-Dec-23	CS-137	< 3.8	
05-Dec-23	BA-LA-140	< 4.4	
05-Dec-23	GROSS BETA	3.599 +/- 0.722	
03-Jan-24	MN-54	< 1.0	
03-Jan-24	CO-58	< 1.2	
03-Jan-24	FE-59	< 2.5	
03-Jan-24	CO-60	< 2.3	
03-Jan-24	ZN-65	< 2.2	
03-Jan-24	ZR-NB-95	< 1.5	
03-Jan-24	I-131	< 0.368	
03-Jan-24	CS-134	< 1.2	
03-Jan-24	CS-137	< 2.1	
03-Jan-24	BA-LA-140	< 1.4	
03-Jan-24	GROSS BETA	2.914 +/- 0.716	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
04-Jan-23	MN-54	< 2.6	
04-Jan-23	CO-58	< 2.2	
04-Jan-23	FE-59	< 4.4	
04-Jan-23	CO-60	< 2.5	
04-Jan-23	ZN-65	< 4.4	
04-Jan-23	ZR-NB-95	< 2.0	
04-Jan-23	I-131	< 0.39	
04-Jan-23	CS-134	< 2.3	
04-Jan-23	CS-137	< 2.6	
04-Jan-23	BA-LA-140	< 3.2	
04-Jan-23	GROSS BETA	3.828 +/- 0.751	
02-Feb-23	MN-54	< 2.9	
02-Feb-23	CO-58	< 3.1	
02-Feb-23	FE-59	< 4.9	
02-Feb-23	CO-60	< 4.0	
02-Feb-23	ZN-65	< 5.6	
02-Feb-23	ZR-NB-95	< 4.4	
02-Feb-23	I-131	< 0.299	
02-Feb-23	CS-134	< 3.5	
02-Feb-23	CS-137	< 3.5	
02-Feb-23	BA-LA-140	< 3.9	
02-Feb-23	GROSS BETA	2.164 +/- 0.676	
02-Mar-23	MN-54	< 3.0	
02-Mar-23	CO-58	< 2.4	
02-Mar-23	FE-59	< 4.9	
02-Mar-23	CO-60	< 6.7	
02-Mar-23	ZN-65	< 5.7	
02-Mar-23	ZR-NB-95	< 1.8	
02-Mar-23	I-131	< 0.392	
02-Mar-23	CS-134	< 3.4	
02-Mar-23	CS-137	< 4.8	
02-Mar-23	BA-LA-140	< 2.4	
02-Mar-23	GROSS BETA	9.763 +/- 1.112	
04-Apr-23	MN-54	< 1.6	
04-Apr-23	CO-58	< 0.8	
04-Apr-23	FE-59	< 3.3	
04-Apr-23	CO-60	< 3.2	
04-Apr-23	ZN-65	< 2.8	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
04-Apr-23	ZR-NB-95	< 1.8	
04-Apr-23	I-131	< 0.45	
04-Apr-23	CS-134	< 1.5	
04-Apr-23	CS-137	< 2.9	
04-Apr-23	BA-LA-140	< 1.5	
04-Apr-23	GROSS BETA	3.301 +/- 0.785	
02-May-23	MN-54	< 1.7	
02-May-23	CO-58	< 2.2	
02-May-23	FE-59	< 4.1	
02-May-23	CO-60	< 2.8	
02-May-23	ZN-65	< 5.4	
02-May-23	ZR-NB-95	< 2.1	
02-May-23	I-131	< 0.239	
02-May-23	CS-134	< 2.9	
02-May-23	CS-137	< 3.8	
02-May-23	BA-LA-140	< 2.9	
02-May-23	GROSS BETA	2.802 +/- 0.752	
01-Jun-23	MN-54	< 2.7	
01-Jun-23	MN-54	< 2.7	
01-Jun-23	CO-58	< 3.0	
01-Jun-23	CO-58	< 3.0	
01-Jun-23	FE-59	< 5.6	
01-Jun-23	FE-59	< 5.6	
01-Jun-23	CO-60	< 2.9	
01-Jun-23	CO-60	< 2.9	
01-Jun-23	ZN-65	< 3.7	
01-Jun-23	ZN-65	< 3.7	
01-Jun-23	ZR-NB-95	< 2.1	
01-Jun-23	ZR-NB-95	< 2.1	
01-Jun-23	I-131	< 0.327	
01-Jun-23	I-131	< 0.327	
01-Jun-23	CS-134	< 2.8	
01-Jun-23	CS-134	< 2.8	
01-Jun-23	CS-137	< 3.1	
01-Jun-23	CS-137	< 3.1	
01-Jun-23	BA-LA-140	< 2.3	
01-Jun-23	BA-LA-140	< 2.3	
01-Jun-23	GROSS BETA	2.978 +/- 0.729	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
01-Jun-23	GROSS BETA	2.978 +/- 0.729	
03-Jul-23	MN-54	< 1.7	
03-Jul-23	CO-58	< 2.2	
03-Jul-23	FE-59	< 4.6	
03-Jul-23	CO-60	< 6.3	
03-Jul-23	ZN-65	< 3.0	
03-Jul-23	ZR-NB-95	< 3.4	
03-Jul-23	I-131	< 0.293	
03-Jul-23	CS-134	< 3.5	
03-Jul-23	CS-137	< 5.4	
03-Jul-23	BA-LA-140	< 3.8	
03-Jul-23	GROSS BETA	3.772 +/- 0.802	
03-Aug-23	MN-54	< 5.4	
03-Aug-23	CO-58	< 5.2	
03-Aug-23	FE-59	< 5.9	
03-Aug-23	CO-60	< 5.1	
03-Aug-23	ZN-65	< 9.8	
03-Aug-23	ZR-NB-95	< 4.4	
03-Aug-23	I-131	< 0.435	
03-Aug-23	CS-134	< 6.6	
03-Aug-23	CS-137	< 5.4	
03-Aug-23	BA-LA-140	< 4.9	
03-Aug-23	GROSS BETA	2.614 +/- 0.664	
05-Sep-23	MN-54	< 8.9	
05-Sep-23	MN-54	< 5.0	Duplicate
05-Sep-23	CO-58	< 10.2	
05-Sep-23	CO-58	< 4.0	Duplicate
05-Sep-23	FE-59	< 11.6	
05-Sep-23	FE-59	< 4.9	Duplicate
05-Sep-23	CO-60	< 7.1	
05-Sep-23	CO-60	< 9.1	Duplicate
05-Sep-23	ZN-65	< 12.3	
05-Sep-23	ZN-65	< 4.5	Duplicate
05-Sep-23	ZR-NB-95	< 4.8	
05-Sep-23	ZR-NB-95	< 3.9	Duplicate
05-Sep-23	I-131	< 0.43	
05-Sep-23	CS-134	< 12.5	
05-Sep-23	CS-134	< 5.1	Duplicate

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
05-Sep-23	CS-137	< 6.7	
05-Sep-23	CS-137	< 8.2	Duplicate
05-Sep-23	BA-LA-140	< 8.8	
05-Sep-23	BA-LA-140	< 4.5	Duplicate
05-Sep-23	GROSS BETA	2.617 +/- 0.672	
05-Sep-23	GROSS BETA	3.266 +/- 0.701	Duplicate
04-Oct-23	MN-54	< 8.4	
04-Oct-23	CO-58	< 9.5	
04-Oct-23	FE-59	< 7.8	
04-Oct-23	CO-60	< 8.4	
04-Oct-23	ZN-65	< 8.2	
04-Oct-23	ZR-NB-95	< 10.2	
04-Oct-23	I-131	< 0.484	
04-Oct-23	CS-134	< 10.9	
04-Oct-23	CS-137	< 5.7	
04-Oct-23	BA-LA-140	< 7.1	
04-Oct-23	GROSS BETA	3.459 +/- 0.728	
06-Nov-23	MN-54	< 2.9	
06-Nov-23	CO-58	< 1.6	
06-Nov-23	FE-59	< 4.0	
06-Nov-23	CO-60	< 2.3	
06-Nov-23	ZN-65	< 6.5	
06-Nov-23	ZR-NB-95	< 3.0	
06-Nov-23	I-131	< 0.447	
06-Nov-23	CS-134	< 3.4	
06-Nov-23	CS-137	< 3.5	
06-Nov-23	BA-LA-140	< 2.6	
06-Nov-23	GROSS BETA	3.606 +/- 0.76	
05-Dec-23	MN-54	< 3.4	
05-Dec-23	CO-58	< 4.0	
05-Dec-23	FE-59	< 5.4	
05-Dec-23	CO-60	< 6.2	
05-Dec-23	ZN-65	< 2.7	
05-Dec-23	ZR-NB-95	< 4.4	
05-Dec-23	I-131	< 0.486	
05-Dec-23	CS-134	< 4.6	
05-Dec-23	CS-137	< 7.0	
05-Dec-23	BA-LA-140	< 3.5	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
05-Dec-23	GROSS BETA	4.318 +/- 0.799	
03-Jan-24	MN-54	< 2.7	
03-Jan-24	CO-58	< 2.1	
03-Jan-24	FE-59	< 5.3	
03-Jan-24	CO-60	< 2.2	
03-Jan-24	ZN-65	< 4.1	
03-Jan-24	ZR-NB-95	< 2.7	
03-Jan-24	I-131	< 0.441	
03-Jan-24	CS-134	< 2.3	
03-Jan-24	CS-137	< 1.9	
03-Jan-24	BA-LA-140	< 2.6	
03-Jan-24	GROSS BETA	2.695 +/- 0.723	

Exposure Pathway - Waterborne
Drinking Water
Quarterly Tritium Analysis
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
04-Jan-23	H-3	<	157	
04-Apr-23	H-3	<	173	
03-Jul-23	H-3	<	158	
03-Jul-23	H-3	<	158	
04-Oct-23	H-3	<	170	
03-Jan-24	H-3	<	169	

Exposure Pathway - Waterborne
Drinking Water
Quarterly Tritium Analysis
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
04-Jan-23	H-3	194 +/- 84	
04-Jan-23	H-3	< 157	
02-Feb-23	H-3	313 +/- 96	
02-Mar-23	H-3	< 163	
04-Apr-23	H-3	< 173	
04-Apr-23	H-3	< 173	
02-May-23	H-3	< 162	
01-Jun-23	H-3	< 157	
01-Jun-23	H-3	< 157	
03-Jul-23	H-3	< 158	
03-Jul-23	H-3	< 158	
03-Jul-23	H-3	< 158	
03-Aug-23	H-3	< 159	
05-Sep-23	H-3	< 160	
04-Oct-23	H-3	< 170	
04-Oct-23	H-3	< 170	
06-Nov-23	H-3	< 171	
05-Dec-23	H-3	< 171	
03-Jan-24	H-3	< 169	

Exposure Pathway - Waterborne
Shoreline Sediment
Location: DC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
17-May-23	SHORELINE SEDIMENTS	K-40	6,949.9 +/-	478.0	
17-May-23	SHORELINE SEDIMENTS	MN-54	<	22.4	
17-May-23	SHORELINE SEDIMENTS	CO-58	<	14.7	
17-May-23	SHORELINE SEDIMENTS	FE-59	<	21.4	
17-May-23	SHORELINE SEDIMENTS	CO-60	<	15.9	
17-May-23	SHORELINE SEDIMENTS	ZN-65	<	34.4	
17-May-23	SHORELINE SEDIMENTS	CS-134	<	17.8	
17-May-23	SHORELINE SEDIMENTS	CS-137	<	13.4	
17-May-23	SHORELINE SEDIMENTS	FE-55	<	16,034.0	
17-May-23	SHORELINE SEDIMENTS	NI-63	<	148.3	
17-May-23	SHORELINE SEDIMENTS	SR-89	<	43.9	
17-May-23	SHORELINE SEDIMENTS	SR-90	<	37.6	
02-Nov-23	SHORELINE SEDIMENTS	K-40	5,126.1 +/-	304.3	
02-Nov-23	SHORELINE SEDIMENTS	K-40	5,126.1 +/-	304.3	
02-Nov-23	SHORELINE SEDIMENTS	MN-54	<	10.5	
02-Nov-23	SHORELINE SEDIMENTS	MN-54	<	10.5	
02-Nov-23	SHORELINE SEDIMENTS	CO-58	<	8.4	
02-Nov-23	SHORELINE SEDIMENTS	CO-58	<	8.4	
02-Nov-23	SHORELINE SEDIMENTS	FE-59	<	22.6	
02-Nov-23	SHORELINE SEDIMENTS	FE-59	<	22.6	
02-Nov-23	SHORELINE SEDIMENTS	CO-60	<	11.0	
02-Nov-23	SHORELINE SEDIMENTS	CO-60	<	11.0	
02-Nov-23	SHORELINE SEDIMENTS	ZN-65	<	22.6	
02-Nov-23	SHORELINE SEDIMENTS	ZN-65	<	22.6	
02-Nov-23	SHORELINE SEDIMENTS	CS-134	<	10.0	
02-Nov-23	SHORELINE SEDIMENTS	CS-134	<	10.0	
02-Nov-23	SHORELINE SEDIMENTS	CS-137	<	12.2	
02-Nov-23	SHORELINE SEDIMENTS	CS-137	<	12.2	
02-Nov-23	SHORELINE SEDIMENTS	SR-89	<	47.0	
02-Nov-23	SHORELINE SEDIMENTS	SR-89	<	47.0	
02-Nov-23	SHORELINE SEDIMENTS	SR-90	<	44.4	
02-Nov-23	SHORELINE SEDIMENTS	NI-63	<	1,433.5	
02-Nov-23	SHORELINE SEDIMENTS	SR-90	<	44.4	
02-Nov-23	SHORELINE SEDIMENTS	FE-55	<	20,459.0	
02-Nov-23	SHORELINE SEDIMENTS	FE-55	<	20,459.0	
02-Nov-23	SHORELINE SEDIMENTS	NI-63	<	1,433.5	

Exposure Pathway - Waterborne
Shoreline Sediment
Location: EEA

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
15-Dec-23	SHORELINE SEDIMENTS	K-40	12,845.0 +/-	709.6	
15-Dec-23	SHORELINE SEDIMENTS	K-40	12,489.0 +/-	411.4	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	MN-54	<	19.1	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	MN-54	<	28.0	
15-Dec-23	SHORELINE SEDIMENTS	CO-58	<	23.2	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	CO-58	<	26.4	
15-Dec-23	SHORELINE SEDIMENTS	FE-59	<	58.1	
15-Dec-23	SHORELINE SEDIMENTS	FE-59	<	46.9	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	CO-60	<	10.4	
15-Dec-23	SHORELINE SEDIMENTS	CO-60	<	16.0	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	ZN-65	<	33.8	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	ZN-65	<	55.4	
15-Dec-23	SHORELINE SEDIMENTS	CS-134	<	13.7	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	CS-134	<	16.2	
15-Dec-23	SHORELINE SEDIMENTS	CS-137	<	15.2	Duplicate
15-Dec-23	SHORELINE SEDIMENTS	CS-137	<	21.2	

Exposure Pathway - Waterborne
Shoreline Sediment
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
20-Jun-23	SHORELINE SEDIMENTS	K-40	10,702.0 +/-	980.6	
20-Jun-23	SHORELINE SEDIMENTS	MN-54	<	36.3	
20-Jun-23	SHORELINE SEDIMENTS	CO-58	<	65.4	
20-Jun-23	SHORELINE SEDIMENTS	FE-59	<	190.5	
20-Jun-23	SHORELINE SEDIMENTS	CO-60	<	22.9	
20-Jun-23	SHORELINE SEDIMENTS	ZN-65	<	107.4	
20-Jun-23	SHORELINE SEDIMENTS	CS-134	<	39.6	
20-Jun-23	SHORELINE SEDIMENTS	CS-137	<	33.6	
04-Dec-23	SHORELINE SEDIMENTS	K-40	11,508.0 +/-	379.9	Duplicate
04-Dec-23	SHORELINE SEDIMENTS	K-40	10,684.0 +/-	448.9	
04-Dec-23	SHORELINE SEDIMENTS	MN-54	<	17.5	Duplicate
04-Dec-23	SHORELINE SEDIMENTS	MN-54	<	20.6	
04-Dec-23	SHORELINE SEDIMENTS	CO-58	<	27.5	
04-Dec-23	SHORELINE SEDIMENTS	CO-58	<	20.0	Duplicate
04-Dec-23	SHORELINE SEDIMENTS	FE-59	<	62.1	
04-Dec-23	SHORELINE SEDIMENTS	FE-59	<	59.7	Duplicate
04-Dec-23	SHORELINE SEDIMENTS	CO-60	<	16.6	
04-Dec-23	SHORELINE SEDIMENTS	CO-60	<	16.0	Duplicate
04-Dec-23	SHORELINE SEDIMENTS	ZN-65	<	37.5	
04-Dec-23	SHORELINE SEDIMENTS	ZN-65	<	38.2	Duplicate
04-Dec-23	SHORELINE SEDIMENTS	CS-134	<	13.3	
04-Dec-23	SHORELINE SEDIMENTS	CS-134	<	15.9	Duplicate
04-Dec-23	SHORELINE SEDIMENTS	CS-137	<	20.3	
04-Dec-23	SHORELINE SEDIMENTS	CS-137	<	14.4	Duplicate

Exposure Pathway - Waterborne
Shoreline Sediment
Location: SC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
28-Jul-23	SHORELINE SEDIMENTS	K-40	12,597.0 +/-	902.2	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	K-40	12,403.0 +/-	988.4	
28-Jul-23	SHORELINE SEDIMENTS	MN-54	<	45.1	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	MN-54	<	55.1	
28-Jul-23	SHORELINE SEDIMENTS	CO-58	<	38.6	
28-Jul-23	SHORELINE SEDIMENTS	CO-58	<	75.1	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	FE-59	<	149.1	
28-Jul-23	SHORELINE SEDIMENTS	FE-59	<	139.7	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	CO-60	<	33.4	
28-Jul-23	SHORELINE SEDIMENTS	CO-60	<	49.1	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	ZN-65	<	70.7	
28-Jul-23	SHORELINE SEDIMENTS	ZN-65	<	78.2	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	CS-134	<	40.4	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	CS-134	<	28.4	
28-Jul-23	SHORELINE SEDIMENTS	CS-137	<	42.9	Duplicate
28-Jul-23	SHORELINE SEDIMENTS	CS-137	<	46.9	

Exposure Pathway - Ingestion
Fish
Location: CCL

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
03-May-23	CATFISH	K-40	3,810.5 +/-	400.7	
03-May-23	CATFISH	MN-54	<	10.8	
03-May-23	CATFISH	CO-58	<	11.3	
03-May-23	CATFISH	FE-59	<	35.9	
03-May-23	CATFISH	CO-60	<	11.7	
03-May-23	CATFISH	ZN-65	<	26.7	
03-May-23	CATFISH	I-131	<	36.7	
03-May-23	CATFISH	CS-134	<	15.6	
03-May-23	CATFISH	CS-137	<	7.9	
03-May-23	CATFISH	H-3	10,229.0 +/-	291.0	
03-May-23	COMMON CARP	K-40	3,166.9 +/-	208.6	
03-May-23	COMMON CARP	MN-54	<	7.7	
03-May-23	COMMON CARP	CO-58	<	8.8	
03-May-23	COMMON CARP	FE-59	<	17.6	
03-May-23	COMMON CARP	CO-60	<	9.2	
03-May-23	COMMON CARP	ZN-65	<	12.9	
03-May-23	COMMON CARP	I-131	<	37.2	
03-May-23	COMMON CARP	CS-134	<	7.3	
03-May-23	COMMON CARP	CS-137	<	7.3	
03-May-23	COMMON CARP	H-3	10,538.0 +/-	294.0	
03-May-23	DRUM	K-40	3,128.6 +/-	213.3	
03-May-23	DRUM	MN-54	<	11.0	
03-May-23	DRUM	CO-58	<	6.1	
03-May-23	DRUM	FE-59	<	24.0	
03-May-23	DRUM	CO-60	<	9.0	
03-May-23	DRUM	ZN-65	<	13.5	
03-May-23	DRUM	I-131	<	47.0	
03-May-23	DRUM	CS-134	<	8.5	
03-May-23	DRUM	CS-137	<	8.7	
03-May-23	DRUM	H-3	8,410.0 +/-	262.0	
03-May-23	SMALLMOUTH BUFFALO	K-40	3,474.1 +/-	145.9	
03-May-23	SMALLMOUTH BUFFALO	MN-54	<	7.2	
03-May-23	SMALLMOUTH BUFFALO	CO-58	<	6.4	
03-May-23	SMALLMOUTH BUFFALO	FE-59	<	16.1	
03-May-23	SMALLMOUTH BUFFALO	CO-60	<	11.4	
03-May-23	SMALLMOUTH BUFFALO	ZN-65	<	12.4	
03-May-23	SMALLMOUTH BUFFALO	I-131	<	35.9	
03-May-23	SMALLMOUTH BUFFALO	CS-134	<	6.1	

Exposure Pathway - Ingestion
Fish
Location: CCL

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
03-May-23	SMALLMOUTH BUFFALO	CS-137	<	9.6	
03-May-23	SMALLMOUTH BUFFALO	H-3	9,056.0 +/-	272.0	
03-May-23	WHITE BASS	K-40	3,399.4 +/-	164.7	
03-May-23	WHITE BASS	MN-54	<	7.4	
03-May-23	WHITE BASS	CO-58	<	6.8	
03-May-23	WHITE BASS	FE-59	<	17.1	
03-May-23	WHITE BASS	CO-60	<	7.5	
03-May-23	WHITE BASS	ZN-65	<	15.9	
03-May-23	WHITE BASS	I-131	<	38.2	
03-May-23	WHITE BASS	CS-134	<	7.1	
03-May-23	WHITE BASS	CS-137	<	7.3	
03-May-23	WHITE BASS	H-3	10,044.0 +/-	291.0	
08-Nov-23	BLUE CATFISH	K-40	3,457.5 +/-	330.0	
08-Nov-23	BLUE CATFISH	MN-54	<	11.2	
08-Nov-23	BLUE CATFISH	CO-58	<	9.9	
08-Nov-23	BLUE CATFISH	FE-59	<	21.2	
08-Nov-23	BLUE CATFISH	CO-60	<	26.1	
08-Nov-23	BLUE CATFISH	ZN-65	<	25.1	
08-Nov-23	BLUE CATFISH	I-131	<	62.0	
08-Nov-23	BLUE CATFISH	CS-134	<	14.0	
08-Nov-23	BLUE CATFISH	CS-137	<	21.1	
08-Nov-23	BLUE CATFISH	H-3	8,823.0 +/-	267.0	
08-Nov-23	CHANNEL CATFISH	K-40	2,920.5 +/-	353.9	
08-Nov-23	CHANNEL CATFISH	MN-54	<	14.3	
08-Nov-23	CHANNEL CATFISH	CO-58	<	8.0	
08-Nov-23	CHANNEL CATFISH	FE-59	<	29.6	
08-Nov-23	CHANNEL CATFISH	CO-60	<	12.7	
08-Nov-23	CHANNEL CATFISH	ZN-65	<	30.2	
08-Nov-23	CHANNEL CATFISH	I-131	<	65.3	
08-Nov-23	CHANNEL CATFISH	CS-134	<	11.8	
08-Nov-23	CHANNEL CATFISH	CS-137	<	14.0	
08-Nov-23	CHANNEL CATFISH	H-3	9,140.0 +/-	275.0	
08-Nov-23	CRAPPIE	K-40	2,877.1 +/-	353.1	
08-Nov-23	CRAPPIE	MN-54	<	14.3	
08-Nov-23	CRAPPIE	CO-58	<	14.1	
08-Nov-23	CRAPPIE	FE-59	<	33.5	
08-Nov-23	CRAPPIE	CO-60	<	14.4	
08-Nov-23	CRAPPIE	ZN-65	<	39.6	

Exposure Pathway - Ingestion
Fish
Location: CCL

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
08-Nov-23	CRAPPIE	I-131	<	74.5	
08-Nov-23	CRAPPIE	CS-134	<	12.3	
08-Nov-23	CRAPPIE	CS-137	<	11.6	
08-Nov-23	CRAPPIE	H-3	7,338.0 +/-	245.0	

Exposure Pathway - Ingestion
Fish
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
22-Mar-23	BIGMOUTH BUFFALO	K-40	2,637.5 +/-	296.8	
22-Mar-23	BIGMOUTH BUFFALO	MN-54	<	8.4	
22-Mar-23	BIGMOUTH BUFFALO	CO-58	<	10.6	
22-Mar-23	BIGMOUTH BUFFALO	FE-59	<	25.2	
22-Mar-23	BIGMOUTH BUFFALO	CO-60	<	13.6	
22-Mar-23	BIGMOUTH BUFFALO	ZN-65	<	21.3	
22-Mar-23	BIGMOUTH BUFFALO	I-131	<	57.1	
22-Mar-23	BIGMOUTH BUFFALO	CS-134	<	11.8	
22-Mar-23	BIGMOUTH BUFFALO	CS-137	<	13.9	
22-Mar-23	BIGMOUTH BUFFALO	H-3	<	120.0	
22-Mar-23	CHANNEL CATFISH	K-40	3,379.1 +/-	264.6	
22-Mar-23	CHANNEL CATFISH	MN-54	<	13.2	
22-Mar-23	CHANNEL CATFISH	CO-58	<	8.0	
22-Mar-23	CHANNEL CATFISH	FE-59	<	33.3	
22-Mar-23	CHANNEL CATFISH	CO-60	<	7.6	
22-Mar-23	CHANNEL CATFISH	ZN-65	<	25.0	
22-Mar-23	CHANNEL CATFISH	I-131	<	86.2	
22-Mar-23	CHANNEL CATFISH	CS-134	<	11.8	
22-Mar-23	CHANNEL CATFISH	CS-137	<	12.1	
22-Mar-23	CHANNEL CATFISH	H-3	<	127.0	
22-Mar-23	COMMON CARP	K-40	2,878.5 +/-	300.1	
22-Mar-23	COMMON CARP	MN-54	<	10.4	
22-Mar-23	COMMON CARP	CO-58	<	13.7	
22-Mar-23	COMMON CARP	FE-59	<	12.6	
22-Mar-23	COMMON CARP	CO-60	<	24.6	
22-Mar-23	COMMON CARP	ZN-65	<	30.9	
22-Mar-23	COMMON CARP	I-131	<	86.1	
22-Mar-23	COMMON CARP	CS-134	<	12.8	
22-Mar-23	COMMON CARP	CS-137	<	22.0	
22-Mar-23	COMMON CARP	H-3	<	126.0	
22-Mar-23	CRAPPIE	K-40	3,382.4 +/-	326.7	
22-Mar-23	CRAPPIE	MN-54	<	8.6	
22-Mar-23	CRAPPIE	CO-58	<	12.8	
22-Mar-23	CRAPPIE	FE-59	<	16.0	
22-Mar-23	CRAPPIE	CO-60	<	28.1	
22-Mar-23	CRAPPIE	ZN-65	<	21.1	
22-Mar-23	CRAPPIE	I-131	<	88.0	
22-Mar-23	CRAPPIE	CS-134	<	12.5	

Exposure Pathway - Ingestion
Fish
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
22-Mar-23	CRAPPIE	CS-137	<	21.9	
22-Mar-23	CRAPPIE	H-3	<	130.0	
22-Mar-23	DRUM	K-40	3,112.9 +/-	180.6	
22-Mar-23	DRUM	MN-54	<	4.2	
22-Mar-23	DRUM	CO-58	<	4.9	
22-Mar-23	DRUM	FE-59	<	11.9	
22-Mar-23	DRUM	CO-60	<	6.4	
22-Mar-23	DRUM	ZN-65	<	9.4	
22-Mar-23	DRUM	I-131	<	47.3	
22-Mar-23	DRUM	CS-134	<	6.7	
22-Mar-23	DRUM	CS-137	<	4.2	
22-Mar-23	DRUM	H-3	<	130.0	
22-Mar-23	GRASS CARP	K-40	3,033.4 +/-	125.6	
22-Mar-23	GRASS CARP	MN-54	<	5.3	
22-Mar-23	GRASS CARP	CO-58	<	5.6	
22-Mar-23	GRASS CARP	FE-59	<	14.3	
22-Mar-23	GRASS CARP	CO-60	<	6.2	
22-Mar-23	GRASS CARP	ZN-65	<	10.3	
22-Mar-23	GRASS CARP	I-131	<	59.8	
22-Mar-23	GRASS CARP	CS-134	<	4.4	
22-Mar-23	GRASS CARP	CS-137	<	4.9	
22-Mar-23	GRASS CARP	H-3	<	128.0	
22-Mar-23	LARGEMOUTH BASS	K-40	3,155.1 +/-	315.2	
22-Mar-23	LARGEMOUTH BASS	MN-54	<	9.3	
22-Mar-23	LARGEMOUTH BASS	CO-58	<	11.6	
22-Mar-23	LARGEMOUTH BASS	FE-59	<	21.6	
22-Mar-23	LARGEMOUTH BASS	CO-60	<	26.7	
22-Mar-23	LARGEMOUTH BASS	ZN-65	<	25.4	
22-Mar-23	LARGEMOUTH BASS	I-131	<	91.3	
22-Mar-23	LARGEMOUTH BASS	CS-134	<	13.3	
22-Mar-23	LARGEMOUTH BASS	CS-137	<	21.8	
22-Mar-23	LARGEMOUTH BASS	H-3	<	128.0	
22-Mar-23	SMALLMOUTH BUFFALO	K-40	2,913.4 +/-	322.0	
22-Mar-23	SMALLMOUTH BUFFALO	K-40	3,046.1 +/-	131.8	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	MN-54	<	5.7	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	MN-54	<	7.7	
22-Mar-23	SMALLMOUTH BUFFALO	CO-58	<	4.1	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	CO-58	<	7.2	

Exposure Pathway - Ingestion
Fish
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
22-Mar-23	SMALLMOUTH BUFFALO	FE-59	<	18.6	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	FE-59	<	19.2	
22-Mar-23	SMALLMOUTH BUFFALO	CO-60	<	12.5	
22-Mar-23	SMALLMOUTH BUFFALO	CO-60	<	10.6	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	ZN-65	<	23.1	
22-Mar-23	SMALLMOUTH BUFFALO	ZN-65	<	12.1	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	I-131	<	81.3	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	I-131	<	55.8	
22-Mar-23	SMALLMOUTH BUFFALO	CS-134	<	10.9	
22-Mar-23	SMALLMOUTH BUFFALO	CS-134	<	5.4	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	CS-137	<	13.3	
22-Mar-23	SMALLMOUTH BUFFALO	CS-137	<	9.4	Duplicate
22-Mar-23	SMALLMOUTH BUFFALO	H-3	<	131.0	
22-Mar-23	SMALLMOUTH BUFFALO	H-3	<	131.0	Duplicate
07-Nov-23	BLUE CATFISH	K-40	2,893.0 +/-	264.4	
07-Nov-23	BLUE CATFISH	MN-54	<	7.5	
07-Nov-23	BLUE CATFISH	CO-58	<	7.9	
07-Nov-23	BLUE CATFISH	FE-59	<	25.2	
07-Nov-23	BLUE CATFISH	CO-60	<	13.9	
07-Nov-23	BLUE CATFISH	ZN-65	<	22.8	
07-Nov-23	BLUE CATFISH	I-131	<	54.4	
07-Nov-23	BLUE CATFISH	CS-134	<	9.9	
07-Nov-23	BLUE CATFISH	CS-137	<	11.2	
07-Nov-23	BLUE CATFISH	H-3	149.0 +/-	70.0	
07-Nov-23	CHANNEL CATFISH	K-40	3,342.5 +/-	305.1	
07-Nov-23	CHANNEL CATFISH	MN-54	<	11.4	
07-Nov-23	CHANNEL CATFISH	CO-58	<	12.9	
07-Nov-23	CHANNEL CATFISH	FE-59	<	18.2	
07-Nov-23	CHANNEL CATFISH	CO-60	<	8.8	
07-Nov-23	CHANNEL CATFISH	ZN-65	<	23.6	
07-Nov-23	CHANNEL CATFISH	I-131	<	68.9	
07-Nov-23	CHANNEL CATFISH	CS-134	<	11.6	
07-Nov-23	CHANNEL CATFISH	CS-137	<	10.0	
07-Nov-23	CHANNEL CATFISH	H-3	<	139.0	
07-Nov-23	CRAPPIE	K-40	3,542.8 +/-	326.4	
07-Nov-23	CRAPPIE	MN-54	<	10.0	
07-Nov-23	CRAPPIE	CO-58	<	13.1	
07-Nov-23	CRAPPIE	FE-59	<	30.4	

Exposure Pathway - Ingestion
Fish
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
07-Nov-23	CRAPPIE	CO-60	<	22.7	
07-Nov-23	CRAPPIE	ZN-65	<	32.5	
07-Nov-23	CRAPPIE	I-131	<	86.6	
07-Nov-23	CRAPPIE	CS-134	<	13.0	
07-Nov-23	CRAPPIE	CS-137	<	19.7	
07-Nov-23	CRAPPIE	H-3	<	135.0	

Exposure Pathway - Ingestion
Food/Garden
Location: A-3

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
15-May-23	HORSERADISH LEAVES	BE-7	430.3 +/-	167.4	
15-May-23	HORSERADISH LEAVES	K-40	4,699.0 +/-	538.2	
15-May-23	HORSERADISH LEAVES	MN-54	<	23.2	
15-May-23	HORSERADISH LEAVES	CO-58	<	16.1	
15-May-23	HORSERADISH LEAVES	FE-59	<	44.7	
15-May-23	HORSERADISH LEAVES	CO-60	<	11.9	
15-May-23	HORSERADISH LEAVES	ZR-NB-95	<	24.0	
15-May-23	HORSERADISH LEAVES	I-131	<	28.4	
15-May-23	HORSERADISH LEAVES	CS-134	<	22.6	
15-May-23	HORSERADISH LEAVES	CS-137	<	28.2	
21-Jun-23	HORSERADISH LEAVES	BE-7	1,112.1 +/-	271.6	
21-Jun-23	HORSERADISH LEAVES	K-40	5,873.9 +/-	665.8	
21-Jun-23	HORSERADISH LEAVES	MN-54	<	20.0	
21-Jun-23	HORSERADISH LEAVES	CO-58	<	21.8	
21-Jun-23	HORSERADISH LEAVES	FE-59	<	47.4	
21-Jun-23	HORSERADISH LEAVES	CO-60	<	17.4	
21-Jun-23	HORSERADISH LEAVES	ZN-65	<	43.2	
21-Jun-23	HORSERADISH LEAVES	ZR-NB-95	<	25.0	
21-Jun-23	HORSERADISH LEAVES	I-131	<	44.1	
21-Jun-23	HORSERADISH LEAVES	CS-134	<	22.9	
21-Jun-23	HORSERADISH LEAVES	CS-137	<	18.8	
19-Jul-23	HORSERADISH LEAVES	BE-7	758.7 +/-	342.8	
19-Jul-23	HORSERADISH LEAVES	K-40	6,589.7 +/-	662.0	
19-Jul-23	HORSERADISH LEAVES	MN-54	<	15.0	
19-Jul-23	HORSERADISH LEAVES	CO-58	<	19.4	
19-Jul-23	HORSERADISH LEAVES	FE-59	<	67.6	
19-Jul-23	HORSERADISH LEAVES	CO-60	<	49.6	
19-Jul-23	HORSERADISH LEAVES	ZN-65	<	55.1	
19-Jul-23	HORSERADISH LEAVES	ZR-NB-95	<	16.2	
19-Jul-23	HORSERADISH LEAVES	I-131	<	43.6	
19-Jul-23	HORSERADISH LEAVES	CS-134	<	26.6	
19-Jul-23	HORSERADISH LEAVES	CS-137	<	47.1	
10-Aug-23	HORSERADISH LEAVES	BE-7	910.4 +/-	314.3	
10-Aug-23	HORSERADISH LEAVES	K-40	5,140.7 +/-	826.7	
10-Aug-23	HORSERADISH LEAVES	MN-54	<	29.1	
10-Aug-23	HORSERADISH LEAVES	CO-58	<	27.3	
10-Aug-23	HORSERADISH LEAVES	FE-59	<	35.9	
10-Aug-23	HORSERADISH LEAVES	CO-60	<	10.3	

Exposure Pathway - Ingestion
Food/Garden
Location: A-3

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
10-Aug-23	HORSERADISH LEAVES	ZN-65	<	34.2	
10-Aug-23	HORSERADISH LEAVES	ZR-NB-95	<	25.9	
10-Aug-23	HORSERADISH LEAVES	I-131	<	58.9	
10-Aug-23	HORSERADISH LEAVES	CS-134	<	33.9	
10-Aug-23	HORSERADISH LEAVES	CS-137	<	26.1	

Exposure Pathway - Ingestion
Food/Garden
Location: B-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
15-May-23	HORSERADISH LEAVES	BE-7	512.3 +/-	196.2	
15-May-23	HORSERADISH LEAVES	K-40	4,679.5 +/-	437.9	
15-May-23	HORSERADISH LEAVES	MN-54	<	14.7	
15-May-23	HORSERADISH LEAVES	CO-58	<	9.1	
15-May-23	HORSERADISH LEAVES	FE-59	<	32.4	
15-May-23	HORSERADISH LEAVES	CO-60	<	14.8	
15-May-23	HORSERADISH LEAVES	ZN-65	<	18.2	
15-May-23	HORSERADISH LEAVES	ZR-NB-95	<	21.1	
15-May-23	HORSERADISH LEAVES	I-131	<	28.5	
15-May-23	HORSERADISH LEAVES	CS-134	<	15.9	
15-May-23	HORSERADISH LEAVES	CS-137	<	15.2	
21-Jun-23	HORSERADISH LEAVES	BE-7	1,109.3 +/-	181.3	
21-Jun-23	HORSERADISH LEAVES	K-40	5,742.2 +/-	439.9	
21-Jun-23	HORSERADISH LEAVES	MN-54	<	17.2	
21-Jun-23	HORSERADISH LEAVES	CO-58	<	18.6	
21-Jun-23	HORSERADISH LEAVES	FE-59	<	18.0	
21-Jun-23	HORSERADISH LEAVES	CO-60	<	32.5	
21-Jun-23	HORSERADISH LEAVES	ZN-65	<	30.8	
21-Jun-23	HORSERADISH LEAVES	ZR-NB-95	<	22.6	
21-Jun-23	HORSERADISH LEAVES	I-131	<	26.0	
21-Jun-23	HORSERADISH LEAVES	CS-134	<	16.9	
21-Jun-23	HORSERADISH LEAVES	CS-137	<	29.1	
19-Jul-23	HORSERADISH LEAVES	BE-7	756.0 +/-	372.9	
19-Jul-23	HORSERADISH LEAVES	K-40	5,583.8 +/-	716.2	
19-Jul-23	HORSERADISH LEAVES	MN-54	<	24.6	
19-Jul-23	HORSERADISH LEAVES	CO-58	<	18.9	
19-Jul-23	HORSERADISH LEAVES	FE-59	<	56.4	
19-Jul-23	HORSERADISH LEAVES	CO-60	<	15.0	
19-Jul-23	HORSERADISH LEAVES	ZN-65	<	38.0	
19-Jul-23	HORSERADISH LEAVES	ZR-NB-95	<	23.3	
19-Jul-23	HORSERADISH LEAVES	I-131	<	49.5	
19-Jul-23	HORSERADISH LEAVES	CS-134	<	29.7	
19-Jul-23	HORSERADISH LEAVES	CS-137	<	27.6	
10-Aug-23	BROADLEAF	BE-7	1,284.5 +/-	292.2	
10-Aug-23	BROADLEAF	K-40	5,824.1 +/-	590.8	
10-Aug-23	BROADLEAF	MN-54	<	21.0	
10-Aug-23	BROADLEAF	CO-58	<	11.9	
10-Aug-23	BROADLEAF	FE-59	<	23.4	

Exposure Pathway - Ingestion
Food/Garden
Location: B-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
10-Aug-23	BROADLEAF	CO-60	<	39.1	
10-Aug-23	BROADLEAF	ZN-65	<	39.9	
10-Aug-23	BROADLEAF	ZR-NB-95	<	21.4	
10-Aug-23	BROADLEAF	I-131	<	39.5	
10-Aug-23	BROADLEAF	CS-134	<	22.0	
10-Aug-23	BROADLEAF	CS-137	<	34.8	
06-Sep-23	BROADLEAF	BE-7	<	476.9	
06-Sep-23	BROADLEAF	K-40	5,788.7 +/-	987.9	
06-Sep-23	BROADLEAF	MN-54	<	45.0	
06-Sep-23	BROADLEAF	CO-58	<	20.9	
06-Sep-23	BROADLEAF	FE-59	<	42.2	
06-Sep-23	BROADLEAF	CO-60	<	18.2	
06-Sep-23	BROADLEAF	ZN-65	<	57.2	
06-Sep-23	BROADLEAF	ZR-NB-95	<	35.8	
06-Sep-23	BROADLEAF	I-131	<	31.2	
06-Sep-23	BROADLEAF	CS-134	<	42.6	
06-Sep-23	BROADLEAF	CS-137	<	48.0	

Exposure Pathway - Ingestion
Food/Garden
Location: D-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
15-May-23	HORSERADISH LEAVES	BE-7	512.9 +/-	177.6	
15-May-23	HORSERADISH LEAVES	K-40	4,543.2 +/-	476.1	
15-May-23	HORSERADISH LEAVES	MN-54	<	18.5	
15-May-23	HORSERADISH LEAVES	CO-58	<	14.4	
15-May-23	HORSERADISH LEAVES	FE-59	<	35.2	
15-May-23	HORSERADISH LEAVES	CO-60	<	12.8	
15-May-23	HORSERADISH LEAVES	ZN-65	<	34.5	
15-May-23	HORSERADISH LEAVES	ZR-NB-95	<	15.1	
15-May-23	HORSERADISH LEAVES	I-131	<	38.9	
15-May-23	HORSERADISH LEAVES	CS-134	<	20.0	
15-May-23	HORSERADISH LEAVES	CS-137	<	21.8	
21-Jun-23	HORSERADISH LEAVES	BE-7	623.2 +/-	158.5	
21-Jun-23	HORSERADISH LEAVES	K-40	5,603.7 +/-	442.5	
21-Jun-23	HORSERADISH LEAVES	MN-54	<	13.6	
21-Jun-23	HORSERADISH LEAVES	CO-58	<	13.9	
21-Jun-23	HORSERADISH LEAVES	FE-59	<	25.6	
21-Jun-23	HORSERADISH LEAVES	CO-60	<	26.5	
21-Jun-23	HORSERADISH LEAVES	ZN-65	<	28.7	
21-Jun-23	HORSERADISH LEAVES	ZR-NB-95	<	14.1	
21-Jun-23	HORSERADISH LEAVES	I-131	<	31.0	
21-Jun-23	HORSERADISH LEAVES	CS-134	<	14.9	
21-Jun-23	HORSERADISH LEAVES	CS-137	<	26.0	
19-Jul-23	HORSERADISH LEAVES	BE-7	699.5 +/-	280.4	
19-Jul-23	HORSERADISH LEAVES	K-40	5,197.0 +/-	596.2	
19-Jul-23	HORSERADISH LEAVES	MN-54	<	24.6	
19-Jul-23	HORSERADISH LEAVES	CO-58	<	22.1	
19-Jul-23	HORSERADISH LEAVES	FE-59	<	57.5	
19-Jul-23	HORSERADISH LEAVES	CO-60	<	24.9	
19-Jul-23	HORSERADISH LEAVES	ZN-65	<	58.9	
19-Jul-23	HORSERADISH LEAVES	ZR-NB-95	<	14.5	
19-Jul-23	HORSERADISH LEAVES	I-131	<	48.7	
19-Jul-23	HORSERADISH LEAVES	CS-134	<	24.3	
19-Jul-23	HORSERADISH LEAVES	CS-137	<	22.4	
10-Aug-23	HORSERADISH LEAVES	BE-7	1,233.2 +/-	398.6	
10-Aug-23	HORSERADISH LEAVES	K-40	5,754.8 +/-	978.5	
10-Aug-23	HORSERADISH LEAVES	MN-54	<	34.7	
10-Aug-23	HORSERADISH LEAVES	CO-58	<	29.7	
10-Aug-23	HORSERADISH LEAVES	FE-59	<	49.9	

Exposure Pathway - Ingestion
Food/Garden
Location: D-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
10-Aug-23	HORSERADISH LEAVES	CO-60	<	21.4	
10-Aug-23	HORSERADISH LEAVES	ZN-65	<	38.0	
10-Aug-23	HORSERADISH LEAVES	ZR-NB-95	<	16.0	
10-Aug-23	HORSERADISH LEAVES	I-131	<	41.5	
10-Aug-23	HORSERADISH LEAVES	CS-134	<	30.3	
10-Aug-23	HORSERADISH LEAVES	CS-137	<	21.5	

Exposure Pathway - Ingestion
Food/Garden
Location: H-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
15-May-23	HORSERADISH LEAVES	BE-7	511.3 +/-	171.9	
15-May-23	HORSERADISH LEAVES	K-40	4,249.2 +/-	492.0	
15-May-23	HORSERADISH LEAVES	MN-54	<	24.2	
15-May-23	HORSERADISH LEAVES	CO-58	<	11.3	
15-May-23	HORSERADISH LEAVES	FE-59	<	41.3	
15-May-23	HORSERADISH LEAVES	CO-60	<	18.6	
15-May-23	HORSERADISH LEAVES	ZN-65	<	38.1	
15-May-23	HORSERADISH LEAVES	ZR-NB-95	<	23.2	
15-May-23	HORSERADISH LEAVES	I-131	<	31.1	
15-May-23	HORSERADISH LEAVES	CS-134	<	16.9	
15-May-23	HORSERADISH LEAVES	CS-137	<	23.4	
21-Jun-23	HORSERADISH LEAVES	BE-7	1,271.7 +/-	299.9	
21-Jun-23	HORSERADISH LEAVES	K-40	7,281.8 +/-	659.9	
21-Jun-23	HORSERADISH LEAVES	MN-54	<	25.7	
21-Jun-23	HORSERADISH LEAVES	CO-58	<	24.1	
21-Jun-23	HORSERADISH LEAVES	FE-59	<	33.9	
21-Jun-23	HORSERADISH LEAVES	CO-60	<	51.6	
21-Jun-23	HORSERADISH LEAVES	ZN-65	<	42.6	
21-Jun-23	HORSERADISH LEAVES	ZR-NB-95	<	24.6	
21-Jun-23	HORSERADISH LEAVES	I-131	<	56.2	
21-Jun-23	HORSERADISH LEAVES	CS-134	<	28.4	
21-Jun-23	HORSERADISH LEAVES	CS-137	<	46.9	
06-Sep-23	HORSERADISH LEAVES	BE-7	1,736.1 +/-	281.9	Duplicate
06-Sep-23	HORSERADISH LEAVES	BE-7	1,603.3 +/-	429.6	
06-Sep-23	HORSERADISH LEAVES	K-40	6,078.9 +/-	672.3	
06-Sep-23	HORSERADISH LEAVES	K-40	5,714.6 +/-	527.8	Duplicate
06-Sep-23	HORSERADISH LEAVES	MN-54	<	19.7	Duplicate
06-Sep-23	HORSERADISH LEAVES	MN-54	<	23.0	
06-Sep-23	HORSERADISH LEAVES	CO-58	<	19.5	
06-Sep-23	HORSERADISH LEAVES	CO-58	<	18.9	Duplicate
06-Sep-23	HORSERADISH LEAVES	FE-59	<	31.8	
06-Sep-23	HORSERADISH LEAVES	FE-59	<	20.7	Duplicate
06-Sep-23	HORSERADISH LEAVES	CO-60	<	38.1	Duplicate
06-Sep-23	HORSERADISH LEAVES	CO-60	<	54.4	
06-Sep-23	HORSERADISH LEAVES	ZN-65	<	61.5	
06-Sep-23	HORSERADISH LEAVES	ZN-65	<	37.7	Duplicate
06-Sep-23	HORSERADISH LEAVES	ZR-NB-95	<	17.7	Duplicate
06-Sep-23	HORSERADISH LEAVES	ZR-NB-95	<	15.3	

Exposure Pathway - Ingestion
Food/Garden
Location: H-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
06-Sep-23	HORSERADISH LEAVES	I-131	<	36.2	Duplicate
06-Sep-23	HORSERADISH LEAVES	I-131	<	36.7	
06-Sep-23	HORSERADISH LEAVES	CS-134	<	28.0	
06-Sep-23	HORSERADISH LEAVES	CS-134	<	22.5	Duplicate
06-Sep-23	HORSERADISH LEAVES	CS-137	<	36.2	Duplicate
06-Sep-23	HORSERADISH LEAVES	CS-137	<	49.2	

Exposure Pathway - Ingestion
Food/Garden
Location: Q-6

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
15-May-23	HORSERADISH LEAVES	BE-7	703.3 +/-	233.9	
15-May-23	HORSERADISH LEAVES	K-40	3,766.8 +/-	468.7	
15-May-23	HORSERADISH LEAVES	MN-54	<	13.8	
15-May-23	HORSERADISH LEAVES	CO-58	<	17.1	
15-May-23	HORSERADISH LEAVES	FE-59	<	36.7	
15-May-23	HORSERADISH LEAVES	CO-60	<	18.8	
15-May-23	HORSERADISH LEAVES	ZN-65	<	36.7	
15-May-23	HORSERADISH LEAVES	ZR-NB-95	<	11.5	
15-May-23	HORSERADISH LEAVES	I-131	<	31.8	
15-May-23	HORSERADISH LEAVES	CS-134	<	17.7	
15-May-23	HORSERADISH LEAVES	CS-137	<	18.1	
21-Jun-23	HORSERADISH LEAVES	BE-7	1,002.6 +/-	460.3	
21-Jun-23	HORSERADISH LEAVES	K-40	5,518.0 +/-	767.6	
21-Jun-23	HORSERADISH LEAVES	MN-54	<	32.0	
21-Jun-23	HORSERADISH LEAVES	CO-58	<	17.2	
21-Jun-23	HORSERADISH LEAVES	FE-59	<	36.1	
21-Jun-23	HORSERADISH LEAVES	CO-60	<	23.0	
21-Jun-23	HORSERADISH LEAVES	ZN-65	<	38.5	
21-Jun-23	HORSERADISH LEAVES	ZR-NB-95	<	19.8	
21-Jun-23	HORSERADISH LEAVES	I-131	<	58.1	
21-Jun-23	HORSERADISH LEAVES	CS-134	<	28.6	
21-Jun-23	HORSERADISH LEAVES	CS-137	<	34.5	
19-Jul-23	HORSERADISH LEAVES	BE-7	636.4 +/-	261.8	
19-Jul-23	HORSERADISH LEAVES	K-40	5,823.9 +/-	617.8	
19-Jul-23	HORSERADISH LEAVES	MN-54	<	14.8	
19-Jul-23	HORSERADISH LEAVES	CO-58	<	11.7	
19-Jul-23	HORSERADISH LEAVES	FE-59	<	27.0	
19-Jul-23	HORSERADISH LEAVES	CO-60	<	39.0	
19-Jul-23	HORSERADISH LEAVES	ZN-65	<	27.1	
19-Jul-23	HORSERADISH LEAVES	ZR-NB-95	<	13.4	
19-Jul-23	HORSERADISH LEAVES	I-131	<	46.1	
19-Jul-23	HORSERADISH LEAVES	CS-134	<	26.6	
19-Jul-23	HORSERADISH LEAVES	CS-137	<	40.1	
10-Aug-23	HORSERADISH LEAVES	BE-7	859.5 +/-	258.0	
10-Aug-23	HORSERADISH LEAVES	K-40	5,840.9 +/-	632.3	
10-Aug-23	HORSERADISH LEAVES	MN-54	<	16.8	
10-Aug-23	HORSERADISH LEAVES	CO-58	<	9.7	
10-Aug-23	HORSERADISH LEAVES	FE-59	<	27.0	

Exposure Pathway - Ingestion
Food/Garden
Location: Q-6

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
10-Aug-23	HORSERADISH LEAVES	CO-60	<	36.2	
10-Aug-23	HORSERADISH LEAVES	ZN-65	<	32.6	
10-Aug-23	HORSERADISH LEAVES	ZR-NB-95	<	15.7	
10-Aug-23	HORSERADISH LEAVES	I-131	<	35.0	
10-Aug-23	HORSERADISH LEAVES	CS-134	<	22.7	
10-Aug-23	HORSERADISH LEAVES	CS-137	<	35.4	
06-Sep-23	HORSERADISH LEAVES	BE-7	498.3 +/-	136.6	
06-Sep-23	HORSERADISH LEAVES	K-40	5,921.7 +/-	359.6	
06-Sep-23	HORSERADISH LEAVES	MN-54	<	14.0	
06-Sep-23	HORSERADISH LEAVES	CO-58	<	11.5	
06-Sep-23	HORSERADISH LEAVES	FE-59	<	13.8	
06-Sep-23	HORSERADISH LEAVES	CO-60	<	9.4	
06-Sep-23	HORSERADISH LEAVES	ZN-65	<	31.3	
06-Sep-23	HORSERADISH LEAVES	ZR-NB-95	<	11.6	
06-Sep-23	HORSERADISH LEAVES	I-131	<	10.6	
06-Sep-23	HORSERADISH LEAVES	CS-134	<	12.3	
06-Sep-23	HORSERADISH LEAVES	CS-137	<	14.2	

Exposure Pathway - Ingestion
Food/Crops
Location: NR-D1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
01-Oct-23	IRRIGATED CORN	BE-7	<	181.7	
01-Oct-23	IRRIGATED CORN	K-40	3,511.3 +/-	549.9	
01-Oct-23	IRRIGATED CORN	MN-54	<	13.0	
01-Oct-23	IRRIGATED CORN	CO-58	<	11.8	
01-Oct-23	IRRIGATED CORN	FE-59	<	27.0	
01-Oct-23	IRRIGATED CORN	CO-60	<	13.5	
01-Oct-23	IRRIGATED CORN	ZN-65	<	42.0	
01-Oct-23	IRRIGATED CORN	ZR-NB-95	<	20.3	
01-Oct-23	IRRIGATED CORN	I-131	<	42.5	
01-Oct-23	IRRIGATED CORN	CS-134	<	22.1	
01-Oct-23	IRRIGATED CORN	CS-137	<	11.5	

Exposure Pathway - Ingestion
Food/Crops
Location: NR-D2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
06-Nov-23	IRRGATED SOYBEANS	BE-7	<	144.1	
06-Nov-23	IRRGATED SOYBEANS	K-40	17,446.0 +/-	1,035.0	
06-Nov-23	IRRGATED SOYBEANS	MN-54	<	22.0	
06-Nov-23	IRRGATED SOYBEANS	CO-58	<	24.9	
06-Nov-23	IRRGATED SOYBEANS	FE-59	<	43.3	
06-Nov-23	IRRGATED SOYBEANS	CO-60	<	17.9	
06-Nov-23	IRRGATED SOYBEANS	ZN-65	<	94.9	
06-Nov-23	IRRGATED SOYBEANS	ZR-NB-95	<	27.5	
06-Nov-23	IRRGATED SOYBEANS	I-131	<	49.3	
06-Nov-23	IRRGATED SOYBEANS	CS-134	<	27.5	
06-Nov-23	IRRGATED SOYBEANS	CS-137	<	19.3	

Exposure Pathway - Ingestion
Food/Crops
Location: NR-U1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
26-Sep-23	IRRIGATED CORN	BE-7	<	129.9	
26-Sep-23	IRRIGATED CORN	BE-7	<	145.8	Duplicate
26-Sep-23	IRRIGATED CORN	K-40	3,364.7 +/-	367.9	
26-Sep-23	IRRIGATED CORN	K-40	3,275.1 +/-	443.2	Duplicate
26-Sep-23	IRRIGATED CORN	MN-54	<	5.0	
26-Sep-23	IRRIGATED CORN	MN-54	<	9.0	Duplicate
26-Sep-23	IRRIGATED CORN	CO-58	<	10.1	
26-Sep-23	IRRIGATED CORN	CO-58	<	10.5	Duplicate
26-Sep-23	IRRIGATED CORN	FE-59	<	18.2	
26-Sep-23	IRRIGATED CORN	FE-59	<	34.7	Duplicate
26-Sep-23	IRRIGATED CORN	CO-60	<	7.2	Duplicate
26-Sep-23	IRRIGATED CORN	CO-60	<	20.5	
26-Sep-23	IRRIGATED CORN	ZN-65	<	26.9	Duplicate
26-Sep-23	IRRIGATED CORN	ZN-65	<	10.3	
26-Sep-23	IRRIGATED CORN	ZR-NB-95	<	9.4	
26-Sep-23	IRRIGATED CORN	ZR-NB-95	<	16.8	Duplicate
26-Sep-23	IRRIGATED CORN	I-131	<	31.5	Duplicate
26-Sep-23	IRRIGATED CORN	I-131	<	21.9	
26-Sep-23	IRRIGATED CORN	CS-134	<	17.1	Duplicate
26-Sep-23	IRRIGATED CORN	CS-134	<	11.9	
26-Sep-23	IRRIGATED CORN	CS-137	<	17.6	
26-Sep-23	IRRIGATED CORN	CS-137	<	11.4	Duplicate
10-Oct-23	IRRIGATED SOYBEAN	BE-7	<	188.8	
10-Oct-23	IRRIGATED SOYBEAN	K-40	15,062.0 +/-	1,075.0	
10-Oct-23	IRRIGATED SOYBEAN	MN-54	<	15.1	
10-Oct-23	IRRIGATED SOYBEAN	CO-58	<	14.8	
10-Oct-23	IRRIGATED SOYBEAN	CO-60	<	31.9	
10-Oct-23	IRRIGATED SOYBEAN	ZN-65	<	68.9	
10-Oct-23	IRRIGATED SOYBEAN	ZR-NB-95	<	14.5	
10-Oct-23	IRRIGATED SOYBEAN	I-131	<	56.9	
10-Oct-23	IRRIGATED SOYBEAN	CS-134	<	21.7	
10-Oct-23	IRRIGATED SOYBEAN	CS-137	<	15.3	
10-Oct-23	IRRIGATED SOYBEAN	FE-55	<	36.3	

Exposure Pathway - Aquatic Vegetation
Location: EEA

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
12-Jul-23	ARROWHEAD	BE-7	<	229.9	
12-Jul-23	ARROWHEAD	K-40	6,699.3 +/-	739.5	
12-Jul-23	ARROWHEAD	MN-54	<	25.1	
12-Jul-23	ARROWHEAD	CO-58	<	16.7	
12-Jul-23	ARROWHEAD	FE-59	<	41.7	
12-Jul-23	ARROWHEAD	CO-60	<	26.9	
12-Jul-23	ARROWHEAD	ZN-65	<	55.6	
12-Jul-23	ARROWHEAD	ZR-NB-95	<	28.5	
12-Jul-23	ARROWHEAD	I-131	<	58.7	
12-Jul-23	ARROWHEAD	CS-134	<	23.8	
12-Jul-23	ARROWHEAD	CS-137	<	27.7	

Exposure Pathway - Aquatic Vegetation
Location: MUDS

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
16-Aug-23	NAIAD	BE-7	394.2 +/-	112.2	
16-Aug-23	NAIAD	K-40	2,067.3 +/-	239.6	
16-Aug-23	NAIAD	MN-54	<	11.6	
16-Aug-23	NAIAD	CO-58	<	12.7	
16-Aug-23	NAIAD	FE-59	<	15.9	
16-Aug-23	NAIAD	CO-60	<	15.6	
16-Aug-23	NAIAD	ZN-65	<	19.6	
16-Aug-23	NAIAD	ZR-NB-95	<	12.6	
16-Aug-23	NAIAD	I-131	<	22.5	
16-Aug-23	NAIAD	CS-134	<	10.3	
16-Aug-23	NAIAD	CS-137	<	14.6	
02-Oct-23	NAIAD	BE-7	<	183.6	
02-Oct-23	NAIAD	K-40	2,548.7 +/-	424.8	
02-Oct-23	NAIAD	MN-54	<	20.0	
02-Oct-23	NAIAD	CO-58	<	12.8	
02-Oct-23	NAIAD	FE-59	<	22.7	
02-Oct-23	NAIAD	CO-60	<	13.5	
02-Oct-23	NAIAD	ZN-65	<	30.8	
02-Oct-23	NAIAD	ZR-NB-95	<	17.3	
02-Oct-23	NAIAD	I-131	<	26.5	
02-Oct-23	NAIAD	CS-134	<	22.8	
02-Oct-23	NAIAD	CS-137	<	15.8	

Exposure Pathway - Aquatic Vegetation
Location: SC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
28-Jul-23	CATTAILS	BE-7	<	209.3	
28-Jul-23	CATTAILS	K-40	2,710.1 +/-	353.0	
28-Jul-23	CATTAILS	MN-54	<	10.7	
28-Jul-23	CATTAILS	CO-58	<	14.4	
28-Jul-23	CATTAILS	FE-59	<	25.5	
28-Jul-23	CATTAILS	CO-60	<	29.0	
28-Jul-23	CATTAILS	ZN-65	<	28.9	
28-Jul-23	CATTAILS	ZR-NB-95	<	16.3	
28-Jul-23	CATTAILS	I-131	<	31.0	
28-Jul-23	CATTAILS	CS-134	<	16.2	
28-Jul-23	CATTAILS	CS-137	<	25.3	

Exposure Pathway - Aquatic
Bottom Sediment
Location: DC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
17-May-23	BOTTOM SEDIMENT	K-40	11,197.0 +/-	418.3	
17-May-23	BOTTOM SEDIMENT	MN-54	<	18.3	
17-May-23	BOTTOM SEDIMENT	CO-58	<	19.2	
17-May-23	BOTTOM SEDIMENT	FE-59	<	40.7	
17-May-23	BOTTOM SEDIMENT	CO-60	<	19.1	
17-May-23	BOTTOM SEDIMENT	ZN-65	<	34.7	
17-May-23	BOTTOM SEDIMENT	CS-134	<	13.5	
17-May-23	BOTTOM SEDIMENT	CS-137	55.2 +/-	14.2	
17-May-23	BOTTOM SEDIMENT	FE-55	<	16,676.0	
02-Nov-23	BOTTOM SEDIMENT	K-40	13,687.0 +/-	1,317.0	
02-Nov-23	BOTTOM SEDIMENT	MN-54	<	48.2	
02-Nov-23	BOTTOM SEDIMENT	CO-58	<	54.3	
02-Nov-23	BOTTOM SEDIMENT	FE-59	<	96.8	
02-Nov-23	BOTTOM SEDIMENT	CO-60	<	86.9	
02-Nov-23	BOTTOM SEDIMENT	ZN-65	<	120.8	
02-Nov-23	BOTTOM SEDIMENT	CS-134	<	37.4	
02-Nov-23	BOTTOM SEDIMENT	CS-137	<	84.1	
02-Nov-23	BOTTOM SEDIMENT	FE-55	<	20,149.0	

Exposure Pathway - Aquatic
Bottom Sediment
Location: EEA

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
07-Apr-23	BOTTOM SEDIMENT	K-40	9,514.5 +/-	578.2	
07-Apr-23	BOTTOM SEDIMENT	MN-54	<	24.4	
07-Apr-23	BOTTOM SEDIMENT	CO-58	<	23.9	
07-Apr-23	BOTTOM SEDIMENT	FE-59	<	56.1	
07-Apr-23	BOTTOM SEDIMENT	CO-60	<	14.5	
07-Apr-23	BOTTOM SEDIMENT	ZN-65	<	51.0	
07-Apr-23	BOTTOM SEDIMENT	CS-134	<	17.9	
07-Apr-23	BOTTOM SEDIMENT	CS-137	61.6 +/-	34.9	

Exposure Pathway - Aquatic
Bottom Sediment
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
20-Jun-23	BOTTOM SEDIMENT	K-40	15,709.0 +/-	1,561.2	
20-Jun-23	BOTTOM SEDIMENT	MN-54	<	57.2	
20-Jun-23	BOTTOM SEDIMENT	CO-58	<	63.6	
20-Jun-23	BOTTOM SEDIMENT	FE-59	<	254.3	
20-Jun-23	BOTTOM SEDIMENT	CO-60	<	42.0	
20-Jun-23	BOTTOM SEDIMENT	ZN-65	<	224.5	
20-Jun-23	BOTTOM SEDIMENT	CS-134	<	50.2	
20-Jun-23	BOTTOM SEDIMENT	CS-137	<	57.6	
04-Dec-23	BOTTOM SEDIMENT	K-40	14,804.0 +/-	1,347.0	
04-Dec-23	BOTTOM SEDIMENT	MN-54	<	63.6	
04-Dec-23	BOTTOM SEDIMENT	CO-58	<	73.9	
04-Dec-23	BOTTOM SEDIMENT	FE-59	<	172.2	
04-Dec-23	BOTTOM SEDIMENT	CO-60	<	40.9	
04-Dec-23	BOTTOM SEDIMENT	ZN-65	<	154.9	
04-Dec-23	BOTTOM SEDIMENT	CS-134	<	43.9	
04-Dec-23	BOTTOM SEDIMENT	CS-137	<	62.2	

Exposure Pathway - Aquatic
Bottom Sediment
Location: MUDS

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
07-Nov-23	BOTTOM SEDIMENT	K-40	10,228.0 +/-	380.9	
07-Nov-23	BOTTOM SEDIMENT	MN-54	<	18.0	
07-Nov-23	BOTTOM SEDIMENT	CO-58	<	24.1	
07-Nov-23	BOTTOM SEDIMENT	FE-59	<	62.6	
07-Nov-23	BOTTOM SEDIMENT	CO-60	<	16.6	
07-Nov-23	BOTTOM SEDIMENT	ZN-65	<	35.2	
07-Nov-23	BOTTOM SEDIMENT	CS-134	<	13.0	
07-Nov-23	BOTTOM SEDIMENT	CS-137	<	15.0	

Exposure Pathway - Terrestrial Vegetation
Location: EEA

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
13-Jun-23	GRASS	BE-7	1,481.8 +/-	173.9	
13-Jun-23	GRASS	K-40	7,781.5 +/-	516.3	
13-Jun-23	GRASS	MN-54	<	17.6	
13-Jun-23	GRASS	CO-58	<	20.3	
13-Jun-23	GRASS	FE-59	<	43.1	
13-Jun-23	GRASS	CO-60	<	18.5	
13-Jun-23	GRASS	ZN-65	<	40.0	
13-Jun-23	GRASS	ZR-NB-95	<	13.2	
13-Jun-23	GRASS	I-131	<	24.0	
13-Jun-23	GRASS	CS-134	<	17.2	
13-Jun-23	GRASS	CS-137	<	19.0	

Exposure Pathway - Terrestrial
Vegetation
Location: MUDS

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
06-Jun-23	GRASS	BE-7	2,070.3 +/-	260.5	
06-Jun-23	GRASS	K-40	3,669.4 +/-	400.2	
06-Jun-23	GRASS	MN-54	<	20.6	
06-Jun-23	GRASS	CO-58	<	11.7	
06-Jun-23	GRASS	FE-59	<	39.3	
06-Jun-23	GRASS	CO-60	<	10.1	
06-Jun-23	GRASS	ZN-65	<	27.4	
06-Jun-23	GRASS	ZR-NB-95	<	16.8	
06-Jun-23	GRASS	I-131	<	32.0	
06-Jun-23	GRASS	CS-134	<	19.1	
06-Jun-23	GRASS	CS-137	<	18.5	

Exposure Pathway - Terrestrial
Soil
Location: MUDS

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
07-Nov-23	Soil	K-40	9,725.4 +/-	514.9	
07-Nov-23	Soil	MN-54	<	22.7	
07-Nov-23	Soil	CO-58	<	29.2	
07-Nov-23	Soil	FE-59	<	110.7	
07-Nov-23	Soil	CO-60	<	14.6	
07-Nov-23	Soil	ZN-65	<	44.1	
07-Nov-23	Soil	CS-134	<	14.2	
07-Nov-23	Soil	CS-137	169.4 +/-	19.2	

Exposure Pathway - Ingestion
Meat
Location: J3.5

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
21-Apr-23	TURKEY	K-40	1,998.7 +/-	116.3	
21-Apr-23	TURKEY	MN-54	<	5.9	
21-Apr-23	TURKEY	CO-58	<	6.3	
21-Apr-23	TURKEY	FE-59	<	14.6	
21-Apr-23	TURKEY	CO-60	<	6.5	
21-Apr-23	TURKEY	ZN-65	<	9.6	
21-Apr-23	TURKEY	CS-134	<	4.7	
21-Apr-23	TURKEY	CS-137	<	5.8	
21-Apr-23	TURKEY	H-3	735.0 +/-	99.0	

Exposure Pathway - Ingestion
Meat
Location: Q2.4

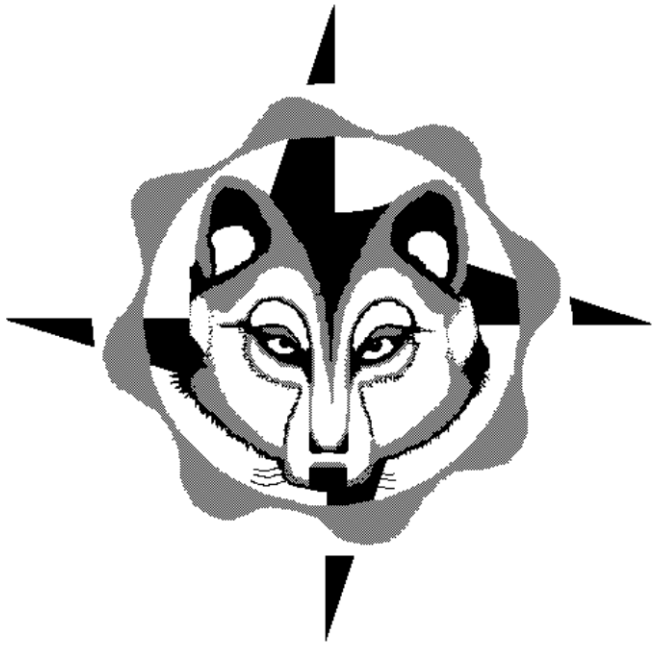
Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
02-Dec-23	DEER MEAT	K-40	3,119.9 +/-	177.6	
02-Dec-23	DEER MEAT	MN-54	<	9.6	
02-Dec-23	DEER MEAT	CO-58	<	9.8	
02-Dec-23	DEER MEAT	FE-59	<	30.3	
02-Dec-23	DEER MEAT	CO-60	<	8.9	
02-Dec-23	DEER MEAT	ZN-65	<	19.6	
02-Dec-23	DEER MEAT	CS-134	<	7.2	
02-Dec-23	DEER MEAT	CS-137	<	8.3	
02-Dec-23	DEER MEAT	H-3	2,189.0 +/-	138.0	

APPENDIX D

LAND USE CENSUS REPORT

WOLF CREEK GENERATING STATION

2023 LAND USE CENSUS REPORT



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EXECUTIVE SUMMARY

The annual Land Use Census of rural residents within five miles of the Wolf Creek Generating Station (WCGS) has been completed in 2023 in accordance with AP 07B-004, [Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)].

No program changes are necessary regarding milk locations. Again, no milk sampling locations were identified.

The two broadleaf vegetation locations with the highest calculated annual average D/Q rankings are A2.60-17TE1527 and Q2.35-MILA1619. Since these gardens are currently listed as sample locations for the Radiological Environmental Monitoring Program in procedure AP 07B-004 (locations A-3 and Q-6), no program changes are necessary regarding broadleaf vegetation locations.

BACKGROUND

Section 5.2, Attachment A, of procedure AP 07B-004, directs that "a Land Use Census shall be conducted annually during the growing season to identify the nearest (1) milk animal, (2) residence, and (3) garden of greater than 500 square feet producing broadleaf vegetation in each of the 16 meteorological sections within five miles of the WCGS site."

Table 5-1, Attachment A, of procedure AP 07B-004, requires that broadleaf vegetation samples be collected from “two indicator locations (using the criteria from the “Land Use Census” section) with highest calculated annual average D/Q.”

Table 5-1, Attachment A, of procedure AP 07B-004, also requires that milk samples be collected from “three indicator locations within 5 miles of the site having the highest dose potential.”

METHODOLOGY

Over two hundred surveys were mailed to the rural residents living within five miles of WCGS. The survey excluded the residents of New Strawn and Burlington. These locations were excluded due to the large number of households and the low likelihood that information gained from these residences would affect the locations chosen for REMP sampling. Drive-by information was collected for the nearest residences in each sector that did not return surveys. Also used Google Earth/Maps to obtain images of properties.

The information collected was compiled and the results are identified in Tables 1-3. Calculations were performed so that garden locations could be ranked by their respective D/Q. These results are contained in Table 4.

RESULTS

No changes were identified for the nearest occupied residence in each sector. Eight changes were noted for the nearest garden producing broadleaf vegetation. These changes are identified as an underlined entry in the Tables. There were no changes regarding milk sample locations. Again, no locations were identified that milked animals for human consumption.

TABLE 1

2023 LAND USE CENSUS DATA

LOCATION OF NEAREST:

SECTOR	RESIDENCE	MILKING ANIMALS	BROADLEAF GARDEN
A	A2.60-17TE1527	None	A2.60-17TE1527
B	B3.53-QURD1755	None	B4.09-18RD1739
C	C1.92-16RD1655	None	C3.58-RERD1675
D	D2.33-RERD1520	None	None
E	E1.78-QULA1451	None	E4.40-TRRD1551
F	F1.84-QULA1419	None	F3.37-14RD1904
G	G2.82-13Rd1790	None	G3.60-RERD1198
H	H3.09-12RD1711	None	H3.15-QURD1181
J	J3.70-11RD1540	None	J3.80-11RD1626
K	K2.79-12LA1435	None	None
L	L2.10-NARD1339	None	L2.39-NARD1309
M	M2.34-14RD1346	None	M3.69-LYLA1290
N	N2.08-15RD1350	None	N2.38-RODR9
P	P2.66-16RD1268	None	P4.52-KARD1630
Q	Q2.35-MILA1619	None	Q2.35-MILA1619
R	R2.08-NALN1650	None	R4.43-NARD1891

NOTE: Entries underlined indicate changes from the 2022 Land Use Census.

EXAMPLE: A2.60-17TE1527
"A" = Sector A
"2.60" = 2.60 miles from the reactor
"17TE1527" = address

TABLE 2

SECTOR	2022 NEAREST RESIDENCE	2023 NEAREST RESIDENCE
A	A2.60-17TE1527	A2.60-17TE1527
B	B3.53-QURD1755	B3.53-QURD1755
C	C1.92-16RD1655	C1.92-16RD1655
D	D2.33-RERD1520	D2.33-RERD1520
E	E1.78-QULA1451	E1.78-QULA1451
F	F1.84-QULA1419	F1.84-QULA1419
G	G2.82-13RD1790	G2.82-13RD1790
H	H3.09-12RD1711	H3.09-12RD1711
J	J3.70-11RD1540	J3.70-11RD1540
K	K2.79-12LA1435	K2.79-12LA1435
L	L2.10-NARD1339	L2.10-NARD1339
M	M2.34-14RD1346	M2.34-14RD1346
N	N2.08-15RD1350	N2.08-15RD1350
P	P2.66-16RD1268	P2.66-16RD1268
Q	Q2.35-MILA1619	Q2.35-MILA1619
R	R2.08-NALN1650	R2.08-NALN1650

NOTE: No changes identified from the 2022 Land Use Census.

TABLE 3

2023 LAND USE CENSUS MILK AND GARDEN DATA

SECTOR	2022 MILKING ANIMALS	2023 MILKING ANIMALS	2022 NEAREST BROADLEAF GARDEN	2023 NEAREST BROADLEAF GARDEN
A	None	None	A2.60-17TE1527	A2.60-17TE1527
B	None	None	B4.09-18RD1739	B4.09-18RD1739
C	None	None	C3.58-RERD1675	C3.58-RERD1675
D	None	None	None	None
E	None	None	None	E4.40-TRRD1551
F	None	None	F2.48-RERD1380	F3.37-14RD1904
G	None	None	None	G3.60-RERD1198
H	None	None	H3.80-11RD1674	H3.15-QURD1181
J	None	None	J4.00-PLRD1080	J3.80-11RD1626
K	None	None	None	None
L	None	None	L2.39-NARD1309	L2.39-NARD1309
M	None	None	M3.69-LYLA1290	M3.69-LYLA1290
N	None	None	None	N2.38-RODR9
P	None	None	P4.95-LADR340	P4.52-KARD1630
Q	None	None	Q2.35-MILA1619	Q2.35-MILA1619
R	None	None	None	R4.43-NARD1891

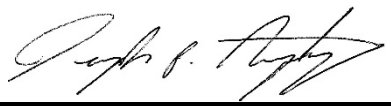
NOTE: Underlined entries indicate changes from the 2022 Land Use Census.

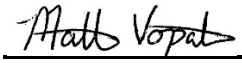
TABLE 4

INFORMATION USED FOR D/Q CALCULATIONS ON GARDENS PRODUCING BROADLEAF VEGETATION

FROM LAND USE			FROM SA-19-002					
	DIST	CALC	NEAR	NEAR	FAR	FAR		SECTOR
SECTOR	(MI)	(METERS)	DIST	D / Q	DIST	D / Q	CALC	RANKING
A	2.60	4184	4000	1.94E-09	5000	1.32E-09	1.83E-09	1
B	4.09	6582	6000	4.84E-10	7000	3.59E-10	4.11E-10	7
C	3.58	5761	5000	2.51E-10	6000	1.85E-10	2.01E-10	13
D								
E	4.40	7081	7000	1.28E-10	8000	1.03E-10	1.26E-10	14
F	3.37	5423	5000	2.68E-10	6000	1.97E-10	2.38E-10	12
G	3.60	5794	5000	4.68E-10	6000	3.44E-10	3.70E-10	8
H	3.15	5069	5000	6.41E-10	6000	4.71E-10	6.29E-10	5
J	3.80	6116	6000	3.37E-10	7000	2.51E-10	3.27E-10	9
K								
L	2.39	3846	3000	1.02E-09	4000	6.11E-10	6.74E-10	4
M	3.69	5938	5000	4.07E-10	6000	2.99E-10	3.06E-10	10
N	2.38	3830	3000	1.12E-09	4000	6.75E-10	7.51E-10	3
P	4.52	7274	7000	2.79E-10	8000	2.25E-10	2.64E-10	11
Q	2.35	3782	3000	1.53E-09	4000	9.17E-10	1.05E-09	2
R	4.43	7129	7000	6.24E-10	8000	5.04E-10	6.09E-10	6

*Sector D and K have no broadleaf gardens to report.

Originated by:  Date: 1/16/2024

Verified by:  Date: 2/14/2024