Constellation

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United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Byron Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: 2025 Annual Radiological Environmental Operating Report (AREOR)

In accordance with Technical Specification 5.6.2, "Annual Radiological Environmental Operating Report," we are submitting the Annual Radiological Environmental Operating Report (AREOR) for Byron Station, Units 1 and 2. This report is required to be submitted to the NRC by May 15th of each year and contains the results of the radiological environmental and meteorological monitoring programs. The Radioactive Effluent Release Report was submitted under separate cover.

Also included are the results of groundwater monitoring conducted in accordance with Constellation's Radiological Groundwater Protection Program (RGPP), which is a voluntary program implemented in 2006. This information is being reported in accordance with a nuclear industry initiative.

If you have any questions regarding this information, please contact Ms. Zoe Cox, Regulatory Assurance Manager, at (779) 231-6606.

Respectfully,

Harris Welt
Site Vice President
Byron Generating Station

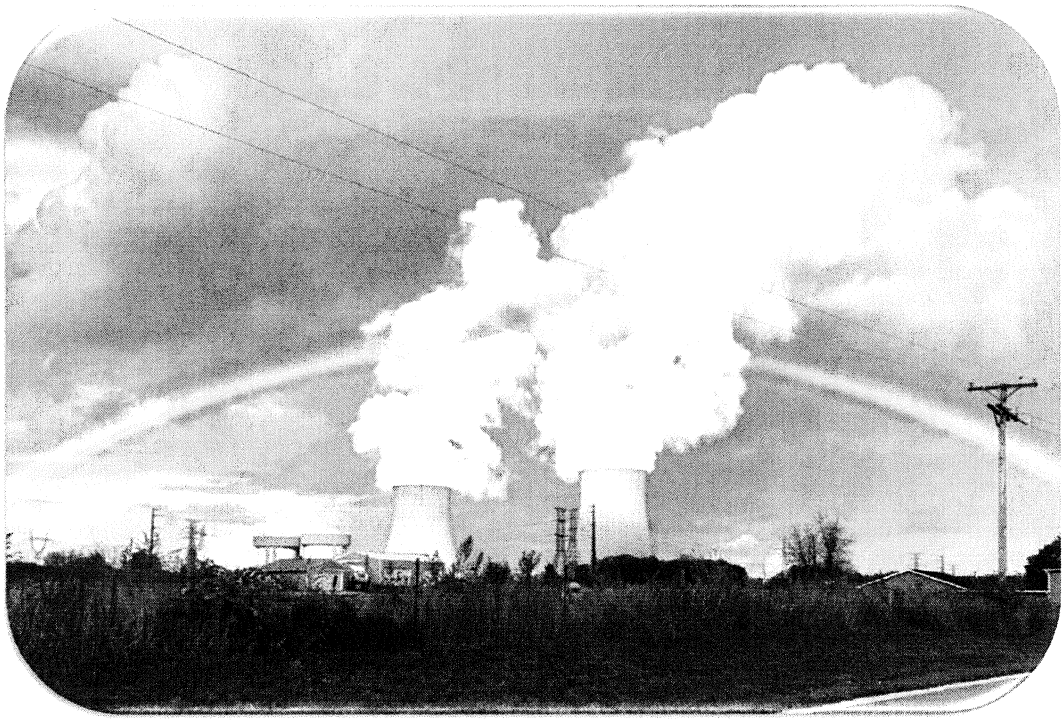
HW/EM/AC/rlp

Attachment: AREOR Report

cc: Mohammed Shuaibi Regional Administrator – NRC Region III (Acting)

Constellation

Byron Clean Energy Center Units 1 and 2



2025

Annual Radiological Environmental Operating Report

Document Number: 50-454/50-455

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1.0 LIST OF ACRONYMS AND DEFINITIONS

1. Airborne Activity Sampling: Continuous sampling of air through the collection of particulates and radionuclides on filter media.

2. ARERR: Annual Radioactive Effluent Release Report

3. AREOR: Annual Radiological Environmental Operating Report

4. BWR: Boiling Water Reactor

5. Composite Sample: A series of single collected portions (aliquots) analyzed as one sample. The aliquots making up the sample are collected at time intervals that are very short compared to the composite period.

6. Control: A sampling station in a location not likely to be affected by plant effluents due to its distance and/or direction from the station.

7. Curie (Ci): A measure of radioactivity; equal to 3.7×10^{10} disintegrations per second, or 2.22×10^{12} disintegrations per minute.

8. Direct Radiation Monitoring: The measurement of radiation dose at various distances from the plant is assessed using Thermoluminescent Dosimeters (TLD), Optically Stimulated Luminescence Dosimeters (OSLD) and pressurized ionization chambers.

9. EPA: Environmental Protection Agency

10. GPI: Groundwater Protection Initiative

11. Grab Sample: A single discrete sample drawn at one point in time.

12. Indicator: A sampling location that is likely to be affected by plant effluents due to its proximity and/or direction from the plant.

13. Ingestion Pathway: The ingestion pathway includes milk, fish, drinking water and garden produce. Also sampled (under special circumstances) are other media such as vegetation or animal products when additional information about particular radionuclides is needed.

14. ISFSI: Independent Spent Fuel Storage Installation

15. Lower Limit of Detection (LLD): An *a priori* measure of the detection capability of a radiochemistry measurement based on instrument setup, calibration, background, decay time, and sample volume. An LLD is expressed as an activity concentration. The MDA is used for reporting results. LLD are specified by a regulator, such as the NRC and are typically listed in the ODCM.

16. MDA: Minimum Detectable Activity. For radiochemistry instruments, the MDA is the *a posteriori* minimum concentration that a counting system detects. The smallest concentration or activity of radioactive material in a sample that will yield a net count above instrument background and that is detected with 95% probability, with only five % probability of falsely concluding that a blank observation represents a true signal.

17. MDC: Minimum Detectable Concentration. Essentially synonymous with MDA for the purposes of radiological monitoring.

18. Mean: The sum of all of the values in a distribution divided by the number of values in the distribution, synonymous with average.

19. Microcurie: 3.7×10^4 disintegrations per second, or 2.22×10^6 disintegrations per minute.

20. N/A: Not Applicable

21. NEI: Nuclear Energy Institute

22. NIST: National Institute of Standards and Technology.

23. NRC: Nuclear Regulatory Commission

24. ODCM: Offsite Dose Calculation Manual

25. OSLD: Optically Stimulated Luminescence Dosimeter

26. pCi/L: picocuries / Liter

27. PWR: Pressurized Water Reactor

28. REMP: Radiological Environmental Monitoring Program

29. TLD: Thermoluminescent Dosimeter

2.0 EXECUTIVE SUMMARY

Byron Clean Energy Center Units 1 and 2 Radiological Environmental Monitoring Program (REMP) was established prior to the station becoming operational to provide information on background radiation present in the area. The goal of Byron Clean Energy Center REMP is to evaluate the impact of the station on the environment. Environmental samples from different media are monitored as part of the program in accordance with specifications detailed in the Offsite Dose Calculation Manual (ODCM). The program compares data from Indicator locations near the plant, to Control locations farther away from the site to assess operation impacts.

The Annual Radiological Environmental Operating Report (AREOR) provides data obtained through analyses of environmental samples collected at Byron Clean Energy Center for the reporting period of January 1st through December 31st, 2025. During that time period 2,389 analyses were performed on 2,267 samples. In assessing all the data gathered for this report and comparing these results with preoperational data and/or 10-year average values, it was concluded that the operation of Byron Clean Energy Center, had no adverse radiological impact on the enviroment.

2.1 Summary of Conclusions:

No measurable activities above background levels were detected. All values were consistent with historical results which indicate no adverse radiological environmental impacts associated with the operation of Byron Clean Energy Center. Naturally occurring radionuclides are present in the Earth's crust and atmosphere and exists in detectable quantities throughout the world. It is common to detect naturally occurring radionuclides in many of the samples collected for REMP. Some examples of naturally occurring radionuclides that are frequently seen in samples are potassium-40, beryllium-7, actinium-228 (present as a decay product of radium-228), and radium-226. Additionally, some relatively long-lived anthropogenic radioisotopes, such as strontium-90 and cesium-137, are also seen in some REMP samples; these radionuclides exist in measurable quantities throughout the world as a result of fallout from historic atmospheric nuclear weapons testing. Detailed information on the exposure of the U.S. population to ionizing radiation can be found in NCRP Report No. 160 [1].

3.0 INTRODUCTION

The Radiological Environmental Monitoring Program (REMP) provides data on measurable levels of radiation and radioactive materials in the environment. This program also evaluates the relationship between quantities of radioactive materials released from the plant and resultant doses to individuals from principal pathways of exposure. In this capacity, REMP provides a check on the effluent release program and dispersion modeling to ensure that concentrations in the environment due to radioactive effluents conform to the "As Low as Is Reasonably Achievable" (ALARA) design objectives of 10 CFR 50, Appendix I [2], and implements the requirements of Section IV.B.2 and IV.B.3 of Appendix I. REMP is designed to conform to the Nuclear Regulatory Commission (NRC) Regulatory Guide 4.1 [3], NUREG 1301/1302 [4] [5], and the 1979 NRC Branch Technical Position [6].

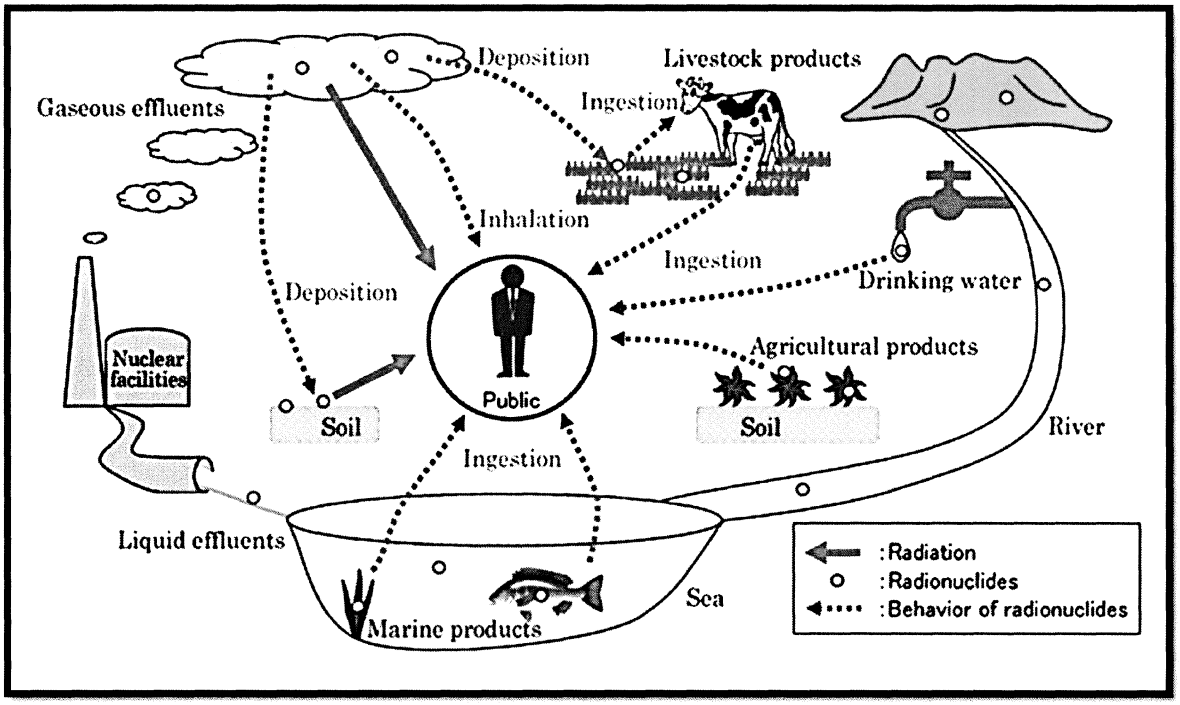


Figure 1: Potential exposure pathways to Members of the Public due to Plant Operations [7]

Quality assurance aspects of the sampling program and TLD/OSLD data collection are conducted in accordance with Regulatory Guides 4.15 [8] and 4.13 [9]. REMP also adheres to the requirements of Illinois, Byron Clean Energy Center Technical Specifications, and Offsite Dose Calculation Manual (ODCM). These governing documents dictate the environmental sampling, sample analysis protocols, data reporting and quality assurance requirements for the environmental monitoring program.

The Annual Radiological Environmental Operating Report provides summaries of the environmental data from exposure pathways, interpretations of the data, and analyses of trends of the results. Routinely monitored pathways include ingestion, inhalation, and direct radiation. Routes of exposure are based on site specific information such as meteorology, receptor locations, and water usage around the plant.

4.0 SITE DESCRIPTION AND SAMPLE LOCATIONS

Byron Station, a two-unit PWR station, is located about two miles east of the Rock River and approximately three miles southwest of Byron in Ogle County, Illinois. The reactors are designed to have capacities of 1,268 and 1,241 MW gross, respectively. Unit One loaded fuel in November 1984 and went online February 2, 1985. Unit Two went online January 9, 1987. The station has been designed to keep releases to the environment at levels below those specified in the codes of federal regulations

Byron Clean Energy Center sampling media are selected based on site specific information such as meteorology, receptor locations, and water usage around the plant. Sampling and analysis frequencies are documented in the Offsite Dose Calculation Manual and site procedures. Required sampling, analysis frequencies and location of sample collected are captured in the following tables and figures:

- Table 1: Radiological Environmental Sampling Program – Exposure Pathway – Direct Radiation
- Table 2: Radiological Environmental Sampling Program – Exposure Pathway - Airborne

- Table 3: Radiological Environmental Sampling Program – Exposure Pathway - Waterborne
- Table 4: Radiological Environmental Sampling Program – Exposure Pathway - Ingestion
- Table 5: REMP Sampling Locations – Direct Radiation
- Figure 2: Inner Ring and Special Interest OSLD Locations of the Byron Clean Energy Center, 2025
- Figure 3: Outer Ring OSLD Locations of the Byron Clean Energy Center, 2025
- Figure 4: Onsite Air Sampling Locations of the Byron Clean Energy Center, 2025
- Figure 5: Offsite Air Sampling Locations of the Byron Clean Energy Center, 2025
- Figure 6: Ingestion and Waterborne Exposure Pathway Sampling Locations of the Byron Clean Energy Center, 2025

5.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS

Table 1: Radiological Environmental Sampling Program – Exposure Pathway – Direct Radiation

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Direct Radiation 83 OSLD monitoring stations with two dosimeters placed as follows: An inner ring of stations, one in each compass sector in the general area of the site boundary. An outer ring of stations, one in each compass sector at approximately 5 miles from the site; and Special interest areas to measure on-site storage facilities. An "other" set at locations where air samplers are present.	Table 5	Quarterly	Gamma dose/Quarterly

Table 2: Radiological Environmental Sampling Program – Exposure Pathway - Airborne

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Airborne Radioiodine and Particulates Samples from 8 locations: Four locations close to the site boundary in different sectors of the highest calculated annual average ground level D/Q. Three samples from the vicinity of a community having the highest calculated annual average D/Q. One sample from Control Locations between 6.2 - 18.6 miles away in the least predominant wind direction.	Indicators-Near Field: BY-21 Byron Nearsite North, 0.30 miles N BY-22 Byron Nearsite Southeast, 0.36 miles SE BY-23 Byron Nearsite South, 0.61 miles S BY-24 Byron Nearsite Southwest, 0.70 miles SW Indicators-Far Field: BY-01 Byron, 2.96 miles N BY-04 Paynes Point, 4.96 miles SE BY-06 Oregon, 4.74 miles SSW Control: BY-08 Leaf River(C), 6.96 miles WNW	Continuous sampler operation with sample collection weekly, or more frequently by dust loading, and radioiodine cannister collection weekly.	Particulate Sampler: Gross Beta analysis following weekly filter change and Gamma isotopic quarterly on composite filters by location on near field and control samples. Radioiodine canister: I-131 analysis weekly on near field and control samples.

Table 3: Radiological Environmental Sampling Program – Exposure Pathway - Waterborne

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Surface Water One sample upstream (control) and one sample downstream (indicator)	BY-12 Oregon Pool of Rock River, Downstream of Discharge, 4.55 miles SSW BY-29 Byron, Upstream of Intake(C), 2.97 miles N	Monthly composite sample from weekly grab samples; quarterly composite from weekly grab samples	Gamma isotopic Monthly Gross beta Monthly H-3 Quarterly Ni-63 Monthly
Groundwater/Well Water Six indicator locations down gradient from the plant, only if likely to be affected.	BY-14-1 3200 North German Church Road, 0.98 miles SSE BY-18-1 Calhoun Well, 0.74 miles SSW BY-32 Wolford Well, 1.86 miles W BY-35 Vancko Well, 1.87 miles WNW BY-37 Alexander Well, 1.95 miles WNW BY-38 Steve Storz Well, 2.00 miles WNW	Quarterly grab samples	Gamma isotopic Quarterly H-3 Quarterly
Sediment from Shoreline One sample upstream (control) and one sample downstream within 10 km (indicator)	BY-12 Oregon Pool of Rock River, Downstream of Discharge, 4.55 miles SSW BY-34 Rock River, Upstream of Discharge(C), 2.60 miles WNW	Semiannual grab samples	Gamma isotopic Semiannually Ni-63 semiannually

Table 4: Radiological Environmental Sampling Program – Exposure Pathway - Ingestion

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Milk One sample from milking animals in three locations within 10km distance having the highest dose potential. One of samples from milking animals at a control location 15 to 30 km distant and in the least prevalent wind direction.	BY-20-1 Ron Snodgrass Farm, 4.85 miles WSW BY-26-2 Joseph Akins Farm(C), 12.20 miles WNW	Biweekly: May through October; Monthly: November through April	Gamma isotopic and I-131 analysis on each sample
Fish One Indicator sample upstream of each commercially and recreationally important species in vicinity of site discharge. One Control sample of same species in areas not influenced by plant discharge.	BY-29 Byron, Upstream of Intake (C), 2.97 miles N BY-31 Byron, Rock River in vicinity of Discharge, 2.58 miles WNW	Semiannually	Gamma isotopic analysis on edible portions Ni-63 on edible portions
Food products Six locations producing vegetables from areas irrigated by water in which liquid plant wastes have been discharged and one sample collected from a control location.	Quadrant 1: 5186 Cox Road, Stillman Valley, 4.6 miles E Quadrant 2: 4834 Brick Road, Oregon, 4.9 miles SE Quadrant 2: 410 Red Oak Lane, Chana, IL, 5.7 miles SE Quadrant 3: 555 Park Rd, Oregon, 3.7 miles SW Quadrant 4: 4615 N Razorville Road, Byron, 2.7 miles SW Quadrant 4: 880 Equestrian Dr., Byron, 1.8 miles W Control: 2327 Route 251, Rochelle, 20.7 miles SE	Annually	Gamma isotopic on each sample

Table 5: REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-101-1 and -2	Inner Ring	N	0.30 miles	
BY-102-1	Inner Ring	NNE	0.97 miles	
BY-102-2	Inner Ring	NNE	0.98 miles	
BY-103-1	Inner Ring	NE	1.67 miles	
BY-103-2	Inner Ring	NE	1.66 miles	
BY-103-3	Inner Ring	NE	0.42 miles	
BY-104-1	Inner Ring	ENE	1.40 miles	
BY-104-2	Inner Ring	ENE	1.39 miles	
BY-104-3	Inner Ring	ENE	0.33 miles	
BY-105-1	Inner Ring	E	1.28 miles	
BY-105-2	Inner Ring	E	1.29 miles	
BY-106-1	Inner Ring	ESE	1.36 miles	
BY-106-2	Inner Ring	ESE	1.38 miles	
BY-107-1	Inner Ring	SE	1.39 miles	
BY-107-2	Inner Ring	SE	1.40 miles	
BY-107-3	Inner Ring	SE	0.41 miles	
BY-108-1	Inner Ring	SSE	0.66 miles	
BY-108-2	Inner Ring	SSE	0.64 miles	
BY-109-1 and -2	Inner Ring	S	0.62 miles	
BY-110-1	Inner Ring	SSW	0.66 miles	
BY-110-2	Inner Ring	SSW	0.67 miles	
BY-111-3	Inner Ring	SW	0.78 miles	
BY-111-4	Inner Ring	SW	0.85 miles	
BY-112-3	Inner Ring	WSW	0.80 miles	
BY-112-4	Inner Ring	WSW	0.78 miles	
BY-113-1	Inner Ring	W	0.72 miles	

Table 5: REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-113-2	Inner Ring	W	0.71 miles	
BY-114-1	Inner Ring	WNW	0.79 miles	
BY-114-2	Inner Ring	WNW	0.81 miles	
BY-115-1	Inner Ring	NW	0.99 miles	
BY-115-2	Inner Ring	NW	1.01 miles	
BY-116-1	Inner Ring	NNW	1.39 miles	
BY-116-2	Inner Ring	NNW	1.42 miles	
BY-116-3	Inner Ring	NNW	0.89 miles	
BY-201-3 and -4	Outer Ring	N	4.37 miles	
BY-202-1	Outer Ring	NNE	4.43 miles	
BY-202-2	Outer Ring	NNE	4.78 miles	
BY-203-1	Outer Ring	NE	4.78 miles	
BY-203-2	Outer Ring	NE	4.67 miles	
BY-204-1	Outer Ring	ENE	4.08 miles	
BY-204-2	Outer Ring	ENE	4.00 miles	
BY-205-1	Outer Ring	E	3.80 miles	
BY-205-2	Outer Ring	E	3.78 miles	
BY-206-1	Outer Ring	ESE	4.00 miles	
BY-206-2	Outer Ring	ESE	4.28 miles	
BY-207-1	Outer Ring	SE	4.15 miles	
BY-207-2	Outer Ring	SE	3.93 miles	
BY-208-1	Outer Ring	SSE	3.97 miles	
BY-208-2	Outer Ring	SSE	3.77 miles	
BY-209-1	Outer Ring	S	3.98 miles	
BY-209-4	Outer Ring	S	4.02 miles	
BY-210-3	Outer Ring	SSW	3.91 miles	
BY-210-4	Outer Ring	SSW	3.93 miles	

Table 5: REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-211-1	Outer Ring	SW	4.93 miles	
BY-211-4	Outer Ring	SW	4.91 miles	
BY-212-1 and -4	Outer Ring	WSW	4.67 miles	
BY-213-1	Outer Ring	W	4.72 miles	
BY-213-4	Outer Ring	W	4.65 miles	
BY-214-1	Outer Ring	WNW	4.65 miles	
BY-214-4	Outer Ring	WNW	4.63 miles	
BY-215-1	Outer Ring	NW	4.15 miles	
BY-215-4	Outer Ring	NW	4.19 miles	
BY-216-1	Outer Ring	NNW	4.54 miles	
BY-216-2	Outer Ring	NNW	4.74 miles	
BY-301-1	Special Interest	N	0.25 miles	
BY-301-2	Special Interest	N	0.15 miles	
BY-309-1	Special Interest	S	0.33 miles	
BY-309-2	Special Interest	S	0.40 miles	
BY-309-3	Special Interest	S	0.42 miles	
BY-309-4	Special Interest	SSW	0.44 miles	
BY-314-2	Special Interest	WNW	0.29 miles	
BY-01-1 and -2	Other	N	2.96 miles	
BY-04-1 and -2	Other	SE	4.96 miles	
BY-06-1 and -2	Other	SSW	4.74 miles	
BY-21-1 and -2	Other	N	0.30 miles	
BY-22-1 and -2	Other	SE	0.36 miles	

Table 5: REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-23-1 and -2	Other	S	0.61 miles	
BY-24-1 and -2	Other	SW	0.70 miles	
BY-08-1 and -2	Control	WNW	6.96 miles	

6.0 MAPS OF COLLECTION SITES

Figure 2: Inner Ring and Special Interest OSLD Locations of the Byron Clean Energy Center, 2025

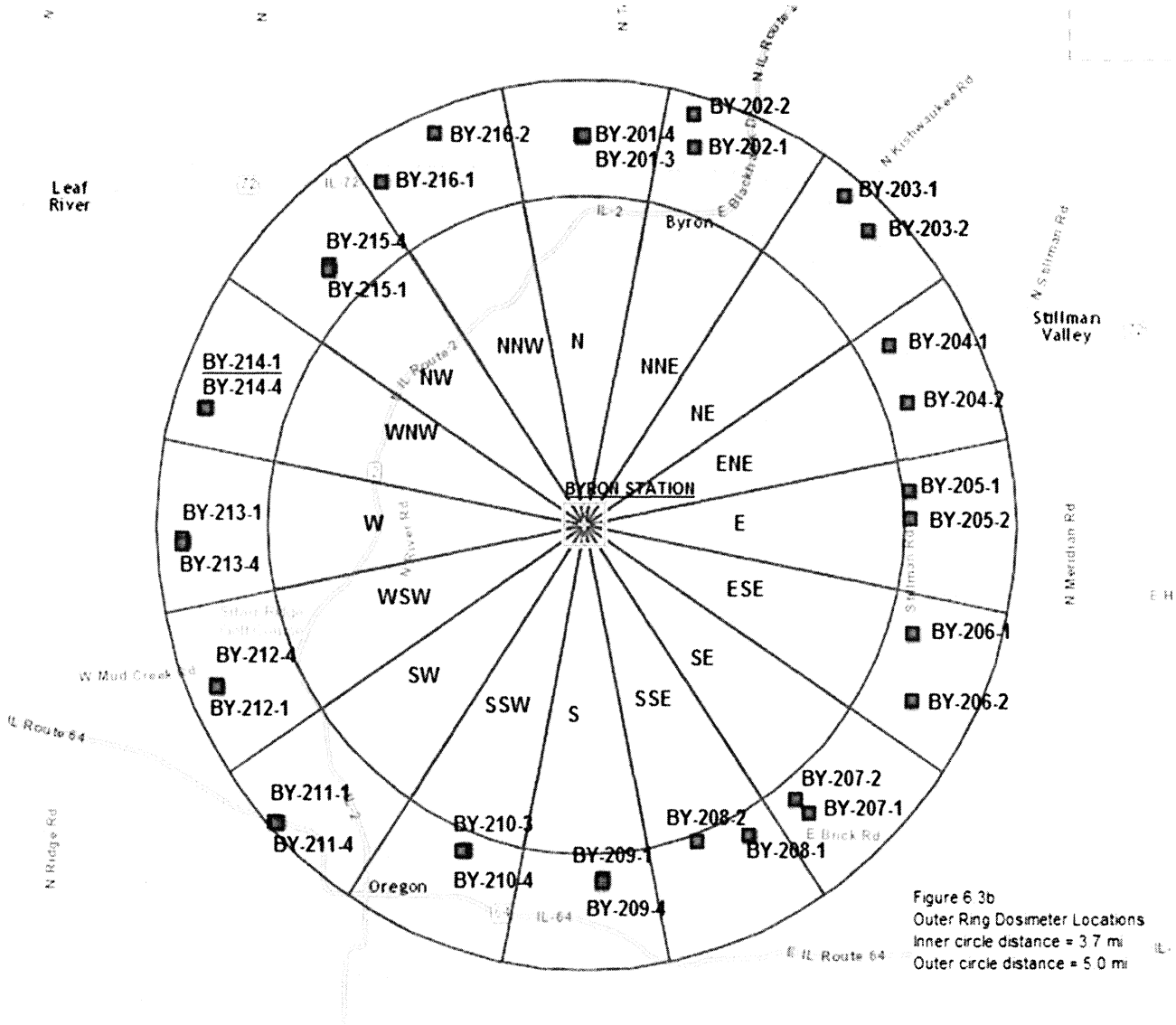


Figure 3: Outer Ring OSLD Locations of the Byron Clean Energy Center, 2025

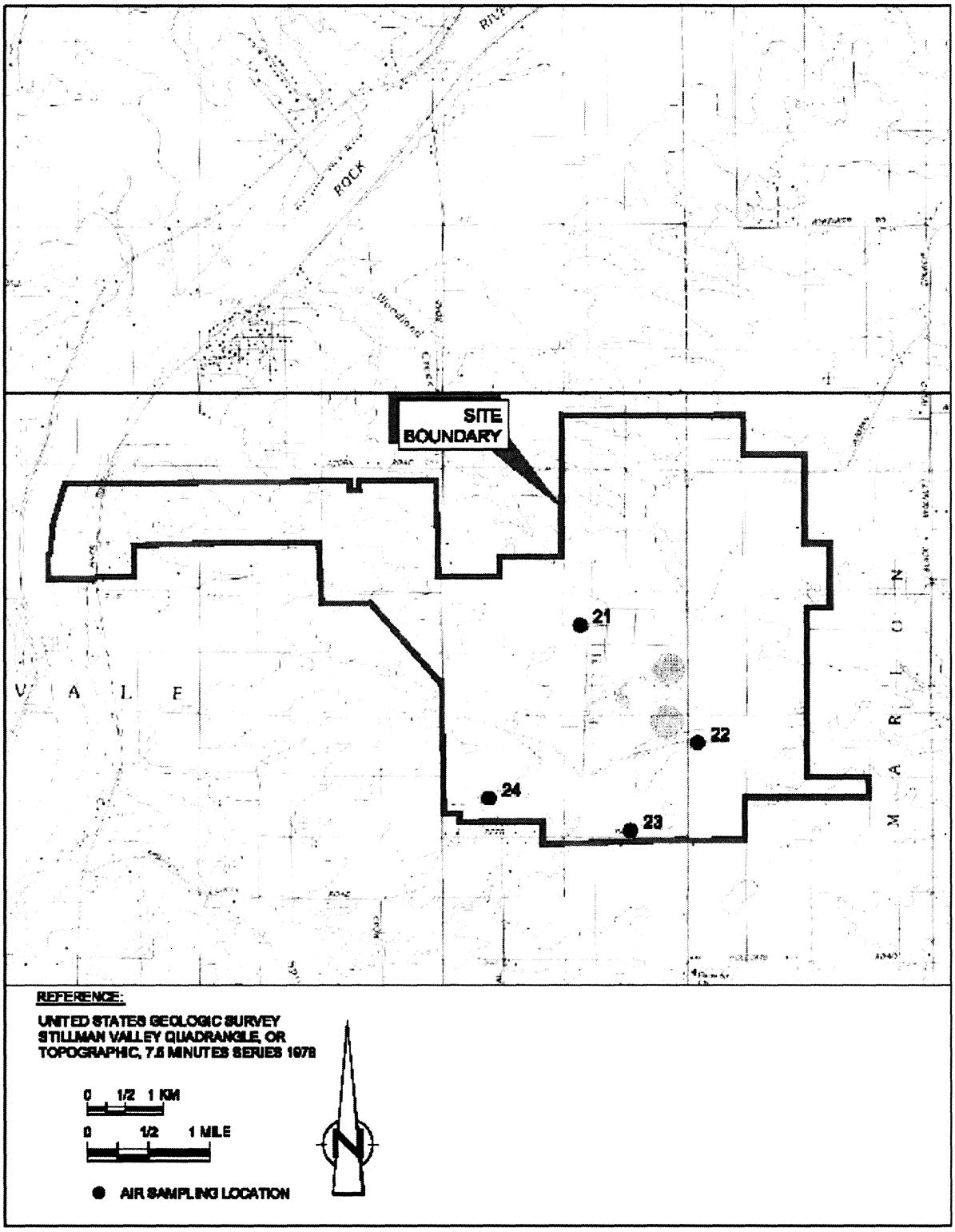


Figure 4: Onsite Air Sampling Locations of the Byron Clean Energy Center, 2025

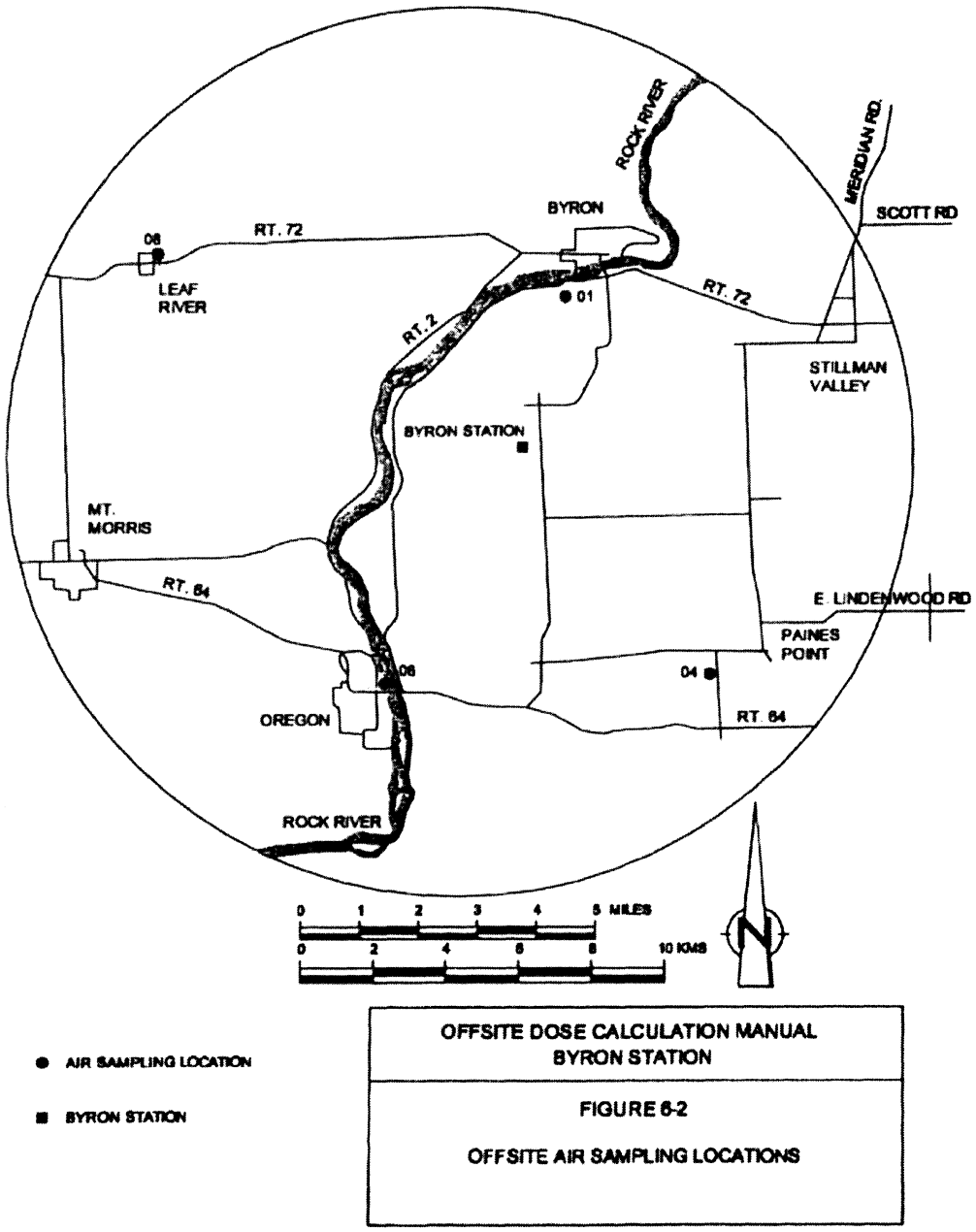


Figure 5: Offsite Air Sampling Locations of the Byron Clean Energy Center, 2025

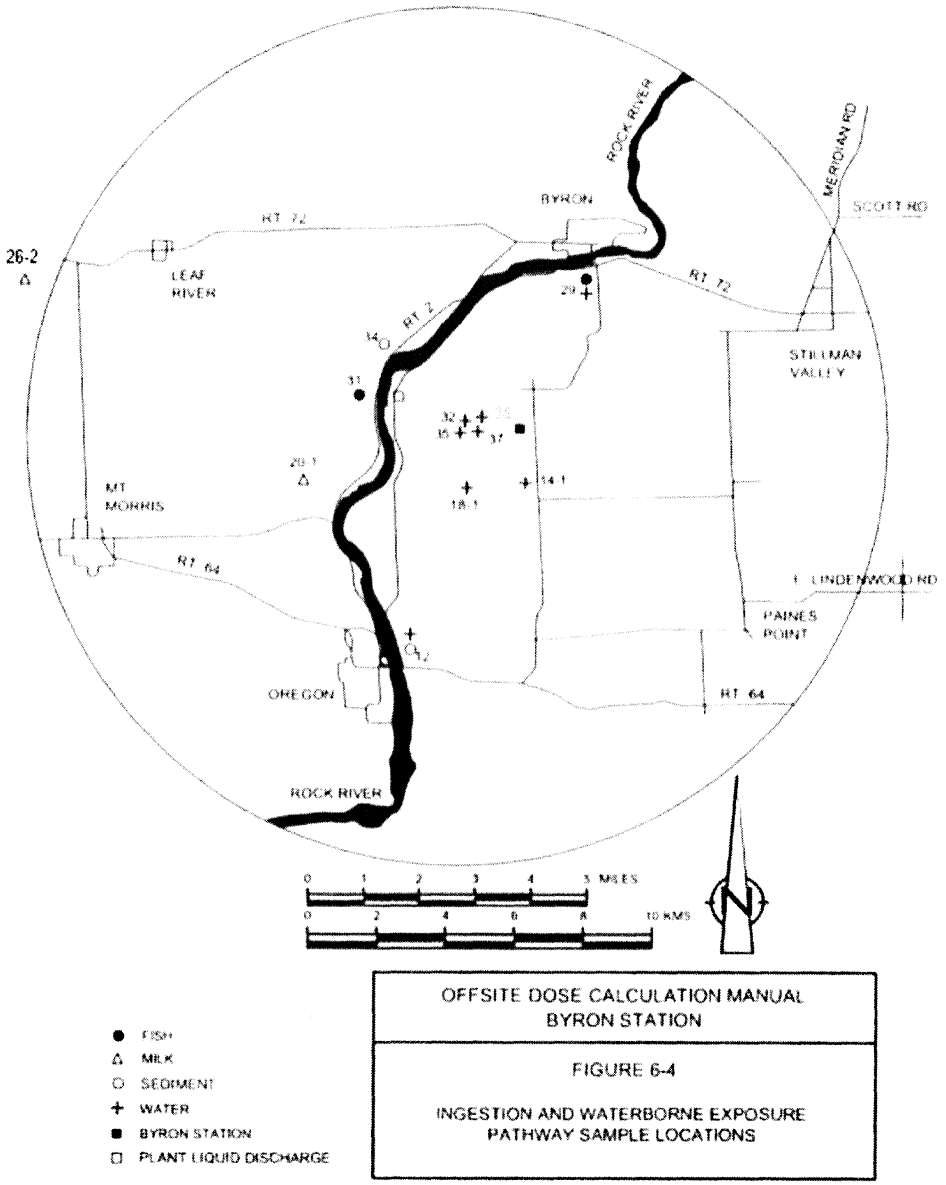


Figure 6: Ingestion and Waterborne Exposure Pathway Sampling Locations of the Byron Clean Energy Center, 2025

7.0 REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Table 6: Reporting Levels for Radioactivity Concentrations in Environmental Samples

Radionuclide	Water (pCi/L)	Air Particulates or Gases (pCi/m^3)	Fish (pCi/kg-wet)	Milk (pCi/L)	Food Products (pCi/Kg-wet)
H-3	20,000 (1)	NA	NA	NA	NA
Mn-54	1,000	NA	30,000	NA	NA
Fe-59	400	NA	10,000	NA	NA
Co-58	1,000	NA	30,000	NA	NA
Co-60	300	NA	10,000	NA	NA
Zn-65	300	NA	20,000	NA	NA
Zr-Nb-95	400	NA	NA	NA	NA
I-131	2 (2)	0.9	NA	3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200	NA	NA	300	NA

Table 7: Lower Limits of Detection

Radionuclide	Water (pCi/L)	Air Particulates or Gases (pCi/m^3)	Fish (pCi/kg-wet)	Milk (pCi/L)	Food Products (pCi/Kg-wet)	Sediment (pCi/Kg-dry)
H-3	2,000 (3)	NA	NA	NA	NA	NA
Mn-54	15	NA	130	NA	NA	NA
Fe-59	30	NA	260	NA	NA	NA
Co-58, Co-60	15	NA	130	NA	NA	NA
Zn-65	30	NA	260	NA	NA	NA
Zr-95	30	NA	NA	NA	NA	NA
Nb-95	15	NA	NA	NA	NA	NA
I-131	1 (4)	0.07	NA	1	60	NA
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-140	60	NA	NA	60	NA	NA
La-140	15	NA	NA	15	NA	NA

[1] For drinking water samples: If no drinking water pathway exists, a value of 30,000 pCi/L may be used.
[2] If no drinking water pathway exists, a value of 20 pCi/l may be used
[3] If no drinking water pathway exists, a value of 3,000 pCi/L may be used. Some states may require a lower LLD for drinking water sources- per 40 CFR 141 Safe drinking water ACT.
[4] If no drinking water pathway exists, a value of 15 pCi/l may be used

8.0 SAMPLING PROGRAM, PROGRAM MODIFICATION AND INTEPRETATION OF RESULTS

At most nuclear stations, data was collected prior to plant operation to determine background radioactivity levels in the environment. Annual data is routinely compared to preoperational and/or 10-year average values to determine if changes in the environs are present. Strict comparison is difficult to make due to fallout from historical nuclear weapon testing. Cesium-137 can be routinely found in environmental samples as a result of above ground nuclear weapons testing. It is important to note, levels of Cs-137 in environment are observed to fluctuate, for example as silt distributions shift due to natural erosion and transport processes, Cs-137 may or may not be observed in sediment samples. Results from samples collected and analyzed during the year, 2025, are described below.

In the following sections, results from direct radiation, air, water, and food products analyzed as part of REMP in 2025 will be discussed. Sampling program descriptions and deviations will also be discussed.

8.1 Environmental Direct Radiation Dosimetry Results

Dose is measured as net exposure (field reading less transit reading) normalized to 91-day quarters. Data is treated and analyzed consistent with ANSI/HPS N13.37-2014, which compares the measured dose for each location to the baseline background dose for that location. Environmental dose rates vary by location, depending on geological and land use considerations, and remain relatively constant for any given location (unless land use changes). Some facilities observe seasonal variation in environmental doses. Baseline Background Doses have been determined for both quarterly and annual measurements at each location using historical field measurements.

ANSI/HPS N13.37-2014 uses the concept of minimum differential dose (MDD), which is the minimum facility-related dose that can be detected above background. Due to natural background variations and measurement sensitivities and uncertainties, minimum differential dose is not zero. MDD is calculated based on statistical performance of the dosimetry system in the environment and is site specific.

Normalized doses that exceed the Minimum Differential Dose value above the Baseline Background Dose are considered to indicate Facility-Related Dose; a quality assurance review is performed to verify that any results indicating Facility-Related Dose are accurate.

During the calendar year 2025, a total of 83 locations were monitored and data analyzed in accordance with the requirements in Attachment 4: Environmental Direct Radiation Dosimetry Results, provides the annual direct radiation dosimetry analysis.

There was no direct radiation dose detected from the facility. All OSLD measurements were analyzed, and none were found to have radiation levels that had increased over normal background radiation levels.

8.2 Air Particulate and Radioiodine Sample Results

Air particulate filters and charcoal canisters were collected from locations specified in Table 2, Radiological Environmental Sampling Program – Exposure Pathway - Airborne. During the calendar year 2025, a total of 832 samples were collected and analyzed for gross beta, gamma emitters and iodine particulate samplers are used to continuously collect airborne particulates on a filter. The samples are analyzed for gross beta activity following filter changeout which occurs weekly. Gamma isotopic analysis is also performed on the samples collected at each location and is analyzed quarterly. All analyses met Minimum Detectable Activities. No fission or activation products were detected.

All gross beta analyses of air particulate filters detected gross beta activity at levels consistent with previous years. All air particulate quarterly gamma composite samples were below the detection limit except for naturally occurring radionuclides.

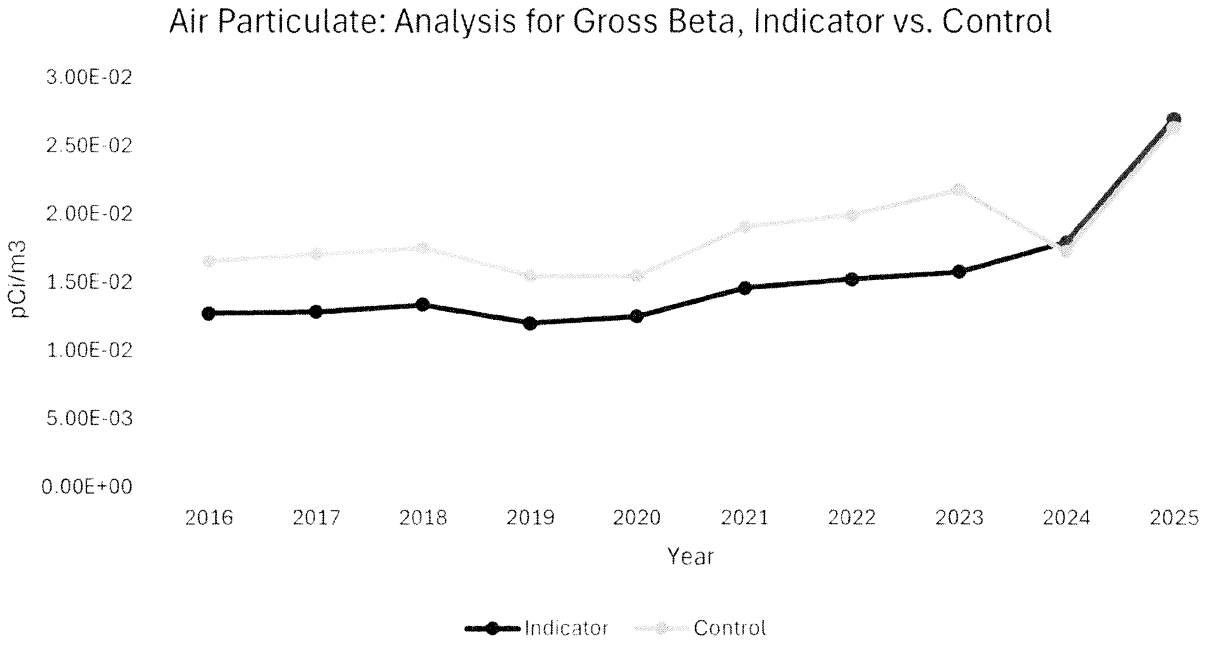


Figure 7: Air Particulate: Analysis for Gross Beta, Average for All Indicator vs. Control Location

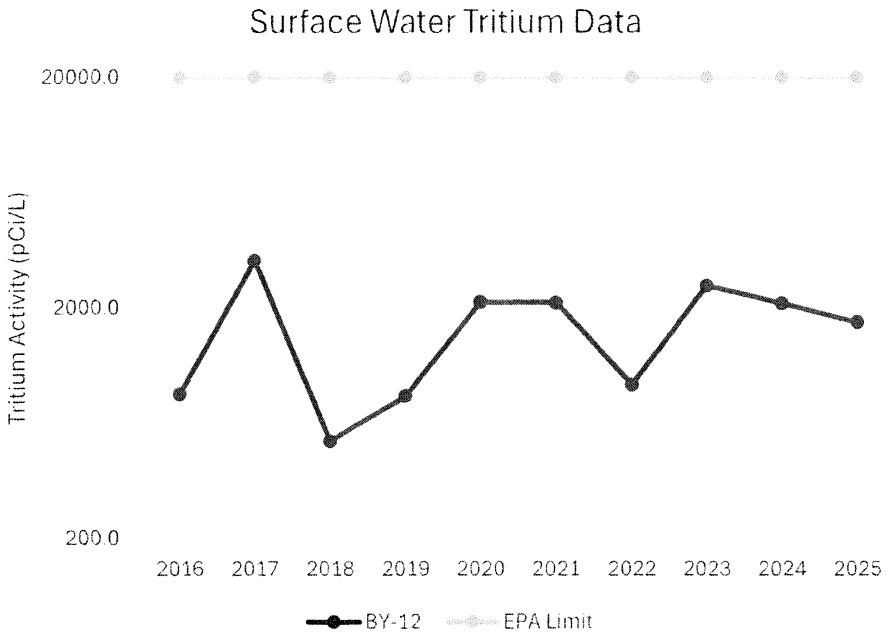
Air particulate and radioiodine results from this monitoring period, 2025, were compared to 10-year average as shown in Figure 7. The slight shift upward in 2025 is likely due to the transition from TBE to CGS Laboratory which analyzes to a lower detection limit, and consequently control and indicator data have lower uncertainties and less variability in results.

8.3 Waterborne Sample Results

8.3.1 Surface Water (i.e., Bay, Lake etc.)

Composite water samples are collected monthly at the upstream control (BY-29) location and at the downstream indicator (BY-12) locations. Monthly composite samples are analyzed for gamma emitters. Aliquots from the monthly composites are combined to form a quarterly composite which is then analyzed for tritium. During the calendar year 2025, a total of 22 surface water samples were collected and analyzed in accordance with the requirements in the ODCM and shown in

Gross Beta was detected in 20 of the 22 samples with a range of 0.90 to 5.95 pCi/L. The required LLD for Gross Beta was met for all samples. Samples from both locations were analyzed for gamma-emitting nuclides. No nuclides were detected and all required LLDs were met Tritium was detected in one sample. The analyzed concentration was 1,730 pCi/L. Tritium concentrations in surface water were well below the EPA tritium drinking water limit of 20,000 pCi/L and were consistent with expected levels as a result of permitted liquid discharges.



* There are no detected tritium results for BY-29(Control). If there is a detected result in the future, it will be added to the graph.

Figure 8: Surface Water Tritium Results

8.3.2 REMP Groundwater

Groundwater samples were collected from control location upgradient from the plant and indicator location downgradient from the plant. During the calendar year 2025, a total of 23 groundwater water samples were collected from offsite monitoring wells and analyzed in accordance with the requirements in the ODCM and shown in Table 3: Radiological Environmental Sampling Program – Exposure Pathway - Waterborne. A total of six indicator samples were collected. These samples were analyzed for tritium and gamma quarterly. All samples were collected in new unused plastic bottles, which were rinsed with source water prior to collection.

Samples from all locations were analyzed for gamma-emitting nuclides. No nuclides were detected and all required LLDs were met. Tritium concentrations in groundwater were well below the EPA tritium drinking water limit of 20,000 pCi/L. There has been no detectable tritium in any REMP groundwater samples in 2025 or the previous 10 years, therefore, no trend has been established above the detection limit to plot on a trending graph.

8.3.3 Sediment from Shoreline

Shoreline sediment collections were made in May and October 2025 and analyzed for gamma-emitting isotopes and nickel-63. Samples are collected at both indicator and control locations. A total of 4 shoreline samples were analyzed in accordance with requirements in the ODCM and shown in Table 3, Radiological Environmental Sampling Program – Exposure Pathway - Waterborne.

All analyses met Minimum Detectable Activities. No fission or activation products were detected.

8.4 Ingestion Pathway Sample Results

8.4.1 Milk

Milk samples from milking animals were collected at 2 locations within 5 km having the highest dose potential, along with samples collected from control locations 15-30 km in the least prevalent wind direction. Samples were collected monthly from November-April and bi-weekly through the rest of the year. Samples were analyzed for gamma-emitting isotopes and I-131(Low Level).

All analyses met Minimum Detectable Activities. No fission or activation products were detected.

8.4.2 Fish

A total of 8 fish samples were collected in 2025. These samples were analyzed for gamma emitting radionuclides and nickel-63 in edible portions, in accordance with requirements of the ODCM and summarized in Table 4, Radiological Environmental Sampling Program – Exposure Pathway - Ingestion.

These samples are collected from the indicator and control areas as required by the ODCM.

All analyses met Minimum Detectable Activities. No fission or activation products were detected.

8.4.3 Food Products

A total of 12 food product type samples were analyzed in 2025, for gamma emitting radionuclides in accordance with requirements of the ODCM, as summarized in Table 4, Radiological Environmental Sampling Program – Exposure Pathway - Ingestion.

All analyses met Minimum Detectable Activities. No fission or activation products were detected.

9.0 LAND USE CENSUS

An annual land use census is required by the Offsite Dose Calculation Manual and is performed to ensure that changes in the use of areas at or beyond the site boundary are identified and modifications to REMP are made if required by changes in land use. The land use census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR 50 [2]. NUREG-1301/1302 Control 3.12.2 specifies that "a Land Use Census shall be conducted and shall identify within a distance of 8 km (5 mi.) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence and the nearest garden of greater than 50 m^2 (500 ft^2) producing broad leaf vegetation. Note, per NUREG-1301/1302, Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the SITE BOUNDARY in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census.

A Land Use Census was conducted during the calendar year, 2025, within the growing season to identify changes in land use, receptor locations, and new exposure pathways. The results for the 2025 Land Use Census are listed in Table 8: Land Use Census – Nearest Receptors within 5 miles. In summary, the nearest residence changed in the ENE sector for 2025. All other highest D/Q locations for nearest livestock, nearest residence and nearest milk animal did not change from the previous 2024 census.

Table 8: Land Use Census – Nearest Receptors within 5 miles

Sector	Direction	Nearest Residence	Distance (Miles)	Nearest Milk Animal	Distance (Miles)	Livestock	Distance (Miles)
A	N	5362 N. Kufalk Road, Byron, IL	1.21			2779 Lynn Road, Byron, IL	5.9
B	NNE	3519 E. Whitaker Road, Byron, IL, dead end road	1.57			Lynn Rd West of Baker Rd, Byron, IL	6.2
C	NE	4963 German Church Rd. Byron, IL	1.08			Reeverts Farm, German Church Road, Byron, IL	2.0
D	ENE	4754 Black Walnut Road Byron, IL	1.40			5886 Stillman Road, Stillman Valley, IL.	3.7
E	E	4252 Black Walnut Rd, Byron, IL	1.00			5785 Weld Road, Stillman Valley, IL.	4.2
F	ESE	3525 Black Walnut Road, Byron, IL	1.47			3525 Black Walnut Rd, Byron, IL	1.5
G	SE	3960 Black Walnut Road, Byron, IL	1.70			6898 E. Brick Rd, Chana, IL.	5.1
H	SSE	3485 German Church Rd. Byron, IL.	0.71			4232 Limerick Road	3.3
J	S	2761 Deer Path Road, Byron, IL	0.63			2761 Deer Path Road, Byron, IL	0.7
K	SSW	2386 Deer Path Road, Oregon, IL	0.69			2386 Deer Path Rd, Byron, IL	0.7
L	SW	2277 Deer Path Road, Oregon, IL	0.77			1381 Pleasant Grove Road, Oregon, IL.	2.0
M	WSW	3418 Spring Creek Road, Byron, IL.	1.60	3082 N. Silver Creek Road, Mt. Morris, IL	4.5	Razorville Road, North of Met Tower	0.8
N	W	R. Grabowski, 879 Equestrian Road, Byron, IL.	1.76			3909 Town Hall Road, Mt. Morris, IL	3.2
P	WNW	1260 Old Wagon Road, Byron, IL	1.56	7361 N. Mile Road, Forreston, IL	11.5	Curly Cattle Ranch, 1260 Old Wagon Road, Byron, IL	1.6
Q	NW	Benesh, 4629 Razorville Road, Byron	0.80			1482 Acorn Road, Byron, IL	1.5
R	NNW	2525 Ash Road, Byron, IL. (Near moto sport park)	0.92			Swanson Shorthorns, 5413 Razorville Road, Byron, IL	1.4

10.0 SAMPLE DEVIATIONS, ANOMALIES AND UNAVAILABILITY

Sampling and analysis are performed for media types addressed in the Offsite Dose Calculation Manual. Sampling and analysis challenges may be experienced due to a multitude of reasons including environmental factors, loss of TLDs/OSLDs, contamination of samples, etc. To aid classification of sampling and analysis challenges experienced in 2025, the following three terms are used to describe the issues: Sample Anomalies, Sample Deviation, and Unavailable Samples.

Media that experienced downtime (i.e., air samplers or water samplers) during a surveillance period are classified a "Sample Deviation". "Sample Anomalies" are defined as errors that were introduced to a sample once it arrived in the laboratory, errors that prevents the sample from being analyzed as it normally would or may have altered the outcome of the analysis (i.e., cross contamination, human error).

"Sample Unavailability" is defined as sample collection with no available sample (i.e., food crop, TLD).

All required samples were collected and analyzed as scheduled except for the following:

Table 9: Sample Deviation Summary

Sample Type and Analysis	Location	Collection Date or Period	Reason for not conducting REMP sampling as required by ODCM	Plans for preventing reoccurrence
SW	BY-29	01/07/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	01/14/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	01/21/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	01/28/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	02/04/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	02/11/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	02/18/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	02/25/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	03/04/25	Unable to collect water; river frozen	N/A Weather dependent
OSLD	BY-108-1	2nd Qtr. 25	One OSLD was missing, possibly dislodged by strong winds. Premises were searched unsuccessfully.	N/A Weather dependent
WW	BY-14-1	10/14/25	House being torn down; water shut off	Sample Site Lost
SW	BY-29	12/09/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	12/16/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	12/23/25	Unable to collect water; river frozen	N/A Weather dependent
SW	BY-29	12/29/25	Unable to collect water; river frozen	N/A Weather dependent

11.0 OTHER SUPPLEMENTAL INFORMATION

11.1 NEI 07-07 Onsite Radiological Groundwater Monitoring Program

Byron Clean Energy Center Units 1 and 2 has developed a Groundwater Protection Initiative (GPI) program in accordance with NEI 07-07, Industry Ground Water Protection Initiative – Final Guidance Document. The purpose of the GPI is to ensure timely detection and an effective response to situations involving inadvertent radiological releases to groundwater in order to prevent migration of licensed radioactive material off-site and to quantify impacts on decommissioning. It is important to note that samples and results taken in support of NEI 07-07 on-site groundwater monitoring program are separate from the Radiological Environmental Monitoring Program (REMP). Results of the NEI 07-07 Radiological Groundwater Monitoring Program for onsite groundwater wells are provided with the AREOR as a separate document.

11.2 Corrections to Previous Reports

The following corrections in previous reports are described below.

11.2.1 It was identified after submittal of the 2024 AREOR that Table 2 was incorrectly labeled. In the 2024 AREOR, Table 2 was labeled “Table 2, Radiological Environmental Sampling Program – Exposure Pathway - Waterborne” but the table information outlined the airborne sampling program. The Table 2 title should have been titled, “Table 2, Radiological Environmental Sampling Program – Exposure Pathway - Airborne”, this error has been corrected in the 2025 Report. While the title of the table was incorrect, the information with the table was accurate to the ODCM. This error occurred due to the transition from the historical report template to the industry approved NISP template that had pre-labeled table headers that were not properly updated during the creation of the 2024 Byron Station AREOR.

11.2.2 It was also determined that, during the preparation of Table 5, "REMP Sampling Locations – Direct Radiation," certain location designations were inadvertently combined, and all distances were rounded to the nearest tenth of a mile instead of the hundredth of a mile as specified in the ODCM. This combination of sample location designations and rounding resulted in errors for each dosimeter location listed in the table; these inaccuracies have been corrected in the 2025 AREOR. It is important to note that these table errors did not affect the accuracy of the 2024 dosimeter reading data.

11.2.3 A correction has been made to the 2024 AREOR Table 11, Weekly Air Particulate Gross Beta (E-3pCi/m3±2 sigma) and Table 13, Weekly Air Iodine I-131(E-3 pCi/M3). The start date of collection for each week in 2024 was inadvertently recorded in the tables instead of the end date of the air compositor’s collection period. There is no impact to the reported results as the correct weeks of sampling were reported, however the error in the reported tables and corrected tables are provided in Attachment 5 of this 2025 AREOR to document the error and correction.

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Constellation

Byron Clean Energy Center Units 1 and 2

Attachment 1: Byron Data Summary Table

Medium or Pathway Sampled (Units)	Type, Total Number of Analyses performed (e.g., I-131, 400)	Lower Limit of Detection (LLD)	Indicator Mean[5]; (f^6). Range[5]	Location with Highest Annual Mean		Control Mean[5] (f^6). Range[5]	Number of Nonroutine Reported Measurements
				Name Distance and Direction	Mean[5] (f^6) Range[5]		
Air Particulates (pCi/m^3)	Beta, 416	(0.07)	1.46 E^{-2} (364/364) (1.66E^{-3} – 7.21E^{-2})	BY-22, Byron Nearsite Southeast, 0.36 miles Sector SE	2.74 E^{-2} (52/52) (9.75 E^{-3}-6.09E^{-2})	2.09 E^{-2} (52/52) (6.76 E^{-3}-7.05E^{-2})	0
Direct Radiation (mrem/qtr.)	Gamma Dose, 2656	NA	17.9 (1324/1328) (2.3 – 23.0)	BY-107-2, 1.40 miles in Sector SE	21.8 (8/8) (20.7 – 22.5)	14.8 (16/16) (14.0 – 15.7)	0
Surface Water (pCi/L)	Gross Beta, 22	(4)	3.74, (12/12) (1.94-5.95)	BY-12, Oregon Pool of Rock River, 4.55 miles, Sector SSW	3.74, (12/12) (1.94-5.95)	3.46, (10/12) (0.90-4.94)	0
Surface Water (pCi/L)	Tritium, 22	(200)	1,730 (1/4)	BY-12, Oregon Pool of Rock River, 4.55 miles, Sector SSW	1,730 (1/4)	NA	0

[5] Mean and range are based on detectable measurements only.
[6] Fraction of detectable measurements at specified locations is indicated in parentheses.

Attachment 2: Complete Data Table for All Analysis Results Obtained In 2025

The following data tables in this attachment are organized by frequency and media type of samples collected for the Radiological Environmental Monitoring Program reporting out the surveillance of the pathways of exposure to the environment for 2025. The goal of the continuous and periodic sampling of these media types provides thorough assessments that plant operations are within all regulatory limits ensuring the safety of the public.

Table 10: Monthly Sample Results

Radionuclides in Surface Water (pCi/L ± 2-σ)					
BY-12					
Date	Gamma Emitters	Gross Beta Activity	Uncertainty (2-σ)	Ni-63	Tritium
01/07/2025 - 01/28/2025	*	3.66	1.44	*	*
02/04/2025 - 02/25/2025	*	3.83	1.49	*	
03/04/2025 - 03/25/2025	*	4.12	1.97	*	
04/01/2025 - 04/29/2025	*	3.79	2.01	*	*
05/06/2025 - 05/27/2025	*	3.59	1.89	*	
06/03/2025 - 06/24/2025	*	5.95	1.94	*	
07/01/2025 - 07/29/2025	*	*	*	*	*
08/05/2025 - 08/26/2025	*	3.21	1.80	*	
09/02/2025 - 09/30/2025	*	3.96	1.92	*	
10/07/2025 - 10/28/2025	*	4.18	1.94	*	1.73E+3
11/04/2025 - 11/25/2025	*	3.07	1.90	*	
12/02/2025 - 12/30/2025	*	3.59	1.87	*	

* All Non-Natural Radionuclides <MDA

Table 10 continued: Radionuclides in Surface Water (pCi/L ± 2-σ)

BY-29

Date	Gamma Emitters	Gross Beta Activity	Uncertainty (2-σ)	Ni-63	Tritium
ND	ND	ND	ND	ND	
ND	ND	ND	ND	ND	*
03/11/2025 - 03/25/2025	*	3.30	1.91	*	
04/01/2025 - 04/29/2025	*	4.02	2.03	*	
05/06/2025 - 05/27/2025	*	*	*	*	*
06/03/2025 – 06/24/2025	*	4.47	1.82	*	
07/01/2025 - 7/29/2025	*	0.90	1.89	*	
08/05/2025 - 08/26/2025	*	4.77	1.92	*	*
09/02/2025 - 09/30/2025	*	4.94	2.00	*	
10/07/2025 - 10/28/2025	*	3.89	1.91	*	
11/04/2025 - 11/25/2025	*	3.29	1.92	*	*
12/02/2025	*	3.58	1.86	*	

* All Non-Natural Radionuclides <MDA

ND No Data, Samples not available, see Table 9 Deviation Summary

Table 10 continued: Monthly and Biweekly Samples for Radionuclides in Milk (pCi/L)

Date	Control Farm BY-26-2	Indicator Farm BY-20-1
01/07/2025	*	*
02/04/2025	*	*
03/04/2025	*	*
04/01/2025	*	*
05/06/2025	*	*
05/20/2025	*	*
06/03/2025	*	*
06/17/2025	*	*
07/01/2025	*	*
07/15/2025	*	*
07/29/2025	*	*
08/12/2025	*	*
08/26/2025	*	*
09/09/2025	*	*
09/23/2025	*	*
10/07/2025	*	*
10/21/2025	*	*
11/04/2025	*	*
12/02/2025	*	*

* All Non-Natural Radionuclides <MDA

Table 11: Weekly Air Monitoring Particulate and I-131 filters (pCi/m^3)

Gross Beta activity in Air Particulates (pCi/m^3 ± 2-σ) Near Locations								
	BY-21		BY-22		BY-23		BY-24	
Date	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)
01/07/2025	3.19E-02	2.51E-03	2.43E-02	2.27E-03	2.90E-02	2.42E-03	2.55E-02	2.31E-03
01/14/2025	3.84E-02	2.81E-03	3.40E-02	2.68E-03	3.41E-02	2.69E-03	4.01E-02	2.85E-03
01/21/2025	2.78E-02	2.43E-03	3.14E-02	2.54E-03	2.88E-02	2.46E-03	2.99E-02	2.49E-03
01/28/2025	3.16E-02	2.53E-03	3.26E-02	2.56E-03	3.08E-02	2.51E-03	3.36E-02	2.59E-03
02/04/2025	2.08E-02	2.24E-03	2.23E-02	2.29E-03	2.24E-02	2.29E-03	2.15E-02	2.26E-03
02/11/2025	2.32E-02	2.29E-03	3.74E-02	2.73E-03	2.16E-02	2.24E-03	2.49E-02	2.35E-03
02/18/2025	3.31E-02	2.58E-03	5.19E-02	3.09E-03	3.23E-02	2.56E-03	3.61E-02	2.67E-03
02/25/2025	2.86E-02	2.39E-03	5.64E-02	3.16E-03	3.35E-02	2.54E-03	3.05E-02	2.45E-03
03/04/2025	1.98E-02	2.12E-03	1.86E-02	2.08E-03	2.14E-02	2.18E-03	2.13E-02	2.18E-03
03/11/2025	2.20E-02	2.18E-03	4.36E-02	2.85E-03	2.16E-02	2.17E-03	1.96E-02	2.09E-03
03/18/2025	2.19E-02	2.16E-03	2.45E-02	2.25E-03	2.06E-02	2.12E-03	2.10E-02	2.13E-03
03/25/2025	2.03E-02	2.13E-03	2.13E-02	2.17E-03	2.11E-02	2.17E-03	2.06E-02	2.14E-03
04/01/2025	1.59E-02	2.02E-03	1.60E-02	2.02E-03	1.62E-02	2.02E-03	1.57E-02	2.00E-03
04/08/2025	1.51E-02	2.01E-03	1.71E-02	2.04E-03	1.73E-02	2.09E-03	1.73E-02	2.07E-03
04/15/2025	2.50E-02	2.32E-03	2.47E-02	2.30E-03	2.38E-02	2.28E-03	2.33E-02	2.26E-03
04/22/2025	1.49E-02	1.98E-03	3.80E-02	2.73E-03	1.69E-02	2.05E-03	1.64E-02	2.03E-03
04/29/2025	2.20E-02	2.25E-03	2.21E-02	2.25E-03	2.43E-02	2.35E-03	2.13E-02	2.23E-03
05/06/2025	9.74E-03	1.76E-03	1.03E-02	1.79E-03	1.09E-02	1.81E-03	1.08E-02	1.81E-03
05/13/2025	1.72E-02	2.08E-03	1.72E-02	2.08E-03	1.73E-02	2.11E-03	1.84E-02	2.13E-03
05/20/2025	1.06E-02	1.82E-03	1.17E-02	1.87E-03	1.15E-02	1.88E-03	1.25E-02	1.90E-03

Table 11 continued: Gross Beta activity in Air Particulates (pCi/m^3 ± 2-σ)
Near Locations

	BY-21		BY-22		BY-23		BY-24	
Date	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)
05/27/2025	6.61E-03	1.66E-03	9.75E-03	1.80E-03	8.12E-03	1.73E-03	9.23E-03	1.80E-03
06/03/2025	2.20E-02	2.20E-03	2.05E-02	2.16E-03	2.59E-02	2.38E-03	2.37E-02	2.28E-03
06/10/2025	1.87E-02	2.07E-03	1.79E-02	2.04E-03	1.96E-02	2.11E-03	1.96E-02	2.11E-03
06/17/2025	2.56E-02	2.32E-03	2.44E-02	2.28E-03	2.27E-02	2.23E-03	2.55E-02	2.32E-03
06/24/2025	2.80E-02	2.36E-03	2.43E-02	2.24E-03	2.50E-02	2.26E-03	2.81E-02	2.37E-03
07/01/2025	1.87E-02	2.03E-03	1.67E-02	1.96E-03	1.61E-02	1.94E-03	1.83E-02	2.02E-03
07/08/2025	2.57E-02	2.31E-03	2.30E-02	2.22E-03	2.32E-02	2.23E-03	2.72E-02	2.36E-03
07/15/2025	2.40E-02	2.29E-03	2.30E-02	2.26E-03	2.00E-02	2.15E-03	2.26E-02	2.25E-03
07/22/2025	1.95E-02	2.17E-03	1.64E-02	2.06E-03	1.91E-02	2.16E-03	2.02E-02	2.22E-03
07/29/2025	2.29E-02	2.22E-03	2.09E-02	2.15E-03	2.48E-02	2.29E-03	2.53E-02	2.33E-03
08/05/2025	2.35E-02	2.28E-03	1.96E-02	2.15E-03	2.11E-02	2.20E-03	2.22E-02	2.24E-03
08/12/2025	3.84E-02	2.73E-03	3.75E-02	2.70E-03	3.92E-02	2.75E-03	3.96E-02	2.76E-03
08/19/2025	2.66E-02	2.35E-03	2.21E-02	2.19E-03	2.50E-02	2.29E-03	2.43E-02	2.27E-03
08/26/2025	1.77E-02	2.04E-03	1.65E-02	1.99E-03	1.79E-02	2.04E-03	1.76E-02	2.03E-03
09/02/2025	2.29E-02	2.25E-03	2.11E-02	2.19E-03	2.05E-02	2.17E-03	2.31E-02	2.26E-03
09/09/2025	1.81E-02	2.16E-03	1.88E-02	2.19E-03	1.78E-02	2.16E-03	1.95E-02	2.22E-03
09/16/2025	6.76E-02	3.48E-03	6.09E-02	3.33E-03	6.31E-02	3.37E-03	6.12E-02	3.33E-03
09/23/2025	5.24E-02	3.11E-03	5.09E-02	3.07E-03	4.84E-02	3.01E-03	5.36E-02	3.14E-03
09/30/2025	4.85E-02	3.02E-03	4.45E-02	2.92E-03	4.66E-02	2.97E-03	4.89E-02	3.03E-03
10/07/2025	4.86E-02	3.00E-03	4.73E-02	2.96E-03	4.69E-02	2.95E-03	4.88E-02	3.00E-03

Table 11 continued: Gross Beta activity in Air Particulates (pCi/m^3 ± 2-σ)
Near Locations

	BY-21		BY-22		BY-23		BY-24	
Date	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)
10/14/2025	3.22E-02	2.58E-03	3.02E-02	2.52E-03	4.76E-02	3.00E-03	3.42E-02	2.64E-03
10/21/2025	3.24E-02	2.58E-03	2.84E-02	2.46E-03	2.99E-02	2.50E-03	3.39E-02	2.62E-03
10/28/2025	1.73E-02	2.09E-03	1.73E-02	2.09E-03	1.69E-02	2.08E-03	1.79E-02	2.12E-03
11/04/2025	2.52E-02	2.35E-03	1.98E-02	2.17E-03	2.16E-02	2.24E-03	2.31E-02	2.29E-03
11/11/2025	2.58E-02	2.41E-03	2.12E-02	2.25E-03	2.44E-02	2.36E-03	2.43E-02	2.36E-03
11/18/2025	2.75E-02	2.40E-03	2.49E-02	2.31E-03	2.94E-02	2.46E-03	2.75E-02	2.40E-03
11/25/2025	4.38E-02	2.87E-03	4.07E-02	2.78E-03	4.69E-02	2.95E-03	4.38E-02	2.87E-03
12/02/2025	1.91E-02	2.19E-03	1.45E-02	2.02E-03	1.82E-02	2.15E-03	1.75E-02	2.13E-03
12/09/2025	4.02E-02	2.77E-03	4.03E-02	2.78E-03	4.14E-02	2.81E-03	4.18E-02	2.82E-03
12/16/2025	3.60E-02	2.66E-03	3.37E-02	2.59E-03	3.61E-02	2.67E-03	2.73E-02	2.40E-03
12/23/2025	3.04E-02	2.54E-03	3.36E-02	2.63E-03	3.48E-02	2.67E-03	3.19E-02	2.58E-03
12/30/2025	3.05E-02	2.53E-03	2.98E-02	2.51E-03	3.76E-02	2.74E-03	3.56E-02	2.68E-03

Table 11 continued: Gross Beta activity in Air Particulates (pCi/m^3 ± 2-σ)
>2 Miles from Site Locations

	BY-01		BY-04		BY-06		BY-08 (Control)	
Date	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)
01/07/2025	2.94E-02	2.43E-03	2.44E-02	2.27E-03	2.59E-02	2.32E-03	2.68E-02	2.36E-03
01/14/2025	3.46E-02	2.70E-03	3.58E-02	2.73E-03	3.88E-02	2.82E-03	3.41E-02	2.68E-03
01/21/2025	2.87E-02	2.46E-03	2.74E-02	2.41E-03	3.01E-02	2.50E-03	2.73E-02	2.41E-03
01/28/2025	2.96E-02	2.47E-03	2.96E-02	2.47E-03	2.89E-02	2.44E-03	2.97E-02	2.47E-03
02/04/2025	2.05E-02	2.22E-03	2.03E-02	2.22E-03	1.90E-02	2.17E-03	2.23E-02	2.29E-03
02/11/2025	2.16E-02	2.24E-03	2.25E-02	2.27E-03	2.02E-02	2.19E-03	2.00E-02	2.18E-03
02/18/2025	3.41E-02	2.61E-03	3.16E-02	2.54E-03	3.02E-02	2.50E-03	3.41E-02	2.61E-03
02/25/2025	3.05E-02	2.45E-03	2.89E-02	2.40E-03	2.91E-02	2.41E-03	2.66E-02	2.33E-03
03/04/2025	1.78E-02	2.05E-03	1.96E-02	2.12E-03	2.11E-02	2.17E-03	2.11E-02	2.17E-03
03/11/2025	2.09E-02	2.15E-03	2.40E-02	2.25E-03	2.24E-02	2.20E-03	2.16E-02	2.16E-03
03/18/2025	2.04E-02	2.11E-03	2.31E-02	2.21E-03	2.28E-02	2.20E-03	2.35E-02	2.22E-03
03/25/2025	2.05E-02	2.14E-03	2.12E-02	2.17E-03	2.24E-02	2.21E-03	2.04E-02	2.14E-03
04/01/2025	1.64E-02	2.04E-03	1.52E-02	1.99E-03	1.73E-02	2.07E-03	1.55E-02	2.00E-03
04/08/2025	1.69E-02	2.08E-03	1.62E-02	2.06E-03	1.69E-02	2.08E-03	1.47E-02	1.99E-03
04/15/2025	2.45E-02	2.29E-03	2.32E-02	2.26E-03	2.53E-02	2.33E-03	2.51E-02	2.32E-03
04/22/2025	1.71E-02	2.06E-03	1.57E-02	2.03E-03	1.68E-02	2.05E-03	1.75E-02	2.08E-03
04/29/2025	2.30E-02	2.29E-03	2.17E-02	2.24E-03	2.22E-02	2.26E-03	2.26E-02	2.30E-03
05/06/2025	1.06E-02	1.80E-03	9.45E-03	1.77E-03	1.27E-02	1.89E-03	9.80E-03	1.77E-03
05/13/2025	1.83E-02	2.12E-03	1.76E-02	2.12E-03	1.90E-02	2.15E-03	1.68E-02	2.07E-03
05/20/2025	1.27E-02	1.90E-03	1.19E-02	1.90E-03	1.26E-02	1.90E-03	1.19E-02	1.88E-03

Table 11 continued: Gross Beta activity in Air Particulates (pCi/m^3 ± 2-σ)
>2 Miles from Site Locations

	BY-01		BY-04		BY-06		BY-08 (Control)	
Date	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)
05/27/2025	9.10E-03	1.77E-03	1.03E-02	1.78E-03	9.57E-03	1.79E-03	6.76E-03	1.67E-03
06/03/2025	2.26E-02	2.19E-03	2.35E-02	2.27E-03	2.31E-02	2.21E-03	2.12E-02	2.17E-03
06/10/2025	1.79E-02	2.04E-03	1.75E-02	2.03E-03	2.03E-02	2.12E-03	1.62E-02	1.97E-03
06/17/2025	2.53E-02	2.31E-03	2.23E-02	2.21E-03	2.35E-02	2.25E-03	2.37E-02	2.26E-03
06/24/2025	2.28E-02	2.19E-03	2.73E-02	2.34E-03	2.66E-02	2.31E-03	2.35E-02	2.21E-03
07/01/2025	1.74E-02	1.98E-03	1.95E-02	2.06E-03	1.86E-02	2.03E-03	1.71E-02	1.97E-03
07/08/2025	2.46E-02	2.27E-03	2.71E-02	2.36E-03	2.72E-02	2.36E-03	2.58E-02	2.31E-03
07/15/2025	2.45E-02	2.31E-03	2.58E-02	2.35E-03	2.49E-02	2.32E-03	2.04E-02	2.17E-03
07/22/2025	1.88E-02	2.05E-03	2.12E-02	2.15E-03	1.92E-02	2.17E-03	1.98E-02	2.19E-03
07/29/2025	2.29E-02	2.14E-03	2.41E-02	2.17E-03	2.67E-02	2.34E-03	2.29E-02	2.22E-03
08/05/2025	2.31E-02	2.27E-03	2.05E-02	2.18E-03	2.51E-02	2.34E-03	2.38E-02	2.29E-03
08/12/2025	3.78E-02	2.71E-03	3.71E-02	2.69E-03	4.01E-02	2.77E-03	3.90E-02	2.75E-03
08/19/2025	2.54E-02	2.31E-03	2.77E-02	2.38E-03	2.61E-02	2.33E-03	2.55E-02	2.30E-03
08/26/2025	1.85E-02	2.06E-03	1.85E-02	2.07E-03	1.88E-02	2.03E-03	1.79E-02	2.01E-03
09/02/2025	2.57E-02	2.35E-03	2.50E-02	2.33E-03	2.46E-02	2.26E-03	2.38E-02	2.25E-03
09/09/2025	1.94E-02	2.21E-03	2.10E-02	2.26E-03	2.37E-02	2.35E-03	2.15E-02	2.28E-03
09/16/2025	6.17E-02	3.34E-03	7.21E-02	3.57E-03	5.94E-02	3.29E-03	7.05E-02	3.53E-03
09/23/2025	4.83E-02	3.01E-03	5.46E-02	3.16E-03	5.65E-02	3.21E-03	5.81E-02	3.25E-03
09/30/2025	4.98E-02	3.05E-03	5.24E-02	3.12E-03	5.13E-02	3.09E-03	4.57E-02	2.95E-03
10/07/2025	4.81E-02	2.98E-03	5.19E-02	3.08E-03	5.18E-02	3.07E-03	5.23E-02	3.09E-03

Table 11 continued: Gross Beta activity in Air Particulates (pCi/m^3 ± 2-σ)
>2 Miles from Site Locations

	BY-01		BY-04		BY-06		BY-08 (Control)	
Date	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)	Gross Beta Activity	(2-σ)
10/14/2025	3.40E-02	2.63E-03	3.74E-02	2.73E-03	3.40E-02	2.63E-03	3.36E-02	2.62E-03
10/21/2025	2.98E-02	2.50E-03	3.26E-02	2.58E-03	3.23E-02	2.57E-03	2.98E-02	2.50E-03
10/28/2025	1.91E-02	2.16E-03	1.86E-02	2.14E-03	1.72E-02	2.09E-03	1.88E-02	2.15E-03
11/04/2025	2.39E-02	2.31E-03	2.45E-02	2.33E-03	2.54E-02	2.36E-03	2.43E-02	2.33E-03
11/11/2025	2.50E-02	2.38E-03	2.49E-02	2.38E-03	2.65E-02	2.43E-03	2.48E-02	2.37E-03
11/18/2025	2.52E-02	2.32E-03	2.90E-02	2.44E-03	2.58E-02	2.34E-03	2.63E-02	2.36E-03
11/25/2025	4.44E-02	2.88E-03	4.35E-02	2.86E-03	4.27E-02	2.84E-03	4.02E-02	2.77E-03
12/02/2025	1.97E-02	2.20E-03	1.77E-02	2.14E-03	2.07E-02	2.25E-03	1.87E-02	2.18E-03
12/09/2025	4.05E-02	2.78E-03	3.58E-02	2.65E-03	4.14E-02	2.81E-03	4.07E-02	2.78E-03
12/16/2025	3.48E-02	2.63E-03	3.42E-02	2.61E-03	3.41E-02	2.60E-03	3.20E-02	2.55E-03
12/23/2025	3.60E-02	2.70E-03	3.47E-02	2.66E-03	3.20E-02	2.58E-03	2.90E-02	2.49E-03
12/30/2025	3.45E-02	2.65E-03	3.03E-02	2.53E-03	3.57E-02	2.69E-03	3.23E-02	2.59E-03

Table 11 continued: Weekly Air Monitoring Particulate and I-131 filters (pCi/m^3)

Airborne I-131 (pCi/m^3) Activity on Charcoal Cartridges								
Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08 [C]
01/07/2025	*	*	*	*	*	*	*	*
01/14/2025	*	*	*	*	*	*	*	*
01/21/2025	*	*	*	*	*	*	*	*
01/28/2025	*	*	*	*	*	*	*	*
02/04/2025	*	*	*	*	*	*	*	*
02/11/2025	*	*	*	*	*	*	*	*
02/18/2025	*	*	*	*	*	*	*	*
02/25/2025	*	*	*	*	*	*	*	*
03/04/2025	*	*	*	*	*	*	*	*
03/11/2025	*	*	*	*	*	*	*	*
03/18/2025	*	*	*	*	*	*	*	*
03/25/2025	*	*	*	*	*	*	*	*
04/01/2025	*	*	*	*	*	*	*	*
04/08/2025	*	*	*	*	*	*	*	*
04/15/2025	*	*	*	*	*	*	*	*
04/22/2025	*	*	*	*	*	*	*	*
04/29/2025	*	*	*	*	*	*	*	*
05/06/2025	*	*	*	*	*	*	*	*
05/13/2025	*	*	*	*	*	*	*	*
05/20/2025	*	*	*	*	*	*	*	*
05/27/2025	*	*	*	*	*	*	*	*
06/03/2025	*	*	*	*	*	*	*	*
06/10/2025	*	*	*	*	*	*	*	*
06/17/2025	*	*	*	*	*	*	*	*
06/24/2025	*	*	*	*	*	*	*	*
07/01/2025	*	*	*	*	*	*	*	*
07/08/2025	*	*	*	*	*	*	*	*

Table 11 continued: Airborne I-131 (pCi/m^3) Activity on Charcoal Cartridges

Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08 [C]
07/15/2025	*	*	*	*	*	*	*	*
07/22/2025	*	*	*	*	*	*	*	*
07/29/2025	*	*	*	*	*	*	*	*
08/05/2025	*	*	*	*	*	*	*	*
08/12/2025	*	*	*	*	*	*	*	*
08/19/2025	*	*	*	*	*	*	*	*
08/26/2025	*	*	*	*	*	*	*	*
09/02/2025	*	*	*	*	*	*	*	*
09/09/2025	*	*	*	*	*	*	*	*
09/16/2025	*	*	*	*	*	*	*	*
09/23/2025	*	*	*	*	*	*	*	*
09/30/2025	*	*	*	*	*	*	*	*
10/07/2025	*	*	*	*	*	*	*	*
10/14/2025	*	*	*	*	*	*	*	*
10/21/2025	*	*	*	*	*	*	*	*
10/28/2025	*	*	*	*	*	*	*	*
11/04/2025	*	*	*	*	*	*	*	*
11/11/2025	*	*	*	*	*	*	*	*
11/18/2025	*	*	*	*	*	*	*	*
11/25/2025	*	*	*	*	*	*	*	*
12/02/2025	*	*	*	*	*	*	*	*
12/09/2025	*	*	*	*	*	*	*	*
12/16/2025	*	*	*	*	*	*	*	*
12/23/2025	*	*	*	*	*	*	*	*
12/30/2025	*	*	*	*	*	*	*	*

*<MDA, Minimum Detectable Activity

[C] Control Location

Table 12: Quarterly isotopic data –Water (pCi/L)

Radionuclides in Ground Water Water (pCi/L)												
	BY-14-1		BY-18-1		BY-32		BY-35		BY-37		BY-38	
Date	Gamma Emitters	Tritium	Gamma Emitters	Tritium	Gamma Emitters	Tritium	Gamma Emitters	Tritium	Gamma Emitters	Tritium	Gamma Emitters	Tritium
01/14/2025	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	ND	ND	<MDA	<MDA
01/18/2025	ND	ND	ND	ND	ND	ND	ND	ND	<MDA	<MDA	ND	ND
04/15/2025	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA
07/08/2025	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA
10/14/2025	NA	NA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA

NOTE: <MDA denotes laboratory analysis detected No non-natural radionuclides at or above the ODCM required Minimum Detectable Activity
[ND], No Data, January samples collected and analyzed as required, see Table 9 Deviation Summary for Q4 BY-14-1
[NA], Not Applicable, Sample location discontinued, see Table 9 Deviation Summary for Q4 BY-14-1

Quarterly Air Filter Composite for Gamma Emitters (pCi/m^3)					
Location	Nuclide	Q1	Q2	Q3	Q4
BY-21	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA
BY-22	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA
BY-23	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA
BY-24	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA
BY-01	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA
BY-04	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA
BY-06	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA
BY-08	Cs134, Cs137	<MDA	<MDA	<MDA	<MDA

NOTE: <MDA denotes laboratory analysis detected No non-natural radionuclides at or above the ODCM required Minimum Detectable Activity

Table 13: Semi-Annual Fish and Sediment Nickel-63 and Gamma Isotopic Data

Radionuclides in Fish (pCi/kg wet)				
Sample Code	Sample Date	Sample Type	Gamma Emitters	Ni-63
BY-29 (Control)	05/06/2025	Freshwater Drum	*	*
	05/06/2025	Bigmouth Buffalo	*	*
	09/29/2025	River Carpsucker	*	*
	09/29/2025	Common Carp	*	*
BY-31	05/06/2025	Freshwater Drum	*	*
	05/06/2025	River Carpsucker	*	*
	09/29/2025	Common Carp	*	*
	09/29/2025	River Carpsucker	*	*
* All Non-Natural Gamma Emitters <MDA				

Radionuclides in Sediment (pCi/kg dry)			
Sample Code	Sample Date	Gamma Emitters	Ni-63
BY-12	05/06/2025	*	*
	10/14/2025	*	*
BY-34 (Control)	05/06/2025	*	*
	10/14/2025	*	*
* All Non-Natural Gamma Emitters <MDA			

Table 14: Annual Food Products Gamma Isotopic (pCi/kg Wet ± 2 Sigma)

Sample Code	Sample Date	Sample Type	Gamma Emitters
BY-CONTROL	08/12/2025	Red Cabbage	*
	08/12/2025	Potatoes	*
BY-QUAD-1	08/02/2025	Cabbage	*
	08/12/2025	Root Vegetables	*
BY-QUAD-2	08/02/2025	Potatoes	*
	08/12/2025	Cabbage	*
BY-QUAD-3	08/02/2025	Cabbage	*
	08/12/2025	Beets	*
BY-QUAD-4	08/02/2025	Cabbage	*
	08/02/2025	Carrots	*
	08/12/2025	Onions	*

Attachment 3: Cross Check Intercomparison Program

Participation in cross check intercomparison studies is mandatory for laboratories performing analyses of REMP samples satisfying the requirements in the Offsite Site Dose Calculation Manual. Intercomparison studies provide a consistent and effective means to evaluate the accuracy and precision of analyses performed by a laboratory. Study results should fall within specified control limits and results that fall outside the control limits are investigated and corrected.

Constellation Generation Solutions Laboratory participated in the following proficiency testing studies provided by Environmental Resource Associates (ERA) and Eckert Ziegler Analytics (EZA) in 2025. The Laboratory's intercomparison program results for 2025 are summarized below.

Attachment 3 is a summary of Constellation Generation Solutions (CGS) laboratory's quality assurance program. It consists of Table 17 which is a compilation of the results of the CGS laboratory's participation in an interlaboratory comparison program with Environmental Resource Associates (ERA) located in Arvada, Colorado and Eckert and Ziegler Analytics, Inc. (EZA) located in Atlanta, Georgia.

The CGS laboratory's intercomparison results are in full agreement when they were evaluated using designated acceptance ranges and the Resolution Test Criteria in accordance with the Constellation Radiochemistry Quality Control procedure, as noted in the Pass/Fail column and described below. The CGS laboratory's results are provided with their analytical uncertainties of 2 sigma. When evaluating with the Resolution Test a one sigma uncertainty is used to determine Pass or Fail and noted accordingly.

The vendor laboratories used by CGS for subcontracting and interlaboratory comparison samples, GEL Laboratories and Teledyne Brown Engineering (TBE), also participate in the ERA and EZA interlaboratory comparison program. A presentation of their full data report is provided in their Annual Environmental Quality Assurance Program Reports [27, 28]. In summary Gel reported results met vendor and laboratory acceptance ranges with the following exceptions described here.

For the GEL Laboratory, the following study reported data that did not meet the specified acceptance criteria and was addressed through GEL's internal nonconformance system. A summary is found below:

GEL crosscheck MRAD-42 failed low for Tritium in water, Quarter 2 2025. The laboratory reviewed the data and counting process for this sample and no errors were noted. It was noted that the duplicate met acceptance criteria in the original preparation. The sample was prepared again in duplicate, and the results were within the acceptance criteria of the PT.

The laboratory will scrutinize dilutions to determine the most appropriate level to lessen the impact on the detection limits and non-detected results. The lab will continue to monitor the recoveries of these parameters to ensure that there are no continued issues. During the analysis time period for MRAD-42, the laboratory successfully completed the analysis of other uranium isotopes in water and filters as well as Tritium in water in PT study MAPEP-52. In which, the samples were prepared and analyzed by the same processes and procedures.

For TBE, the following studies reported data that did not meet the specified acceptance criteria and were addressed through the TBE Corrective Action Program. Investigation of the failure is described as follows:

NCR 25-05: Interlaboratory crosscheck failure: MAPEP 25-MaS52 Ni-63 in soil. A manual data-entry error in the carrier volume for one nuclide/matrix led to an incorrect LIMS value. Manual verification showed that the crosscheck would have passed with the correct volume. The procedure has been revised with more prominent notation to assist technicians. No recurrence identified and the following crosscheck study did not result in repeated error- supporting effectiveness of corrective action.

NCR 25-12: Investigation In-progress, Interlaboratory crosscheck failure: MAPEP Series 53, Ni-63 in Soil.

Table 15: Cross Check Intercomparison Results

Study Date	Study ID	Units	Radionuclide	Reported Value	Assigned Value	Acceptance		Performance Evaluation
						Lower Limit	Upper Limit	
03/13/2025	E14262 Milk	pCi/L	Ce-141	80.8	75.8	53.1	98.5	Pass
		pCi/L	Co-58	114	105	73.5	137	Pass
		pCi/L	Co-60	197	193	135	251	Pass
		pCi/L	Cr-51	264	291	204	378	Pass
		pCi/L	Cs-134	140	142	99.4	185	Pass
		pCi/L	Cs-137	173	168	118	218	Pass
		pCi/L	Fe-59	138	135	94.5	176	Pass
		pCi/L	I-131	84.0	94.7	66.3	123	Pass
		pCi/L	Mn-54	198	189	132	246	Pass
		pCi/L	Zn-65	231	251	176	326	Pass
03/13/2025	E14262 Milk	pCi/L	Ce-141	74.3	75.8	53.1	98.5	Pass
		pCi/L	Co-58	97.9	105	73.5	137	Pass
		pCi/L	Co-60	197	193	135	251	Pass
		pCi/L	Cr-51	286	291	204	378	Pass
		pCi/L	Cs-134	146	142	99.4	185	Pass
		pCi/L	Cs-137	181	168	118	218	Pass
		pCi/L	Fe-59	141	135	94.5	176	Pass
		pCi/L	I-131	96.3	94.7	66.3	123	Pass
		pCi/L	Mn-54	192	189	132	246	Pass
		pCi/L	Zn-65	225	251	176	326	Pass
03/13/2025	E14262 Milk	pCi/L	Ce-141	86.2	75.8	53.1	98.5	Pass
		pCi/L	Co-58	117	105	73.5	137	Pass
		pCi/L	Co-60	193	193	135	251	Pass

Table 15: Continued: Cross Check Intercomparison Results

Study Date	Study ID	Units	Radionuclide	Reported Value	Assigned Value	Acceptance		Performance Evaluation
						Lower Limit	Upper Limit	
03/13/2025	E14262 Milk	pCi/L	Cs-134	141	142	99.4	185	Pass
		pCi/L	Cs-137	176	168	118	218	Pass
		pCi/L	Fe-59	124	135	94.5	176	Pass
		pCi/L	I-131	89.3	94.7	66.3	123	Pass
		pCi/L	Mn-54	201	189	132	246	Pass
		pCi/L	Zn-65	236	251	176	326	Pass
03/13/2025	E14263 Water	pCi/L	Beta Cs-137	247	243	170	316	Pass
03/13/2025	E14264 Cartridge	pCi	I-131	61.4	66.1	46.3	85.9	Pass
03/13/2025	E14264 Cartridge	pCi	I-131	63.7	66.1	46.3	85.9	Pass
03/13/2025	E14264 Cartridge	pCi	I-131	61.5	66.1	46.3	85.9	Pass
03/13/2025	E14264 Cartridge	pCi	I-131	59.0	66.1	46.3	85.9	Pass
04/07/2025	RAD-141	pCi/L	Cs-134	17.3	16.5	5.65	27.4	Pass
	Water		Cs-137	49.1	50.8	27.3	74.3	Pass
			Co-60	109	104	84.4	124	Pass
			Zn-65	338	341	279	403	Pass
04/07/2025	RAD-141	pCi/L	Cs-134	18.3	16.5	5.65	27.4	Pass
	Water		Cs-137	54.0	50.8	27.3	74.3	Pass
			Co-60	116	104	84.4	124	Pass
			Zn-65	330	341	279	403	Pass

Table 15: Continued: Cross Check Intercomparison Results

Study Date	Study ID	Units	Radionuclide	Reported Value	Assigned Value	Acceptance		Performance Evaluation
						Lower Limit	Upper Limit	
04/07/2025	RAD-141 Water	pCi/L	Beta Cs-137	20.2	22.9	15.0	30.8	Pass
04/07/2025	RAD-141 Water	pCi/L	I-131	28.0	26.8	23.2	30.4	Pass
04/07/2025	RAD-141 Water	pCi/L	I-131	27.5	26.8	23.2	30.4	Pass
04/07/2025	RAD-141 Water	pCi/L	I-131	27.2	26.8	23.2	30.4	Pass
06/12/2025	E14258 Soil	pCi/g	Cs-134	0.322	0.347	0.243	0.451	Pass
			Cs-137	0.314	0.319	0.223	0.415	Pass
06/12/2025	E14258 Soil	pCi/g	Cs-134	0.318	0.347	0.243	0.451	Pass
			Cs-137	0.333	0.319	0.223	0.415	Pass
06/12/2025	E14258 Soil	pCi/g	Cs-134	0.301	0.347	0.243	0.451	Pass
			Cs-137	0.282	0.319	0.223	0.415	Pass
06/12/2025	E14258 Soil	pCi/g	Cs-134	0.312	0.347	0.243	0.451	Pass
			Cs-137	0.309	0.319	0.223	0.415	Pass
06/12/2025	E14265 Water	pCi/L	Beta Cs-137	201	204	143	265	Pass

Table 15: Continued: Cross Check Intercomparison Results

Study Date	Study ID	Units	Radionuclide	Reported Value	Assigned Value	Acceptance		Performance Evaluation
						Lower Limit	Upper Limit	
06/12/2025	E14266 Water	pCi/L	Ce-141	140	138	96.6	179	Pass
			Co-58	155	160	112	208	Pass
			Co-60	229	211	148	274	Pass
06/12/2025	E14266 Water	pCi/L	Cr-51	320	283	198	368	Pass
			Cs-134	194	204	143	265	Pass
			Cs-137	152	149	104	194	Pass
			Fe-59	159	135	94.5	176	Pass
			I-131	73.8	62.5	43.8	81.3	Pass
			Mn-54	157	150	105	195	Pass
			Zn-65	286	282	197	367	Pass
06/12/2025	E14266 Water	pCi/L	Ce-141	128	138	96.6	179	Pass
			Co-58	156	160	112	208	Pass
			Co-60	211	211	148	274	Pass
			Cr-51	261	283	198	368	Pass
			Cs-134	203	204	143	265	Pass
			Cs-137	147	149	104	194	Pass
			Fe-59	151	135	94.5	176	Pass
			I-131	60.8	62.5	43.8	81.3	Pass
			Mn-54	164	150	105	195	Pass
			Zn-65	285	282	197	367	Pass
06/12/2025	E14267 Filter	pCi	Ce-141	88.4	89.9	62.9	117	Pass
			Co-58	105	104	72.8	135	Pass
			Co-60	139	137	95.9	178	Pass

Table 15: Continued: Cross Check Intercomparison Results

Study Date	Study ID	Units	Radionuclide	Reported Value	Assigned Value	Acceptance		Performance Evaluation
						Lower Limit	Upper Limit	
06/12/2025	E14267 Filter	pCi	Cr-51	198	184	128.80	239	Pass
			Cs-134	108	133	93.1	173	Pass
			Cs-137	100	96.8	67.8	126	Pass
			Fe-59	101	87.5	61.3	114	Pass
			Mn-54	102	97.4	68.2	127	Pass
			Zn-65	195	183	128.1	238	Pass
06/12/2025	E14267 Filter	pCi	Ce-141	87.5	89.9	62.9	117	Pass
			Co-58	103	104	72.8	135	Pass
			Co-60	138	137	95.9	178.1	Pass
			Cr-51	174	184	129	239.2	Pass
			Cs-134	114	133	93.1	172.9	Pass
			Cs-137	95.3	96.8	67.8	125.84	Pass
			Fe-59	97.2	87.5	61.3	113.75	Pass
			Mn-54	110	97.4	68.2	126.62	Pass
			Zn-65	180	183	128	237.9	Pass
06/12/2025	E14268 Filter	pCi	Beta Cs-137	243	196	137	254.8	Pass
06/12/2025	E14268 Filter	pCi	Beta Cs-137	239	196	137	254.8	Pass
09/11/2025	E14269 Filter	pCi	Beta Cs-137	135	119	83	155	Pass
09/11/2025	E14259 Soil	pCi/g	Cs-134	0.216	0.236	0.165	0.307	Pass
			Cs-137	0.301	0.276	0.193	0.359	Pass

Table 15: Continued: Cross Check Intercomparison Results

Study Date	Study ID	Units	Radionuclide	Reported Value	Assigned Value	Acceptance		Performance Evaluation
						Lower Limit	Upper Limit	
09/11/2025	E14259 Soil	pCi/g	Cs-134	0.213	0.236	0.165	0.307	Pass
			Cs-137	0.276	0.276	0.193	0.359	Pass
09/22/2025	MRAD43	pCi	Cs-134	293	341	221	418	Pass
	Filter		Cs-137	376	379	311	497	Pass
			Co-60	307	322	274	409	Pass
			Zn-65	194	193	158	295	Pass
09/22/2025	MRAD43	pCi	Cs-134	282	341	221	418	Pass
	Filter		Cs-137	356	379	311	497	Pass
			Co-60	322	322	274	409	Pass
			Zn-65	197	193	158	295	Pass
09/22/2025	MRAD43	pCi	Cs-134	296	341	221	418	Pass
	Filter		Cs-137	357	379	311	497	Pass
			Co-60	342	322	274	409	Pass
			Zn-65	225	193	158	295	Pass
10/03/2025	RAD143	pCi/L	Cs-134	59.8	58.0	43.0	73.0	Pass
	Water		Cs-137	182	178	142	214	Pass
			Co-60	55.4	55.0	40.3	69.7	Pass
			Zn-65	34.4	36.8	5.51	68.1	Pass
10/03/2025	RAD143 Water	pCi/L	Cs-134	57.7	58.0	43.0	73.0	Pass
			Cs-137	181	178	142	214	Pass

Table 15: Continued: Cross Check Intercomparison Results

Study Date	Study ID	Units	Radionuclide	Reported Value	Assigned Value	Acceptance		Performance Evaluation
						Lower Limit	Upper Limit	
10/03/2025	RAD143	pCi/L	Co-60	58.5	55.0	40.3	69.7	Pass
		pCi/L	Zn-65	34.3	36.8	5.51	68.1	Pass
10/03/2025	RAD143 Water	pCi/L	I-131	23.2	24.3	20.9	27.7	Pass
10/03/2025	RAD143 Water	pCi/L	I-131	24.8	24.3	20.9	27.7	Pass
12/04/2025	E14271 Water	pCi/L	Beta Cs-137	278	257	180	334	Pass
12/04/2025	E14272 Charcoal	pCi	I-131	78.2	88.8	62.2	115	Pass
12/04/2025	E14272 Charcoal	pCi	I-131	77.8	88.8	62.2	115	Pass
12/04/2025	E14273	pCi/L	Ce-141	155	143	100	186	Pass
			Co-58	171	169	118	220	Pass
			Co-60	236	217	152	282	Pass
			Cr-51	298	299	209	389	Pass
			Cs-134	142	139	97.3	181	Pass
			Cs-137	177	168	118	218	Pass
			Fe-59	161	134	93.8	174	Pass
			I-131	80.6	86	60.2	112	Pass
			Mn-54	212	187	131	243	Pass
			Zn-65	259	244	171	317	Pass

See discussion at the beginning of Attachment 3 describes the interlaboratory split program.

Attachment 4: Environmental Direct Radiation Dosimetry Results

Monitoring Location	Quarterly Baseline, B_Q (mrem)	$B_Q + MDD_Q$ (mrem)	Normalized Quarterly Monitoring Data, M_Q (mrem)				Quarterly Facility Dose, $F_Q=M_Q-B_Q$ (mrem, or "ND" if $F_Q \leq MDD_Q$)				Annual Baseline, B_A (mrem)	$B_A + MDD_A$ (mrem)	Annual Monitoring Data, M_A (mrem)	Annual Facility Dose, $F_A=M_A-B_A$ (mrem, or "ND" if $F_A \leq MDD_A$)
			1	2	3	4	1	2	3	4				
BY-01	14.6	21.1	14.2	14.3	15.1	12.2	ND	ND	ND	ND	58.4	77.8	55.8	ND
BY-04	17.8	24.3	16.6	18.1	18.1	18.2	ND	ND	ND	ND	71.3	90.7	71	ND
BY-06	14.6	21.1	14.3	14.9	15.4	16.1	ND	ND	ND	ND	58.5	77.9	60.7	ND
BY-08	14.4	20.9	14	14.4	15.7	15.1	ND	ND	ND	ND	57.5	76.9	59.2	ND
BY-101-1	12.7	19.2	12.5	13.3	13.6	12.2	ND	ND	ND	ND	50.7	70.1	51.6	ND
BY-101-2	12.8	19.3	14.4	12.5	12.1	12.5	ND	ND	ND	ND	51.1	70.5	51.5	ND
BY-102-1	19.1	25.6	21.3	19.1	19.8	21.8	ND	ND	ND	ND	76.4	95.8	82	ND
BY-102-2	19.7	26.2	20	19	21.2	20.3	ND	ND	ND	ND	78.6	98	80.5	ND
BY-103-1	17.8	24.3	18.5	18.7	19.2	18.1	ND	ND	ND	ND	71.2	90.6	74.5	ND
BY-103-2	18.7	25.2	16.4	18.4	19.6	21.2	ND	ND	ND	ND	74.9	94.3	75.6	ND
BY-103-3	17.4	23.9	16.3	17.2	17.9	17	ND	ND	ND	ND	69.5	88.9	68.4	ND
BY-104-1	19.2	25.7	19.3	19.2	20.4	21.2	ND	ND	ND	ND	76.8	96.2	80.1	ND
BY-104-2	19.4	25.9	16.9	19.7	21.5	20.5	ND	ND	ND	ND	77.6	97	78.6	ND
BY-104-3	16.7	23.2	17.5	15.4	16.4	16.6	ND	ND	ND	ND	66.8	86.2	65.9	ND
BY-105-1	19.2	25.7	18.8	20.1	19.7	20.5	ND	ND	ND	ND	77	96.4	79.1	ND
BY-105-2	19.7	26.2	21.2	20.8	19.3	19.6	ND	ND	ND	ND	78.9	98.3	80.9	ND
BY-106-1	18.8	25.3	18.1	18.9	20.1	20.2	ND	ND	ND	ND	75.1	94.5	77.3	ND
BY-106-2	18	24.5	19.3	18.2	20.2	18.9	ND	ND	ND	ND	72.1	91.5	76.6	ND
BY-107-1	20.3	26.8	18.2	20.5	22.3	23	ND	ND	ND	ND	81	100.4	84	ND
BY-107-2	20.5	27	21.9	20.7	21.9	22.5	ND	ND	ND	ND	81.9	101.3	87	ND

MDD_Q = Quarterly Minimum Differential Dose = 6.5 mrem
MDD_A = Annual Minimum Differential Dose = 19.4 mrem
ND = Not Detected, where $M_Q \leq (B_Q+MDD_Q)$ or $M_A \leq (B_A+MDD_A)$
B_Q = Quarterly Normalized Mean Background for a monitoring location (mrem)
B_A = Annual Normalized Mean Background for a monitoring location (mrem)
M_A = Normalized Annual Dose (mrem)

Attachment 4: Environmental Direct Radiation Dosimetry Results Cont'd

Monitoring Location	Quarterly Baseline, B_Q (mrem)	B_Q + MDD_Q (mrem)	Normalized Quarterly Monitoring Data, M_Q (mrem)				Quarterly Facility Dose, $F_Q=M_Q-B_Q$ (mrem, or "ND" if $F_Q \leq MDD_Q$)				Annual Baseline, B_A (mrem)	B_A + MDD_A (mrem)	Annual Monitoring Data, M_A (mrem)	Annual Facility Dose, $F_A=M_A-B_A$ (mrem, or "ND" if $F_A \leq MDD_A$)
			1	2	3	4	1	2	3	4				
BY-107-3	16.6	23.1	16.2	17.2	15.9	18.4	ND	ND	ND	ND	66.5	85.9	67.7	ND
BY-108-1	19	25.5	20.2	19.4	21.3	22.2	ND	ND	ND	ND	76.1	95.5	83.1	ND
BY-108-2	17.3	23.8	17.9	17.8	18.1	19.2	ND	ND	ND	ND	69	88.4	73	ND
BY-109-1	17.6	24.1	19.1	17	18.1	20.4	ND	ND	ND	ND	70.3	89.7	74.6	ND
BY-109-2	17.7	24.2	16.2	18.2	19.4	16.8	ND	ND	ND	ND	70.6	90	70.6	ND
BY-110-1	16.3	22.8	19.2	16.5	18.4	16.1	ND	ND	ND	ND	65.4	84.8	70.2	ND
BY-110-2	17.3	23.8	17.9	18.4	19.2	19.1	ND	ND	ND	ND	69.4	88.8	74.6	ND
BY-111-3	18.9	25.4	18.8	18.8	19.7	21	ND	ND	ND	ND	75.7	95.1	78.3	ND
BY-111-4	18.1	24.6	16.8	17	21.6	19.1	ND	ND	ND	ND	72.6	92	74.5	ND
BY-112-3	18	24.5	15.6	18	18.3	18.2	ND	ND	ND	ND	71.9	91.3	70.1	ND
BY-112-4	18	24.5	15.3	19.7	18.4	17.8	ND	ND	ND	ND	72.1	91.5	71.2	ND
BY-113-1	18.5	25	15.5	18.3	18.7	20.1	ND	ND	ND	ND	74.1	93.5	72.6	ND
BY-113-2	15.5	22	12.8	15.6	13.7	15.6	ND	ND	ND	ND	62.2	81.6	57.7	ND
BY-114-1	14.5	21	13.2	13.4	14.3	14.8	ND	ND	ND	ND	58.1	77.5	55.7	ND
BY-114-2	17.3	23.8	16.1	16	17.7	17.6	ND	ND	ND	ND	59.1	78.5	67.4	ND
BY-115-1	18	24.5	16.3	17	17.9	19.2	ND	ND	ND	ND	71.9	91.3	70.4	ND
BY-115-2	16.7	23.2	13.6	16.4	22.4	17.1	ND	ND	ND	ND	67	86.4	69.5	ND
BY-116-1	15.9	22.4	15	14.7	18.8	15.9	ND	ND	ND	ND	63.5	82.9	64.4	ND
BY-116-2	15.8	22.3	14.6	15.7	15.9	17	ND	ND	ND	ND	63.1	82.5	63.2	ND

MDD_Q = Quarterly Minimum Differential Dose = 6.5 mrem
MDD_A = Annual Minimum Differential Dose = 19.4 mrem
ND = Not Detected, where $M_Q \leq (B_Q+MDD_Q)$ or $M_A \leq (B_A+MDD_A)$
B_Q = Quarterly Normalized Mean Background for a monitoring location (mrem)
B_A = Annual Normalized Mean Background for a monitoring location (mrem)
M_A = Normalized Annual Dose (mrem)

Attachment 4: Environmental Direct Radiation Dosimetry Results Cont'd

Monitoring Location	Quarterly Baseline, B_Q (mrem)	B_Q + MDD_Q (mrem)	Normalized Quarterly Monitoring Data, M_Q (mrem)				Quarterly Facility Dose, $F_Q=M_Q-B_Q$ (mrem, or "ND" if $F_Q \leq MDD_Q$)				Annual Baseline, B_A (mrem)	B_A + MDD_A (mrem)	Annual Monitoring Data, M_A (mrem)	Annual Facility Dose, $F_A=M_A-B_A$ (mrem, or "ND" if $F_A \leq MDD_A$)
			1	2	3	4	1	2	3	4				
BY-116-3	16.4	22.9	14.8	14.9	18.2	16.4	ND	ND	ND	ND	65.5	84.9	64.3	ND
BY-201-3	17.8	24.3	15.7	16.5	20.5	17.6	ND	ND	ND	ND	71.2	90.6	70.3	ND
BY-201-4	19.2	25.7	16.3	18.6	19.7	20.3	ND	ND	ND	ND	76.6	96	74.9	ND
BY-202-1	17.6	24.1	16.9	16.8	20.2	18.8	ND	ND	ND	ND	67	86.4	72.7	ND
BY-202-2	19.9	26.4	17.7	20.3	23	21.5	ND	ND	ND	ND	79.8	99.2	82.5	ND
BY-203-1	14.5	21	12.6	14	15.9	15.9	ND	ND	ND	ND	58	77.4	58.4	ND
BY-203-2	16.8	23.3	17.7	15.5	20.3	17.3	ND	ND	ND	ND	67.2	86.6	70.8	ND
BY-204-1	15.6	22.1	13.3	14.6	16.1	16.2	ND	ND	ND	ND	62.4	81.8	60.2	ND
BY-204-2	18.9	25.4	20.4	19.5	21.4	21.6	ND	ND	ND	ND	75.5	94.9	82.9	ND
BY-205-1	19.3	25.8	20.9	18.3	21.4	20.1	ND	ND	ND	ND	77.4	96.8	80.7	ND
BY-205-2	17	23.5	16.6	15.7	18.5	17.2	ND	ND	ND	ND	67.9	87.3	68	ND
BY-206-1	19.2	25.7	18.3	15.6	18.3	18.3	ND	ND	ND	ND	76.7	96.1	70.5	ND
BY-206-2	19.7	26.2	19.2	18.7	21.1	19.5	ND	ND	ND	ND	78.7	98.1	78.5	ND
BY-207-1	20.2	26.7	20.2	21.1	22	21.2	ND	ND	ND	ND	80.7	100.1	84.5	ND
BY-207-2	18.6	25.1	18.6	18.8	21.3	18.7	ND	ND	ND	ND	74.2	93.6	77.4	ND
BY-208-1	20.2	26.7	19.1	19.6	21.1	18.6	ND	ND	ND	ND	80.6	100	78.4	ND
BY-208-2	19	25.5	15.5	17.2	19.4	19.3	ND	ND	ND	ND	76.1	95.5	71.4	ND
BY-209-1	19.5	26	19.7	19.1	22.2	19.6	ND	ND	ND	ND	78	97.4	80.6	ND
BY-209-4	20	26.5	20.3	20.7	22.3	18.7	ND	ND	ND	ND	80	99.4	82	ND

MDD_Q = Quarterly Minimum Differential Dose = 6.5 mrem
MDD_A = Annual Minimum Differential Dose = 19.4 mrem
ND = Not Detected, where $M_Q \leq (B_Q+MDD_Q)$ or $M_A \leq (B_A+MDD_A)$
B_Q = Quarterly Normalized Mean Background for a monitoring location (mrem)
B_A = Annual Normalized Mean Background for a monitoring location (mrem)

M_A = Normalized Annual Dose (mrem)

Attachment 4: Environmental Direct Radiation Dosimetry Results Cont'd

Monitoring Location	Quarterly Baseline, B_Q (mrem)	B_Q + MDD_Q (mrem)	Normalized Quarterly Monitoring Data, M_Q (mrem)				Quarterly Facility Dose, $F_Q=M_Q-B_Q$ (mrem, or "ND" if $F_Q \leq MDD_Q$)				Annual Baseline, B_A (mrem)	B_A + MDD_A (mrem)	Annual Monitoring Data, M_A (mrem)	Annual Facility Dose, $F_A=M_A-B_A$ (mrem, or "ND" if $F_A \leq MDD_A$)
			1	2	3	4	1	2	3	4				
BY-21	12.7	19.2	11.8	13.1	13.3	14.9	ND	ND	ND	ND	50.8	70.2	53.1	ND
BY-210-3	12.7	19.2	18.4	18.1	21.1	19.9	ND	ND	ND	ND	74.4	93.8	77.5	ND
BY-210-4	18.6	25.1	16.9	17.3	18.4	17	ND	ND	ND	ND	70.5	89.9	69.6	ND
BY-211-1	17.6	24.1	18.5	18.5	19.9	19.8	ND	ND	ND	ND	75.1	94.5	76.7	ND
BY-211-4	18.8	25.3	19.7	17.7	20.2	18.3	ND	ND	ND	ND	76.6	96	75.9	ND
BY-212-1	19.2	25.7	18.7	20.7	20.3	18.1	ND	ND	ND	ND	80.2	99.6	77.8	ND
BY-212-4	20.1	26.6	19.5	20.4	22.9	23	ND	ND	ND	ND	82.1	101.5	85.8	ND
BY-213-1	20.5	27	16.9	19.2	22.7	19.4	ND	ND	ND	ND	76.6	96	78.2	ND
BY-213-4	19.2	25.7	18.7	19.8	22.3	2.3	ND	ND	ND	ND	73.9	93.3	81.1	ND
BY-214-1	19.4	25.9	16.7	16.7	20.1	19.6	ND	ND	ND	ND	74.9	94.3	73.1	ND
BY-214-4	18.7	25.2	19	18.4	19.3	17.8	ND	ND	ND	ND	75.5	94.9	74.5	ND
BY-215-1	18.9	25.4	16.8	17.3	20.2	18.7	ND	ND	ND	ND	73.2	92.6	73	ND
BY-215-4	18.3	24.8	16.9	19.2	21.8	18.2	ND	ND	ND	ND	76.5	95.9	76.1	ND
BY-216-1	19.1	25.6	16.7	20	22	18.2	ND	ND	ND	ND	81.4	100.8	76.9	ND
BY-216-2	20.3	26.8	16.8	19.1	20.9	20.5	ND	ND	ND	ND	75.8	95.2	77.3	ND
BY-22	19	25.5	17.5	18.8	20.6	18.6	ND	ND	ND	ND	73.4	92.8	75.5	ND
BY-23	18.3	24.8	16.6	18.8	21.1	20.7	ND	ND	ND	ND	71.3	90.7	77.2	ND
BY-24	17.8	24.3	15.6	15.3	17.3	17.2	ND	ND	ND	ND	63.9	83.3	65.4	ND
BY-301-1	16	22.5	12.1	11.9	12.6	12.9	ND	ND	ND	ND	51.2	70.6	49.95	ND

MDD_Q = Quarterly Minimum Differential Dose = 6.5 mrem
MDD_A = Annual Minimum Differential Dose = 19.4 mrem

ND = Not Detected, where $M_Q \leq (B_Q+MDD_Q)$ or $M_A \leq (B_A+MDD_A)$
B_Q = Quarterly Normalized Mean Background for a monitoring location (mrem)
B_A = Annual Normalized Mean Background for a monitoring location (mrem)
M_A = Normalized Annual Dose (mrem)

Attachment 4: Environmental Direct Radiation Dosimetry Results Cont'd

Monitoring Location	Quarterly Baseline, B_Q (mrem)	$B_Q + MDD_Q$ (mrem)	Normalized Quarterly Monitoring Data, M_Q (mrem)				Quarterly Facility Dose, $F_Q=M_Q-B_Q$ (mrem, or "ND" if $F_Q \leq MDD_Q$)				Annual Baseline, B_A (mrem)	$B_A + MDD_A$ (mrem)	Annual Monitoring Data, M_A (mrem)	Annual Facility Dose, $F_A=M_A-B_A$ (mrem, or "ND" if $F_A \leq MDD_A$)
			1	2	3	4	1	2	3	4				
BY-301-2	12.8	19.3	13.9	13.1	15.3	17.9	ND	ND	ND	ND	60.2	79.6	60.2	ND
BY-309-1	15	21.5	16	16.7	18.4	17.1	ND	ND	ND	ND	68.4	87.8	68.2	ND
BY-309-2	17.1	23.6	18	18.3	19.3	19.8	ND	ND	ND	ND	72.2	91.6	75.4	ND
BY-309-3	18.1	24.6	15.3	17.2	16.3	16.6	ND	ND	ND	ND	66.1	85.5	65.4	ND
BY-309-4	16.5	23	14.4	16.4	17.6	16.3	ND	ND	ND	ND	61	80.4	64.7	ND
BY-314-2	15.2	21.7	12.2	12.7	15.6	13.5	ND	ND	ND	ND	56.1	75.5	54	ND

MDD_Q = Quarterly Minimum Differential Dose = 6.5 mrem
MDD_A = Annual Minimum Differential Dose = 19.4 mrem
ND = Not Detected, where $M_Q \leq (B_Q+MDD_Q)$ or $M_A \leq (B_A+MDD_A)$
B_Q = Quarterly Normalized Mean Background for a monitoring location (mrem)
B_A = Annual Normalized Mean Background for a monitoring location (mrem)
M_A = Normalized Annual Dose (mrem)

Attachment 5: 2024 ERRATA

Reference to section 11 Corrections to Previous Reports: 11.2.1

Table 2, Radiological Environmental Sampling Program – Exposure Pathway - ~~Waterborne~~

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Airborne Radioiodine and Particulates Samples from 8 locations: Four locations close to the site boundary in different sectors of the highest calculated annual average ground level D/Q. Three samples from the vicinity of a community having the highest calculated annual average D/Q. One samples from Control Locations between 4 - 8 miles away in the least predominant wind direction.	BY-01 Byron, 3.0 miles N BY-04 Paynes Point, 5.0 miles SE BY-06 Oregon, 4.7 miles SSW BY-08 Leaf River(C), 7.0 miles WNW BY-21 Byron Nearsite North, 0.3 miles N BY-22 Byron Nearsite Southeast, 0.4 miles SE BY-23 Byron Nearsite South, 0.6 miles S BY-24 Byron Nearsite Southwest, 0.7 miles SW	Continuous sampler operation with sample collection weekly or more frequently by dust loading, and radioiodine cannister collection weekly	Particulate sampler: Gross Beta analysis following weekly filter change and Gamma isotopic quarterly on composite filters by location on near field and control samples. Radioiodine canister: I-131 analysis weekly on near field and control samples.

Table 2: Radiological Environmental Sampling Program – Exposure Pathway - Airborne

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Airborne Radioiodine and Particulates Samples from 8 locations: Four locations close to the site boundary in different sectors of the highest calculated annual average ground level D/Q. Three samples from the vicinity of a community having the highest calculated annual average D/Q. One sample from Control Locations between 6.2 - 18.6 miles away in the least predominant wind direction.	Indicators-Near Field: BY-21 Byron Nearsite North, 0.30 miles N BY-22 Byron Nearsite Southeast, 0.36 miles SE BY-23 Byron Nearsite South, 0.61 miles S BY-24 Byron Nearsite Southwest, 0.70 miles SW Indicators-Far Field: BY-01 Byron, 2.96 miles N BY-04 Paynes Point, 4.96 miles SE BY-06 Oregon, 4.74 miles SSW Control: BY-08 Leaf River(C), 6.96 miles WNW	Continuous sampler operation with sample collection weekly, or more frequently by dust loading, and radioiodine cannister collection weekly	Particulate Sampler: Gross Beta analysis following weekly filter change and Gamma isotopic quarterly on composite filters by location on near field and control samples. Radioiodine canister: I-131 analysis weekly on near field and control samples.

Attachment 5: ERRATA Continued

Reference to section 11 Corrections to Previous Reports: 11.2.2

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-101-1 and -2	Inner Ring	N	~~0.3~~ miles 0.30 miles	
BY-102-1	Inner Ring	NNE	~~1.0~~ miles 0.97 miles	
BY-102-2	Inner Ring	NNE	~~1.0~~ miles 0.98 miles	
BY-103-1 ~~and -2~~	Inner Ring	NE	~~1.7~~ miles 1.67 miles	
BY-103-2	Inner Ring	NE	~~1.7~~ miles 1.66 miles	
BY-103-3	Inner Ring	NE	~~0.4~~ miles 0.42 miles	
BY-104-1 ~~and -2~~	Inner Ring	ENE	~~1.4~~ miles 1.40 miles	
BY-104-2	Inner Ring	ENE	1.39 miles	
BY-104-3	Inner Ring	ENE	~~0.3~~ miles 0.33 miles	
BY-105-1 ~~and -2~~	Inner Ring	E	~~1.3~~ miles 1.28 miles	
BY-105-2	Inner Ring	E	~~1.3~~ miles 1.29 miles	
BY-106-1 ~~and -2~~	Inner Ring	ESE	1.4 miles ~~1.36~~ miles	
BY-106-2	Inner Ring	ESE	~~1.4~~ miles 1.38 miles	
BY-107-1 ~~and -2~~	Inner Ring	SE	~~1.4~~ miles 1.39 miles	
BY-107-2	Inner Ring	SE	~~1.4~~ miles 1.40 miles	
BY-107-3	Inner Ring	SE	~~0.4~~ miles 0.41 miles	
BY-108-1	Inner Ring	SSE	~~0.7~~ miles 0.66 miles	
BY-108-2	Inner Ring	SSE	~~0.6~~ miles 0.64 miles	
BY-109-1 and -2	Inner Ring	S	~~0.6~~ miles 0.62 miles	
BY-110-1 ~~and -2~~	Inner Ring	SSW	~~0.7~~ miles 0.66 miles	
BY-110-2	Inner Ring	SW	~~0.7~~ miles 0.67 miles	
BY-111-3	Inner Ring	SSW	~~0.8~~ miles 0.78 miles	

Attachment 5: ERRATA Continued

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-111-4	Inner Ring	SW	~~0.9~~ miles 0.85 miles	
BY-112-3 ~~and -4~~	Inner Ring	WSW	~~0.8~~ miles 0.80 miles	
~~BY-112-3~~	~~Inner Ring~~	~~WSW~~	~~0.8~~ miles 0.79 miles	
BY-113-1 ~~and -2~~	Inner Ring	W	~~0.7~~ miles 0.72 miles	
~~BY-113-2~~	~~Inner Ring~~	~~W~~	~~0.7~~ miles 0.71 miles	
BY-114-1 ~~and -2~~	Inner Ring	WNW	~~0.8~~ miles 0.79 miles	
~~BY-114-2~~	~~Inner Ring~~	~~WNW~~	~~0.8~~ miles 0.81 miles	
BY-115-1 ~~and -2~~	Inner Ring	NW	~~1.0~~ miles 0.99 Miles	
~~BY-115-2~~	~~Inner Ring~~	~~NW~~	~~1.0~~ miles 1.01 miles	
BY-116-1 ~~and -2~~	Inner Ring	NNW	~~1.4~~ miles 1.39 miles	
~~BY-116-2~~	~~Inner Ring~~	~~NNW~~	~~1.4~~ miles 1.42 miles	
BY-116-3	Inner Ring	NNW	~~0.9~~ miles 0.89 miles	
BY-201-3 and -4	Outer Ring	N	~~4.4~~ miles 4.37 miles	
~~BY-201-4~~	~~Outer Ring~~	~~N~~	~~4.4 miles~~	
BY-202-1	Outer Ring	NNE	~~4.4~~ miles 4.43 miles	
BY-202-2	Outer Ring	NNE	~~4.8~~ miles 4.78 miles	
BY-203-1	Outer Ring	NE	~~4.8~~ miles 4.78 miles	
BY-203-2	Outer Ring	NE	~~4.7~~ miles 4.67 miles	
BY-204-1	Outer Ring	ENE	~~4.1~~ miles 4.08 miles	
BY-204-2	Outer Ring	ENE	~~4.0~~ miles 4.00 miles	
BY-205-1 ~~and -2~~	Outer Ring	E	~~3.8~~ miles 3.80 miles	
~~BY-205-2~~	~~Outer Ring~~	~~E~~	~~3.8~~ miles 3.78 miles	

Attachment 5: ERRATA Continued

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-206-1	Outer Ring	ESE	~~4.0~~ miles 4.00 miles	
BY-206-2	Outer Ring	ESE	~~4.3~~ miles 4.28 miles	
BY-207-1	Outer Ring	SE	~~4.2~~ miles 4.15 miles	
BY-207-2	Outer Ring	SE	~~3.9~~ miles 3.93 miles	
BY-208-1	Outer Ring	SSE	~~4.0~~ miles 3.97 miles	
BY-208-2	Outer Ring	SSE	~~3.8~~ miles 3.77 miles	
BY-209-1 ~~and 4~~	Outer Ring	S	~~4.0~~ miles 3.98 miles	
~~BY-209-4~~	~~Outer Ring~~	~~S~~	~~4.0~~ miles ~~4.02 miles~~	
BY-210-3 ~~and -4~~	Outer Ring	SSW	~~3.9~~ miles 3.91 miles	
~~BY-210-4~~	~~Outer Ring~~	~~SSW~~	~~3.9~~ miles ~~3.93 miles~~	
BY-211-1 ~~and -4~~	Outer Ring	SW	~~4.9~~ miles 4.93 miles	
~~BY-211-4~~	~~Outer Ring~~	~~SW~~	~~4.9~~ miles ~~4.91 miles~~	
BY-212-3 and -4	Outer Ring	WSW	~~4.7~~ miles 4.67 miles	
BY-213-1	Outer Ring	W	~~4.7~~ miles 4.72 miles	
BY-213-4	Outer Ring	W	~~4.7~~ miles 4.65 miles	
BY-214-1	Outer Ring	WNW	~~4.7~~ miles 4.65 miles	
BY-214-4	Outer Ring	WNW	~~4.6~~ miles 4.63 miles	
BY-215-1	Outer Ring	NW	~~4.2~~ miles 4.15 miles	
BY-215-4	Outer Ring	NW	~~4.2~~ miles 4.19 miles	
BY-216-1	Outer Ring	NNW	~~4.5~~ miles 4.54 miles	

Attachment 5: ERRATA Continued

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
BY-216-2	Outer Ring	NNW	~~4.7~~ miles 4.74 miles	
BY-301-1	Special Interest	N	~~0.3~~ miles 0.25 miles	
BY-301-2	Special Interest	N	~~0.2~~ miles 0.15 miles	
BY-309-1	Special Interest	S	~~0.3~~ miles 0.33 miles	
BY-309-2	Special Interest	S	~~0.4~~ miles 0.40 miles	
BY-309-3	Special Interest	S	~~0.4~~ miles 0.42 miles	
BY-309-4	Special Interest	SSW	~~0.4~~ miles 0.44 miles	
BY-314-2	Special Interest	WNW	~~0.3~~ miles 0.29 miles	
BY-01-1 and -2	Other	N	~~0.3~~ miles 2.96 miles	
BY-04-1 and -2	Other	SE	~~0.2~~ miles 4.96 miles	
BY-06-1 and -2	Other	SSW	~~0.3~~ miles 4.74 miles	
BY-21-1 and -2	Other	N	~~0.4~~ miles 0.30 miles	
BY-22-1 and -2	Other	SE	~~0.4~~ miles 0.36 miles	
BY-23-1 and -2	Other	S	~~0.4~~ miles 0.61 miles	
BY-24-1 and -2	Other	SW	~~0.3~~ miles 0.70 miles	
BY-08-1 and -2	Control	WNW	~~7.0~~ miles 6.96 miles	

Attachment 5: ERRATA Continued

Reference to section 11 Corrections to Previous Reports: 11.2.3

Table 11: Weekly Air Particulate Gross Beta (E^{-3} pCi/m^3)

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
~~01/02/2024~~	18 ± 5	22 ± 5	18 ± 5	11 ± 4	21 ± 5	17 ± 5	14 ± 5	11 ± 4
~~01/09/2024~~	18 ± 4	< 4	18 ± 4	21 ± 4	22 ± 5	18 ± 5	25 ± 5	24 ± 5
~~01/16/2024~~	24 ± 5	23 ± 6(1)	24 ± 5	14 ± 4	25 ± 5	23 ± 4(1)	24 ± 4	20 ± 4
~~01/23/2024~~	8 ± 3	13 ± 4(1)	10 ± 4	10 ± 4	13 ± 4	9 ± 3	12 ± 4	11 ± 4
~~01/30/2024~~	13 ± 4	13 ± 4	13 ± 4	17 ± 4	16 ± 4	16 ± 4	15 ± 4	15 ± 4
~~02/06/2024~~	19 ± 4	19 ± 4	17 ± 4	17 ± 4	16 ± 4	20 ± 4	18 ± 4	16 ± 4
~~02/13/2024~~	19 ± 4	17 ± 4	16 ± 4	18 ± 4	19 ± 5	15 ± 4	19 ± 5	17 ± 4
~~02/20/2024~~	24 ± 5	23 ± 5	24 ± 5	25 ± 5	13 ± 4	21 ± 5	22 ± 5	22 ± 5
~~02/27/2024~~	28 ± 5	18 ± 4	16 ± 4	18 ± 4	16 ± 4	19 ± 4	19 ± 4	15 ± 4
~~03/05/2024~~	20 ± 4	18 ± 4	15 ± 4	16 ± 4	18 ± 4	14 ± 4	15 ± 4	16 ± 4
~~03/12/2024~~	21 ± 4	13 ± 4	22 ± 4	14 ± 4	17 ± 4	18 ± 4	17 ± 4	18 ± 4
~~03/19/2024~~	15 ± 4	17 ± 4	15 ± 4	16 ± 4	15 ± 4	14 ± 4	11 ± 4	13 ± 4
~~03/26/2024~~	10 ± 3	13 ± 4	14 ± 4	13 ± 4	12 ± 4	13 ± 4	< 4	10 ± 3
~~04/02/2024~~	6 ± 3	10 ± 4	7 ± 3	< 4	5 ± 3	6 ± 3	< 5(1)	6 ± 3
~~04/09/2024~~	13 ± 4	11 ± 4	12 ± 4	12 ± 4	11 ± 4	9 ± 4	< 4	11 ± 4
~~04/16/2024~~	14 ± 4	16 ± 4	16 ± 4	14 ± 4	14 ± 4	12 ± 4	10 ± 3	13 ± 4
~~04/23/2024~~	16 ± 5	18 ± 5	15 ± 4	16 ± 5	14 ± 4	17 ± 5	7 ± 4	16 ± 5
~~04/29/2024~~	11 ± 3	12 ± 3	10 ± 3	9 ± 3	10 ± 3	9 ± 3	8 ± 3	10 ± 3
~~05/07/2024~~	14 ± 4	14 ± 4(1)	14 ± 4(1)	13 ± 4(1)	13 ± 4	13 ± 4(1)	12 ± 4	10 ± 4
~~05/14/2024~~	17 ± 4	14 ± 4	13 ± 4	10 ± 4	13 ± 4	14 ± 4	10 ± 4	13 ± 4
~~05/21/2024~~	16 ± 4	12 ± 4	17 ± 4	13 ± 4	14 ± 4	15 ± 4	12 ± 4	14 ± 4

(1) Refer to Sample Deviation Summary Table 9

Attachment 5: ERRATA Continued

Table 11: Weekly Air Particulate Gross Beta (E-3 pCi/m3) Cont'd

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
~~05/28/2024~~	13 ± 4	15 ± 4	15 ± 4	15 ± 4	14 ± 4	15 ± 4	14 ± 4	12 ± 4
~~06/04/2024~~	10 ± 4	10 ± 4	10 ± 4	11 ± 4	8 ± 4	10 ± 4	7 ± 3	10 ± 4
~~06/11/2024~~	19 ± 4	20 ± 4	15 ± 4	16 ± 4	23 ± 4	18 ± 4	21 ± 4	15 ± 4
~~06/18/2024~~	8 ± 4	15 ± 4	19 ± 4	13 ± 4	17 ± 4	22 ± 5	17 ± 4	14 ± 4
~~06/25/2024~~	< 5[1]	14 ± 4[1]	11 ± 4[1]	9 ± 4[1]	14 ± 4[1]	13 ± 4[1]	12 ± 4[1]	13 ± 4[1]
~~07/02/2024~~	< 5	16 ± 4	12 ± 4	15 ± 4	14 ± 4	14 ± 4	16 ± 4	14 ± 4
~~07/09/2024~~	< 6[1]	13 ± 4	8 ± 4	13 ± 5	14 ± 5	10 ± 4	12 ± 4	15 ± 5
~~07/16/2024~~	15 ± 4[1]	19 ± 4	15 ± 4	16 ± 4[1]	15 ± 4[1]	17 ± 4	15 ± 4	7 ± 3[1]
~~07/23/2024~~	20 ± 4	15 ± 4	19 ± 4	14 ± 4[1]	17 ± 4	14 ± 4	17 ± 4	18 ± 4[1]
~~07/30/2024~~	22 ± 5	19 ± 4	20 ± 4	18 ± 4	21 ± 5	6 ± 3	21 ± 4	18 ± 4
~~08/06/2024~~	14 ± 4	16 ± 4	10 ± 4	14 ± 4	17 ± 4	14 ± 4	19 ± 4	12 ± 4
~~08/13/2024~~	22 ± 5	20 ± 5	22 ± 5	20 ± 5	23 ± 5	21 ± 5	22 ± 5	19 ± 5
~~08/19/2024~~	25 ± 5	19 ± 4	25 ± 5	19 ± 4	24 ± 4	22 ± 4	25 ± 4	25 ± 4
~~08/27/2024~~	20 ± 4	20 ± 4	15 ± 4	17 ± 4	22 ± 4	18 ± 4	19 ± 4	17 ± 4
~~09/03/2024~~	18 ± 4	17 ± 4	20 ± 4	17 ± 4	17 ± 4	18 ± 4	19 ± 4	20 ± 4
~~09/10/2024~~	37 ± 5	30 ± 5	32 ± 5	35 ± 5	41 ± 6	35 ± 5	33 ± 5	34 ± 5
~~09/17/2024~~	29 ± 5	28 ± 5	25 ± 5	25 ± 5	31 ± 5	28 ± 5	30 ± 5	29 ± 5
~~09/24/2024~~	21 ± 4	15 ± 4	24 ± 5	18 ± 4	26 ± 5	20 ± 4	26 ± 5	22 ± 5
~~10/01/2024~~	23 ± 4	19 ± 4	22 ± 4	21 ± 4	26 ± 5	22 ± 4	28 ± 5	24 ± 5
~~10/08/2024~~	22 ± 4	21 ± 4	22 ± 4	22 ± 4	24 ± 5	19 ± 4	21 ± 4	25 ± 5
~~10/15/2024~~	24 ± 4	26 ± 4	29 ± 5	22 ± 4	23 ± 4	24 ± 4	29 ± 5	23 ± 4
~~10/22/2024~~	25 ± 5	30 ± 5	26 ± 5	20 ± 4	29 ± 5	24 ± 5	26 ± 5	26 ± 5

[1] Refer to Sample Deviation Summary Table 9

Attachment 5: ERRATA Continued

Table 11: Weekly Air Particulate Gross Beta (E-3 pCi/m3) Cont'd

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
~~10/29/2024~~	18 ± 4	22 ± 5	16 ± 4	17 ± 4	23 ± 5	20 ± 5	21 ± 5	17 ± 4
~~11/05/2024~~	17 ± 4	21 ± 5	19 ± 4	18 ± 4	17 ± 4	18 ± 4	12 ± 4	20 ± 4
~~11/12/2024~~	21 ± 5	21 ± 5	28 ± 5	22 ± 5	19 ± 4	25 ± 5	18 ± 4	22 ± 5
~~11/19/2024~~	14 ± 4	14 ± 4	17 ± 4	11 ± 4	13 ± 4	11 ± 4	16 ± 4	17 ± 4
~~11/26/2024~~	22 ± 5	12 ± 4	22 ± 5	24 ± 5	24 ± 5	23 ± 5	25 ± 5	21 ± 4
~~12/03/2024~~	21 ± 4	25 ± 5	23 ± 5	26 ± 5	24 ± 5	25 ± 5	23 ± 5	22 ± 4
~~12/10/2024~~	28 ± 5	26 ± 4	29 ± 5	20 ± 4	26 ± 4	25 ± 4	27 ± 5	28 ± 5
~~12/17/2024~~	25 ± 5	30 ± 6	27 ± 5	21 ± 5	26 ± 5	25 ± 5	28 ± 5	20 ± 5
~~12/23/2024~~	26 ± 4	24 ± 4	23 ± 4	22 ± 4	21 ± 4	25 ± 4	24 ± 4	21 ± 4

Attachment 5: ERRATA Continued

Table 11: Weekly Air Particulate Gross Beta (E^{-3} pCi/m^3)

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
01/09/2024	**18** ± 5	**22** ± 5	**18** ± 5	**11** ± 4	**21** ± 5	**17** ± 5	**14** ± 5	**11** ± 4
01/16/2024	**18** ± 4	< 4	**18** ± 4	**21** ± 4	**22** ± 5	**18** ± 5	**25** ± 5	**24** ± 5
01/23/2024	**24** ± 5	**23** ± 6[1]	**24** ± 5	**14** ± 4	**25** ± 5	**23** ± 4[1]	**24** ± 4	**20** ± 4
01/30/2024	**8** ± 3	**13** ± 4[1]	**10** ± 4	**10** ± 4	**13** ± 4	**9** ± 3	**12** ± 4	**11** ± 4
02/06/2024	**13** ± 4	**13** ± 4	**13** ± 4	**17** ± 4	**16** ± 4	**16** ± 4	**15** ± 4	**15** ± 4
02/13/2024	**19** ± 4	**19** ± 4	**17** ± 4	**17** ± 4	**16** ± 4	**20** ± 4	**18** ± 4	**16** ± 4
02/20/2024	**19** ± 4	**17** ± 4	**16** ± 4	**18** ± 4	**19** ± 5	**15** ± 4	**19** ± 5	**17** ± 4
02/27/2024	**24** ± 5	**23** ± 5	**24** ± 5	**25** ± 5	**13** ± 4	**21** ± 5	**22** ± 5	**22** ± 5
03/05/2024	**28** ± 5	**18** ± 4	**16** ± 4	**18** ± 4	**16** ± 4	**19** ± 4	**19** ± 4	**15** ± 4
03/12/2024	**20** ± 4	**18** ± 4	**15** ± 4	**16** ± 4	**18** ± 4	**14** ± 4	**15** ± 4	**16** ± 4
03/19/2024	**21** ± 4	**13** ± 4	**22** ± 4	**14** ± 4	**17** ± 4	**18** ± 4	**17** ± 4	**18** ± 4
03/26/2024	**15** ± 4	**17** ± 4	**15** ± 4	**16** ± 4	**15** ± 4	**14** ± 4	**11** ± 4	**13** ± 4
04/02/2024	**10** ± 3	**13** ± 4	**14** ± 4	**13** ± 4	**12** ± 4	**13** ± 4	< 4	**10** ± 3
04/09/2024	**6** ± 3	**10** ± 4	**7** ± 3	< 4	**5** ± 3	**6** ± 3	< 5[1]	**6** ± 3
04/16/2024	**13** ± 4	**11** ± 4	**12** ± 4	**12** ± 4	**11** ± 4	**9** ± 4	< 4	**11** ± 4
04/23/2024	**14** ± 4	**16** ± 4	**16** ± 4	**14** ± 4	**14** ± 4	**12** ± 4	**10** ± 3	**13** ± 4
04/29/2024	**16** ± 5	**18** ± 5	**15** ± 4	**16** ± 5	**14** ± 4	**17** ± 5	**7** ± 4	**16** ± 5
05/07/2024	**11** ± 3	**12** ± 3	**10** ± 3	**9** ± 3	**10** ± 3	**9** ± 3	**8** ± 3	**10** ± 3
05/14/2024	**14** ± 4	**14** ± 4[1]	**14** ± 4[1]	**13** ± 4[1]	**13** ± 4	**13** ± 4[1]	**12** ± 4	**10** ± 4
05/21/2024	**17** ± 4	**14** ± 4	**13** ± 4	**10** ± 4	**13** ± 4	**14** ± 4	**10** ± 4	**13** ± 4
05/28/2024	**16** ± 4	**12** ± 4	**17** ± 4	**13** ± 4	**14** ± 4	**15** ± 4	**12** ± 4	**14** ± 4

[1] Refer to Sample Deviation Summary Table 9

Attachment 5: ERRATA Continued

Table 11: Weekly Air Particulate Gross Beta (E-3 pCi/m3) Cont'd

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
06/04/2024	13 ± 4	15 ± 4	15 ± 4	15 ± 4	14 ± 4	15 ± 4	14 ± 4	12 ± 4
06/11/2024	10 ± 4	10 ± 4	10 ± 4	11 ± 4	8 ± 4	10 ± 4	7 ± 3	10 ± 4
06/18/2024	19 ± 4	20 ± 4	15 ± 4	16 ± 4	23 ± 4	18 ± 4	21 ± 4	15 ± 4
06/25/2024	8 ± 4	15 ± 4	19 ± 4	13 ± 4	17 ± 4	22 ± 5	17 ± 4	14 ± 4
07/02/2024	< 5[1]	14 ± 4[1]	11 ± 4[1]	9 ± 4[1]	14 ± 4[1]	13 ± 4[1]	12 ± 4[1]	13 ± 4[1]
07/09/2024	< 5	16 ± 4	12 ± 4	15 ± 4	14 ± 4	14 ± 4	16 ± 4	14 ± 4
07/16/2024	< 6[1]	13 ± 4	8 ± 4	13 ± 5	14 ± 5	10 ± 4	12 ± 4	15 ± 5
07/23/2024	15 ± 4[1]	19 ± 4	15 ± 4	16 ± 4[1]	15 ± 4[1]	17 ± 4	15 ± 4	7 ± 3[1]
07/30/2024	20 ± 4	15 ± 4	19 ± 4	14 ± 4[1]	17 ± 4	14 ± 4	17 ± 4	18 ± 4[1]
08/06/2024	22 ± 5	19 ± 4	20 ± 4	18 ± 4	21 ± 5	6 ± 3	21 ± 4	18 ± 4
08/13/2024	14 ± 4	16 ± 4	10 ± 4	14 ± 4	17 ± 4	14 ± 4	19 ± 4	12 ± 4
08/19/2024	22 ± 5	20 ± 5	22 ± 5	20 ± 5	23 ± 5	21 ± 5	22 ± 5	19 ± 5
08/27/2024	25 ± 5	19 ± 4	25 ± 5	19 ± 4	24 ± 4	22 ± 4	25 ± 4	25 ± 4
09/03/2024	20 ± 4	20 ± 4	15 ± 4	17 ± 4	22 ± 4	18 ± 4	19 ± 4	17 ± 4
09/10/2024	18 ± 4	17 ± 4	20 ± 4	17 ± 4	17 ± 4	18 ± 4	19 ± 4	20 ± 4
09/17/2024	37 ± 5	30 ± 5	32 ± 5	35 ± 5	41 ± 6	35 ± 5	33 ± 5	34 ± 5
09/24/2024	29 ± 5	28 ± 5	25 ± 5	25 ± 5	31 ± 5	28 ± 5	30 ± 5	29 ± 5
10/01/2024	21 ± 4	15 ± 4	24 ± 5	18 ± 4	26 ± 5	20 ± 4	26 ± 5	22 ± 5
10/08/2024	23 ± 4	19 ± 4	22 ± 4	21 ± 4	26 ± 5	22 ± 4	28 ± 5	24 ± 5
10/15/2024	22 ± 4	21 ± 4	22 ± 4	22 ± 4	24 ± 5	19 ± 4	21 ± 4	25 ± 5
10/22/2024	24 ± 4	26 ± 4	29 ± 5	22 ± 4	23 ± 4	24 ± 4	29 ± 5	23 ± 4
10/29/2024	25 ± 5	30 ± 5	26 ± 5	20 ± 4	29 ± 5	24 ± 5	26 ± 5	26 ± 5

[1] Refer to Sample Deviation Summary Table 9

Attachment 5: ERRATA Continued

Table 11: Weekly Air Particulate Gross Beta (E-3 pCi/m3) Cont'd

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
11/05/2024	**18** ± 4	**22** ± 5	**16** ± 4	**17** ± 4	**23** ± 5	**20** ± 5	**21** ± 5	**17** ± 4
11/12/2024	**17** ± 4	**21** ± 5	**19** ± 4	**18** ± 4	**17** ± 4	**18** ± 4	**12** ± 4	**20** ± 4
11/19/2024	**21** ± 5	**21** ± 5	**28** ± 5	**22** ± 5	**19** ± 4	**25** ± 5	**18** ± 4	**22** ± 5
11/26/2024	**14** ± 4	**14** ± 4	**17** ± 4	**11** ± 4	**13** ± 4	**11** ± 4	**16** ± 4	**17** ± 4
12/03/2024	**22** ± 5	**12** ± 4	**22** ± 5	**24** ± 5	**24** ± 5	**23** ± 5	**25** ± 5	**21** ± 4
12/10/2024	**21** ± 4	**25** ± 5	**23** ± 5	**26** ± 5	**24** ± 5	**25** ± 5	**23** ± 5	**22** ± 4
12/17/2024	**28** ± 5	**26** ± 4	**29** ± 5	**20** ± 4	**26** ± 4	**25** ± 4	**27** ± 5	**28** ± 5
12/23/2024	**25** ± 5	**30** ± 6	**27** ± 5	**21** ± 5	**26** ± 5	**25** ± 5	**28** ± 5	**20** ± 5
12/30/2024	**26** ± 4	**24** ± 4	**23** ± 4	**22** ± 4	**21** ± 4	**25** ± 4	**24** ± 4	**21** ± 4

Attachment 5: ERRATA Continued

Reference to section 11 Corrections to Previous Reports: 11.2.3

Table 13: Weekly Air Iodine I-131 (E^{-3} pCi/m^3)

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
~~01/02/2024~~	< 58	< 59	< 59	< 58	< 41	< 41	< 41	< 41
~~01/09/2024~~	< 39	< 33	< 39	< 27	< 68	< 37	< 42	< 42
~~01/16/2024~~	< 36	< 30(1)	< 36	< 35	< 51	< 52	< 51	< 51
~~01/23/2024~~	< 23	< 23	< 23	< 23	< 13	< 13	< 13	< 13
~~01/30/2024~~	< 35	< 36	< 16	< 36	< 43	< 43	< 43	< 43
~~02/06/2024~~	< 38	< 38	< 38	< 38	< 21	< 21	< 21	< 21
~~02/13/2024~~	< 49	< 49	< 49	< 21	< 37	< 38	< 38	< 38
~~02/20/2024~~	< 38	< 38	< 38	< 38	< 36	< 36	< 36	< 17
~~02/27/2024~~	< 53	< 53	< 22	< 53	< 42	< 42	< 42	< 42
~~03/05/2024~~	< 58	< 58	< 58	< 58	< 41	< 41	< 41	< 41
~~03/12/2024~~	< 53	< 53	< 53	< 53	< 24	< 58	< 58	< 58
~~03/19/2024~~	< 36	< 36	< 36	< 36	< 39	< 40	< 40	< 40
~~03/26/2024~~	< 53	< 53	< 53	< 53	< 58	< 58	< 58	< 58
~~04/02/2024~~	< 28	< 28	< 28	< 28	< 40	< 39	< 19	< 40
~~04/09/2024~~	< 54	< 54	< 54	< 22	< 66	< 67	< 67	< 67
~~04/16/2024~~	< 34	< 35	< 35	< 26	< 58	< 58	< 58	< 58
~~04/23/2024~~	< 40	< 40	< 40	< 40	< 19	< 19	< 19	< 19
~~04/29/2024~~	< 53	< 54	< 54	< 54	< 48	< 50	< 48	< 49
~~05/07/2024~~	< 40	< 40	< 40	< 40	< 50	< 50	< 50	< 50
~~05/14/2024~~	< 37	< 37	< 37	< 37	< 39	< 39	< 39	< 39
~~05/21/2024~~	< 45	< 45	< 45	< 45	< 22	< 22	< 22	< 22

Attachment 5: ERRATA Continued

Table 13: Weekly Air Iodine I-131 (E^{-3} pCi/m^3) Cont'd

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
~~05/28/2024~~	< 52	< 52	< 52	< 52	< 46	< 46	< 46	< 46
~~06/04/2024~~	< 44	< 44	< 44	< 44	< 34	< 34	< 35	< 34
~~06/11/2024~~	< 37	< 37	< 37	< 18	< 37	< 37	< 37	< 38
~~06/18/2024~~	< 50	< 50	< 50	< 50	< 51	< 52	< 52	< 52
~~06/25/2024~~	< 65	< 34	< 34	< 17	< 65	< 66	< 66	< 28
~~07/02/2024~~	< 48	< 48	< 49	< 48	< 38	< 38	< 39	< 39
~~07/09/2024~~	< 38	< 38	< 38	< 41	< 45	< 43	< 43	< 47
~~07/16/2024~~	< 37	< 25	< 37	< 39	< 48	< 49	< 48	< 51
~~07/23/2024~~	< 48	< 32	< 48	< 48	< 43	< 43	< 43	< 43
~~07/30/2024~~	< 37	< 37	< 38	< 38	< 36	< 36	< 36	< 36
~~08/06/2024~~	< 48	< 48	< 48	< 24	< 50	< 50	< 51	< 51
~~08/13/2024~~	< 29	< 29	< 29	< 29	< 32	< 32	< 32	< 23
~~08/19/2024~~	< 43	< 42	< 42	< 42	< 36	< 36	< 36	< 36
~~08/27/2024~~	< 26	< 26	< 26	< 26	< 29	< 29	< 29	< 29
~~09/03/2024~~	< 63	< 60	< 62	< 62	< 40	< 39	< 40	< 40
~~09/10/2024~~	< 45	< 46	< 46	< 23	< 40	< 40	< 40	< 40
~~09/17/2024~~	< 44	< 44	< 44	< 44	< 25	< 38	< 38	< 38
~~09/24/2024~~	< 32	< 32	< 32	< 32	< 31	< 31	< 31	< 31
~~10/01/2024~~	< 21	< 22	< 22	< 22	< 14	< 21	< 21	< 21
~~10/08/2024~~	< 43	< 43	< 43	< 43	< 33	< 33	< 33	< 33
~~10/15/2024~~	< 39	< 39	< 39	< 43	< 23	< 23	< 23	< 23
~~10/22/2024~~	< 39	< 39	< 39	< 39	< 36	< 36	< 36	< 15

Attachment 5: ERRATA Continued

Table 13: Weekly Air Iodine I-131 (E^{-3} pCi/m^3) Cont'd

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
~~10/29/2024~~	< 37	< 37	< 37	< 28	< 43	< 43	< 43	< 43
~~11/05/2024~~	< 21	< 21	< 22	< 21	< 35	< 35	< 35	< 35
~~11/12/2024~~	< 37	< 37	< 37	< 37	< 42	< 42	< 42	< 42
~~11/19/2024~~	< 57	< 57	< 57	< 57	< 60	< 60	< 60	< 60
~~11/26/2024~~	< 46	< 46	< 46	< 22	< 36	< 37	< 37	< 37
~~12/03/2024~~	< 34	< 34	< 34	< 34	< 29	< 29	< 29	< 29
~~12/10/2024~~	< 50	< 50	< 51	< 24	< 45	< 45	< 45	< 45
~~12/17/2024~~	< 53	< 53	< 54	< 26	< 40	< 40	< 41	< 41
~~12/23/2024~~	< 49	< 49	< 49	< 49	< 52	< 52	< 52	< 25

Attachment 5: ERRATA Continued

Reference to section 11 Corrections to Previous Reports: 11.2.3

Table 13: Weekly Air Iodine I-131 (E^{-3} pCi/m^3)

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
01/09/2024	< 58	< 59	< 59	< 58	< 41	< 41	< 41	< 41
01/16/2024	< 39	< 33	< 39	< 27	< 68	< 37	< 42	< 42
01/23/2024	< 36	< 30[1]	< 36	< 35	< 51	< 52	< 51	< 51
01/30/2024	< 23	< 23	< 23	< 23	< 13	< 13	< 13	< 13
02/06/2024	< 35	< 36	< 16	< 36	< 43	< 43	< 43	< 43
02/13/2024	< 38	< 38	< 38	< 38	< 21	< 21	< 21	< 21
02/20/2024	< 49	< 49	< 49	< 21	< 37	< 38	< 38	< 38
02/27/2024	< 38	< 38	< 38	< 38	< 36	< 36	< 36	< 17
03/05/2024	< 53	< 53	< 22	< 53	< 42	< 42	< 42	< 42
03/12/2024	< 58	< 58	< 58	< 58	< 41	< 41	< 41	< 41
03/19/2024	< 53	< 53	< 53	< 53	< 24	< 58	< 58	< 58
03/26/2024	< 36	< 36	< 36	< 36	< 39	< 40	< 40	< 40
04/02/2024	< 53	< 53	< 53	< 53	< 58	< 58	< 58	< 58
04/09/2024	< 28	< 28	< 28	< 28	< 40	< 39	< 19	< 40
04/16/2024	< 54	< 54	< 54	< 22	< 66	< 67	< 67	< 67
04/23/2024	< 34	< 35	< 35	< 26	< 58	< 58	< 58	< 58
04/29/2024	< 40	< 40	< 40	< 40	< 19	< 19	< 19	< 19
05/07/2024	< 53	< 54	< 54	< 54	< 48	< 50	< 48	< 49
05/14/2024	< 40	< 40	< 40	< 40	< 50	< 50	< 50	< 50
05/21/2024	< 37	< 37	< 37	< 37	< 39	< 39	< 39	< 39
05/28/2024	< 45	< 45	< 45	< 45	< 22	< 22	< 22	< 22

Attachment 5: ERRATA Continued

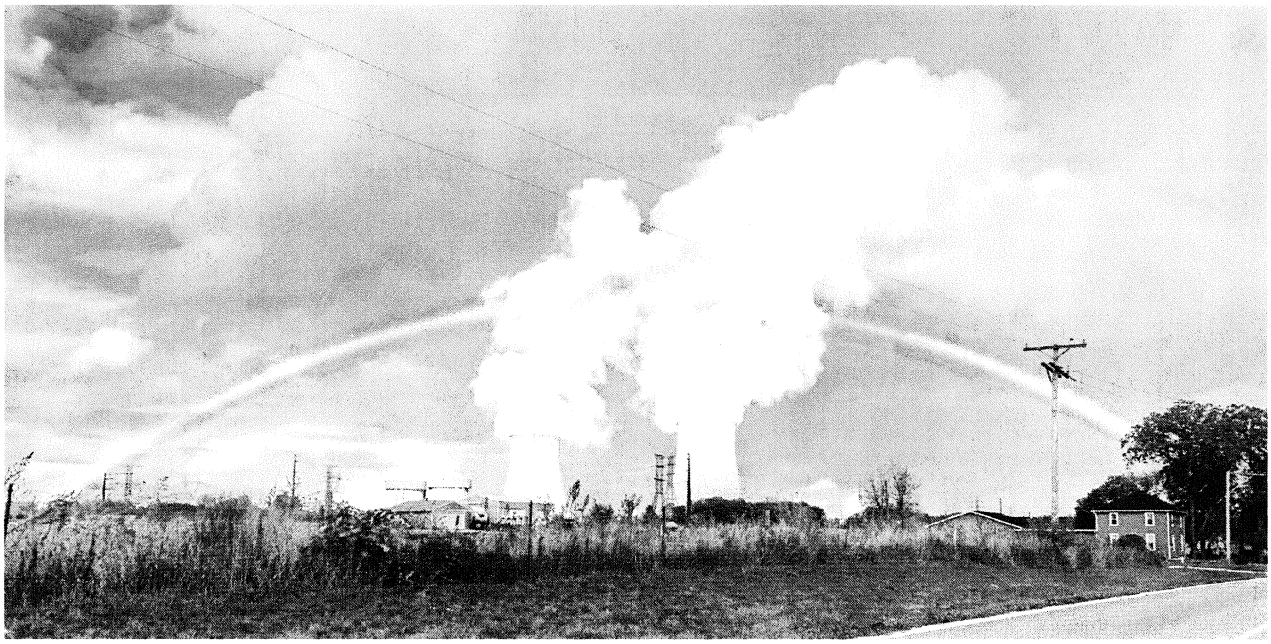
Table 13: Weekly Air Iodine I-131 (E^{-3} pCi/m^3) Cont'd

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
06/04/2024	< 52	< 52	< 52	< 52	< 46	< 46	< 46	< 46
06/11/2024	< 44	< 44	< 44	< 44	< 34	< 34	< 35	< 34
06/18/2024	< 37	< 37	< 37	< 18	< 37	< 37	< 37	< 38
06/25/2024	< 50	< 50	< 50	< 50	< 51	< 52	< 52	< 52
07/02/2024	< 65	< 34	< 34	< 17	< 65	< 66	< 66	< 28
07/09/2024	< 48	< 48	< 49	< 48	< 38	< 38	< 39	< 39
07/16/2024	< 38	< 38	< 38	< 41	< 45	< 43	< 43	< 47
07/23/2024	< 37	< 25	< 37	< 39	< 48	< 49	< 48	< 51
07/30/2024	< 48	< 32	< 48	< 48	< 43	< 43	< 43	< 43
08/06/2024	< 37	< 37	< 38	< 38	< 36	< 36	< 36	< 36
08/13/2024	< 48	< 48	< 48	< 24	< 50	< 50	< 51	< 51
08/19/2024	< 29	< 29	< 29	< 29	< 32	< 32	< 32	< 23
08/27/2024	< 43	< 42	< 42	< 42	< 36	< 36	< 36	< 36
09/03/2024	< 26	< 26	< 26	< 26	< 29	< 29	< 29	< 29
09/10/2024	< 63	< 60	< 62	< 62	< 40	< 39	< 40	< 40
09/17/2024	< 45	< 46	< 46	< 23	< 40	< 40	< 40	< 40
09/24/2024	< 44	< 44	< 44	< 44	< 25	< 38	< 38	< 38
10/01/2024	< 32	< 32	< 32	< 32	< 31	< 31	< 31	< 31
10/08/2024	< 21	< 22	< 22	< 22	< 14	< 21	< 21	< 21
10/15/2024	< 43	< 43	< 43	< 43	< 33	< 33	< 33	< 33
10/22/2024	< 39	< 39	< 39	< 43	< 23	< 23	< 23	< 23
10/29/2024	< 39	< 39	< 39	< 39	< 36	< 36	< 36	< 15

Attachment 5: ERRATA Continued

Table 13: Weekly Air Iodine I-131 (E^{-3} pCi/m^3)

Collection Date	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
11/05/2024	< 37	< 37	< 37	< 28	< 43	< 43	< 43	< 43
11/12/2024	< 21	< 21	< 22	< 21	< 35	< 35	< 35	< 35
11/19/2024	< 37	< 37	< 37	< 37	< 42	< 42	< 42	< 42
11/26/2024	< 57	< 57	< 57	< 57	< 60	< 60	< 60	< 60
12/03/2024	< 46	< 46	< 46	< 22	< 36	< 37	< 37	< 37
12/10/2024	< 34	< 34	< 34	< 34	< 29	< 29	< 29	< 29
12/17/2024	< 50	< 50	< 51	< 24	< 45	< 45	< 45	< 45
12/23/2024	< 53	< 53	< 54	< 26	< 40	< 40	< 41	< 41
12/30/2024	< 49	< 49	< 49	< 49	< 52	< 52	< 52	< 25



2025 Annual Radiological Groundwater Protection Program Report

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TABLES

FIGURES

1.0 LIST OF ACRONYMS AND DEFINITIONS

1. Alpha Particle (α): A charged particle emitted from the nucleus of an atom having a mass and charge equal in magnitude of a helium nucleus.
2. BWR: Boiling Water Reactor
3. Composite Sample: A series of single collected portions (aliquots) analyzed as one sample. The aliquots making up the sample are collected at time intervals that are very short compared to the composite period.
4. Control: A sampling station in a location not likely to be affected by plant effluents due to its distance and/or direction from the Plant.
5. Counting Error: An estimate of the two-sigma uncertainty associated with the sample results based on total counts accumulated.
6. Curie (Ci): A measure of radioactivity; equal to 3.7×10^{10} disintegrations per second, or 2.22×10^{12} disintegrations per minute.
7. Direct Radiation Monitoring: The measurement of radiation dose at various distances from the plant is assessed using thermoluminescent dosimeters (TLDs), optically stimulated luminescent dosimeters (OSLDs), and/or pressurized ionization chambers.
8. Grab Sample: A single discrete sample drawn at one point in time.
9. Indicator: A sampling location that is potentially affected by plant effluents due to its proximity and/or direction from the plant.
10. Ingestion Pathway: The ingestion pathway includes milk, fish, drinking water and garden produce. Also sampled (under special circumstances) are other media such as vegetation or animal products when additional information about particular radionuclides is needed.
11. ISFSI: Independent Spent Fuel Storage Installation
12. LLD: Lower Limit of Detection. An *a priori* measure of the detection capability of a radiochemistry measurement based on instrument setup, calibration, background, decay time, and sample volume. An LLD is expressed as an activity concentration. The MDA is used for reporting results. LLD are specified by a regulator, such as the NRC and are typically listed in the ODCM.
13. MDA: Minimum Detectable Activity. For radiochemistry instruments, the MDA is the *a posteriori* minimum concentration that a counting system detects. The smallest concentration or activity of radioactive material in a sample that will yield a net count above instrument background and that is detected with 95% probability, with only 5% probability of falsely concluding that a blank observation represents a true signal.
14. MDC: Minimum Detectable Concentration. Essentially synonymous with MDA for the purposes of radiological monitoring.
15. Mean: The sum of all of the values in a distribution divided by the number of values in the distribution, synonymous with average.

16. Microcurie (µCi): 3.7 x 10^4 disintegrations per second, or 2.22 x10^6 disintegrations per minute.
17. millirem (mrem): 1/1000 rem; a unit of radiation dose equivalent in tissue.
18. Milliroentgen (mR): 1/1000 Roentgen; a unit of exposure to X- or gamma radiation.
19. N/A: Not Applicable
20. NEI: Nuclear Energy Institute
21. NRC: Nuclear Regulatory Commission
22. ODCM: Offsite Dose Calculation Manual
23. OSLD: Optically Stimulated Luminescence Dosimeter
24. Protected Area: A 10 CFR 73 security term is an area encompassed by physical barriers and to which access is controlled for security purposes. The fenced area immediately surrounding the plant and around ISFSI are commonly classified by the licensee as "Protected areas." Access to the protected area requires a security badge or escort.
25. PWR: Pressurized Water Reactor
26. REC: Radiological Effluent Control
27. REMP: Radiological Environmental Monitoring Program
28. Restricted Area: A 10 CFRR 20 defined term where access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials.
29. TEDE: Total Effective Dose Equivalent (TEDE) means the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).
30. TLD: Thermoluminescent Dosimeter
31. TRM: Technical Requirements Manual
32. TS: Technical Specification
33. Unrestricted Area: An area, access to which is neither limited nor controlled by the licensee.

2.0 Introduction

2.1 About Nuclear Power

Commercial nuclear power plants are generally classified as either Boiling Water Reactors (BWRs) or Pressurized Water Reactors (PWRs), based on their design. A BWR includes a single coolant system where water used as reactor coolant boils as it passes through the core and the steam generated is used to turn the turbine generator for power production. A PWR, in contrast, includes two separate water systems: radioactive reactor coolant and a secondary system. Reactor coolant is maintained under high pressure, preventing boiling. The high-pressure coolant is passed through a heat exchanger called a steam generator where the secondary system water is boiled, and the steam is used to turn the turbine generator for power production.

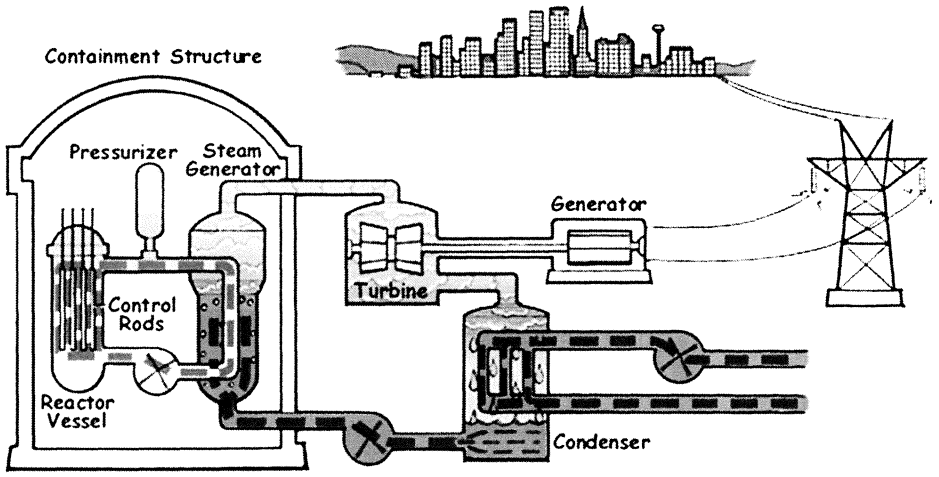

Figure 5, Pressurized Water Reactor (PWR) **[1]**

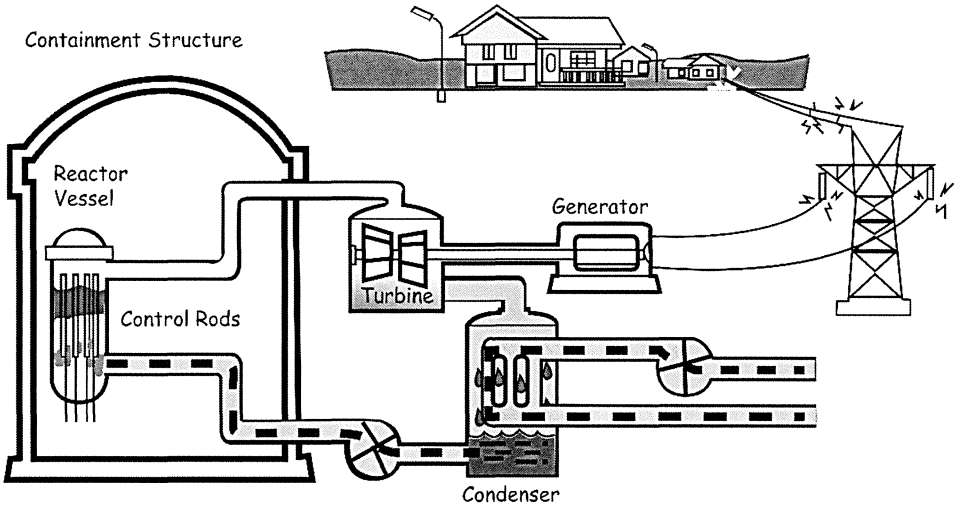

Figure 6, Boiling Water Reactor (BWR) **[2]**

Electricity is generated by a nuclear power plant similarly to the way that electricity is generated at other conventional types of power plants, such as those powered by coal or natural gas. Water is boiled to generate steam; the steam turns a turbine that is attached to a generator and the steam is condensed back into water to be returned to the boiler. What makes nuclear power different from these other types of power plants is that the heat is generated by fission and decay reactions occurring within and around the core containing fissionable uranium (U-235).

Nuclear fission occurs when certain nuclides (primarily U-233, U-235, or Pu-239) absorb a neutron and break into several smaller nuclides (called fission products) as well as producing some additional neutrons.

Fission results in production of radioactive materials including gases and solids that must be contained to prevent release or treated prior to release. These effluents are generally treated by filtration and/or hold-up prior to release. Releases are generally monitored by sampling and by continuously indicating radiation monitors. The effluent release data is used to calculate doses in order to ensure that dose to the public due to plant operation remains within required limits.

2.2 About Radiation Dose

Ionizing radiation, including alpha, beta, and gamma radiation from radioactive decay, has enough energy to break chemical bonds in tissues and result in damage to tissue or genetic material. The amount of ionization that will be generated by a given exposure to ionizing radiation is quantified as dose. Radiation dose is generally reported in units of millirem (mrem) in the US.

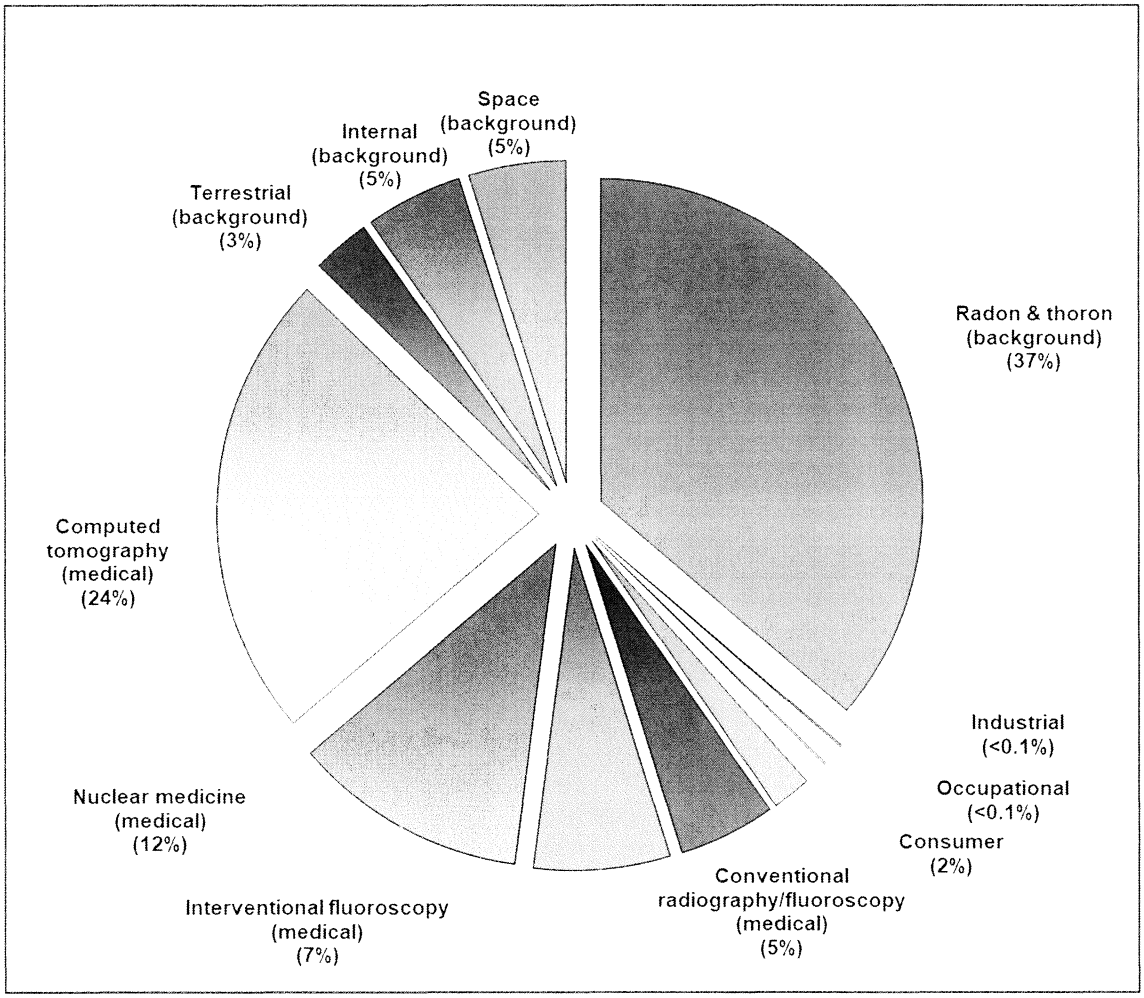

Figure 7, Sources of Radiation Exposure (NCRP Report No. 160) **[3]**

The National Council on Radiation Protection (NCRP) has evaluated the population dose for the US and determined that the average individual is exposed to approximately 620 mrem per year [3]. There are many sources for radiation dose, ranging from natural background sources to medical procedures, air travel, and industrial processes. Approximately half (310 mrem) of the average exposure is due to natural sources of radiation including exposure to radon, cosmic radiation, and internal radiation and terrestrial due to naturally occurring radionuclides. The remaining 310 mrem of exposure is due to man-made sources of exposure, with the most significant contributors being medical (48% of total mrem per year) due to radiation used in various types of medical scans and treatments. Of the remaining 2% of dose, most is due to consumer activities such as air travel, smoking cigarettes, and building materials. A small fraction of this 2% is due to industrial activities including generation of nuclear power.

Readers that are curious about common sources and effects of radiation dose that they may encounter can find excellent sources of information from the Health Physics Society, including the Radiation Fact Sheets [4], and from the US Nuclear Regulatory Commission website [5]

2.3 About Dose Calculation

Concentrations of radioactive material in the environment resulting from plant operations are very small and it is not possible to determine doses directly using measured activities of environmental samples. To overcome this, dose calculations based on measured activities of effluent streams are used to model the dose impact for Members of the Public due to plant operation and effluents. There are several mechanisms that can result in dose to Members of the Public, including: Ingestion of radionuclides in food or water; Inhalation of radionuclides in air; Immersion in a plume of noble gases; and Direct Radiation from the ground, the plant or from an elevated plume.

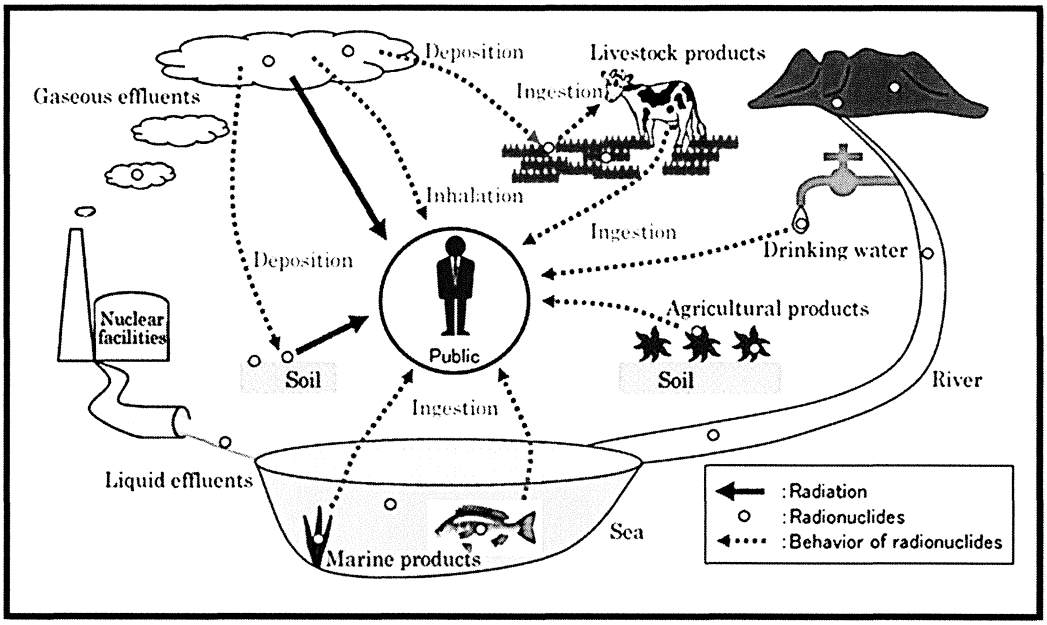

Figure 8, Potential exposure pathways to Members of the Public due to Plant Operations **[6]**

Each plant has an Offsite Dose Calculation Manual (ODCM) that specifies the methodology used to obtain the doses in the Dose Assessment section of this report. The dose assessment methodology in the ODCM is based on NRC Regulatory Guide 1.109 [7] and NUREG-0133 [8]. Doses are calculated by determining what the nuclide concentration will be in air, water, on the ground, or in food products based on plant effluent releases. Release points are continuously monitored to quantify what concentrations of nuclides are being released. For gaseous releases meteorological data is used to determine how much of the released activity will be present at a given location outside of the plant either deposited onto the ground or in gaseous form. Intake patterns and nuclide bio-concentration factors are used to determine how much activity will be transferred into animal milk or meat. Finally, human ingestion factors and dose factors are used to determine how much activity will be consumed and how much dose the consumer will receive. Inhalation dose is calculated by determining the concentration of nuclides and how much air is breathed by the individual.

For liquid releases, dilution and mixing factors are used to model the environmental concentrations in water. Drinking water pathways are modeled by determining the concentration of nuclides in the water at the point where the drinking water is sourced (e.g., taken from wells, rivers, or lakes). Fish and invertebrate pathways are determined by using concentration at the release point, bioaccumulation factors for the fish or invertebrate and an estimate of the quantity of fish consumed.

Each year a Land Use Census is performed to determine what potential dose pathways currently exist within a five-mile radius around the plant, the area most affected by plant operations. The Annual Land Use Census identifies the locations of vegetable gardens, nearest residences, milk animals and meat animals. The data from the census is used to determine who is the likely to be most exposed to radiation dose as a result of plant operation.

There is significant uncertainty in dose calculation results, due to modeling dispersion of material released and bioaccumulation factors, as well as assumptions associated with consumption and land-use patterns. Even with these sources of uncertainty, the calculations do provide a reasonable estimate of the order of magnitude of the exposure. Conservative assumptions are made in the calculation inputs such as the number of various foods and water consumed, the amount of air inhaled, and the amount of direct radiation exposure from the ground or plume, such that the actual dose received are likely lower than the calculated dose. Even with the built-in conservatism, doses calculated for the maximum exposed individual due to plant operation are a very small fraction of the annual dose that is received due to other sources. The calculated doses due to plant effluents, along with REMP results, serve to provide assurance that radioactive effluents releases are not exceeding safety standards for the environment or people living near the plant.

3.0 NEI 07-07 ONSITE RADIOLOGICAL GROUNDWATER MONITORING PROGRAM

Byron Clean Energy Center has developed a Groundwater Protection Initative (GPI) program in accordance with NEI 07-07, Industry Ground Water Protection Initiative – Final Guidance Document [9]. The purpose of the GPI is to ensure timely detection and an effective response to situations involving inadvertent radiological releases to groundwater in order to prevent migraton of licensed radioactive material off-site and to quantify impacts on decommissioning. During 2025, Byron Clean Energy collected and analyzed groundwater samples in accordance with the requirements of approved procedures following regulatory methods.

This section is included in this report to communicate results of NEI 07-07 Radiological Groundwater Monitoring Program. Monitoring wells installed as part of GPI program are sampled and analyzed as summarized in Table 1, Groundwater Protection Program Well Sampling Location. In addition to reporting results from NE 07-07 monitoring wells, voluntary communications to offsite governmental agencies for onsite leaks or spills per NEI 07-07 Objective 2.2, are also reported as part of this report. It is important to note, samples and results taken in support of NEI 07-07 groundwater monitoring program are not part of the Radiological Environmental Monitoring Program (REMP) but should be reported as part of ARERR.

Table 1, Groundwater Protection Program Monitoring Well Sampling Locations

Site	Description	Sample Point Designation
AR-1	North of Vacuum Breaker Vault #1	Source
AR-2	West of Vacuum Breaker Vault #2	Background
AR-3	West of Vacuum Breaker Vault #3	Source
AR-4	West of Vacuum Breaker Vault #4	Source
AR-7	West of U2 Containment	Source
AR-8	South of Turbine Building	Source
AR-9	East of Circulating Water Flume	Source
AR-10	North of U-2 NDCT	Background

Table 1, Groundwater Protection Program Monitoring Well Sampling Locations
Cont'd

Site	Description	Sample Point Designation
AR-11	South of Vacuum Breaker Vault #4	Mid-Field
AR-12	Next to Vehicle Storage and Warehouse	Source
AR-13	West of RWST	Source
CAR-1	East of River Road	Perimeter
CAR-3	South of TR Ponds	Source
DF-24	West of boundary of Old Dirks Farm property; South of AR-4	Idle
MW-1	North of Blowdown Line near Vacuum Breaker Vault #2	Idle
MW-3	East of Razorville Road; west of Vacuum Breaker Vault #3	Idle
TW-13	East of River Road	Perimeter
CROP	Northwest of U-2 NDCT	Surface Water

MAP OF COLLECTION SITES

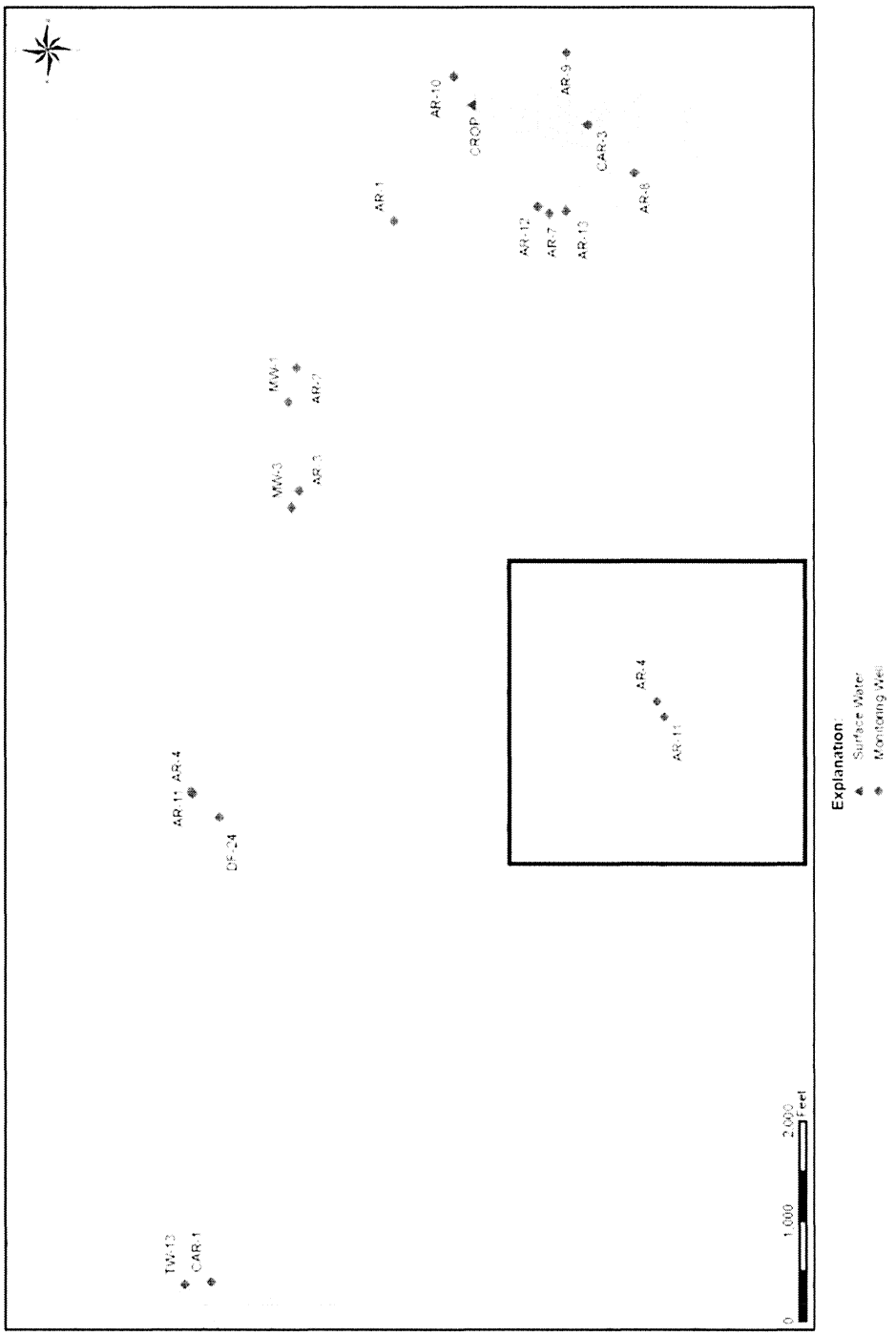

Figure 5, Monitoring Well Locations, Byron Clean Energy Center, 2025

Radiological Groundwater Monitoring Program tritium results are summarized in Table 2. Naturally occurring Potassium-40 was detected at one of the monitoring well locations.

Table 2, Groundwater Protection Program Monitoring Well Tritium, Strontium, and Gross Alpha in Ground water Samples (pCi/L ± 2 sigma)

Site	Collection Date	H-3	Sr-89	Sr-90
AR-1	3/12/2025	<186		
AR-1	6/3/2025	<184	<7.96	<0.789
AR-1	8/21/2025	<185		
AR-1	11/6/2025	<199		
AR2	6/5/2025	<183		
AR-3	3/13/2025	<186		
AR-3	6/5/2025	<179	<8.21	<0.83
AR-3	8/18/2025	<193		
AR-3	11/5/2025	<193		
AR-4	3/13/2025	<183		
AR-4	6/5/2025	<183	<7.68	<0.805
AR-4	8/18/2025	<193		
AR-4	11/5/2025	<190		
AR-7	3/10/2025	<181		
AR-7	6/2/2025	<186	<9.96	<0.78
AR-7	8/20/2025	<188		
AR-7	11/3/2025	<195		
AR-8	3/10/2025			
AR-8	6/2/2025	<186	<8.01	<0.847
AR-8	8/20/2025	<189		
AR-8	11/6/2025	<193		
AR-9	3/12/2025	<185		
AR-9	6/2/2025	<185	<8.78	<0.774
AR-9	8/20/2025	<189		
AR-9	11/6/2025	<193		
AR-10	6/5/2025	<189		

Table 2, Groundwater Protection Program Monitoring Well tritium, Strontium, and Gross Alpha in Groundwater Samples (pCi/L ± 2 sigma) Cont'd

Site	Collection Date	H-3	Sr-89	Sr-90
AR-11	6/5/2025	265 ± 123		
AR-11	11/5/2025	269 ± 130		
AR-12	3/10/2025	<193	<2.56	<0.256
AR-12	6/2/2025	<191		
AR-12	8/20/2025	275 ± 127		
AR-12	11/6/2025	<190		
AR-13	3/10/2025	<186	<6.56	<0.846
AR-13	6/3/2025	<185		
AR-13	8/20/2025	<189		
AR-13	11/6/2025	<193		
CAR-1	6/5/2025	<187		
CAR-3	3/10/2025	<185	<9.17	<0.943
CAR-3	6/2/2025	<183		
CAR-3	8/20/2025	<188		
CAR-3	11/6/2025	<197		
*CROP	3/19/2025	<187	<8.65	<0.627
*CROP	6/3/2025	<186		
*CROP	8/20/2025	<187		
*CROP	11/6/2025	<195		
TW-13	6/5/2025	<190		

* *Surface water*

No samples collected for gross alpha and beta analysis.

Table 3, Groundwater Protection Program Monitoring Well Gamma Isotopic in Groundwater Samples (pCi/L ± 2 sigma)

No Samples collected or analyzed for gamma emmiters in 2025

Table 4, Groundwater Protection Program Monitoring Well Hard-To-Detect in Groundwater Samples (pCi/L ± 2 sigma)

No Samples collected or analyzed for hard to detects in 2025

3.1 Voluntary Notification

During 2025, Byron Clean Energy Center did not make a voluntary NEI 07-07 notification to State/Local officials, NRC, and to other stakeholders required by site procedures.

4.0 BIBLIOGRAPHY

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