

OCAN2026-00004

10 CFR 50, Appendix I

May 7, 2026

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

Subject: Annual Radiological Environmental Operating Report for 2025

Arkansas Nuclear One – Unit 1 and Unit 2
NRC Docket No. 50-313 and 50-368
Renewed Facility Operating License Nos. DPR-51 and NPF-6

Arkansas Nuclear One, Units 1 and 2 (ANO-1 and ANO-2) Technical Specifications (TSs) 5.6.2 and 6.6.2, respectively, require the submittal of an annual radiological environmental operating report for the previous year by May 15, of each year. These same TSs allow a single submission to be made for ANO. The submittal shall combine sections common to both units.

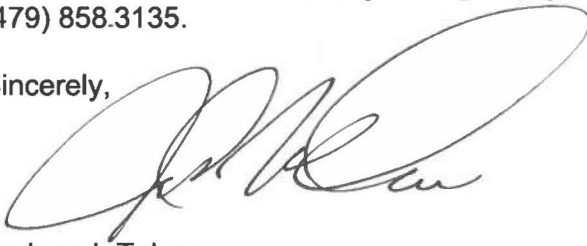
The radionuclides detected by the radiological environmental monitoring program during 2025, were significantly below regulatory limits. The operation of the ANO station, during 2025, had no harmful radiological effects nor resulted in any irreversible damage to the local environment.

The enclosure to this letter contains the Annual Radiological Environmental Operating Report for 2025. This report fulfills the reporting requirements of the TSs listed above.

This letter contains no new regulatory commitments.

Should you have any questions or require additional information regarding this report, please contact Joshua Toben, Manager, Regulatory and Emergency Preparedness, ANO, at (479) 858.3135.

Sincerely,



Joshua J. Toben
JJT/cgm

Reference: Entergy Operations, Inc. (Entergy) letter to the U. S. Nuclear Regulatory Commission (NRC), "Radioactive Effluent Release Report for the 2025 Calendar Year," (ADAMS Accession Number ML26107A038), (OCAN2026-00002), dated April 16, 2026.

Enclosure: Annual Radiological Environmental Operating Report for 2025

cc: NRC Region IV Regional Administrator
NRC Senior Resident Inspector – Arkansas Nuclear One
NRC Project Manager – Arkansas Nuclear One
Designated Arkansas State Official

Enclosure

0CAN2026-00004

Annual Radiological Environmental Operating Report for 2025



2025

Annual Radiological Environmental Operating Report

Document Number: 0CAN2026-00004

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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.

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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

Arkansas Nuclear One 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 ANO 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) and. The program compares data from Indicator locations near the plant, to Control locations farther away from the site to assess operation impacts.

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The Annual Radiological Environmental Operating Report (AREOR) provides data obtained through analyses of environmental samples collected at ANO for the reporting period of January 1st through December 31st, 2025. During that time period 279 were performed on 281. 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 ANO, did not result in detection of plant related radionuclides in the environment.

2.1 Summary of Conclusions:

No measurable activities above background levels were detected with the exception of the 4th quarter TLD at Station 56 which had an attributable dose of 5.4mrem. Section 8.1 provides details of this exception. All other values were consistent with historical results which indicate no adverse radiological environmental impacts associated with the operation of ANO. 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].

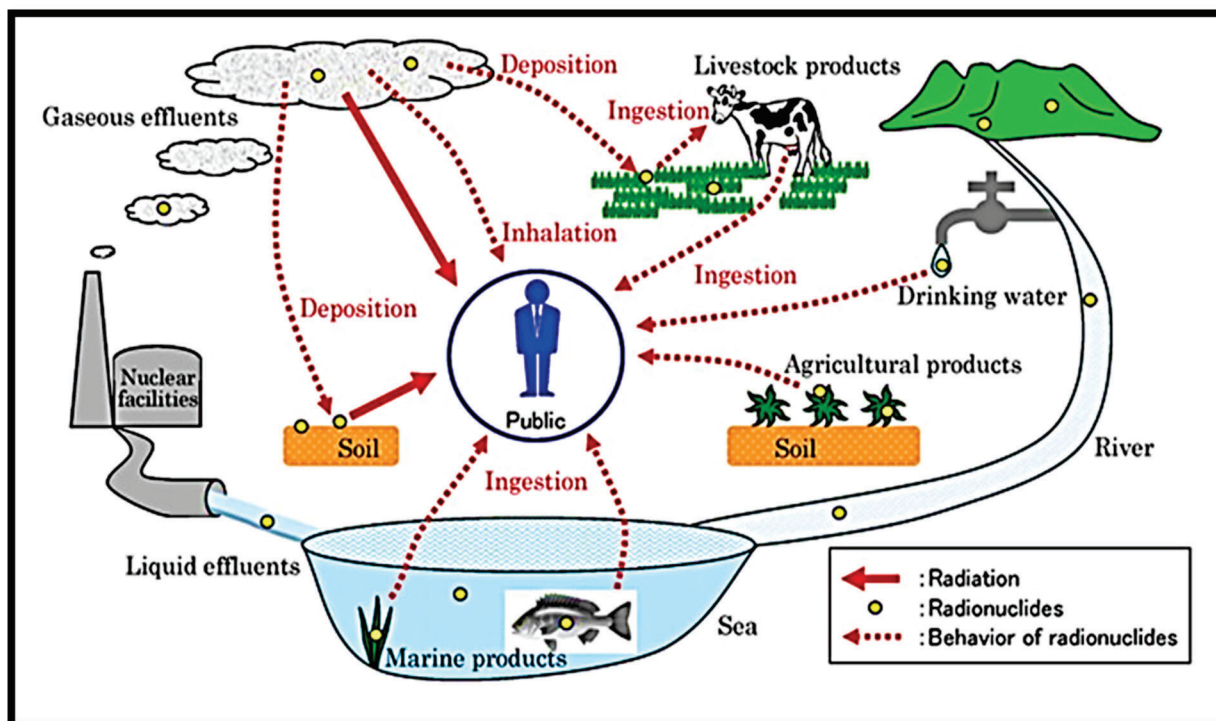


Figure 1, Potential exposure pathways to Members of the Public due to Plant Operations [7]

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 Arkansas, ANO 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.

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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

Arkansas Nuclear One is a dual unit commercial nuclear power plant that achieved initial criticality in 1974 on Unit 1 and 1978 on Unit 2. The plant is in Russellville, AR, a town of approximately 30,000 people.

ANO 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 Monitoring Program – Direct Radiation
- Table 2, Radiological Environmental Monitoring Program – Airborne
- Table 3, Radiological Environmental Monitoring Program – Waterborne
- Table 4, Radiological Environmental Monitoring Program – Ingestion
- Table 5, REMP Sampling Locations – Direct Radiation
- Figure 2, REMP Sample Locations (Near Field/Site Boundary)
- Figure 3, REMP Sample Locations (Far Field)
- Figure 4, REMP Sample Locations (Onsite)

5.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS

Table 1, Radiological Environmental Monitoring Program – Direct Radiation

| Requirement | Sample Location Description, Distance, and Direction | Sampling Collection/Frequency | Type and Frequency of Analyses |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------|--------------------------------|
| <p>Direct Radiation 24 Routine monitoring stations with two or more 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, such as population centers, nearby recreation areas, and control stations</p> | <p>See Table 5</p> | <p>Quarterly</p> | <p>gamma dose/Quarterly</p> |

Table 2, Radiological Environmental Monitoring Program – Airborne

| Requirement | Sample Location Description, Distance, and Direction | Sampling Collection/Frequency | Type and Frequency of Analyses |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>Airborne Radioiodine and Particulates</u></p> <p>Samples from 5 locations:</p> <p>Three locations close to the site boundary in different sectors of the highest calculated annual average ground level D/Q.</p> <p>One sample from the vicinity of a community having the highest calculated annual average D/Q.</p> <p>One sample from a Control Location, approximately 10 to 20 miles away in the least predominant wind direction.</p> | <p>Station 2 (243° - 0.5 miles) - South of the sewage treatment plant.</p> <p>Station 56 (264° - 0.4 miles) – West end of the sewage treatment plant.</p> <p>Station 1 (88° - 0.5 miles) - Near the meteorology tower.</p> <p>Station 6 (111° - 6.8 miles) – Local Entergy office, 305 South Knoxville Avenue, Russellville</p> <p>Station 7 (210° - 19.0 miles) – Entergy Supply Yard on Highway 10 in Danville. (Control)</p> | <p>Continuous sampler operation with sample collection bi-weekly.</p> | <p>Particulate sampler: Analyze for gross beta radioactivity \geq 24 hours following filter change / Bi-weekly. Perform gamma isotopic analysis on each sample when gross beta activity is $>$ 10 times the yearly mean of control samples.</p> <p>Radioiodine canister: Iodine (I)-131 analysis/Bi-weekly.</p> |

Table 3, Radiological Environmental Monitoring Program – Waterborne

| Requirement | Sample Location Description, Distance, and Direction | Sampling Collection/Frequency | Type and Frequency of Analyses |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <u>Surface Water</u> One sample upstream (control) and one sample downstream (indicator) | <p>Station 8 (166° - 0.2 miles) - Plant discharge canal.</p> <p>Station 10 (95° - 0.5 miles) – Plant intake canal.</p> | <p>Composite sample over one-month period; samples from monthly composites are combined to form quarterly composite samples to be analyzed for tritium (H-3).</p> | <p>Gamma isotopic analysis and tritium analysis quarterly.</p> |
| <u>Drinking Water</u> One sample upstream (control) and one sample downstream (indicator) | <p>Station 14 (70° - 5.1 miles) - Russellville city water system from the Illinois Bayou.</p> <p>Station 57 (208° - 19.5 miles) - Danville public water supply treatment on Fifth Street.</p> | <p>Once per 92 days.</p> | <p>I-131, gross beta, gamma isotopic and tritium analyses once per 92 days.</p> |
| <u>Groundwater</u> Two control location upgradient from the plant and Two indicator locations down gradient from the plant, only if likely to be affected. | <p>Station 58 (GWM-1, 22° - 0.3 miles) – North of Protected Area (PA) in Owner Control Area (OCA). West of Security North Check Point, east side of access road.</p> <p>Station 62 (GWM-101, 34° - 0.5 miles) – North of PA in OCA. East of outside receiving building.</p> <p>Station 63 (GWM-103, 206° - 0.1 miles) – South of PA in OCA. North-east of Stator Rewind Bldg. near wood line.</p> <p>Station 64 (GWM-13, 112° - 0.1 miles) – South of Oily Water Separator facility, northwest corner of Unit 2 Intake Structure. Inside PA.</p> | <p>Grab samples every 92 days.</p> | <p>Gamma isotopic, gross beta, and tritium analysis quarterly.</p> |
| <u>Sediment from Shoreline</u> One sample upstream (control) and one sample downstream (indicator) | <p>Station 8 (243° - 0.9 miles) - Plant discharge canal.</p> <p>Station 16 (305° - 7.0 miles) - Big Piney Creek, located on the north side of the Arkansas River near the mouth of Piney Creek inland to Piney Bay.</p> | <p>Once per 365 days.</p> | <p>Gamma isotopic analysis annually.</p> |

Table 4, Radiological Environmental Monitoring Program – Ingestion

| Requirement | Sample Location Description, Distance, and Direction | Sampling Collection/Frequency | Type and Frequency of Analyses |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------|
| <p><u>Fish and Invertebrates:</u> 1 of sample of each commercially and recreationally important species in vicinity of site discharge.</p> <p>1 of sample of same species in areas not influenced by plant discharge.</p> | <p>Station 8 (212° - 0.5 miles) – Plant discharge canal.</p> <p>Station 16 (305° - 7.0 miles) - Big Piney Creek, located on the north side of the Arkansas River near the mouth of Piney Creek inland to Piney Bay.</p> | <p>Once per 365 days.</p> | <p>Gamma isotopic analysis on edible portions annually</p> |
| <p><u>Food Products:</u> Broad leaf vegetation grown nearest offsite locations of highest predicated annual average ground level D/Q if milk sampling is not performed and 1 sample collected from the control location.</p> | <p>Station 13 (273° - 0.5 miles) - West from ANO toward Gate 4 onto Flatwood Road.</p> <p>Station 55 (217° - 13.1 miles) – Ozark National Forest north of Danville</p> | <p>Three per 365 days.</p> | <p>Gamma. isotopic and I-131 analyses three times per 365 days</p> |

Table 5, REMP Sampling Locations – Direct Radiation

| Site # | Location Type | Sector | Distance (miles) |
|--------|---------------|--------|------------------|
| 1 | Inner Ring | E | 0.5 |
| 2 | Inner Ring | WSW | 0.5 |
| 3 | Inner Ring | N | 0.7 |
| 4 | Inner Ring | S | 0.5 |
| 56 | Inner Ring | W | 0.4 |
| 108 | Inner Ring | NW | 0.9 |
| 109 | Inner Ring | WNW | 0.6 |
| 110 | Inner Ring | SE | 0.8 |
| 145 | Inner Ring | NNE | 0.6 |
| 146 | Inner Ring | NE | 0.6 |
| 147 | Inner Ring | ENE | 0.6 |
| 148 | Inner Ring | ESE | 0.6 |
| 149 | Inner Ring | SSE | 0.5 |
| 150 | Inner Ring | SSW | 0.6 |
| 151 | Inner Ring | SW | 0.4 |
| 152 | Inner Ring | NNW | 0.8 |

Table 5, REMP Sampling Locations – Direct Radiation

| Site # | Location Type | Sector | Distance (miles) |
|--------|------------------|--------|------------------|
| 6 | Special Interest | ESE | 6.8 |
| 111 | Special Interest | ESE | 2.0 |
| 116 | Special Interest | NW | 1.8 |
| 125 | Special Interest | NE | 8.7 |
| 127 | Special Interest | E | 5.2 |
| 137 | Special Interest | SSE | 8.2 |
| 153 | Special Interest | NW | 9.2 |
| 7 | Control | SSW | 19.0 |

6.0 MAPS OF COLLECTION SITES

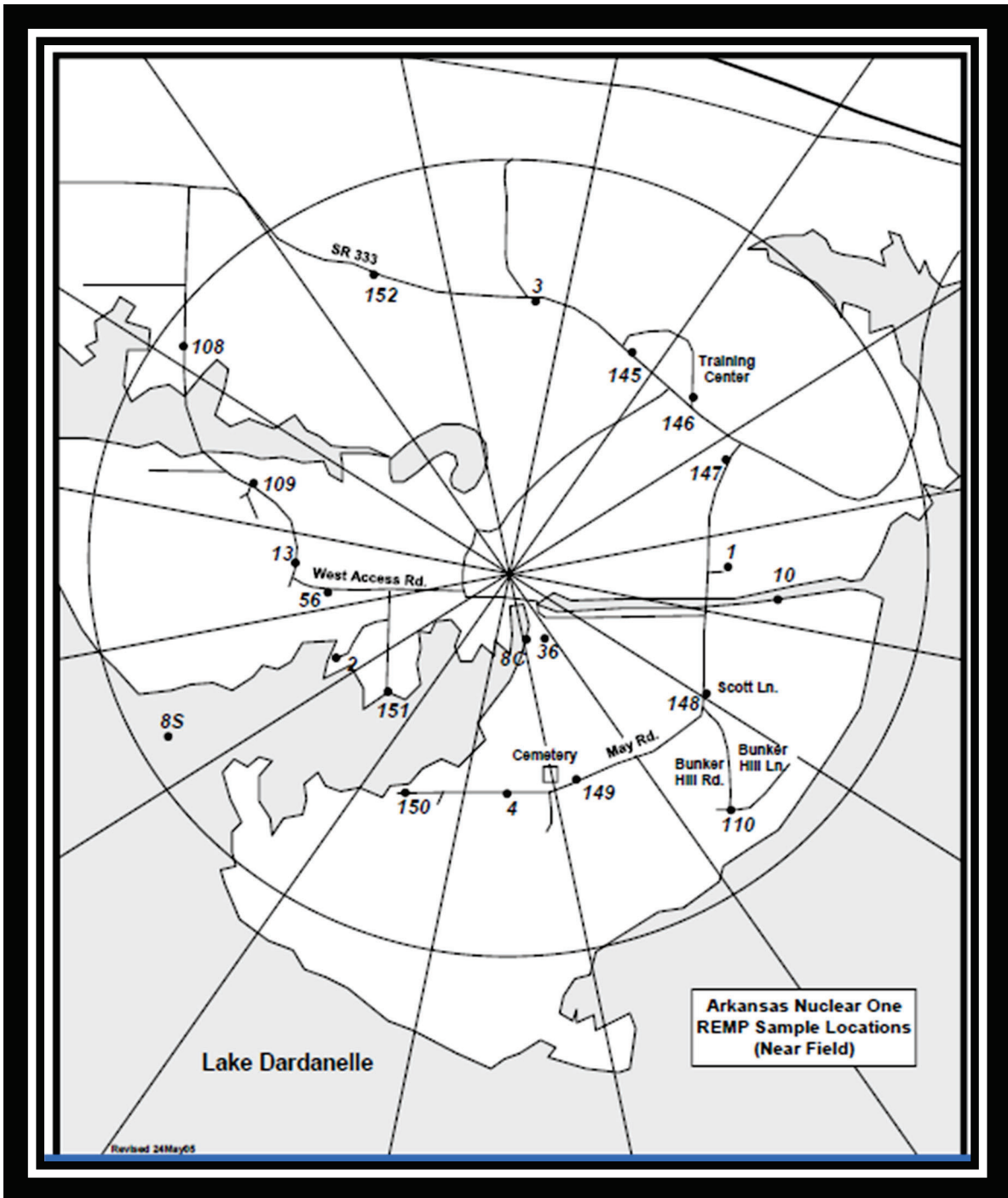


Figure 2, REMP Sample Locations (Near Field/Site Boundary)

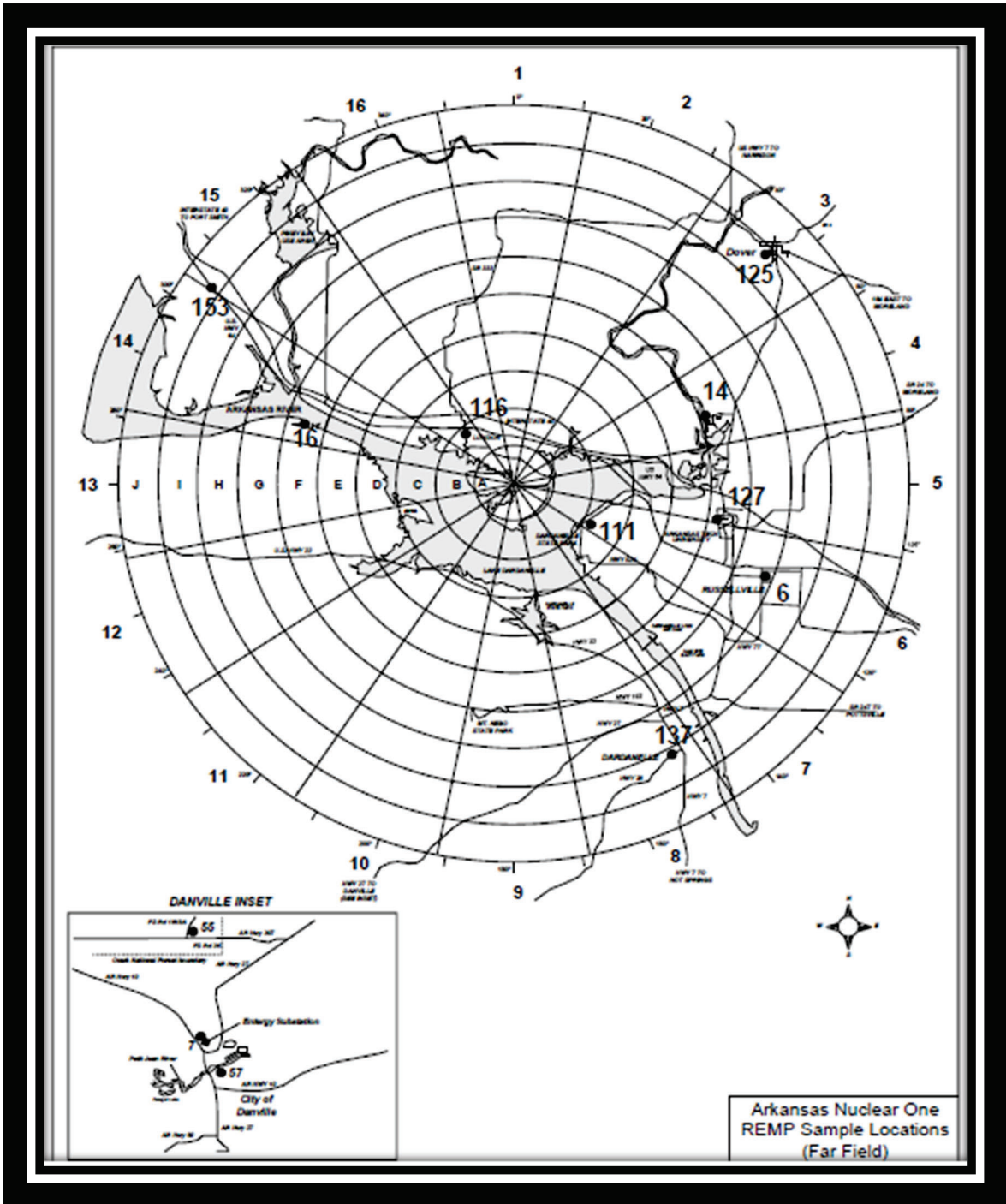


Figure 3, REMP Sample Locations (Far Field)

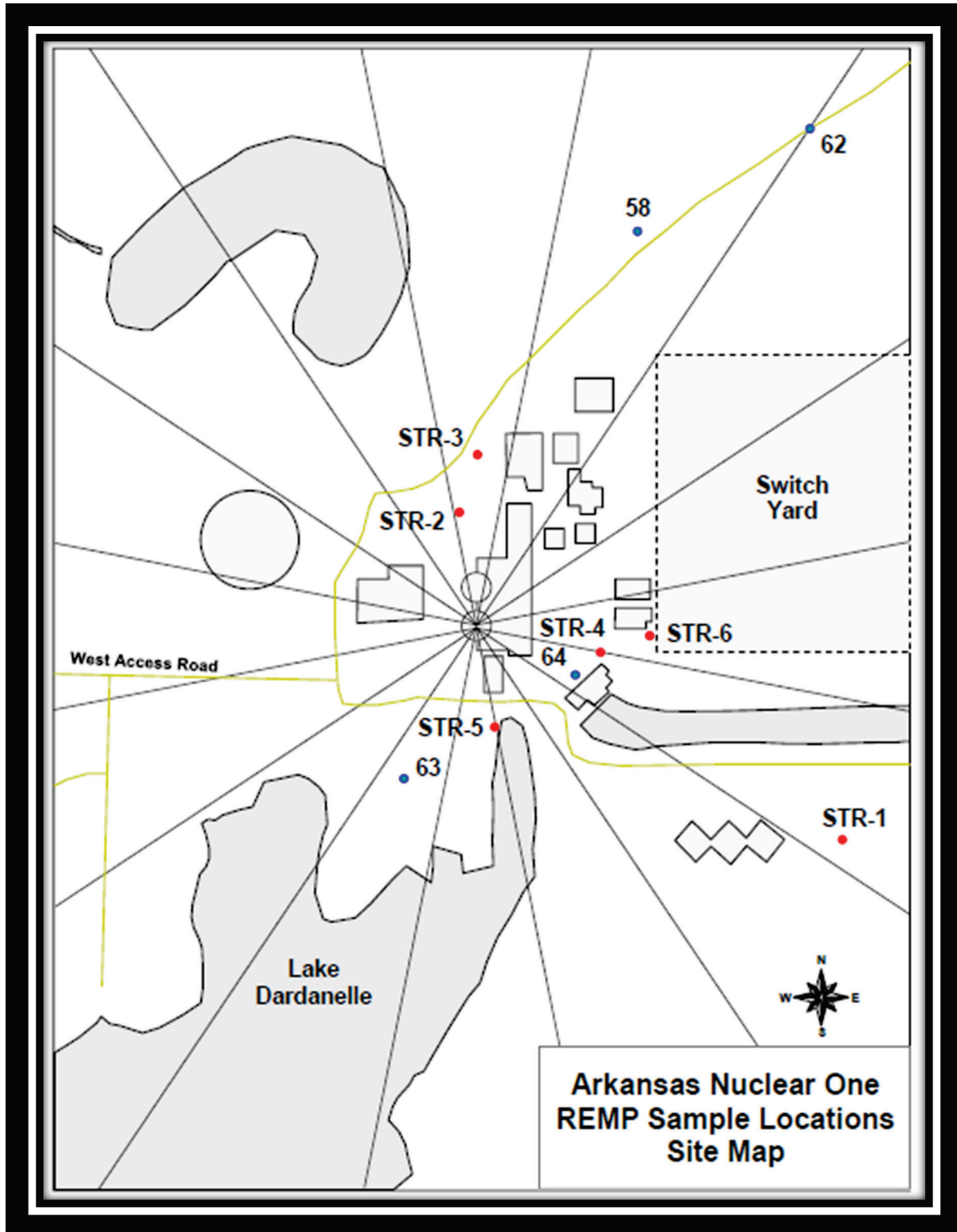


Figure 4, REMP Sample Locations (Onsite)

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⁾ | | | | |
| Mn-54 | 1,000 | | 30,000 | | |
| Fe-59 | 400 | | 10,000 | | |
| Co-58 | 1,000 | | 30,000 | | |
| Co-60 | 300 | | 10,000 | | |
| Zn-65 | 300 | | 20,000 | | |
| Zr-Nb-95 | 400 | | | | |
| I-131 | 2 ⁽²⁾ | 0.9 | | 3 | 100 |
| Cs-134 | 30 | 10 | 1,000 | 60 | 1,000 |
| Cs-137 | 50 | 20 | 2,000 | 70 | 2,000 |
| Ba-La-140 | 200 | | | 300 | |

Table 7, Maximum Values for the Limit 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) |
|--------------|----------------------|-------------------------------------------------|-------------------|--------------|----------------------------|-----------------------|
| Gross Beta | 4.0 | 0.01 | | | | |
| H-3 | 2,000 ⁽³⁾ | | | | | |
| Mn-54 | 15 | | 130 | | | |
| Fe-59 | 30 | | 260 | | | |
| Co-58, Co-60 | 15 | | 130 | | | |
| Zn-65 | 30 | | 260 | | | |
| Zr-Nb-95 | 15 | | | | | |
| I-131 | 1 ⁽⁴⁾ | 0.07 | | 1 | 60 | |
| Cs-134 | 15 | 0.05 | 130 | 15 | 60 | 150 |
| Cs-137 | 18 | 0.06 | 150 | 18 | 80 | 180 |
| Ba-La-140 | 15 | | | 15 | | |

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 24 locations were monitored and data analyzed in accordance with the requirements in Table 1, Radiological Environmental Monitoring Program – Direct Radiation. Attachment 4, Environmental Direct Radiation Dosimetry Results, provides the annual direct radiation dosimetry analysis.

There was no direct radiation dose detected from the facility with the exception of the 4th quarter event at Station 56, where 5.4 mrem of attributable plant dose was detected. This is attributed to the old Unit One reactor vessel head being staged outside the mausoleum and moved to a barge for shipping. The haul path for the head was down the plant access road that is approximately 700 feet east from Station 56. All other TLD 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 1, Radiological Environmental Monitoring Program – Direct Radiation. During the calendar year 2025, a total of 134 of 135 samples were collected and analyzed for gross beta, gamma emitters and iodine. Particulate and radioiodine (I-131) samplers are used to continuously collect airborne particulates on a filter and radioiodine cartridges. Samples are collected and filter changeout which occurs bi-weekly.

All radioiodine samples were below detection limit.

Indicator gross beta air particulate results for 2025 were comparable to results obtained from 2015-2024 of the operational REMP. Also, the 2025 gross beta annual average was less than the average for preoperational levels.

Figure 5, Air Particulate: Analysis for Gross Beta, Average for All Indicator vs. Control Location

| <u>Monitoring Period</u> | <u>Result (rem)</u> |
|-----------------------------|---------------------|
| 2015 – 2024 (Minimum Value) | 0.017 |
| 2025 Average Value | 0.024 |
| 2015 – 2024 (Maximum Value) | 0.040 |
| Preoperational | 0.050 |

Air particulate and radioiodine results from this monitoring period, 2025, were compared to 10-year average as shown in Figure 5, and there were no significant changes.

In the absence of plant-related gamma radionuclides, gross beta activity is attributed to naturally occurring radionuclides, Table 10: Air Particulate Data Summary Tables (Gross Beta – pCi/m3) includes gross beta concentrations and provides a comparison of the indicator and control means and ranges emphasizes the consistent trends seen in this pathway to support the presence of naturally occurring activity. Therefore, it can be concluded that the airborne pathway continues to be unaffected by ANO operations.

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 location and at the downstream indicator 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 24 surface water samples were collected and analyzed in accordance with the requirements in the ODCM and shown in Table 3, Radiological Environmental Monitoring Program – Waterborne. Positive detections of tritium were seen during the 2nd, 3rd, and 4th surface lake water sampling events. These positive detections align with plant effluent discharges. Tritium concentrations in surface water were well below the EPA tritium drinking water limit of 20,000 pCi/L.

Figure 6: Surface Water Tritium Results

| <u>Monitoring Period</u> | <u>Result</u> |
|---------------------------------|----------------------|
| 2015 – 2024 (Minimum Value) | 671.3 |
| 2025 Value | 695.3 |
| 2015 – 2024 (Maximum Value) | 963.5 |
| Preoperational | 200.0 |

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 16 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 8 control samples and a total of 8 indicator samples were collected. These samples were analyzed for tritium and gamma quarterly.

Groundwater is collected by peristaltic pumping or HydraSleeves. Pumping requires removing three volumes of water from the well (purging) before collecting samples. Once purging is complete, pumping of water out of the well is equilibrated with water coming into the well. Once this equilibrium is obtained, representative samples of the groundwater table are collected. The HydraSleeve is classified as a no-purge (passive) grab sampling device, meaning that it is used to collect ground-water samples directly from the screened interval of a well without having to purge the well prior to sample collection. When it is used as described in this Standard Operating Procedure (SOP), the HydraSleeve causes no drawdown in the well (until the sample is withdrawn from the water column) and only minimal disturbance of the water column, because it has a very thin cross section, and it displaces very little water (<100 ml) during deployment in the well. The HydraSleeve collects a sample from within the screen only, and it excludes water from any other part of the water column in the well using a self-sealing check valve at the top of the sampler. It is a single-use sampler that is not intended for reuse, so there are no decontamination requirements for the sampler itself.

Tritium and gamma concentrations were below the LLD limits at all four locations. Listed below is a comparison of 2025 indicator results to past operational years. Results are reported as annual average pCi/L. REMP Groundwater data are captured in the table below. During 2025 both control and indicator locations showed positive detection of gross beta. Gross beta activity is attributed to naturally occurring radionuclides. Table 19, Groundwater - Gamma and Iodine includes gross beta concentrations and provides a comparison of the indicator and control means and ranges emphasizes the consistent trends seen in this pathway to support the presence of naturally occurring activity. Therefore, it can be concluded that the groundwater pathway continues to be unaffected by ANO operations.

Figure 7: REMP Groundwater Tritium Sample Results

| <u>Radionuclide</u> | <u>2025</u> | <u>2015 – 2024</u> |
|---------------------|-------------|--------------------|
| Iodine-131 | < LLD | < LLD |
| Gamma | < LLD | < LLD |
| Tritium | < LLD | < LLD |
| Gross Beta | 2.48* | 4.01** |

* Average for Indicator and control wells for 2025.

** Only 2015-2024 gross beta average of indicator and control well data were used for review as historical data.

8.3.3 Drinking Water

A total of 8 drinking water samples were obtained in 2025. Samples were collected from two locations (indicator and control). Although ANO personnel utilize Station 14 (City of Russellville) as an indicator location due to the potential for the drinking water pathway to exist, the City of Russellville has not withdrawn water from Lake Dardanelle in the past several years.

Drinking water samples were analyzed for gross beta radionuclides, I-131, gamma radionuclides and tritium. Gamma radionuclides, gross beta radionuclides, I-131, and tritium concentrations were below the LLD limits at the indicator and control locations, which is consistent with the preoperational and operational years as shown below. Results from 2025 are summarized in table below. Results are reported as annual average pCi/L. The indicator location has historically shown gross beta above MDC but less than LLD, while the control location is below MDC and LLD. However, in 2025 the fourth quarter samples for both the indicator and control were 1.89 pCi/L and 2.29 pCi/L. This is above MDC but less than LLD

Figure 8: Drinking Water Gross Beta Samples Control vs. Indicator Comparison

| <u>Radionuclide</u> | <u>2025</u> | <u>2015 – 2024*</u> | <u>Preoperational</u> |
|---------------------|-------------|---------------------|-----------------------|
| Gross Beta | 2.09 | 2.41 | 2.0 |
| Iodine-131 | < LLD | < LLD | < LLD |
| Gamma | < LLD | < LLD | < LLD |
| Tritium | < LLD | < LLD | 200.0 |

*Average of the control and indicator results from the years 2015-2024.

8.3.4 Sediment from Shoreline

Shoreline sediment collections were made in May, 2025 and analyzed for gamma-emitting isotopes. Samples are collected at both indicator and control locations. A total of 2 shoreline samples were analyzed in accordance with requirements in the ODCM and shown in Table 3, Radiological Environmental Monitoring Program – Waterborne.

Although Cs-137 has been detected in years prior to 2025, all gamma radionuclides from 2025 samples were below detectable limits. These results are consistent with previous years' results. Therefore, ANO operations had no significant impact on the environment or public by this waterborne pathway.

8.4 Ingestion Pathway Sample Results

8.4.1 Milk

Milk samples were not collected during 2025 due to the unavailability of indicator locations within five miles of ANO. Due to the unavailability of an indication location, no control samples (greater than 5 miles from ANO) were collected.

8.4.2 Fish and Invertebrates

Fish samples were collected from two locations and analyzed for gamma radionuclides. In 2025, gamma radionuclides were below detectable limits which are consistent with the preoperational monitoring period and operational results since 1997. In accordance with requirements of the ODCM and summarized in Table 4, Radiological Environmental Monitoring Program – Ingestion. These samples are collected from the indicator and control areas as required by the ODCM.

Based on these analyses, ANO operations had no significant radiological impact upon the environment or public by this ingestion.

8.4.3 Leafy Vegetation

In accordance with the ODCM and as described in Table 4, Radiological Environmental Monitoring Program – Ingestion, 6 broad leaf vegetation samples were collected from growing locations nearest site boundary in areas of highest predicted annual average ground level D/Q. Samples are collected and analyzed for gamma isotopic and I-131 from the indicator and control locations monthly during growing season.

2025 levels remained undetectable, as has been the case in previous years. Therefore, based on these measurements, ANO operations had no significant radiological impact upon the environment or public by this ingestion pathway.

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 m² (500 ft²) producing broad leaf vegetation. For elevated releases the Land Use Census shall also identify within a distance of 5 km (3 miles) the locations in each of the 16 meteorological sectors of all milk animals and all gardens of greater than 50 m² 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 highest D/Q locations for nearest garden, nearest residence and nearest milk animal did not change following the 2025 census.

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

| Sector | Direction | Nearest Residence (Miles) | Nearest Milk Animal (Miles) | Nearest Garden (Miles) |
|--------|-----------|---------------------------|-----------------------------|------------------------|
| A | N | 1.0 | >5 | >5 |
| B | NNE | 1.2 | >5 | >5 |
| C | NE | 0.9 | >5 | >5 |
| D | ENE | 0.8 | >5 | >5 |
| E | E | 0.8 | >5 | >5 |
| F | ESE | 0.8 | >5 | >5 |
| G | SE | 0.8 | >5 | >5 |
| H | SSE | 0.8 | >5 | >5 |
| J | S | 0.8 | >5 | >5 |
| K | SSW | 0.7 | >5 | >5 |
| L | SW | 2.8 | >5 | >5 |
| M | WSW | 0.7 | >5 | >5 |
| N | W | 0.8 | >5 | >5 |
| P | WNW | 0.8 | >5 | >5 |
| Q | NW | 1.0 | >5 | 4.2 |
| R | NNW | 0.9 | >5 | >5 |

There was one commercial garden found in a five (5) mile radius of the plant which is Renee's Berry Garden. This garden is exclusively strawberries and blackberries which do not meet the definition of broadleaf vegetation as described in the NRC Branch Technical Position (BTP).

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 |
|---------------------------------|-----------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Deviation – Air | 1 | 4/15/25 | CR-ANO-C-2025-00668. This CR documents a loss of power for 93.5 hours at Air Station 1 due to storms. | Remote monitoring installed to mitigate loss of run time. |
| Deviation - Air | 2 | 10/28/25 | CR-ANO-C-2025-01870. The CR documents the lack of run-time at air station 2 due to loss of power to sample pump | Remote monitoring installed to mitigate loss of run time. |
| Deviation – Air | 7 | 9/16/25 | CR-ANO-C-2025-01527. The CR documents the lack of run-time at air station 7 due to sample pump failure. | Routine maintenance |
| Deviation - Air | 7 | 9/30/25 | CR-ANO-C-2025-01650. The CR documents the lack of run-time at air station 7 due to sample pump failure. | Routine maintenance |
| Deviation - Air | 6 | 12/30/25 | CR-ANO-C-2025-02169. The CR documents for the filter housing that was found on the ground at air station 6. | The filter was loaded and looked to have been jarred loose inadvertently by employees in the area. |
| Deviation – TLD | 150 | 1/20/25 | CR-ANO-C-2026-00088. This CR documents a missing TLD at station #150 during 4th quarter 2025 TLD collection. | Place cage inconspicuously to prevent public disturbance. |

11.0 OTHER SUPPLEMENTAL INFORMATION

11.1 NEI 07-07 Onsite Radiological Groundwater Monitoring Program

Arkansas Nuclear One 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 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 in the ARERR.

11.2 Program Modifications

There was no revision made to ANO REMP Procedure, EN-CY-130-01, in 2025.

11.3 Corrections to Previous Reports

None.

| | | |
|-----------------------------------------------------------|------------------------------------|----------------------|
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| Company: Entergy | Plant: Arkansas Nuclear One | |

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Attachment 1, Data Table Summary

| Medium or Pathway Sampled (Units) | Type, Total Number of Analyses performed ⁵ (e.g., I-131, 400) | Lower Limit of Detection (LLD) ⁶ | Indicator Mean; ⁷ (F). Range | Location with Highest Annual Mean | | Control Mean (F). Range | Number of Nonroutine Reported Measurements ⁹ |
|--------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------|------------------------------------------|-------------------------|-------------------------|---------------------------------------------------------|
| | | | | Name Direction and Distance ⁸ | Mean (F) Range | | |
| Air Particulates (pCi/m ³) | GB/135 | 0.01 | 0.0237 0.0095-0.0447 | Station 2 243° - 0.5mi | 0.0261 0.0140-0.0447 | 0.0216 0.0052-0.0341 | 0 |
| Airborne Radioiodine (pCi/m ³) | I-131/135 | 0.07 | <LLD | N/A | N/A | <LLD | 0 |
| Direct Radiation (mrem/qtr.) | Gamma Dose, 96 | N/A | 10.6 8.0-13.9 | 56 264° - 0.4mi | 13.9 | 10.1 | 0 |
| Milk (pCi/L) | 0 | N/A | N/A | N/A | N/A | N/A | N/A |
| Vegetation (pCi/kg-wet) | I-131 / 6 | 60 | < LLD | N/A | N/A | N/A | 0 |
| | GS / 6 | | | | | | |
| | Cs-134 | 60 | < LLD | N/A | N/A | N/A | 0 |
| | Cs-137 | 80 | < LLD | N/A | N/A | N/A | 0 |

⁵ GB = Gross beta; GS = Gamma scan; H-3 = Tritium; Mn-54 = Manganese-54; Fe-59 = Iron-59; Co-58 = Cobalt-58; Zn-65 = Zinc-65; Zr-95 = Zirconium-95; Nb-95 = Niobium-95; Ba-140 = Barium-140; and La-140 = Lanthanum-140.

⁶ LLD = Required lower limit of detection based on ANO Units 1 and 2 ODCM Table 2.5-1.

⁷ Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F)

⁸ Locations are specified (1) by name and (2) degrees relative to reactor site.

⁹ Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.

| Medium or Pathway Sampled (Units) | Type, Total Number of Analyses performed ⁵ (e.g., I-131, 400) | Lower Limit of Detection (LLD) ⁶ | Indicator Mean; ⁷ (F). Range | Location with Highest Annual Mean | | Control Mean (F). Range | Number of Nonroutine Reported Measurements ⁹ |
|-----------------------------------|--------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------|------------------------------------------|---------------------------|-------------------------|---------------------------------------------------------|
| | | | | Name Direction and Distance ⁸ | Mean (F) Range | | |
| Surface Water (pCi/L) | Tritium H-3 / 8 | 3000 | 695.3 (4 / 4) [484 – 950] | Station 8 (166°, 0.2 mi) | 695.3 (4 / 4) [484 – 950] | < LLD | 0 |
| | GS / 24 | | | | | | |
| | Mn-54 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Fe-59 | 30 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-58 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-60 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Zn-65 | 30 | < LLD | N/A | N/A | < LLD | 0 |
| | Zr-95 | 30 | < LLD | N/A | N/A | < LLD | 0 |
| | Nb-95 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | I-131 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-134 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-137 | 18 | < LLD | N/A | N/A | < LLD | 0 |
| | Ba-140 | 60 | < LLD | N/A | N/A | < LLD | 0 |
| | La-140 | 15 | < LLD | N/A | N/A | < LLD | 0 |

| Medium or Pathway Sampled (Units) | Type, Total Number of Analyses performed ⁵ (e.g., I-131, 400) | Lower Limit of Detection (LLD) ⁶ | Indicator Mean; ⁷ (F). Range | Location with Highest Annual Mean | | Control Mean (F). Range | Number of Nonroutine Reported Measurements ⁹ |
|-----------------------------------|--------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------|------------------------------------------|-------------------------------|-------------------------------|---------------------------------------------------------|
| | | | | Name Direction and Distance ⁸ | Mean (F) Range | | |
| Drinking Water (pCi/L) | GB / 8 | 4 | 1.89 (4 / 4) [1.89 – 1.89] | Station 57 (208°, 19.5 mi) | 2.29 (4 / 4) [2.29 – 2.29] | 2.29 (4 / 4) [2.29 – 2.29] | 0 |
| | I-131 / 8 | 1 | < LLD | N/A | N/A | < LLD | 0 |
| | H-3 / 8 | 2000 | < LLD | N/A | N/A | < LLD | 0 |
| | GS / 8 | | | | | | |
| | Mn-54 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Fe-59 | 30 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-58 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-60 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Zn-65 | 30 | < LLD | N/A | N/A | < LLD | 0 |
| | Zr-95 | 30 | < LLD | N/A | N/A | < LLD | 0 |
| | Nb-95 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-134 | 15 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-137 | 18 | < LLD | N/A | N/A | < LLD | 0 |
| | Ba-140 | 60 | < LLD | N/A | N/A | < LLD | 0 |
| | La-140 | 15 | < LLD | N/A | N/A | < LLD | 0 |

| Medium or Pathway Sampled (Units) | Type, Total Number of Analyses performed ⁵ (e.g., I-131, 400) | Lower Limit of Detection (LLD) ⁶ | Indicator Mean; ⁷ (F). Range | Location with Highest Annual Mean | | Control Mean (F). Range | Number of Nonroutine Reported Measurements ⁹ |
|-----------------------------------|--------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------|------------------------------------------|----------------|-------------------------|---------------------------------------------------------|
| | | | | Name Direction and Distance ⁸ | Mean (F) Range | | |
| Fish (pCi/kg-wet) | GS / 2 | | < LLD | N/A | N/A | < LLD | 0 |
| | Mn-54 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Fe-59 | 260 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-58 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-60 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Zn-65 | 260 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-134 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-137 | 150 | < LLD | N/A | N/A | < LLD | 0 |
| Sediment (pCi/kg-dry) | GS / 2 | | < LLD | N/A | N/A | < LLD | 0 |
| | Mn-54 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Fe-59 | 260 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-58 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Co-60 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Zn-65 | 260 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-134 | 130 | < LLD | N/A | N/A | < LLD | 0 |
| | Cs-137 | 150 | < LLD | N/A | N/A | < LLD | 0 |

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

Table 10: Air Particulate Data Summary Tables (Gross Beta – pCi/m3)

| Date/ Sample ID | Station 1 | Station 2 | Station 56 | Station 6 | Station 7 |
|-----------------|-----------|-----------|------------|-----------|------------------|
| 01/14/2025 | 3.01E-02 | 2.81E-02 | 2.90E-02 | 2.74E-02 | 3.00E-02 |
| 01/28/2025 | 2.52E-02 | 2.49E-02 | 2.63E-02 | 2.53E-02 | 2.52E-02 |
| 02/11/2025 | 2.57E-02 | 2.76E-02 | 2.43E-02 | 2.54E-02 | 2.72E-02 |
| 02/17/2025 | 2.80E-02 | 3.58E-02 | 3.03E-02 | 2.55E-02 | 2.77E-02 |
| 03/03/2025 | 2.39E-02 | 2.51E-02 | 2.13E-02 | 2.06E-02 | 2.16E-02 |
| 03/18/2025 | 1.83E-02 | 1.71E-02 | 2.01E-02 | 1.70E-02 | 1.78E-02 |
| 04/01/2025 | 1.58E-02 | 1.72E-02 | 1.92E-02 | 1.49E-02 | 1.44E-02 |
| 04/15/2025 | 2.04E-02 | 1.86E-02 | 2.15E-02 | 1.84E-02 | 1.61E-02 |
| 04/29/2025 | 1.89E-02 | 1.61E-02 | 1.49E-02 | 1.70E-02 | 1.99E-02 |
| 05/13/2025 | 9.53E-03 | 1.40E-02 | 1.53E-02 | 1.01E-02 | 1.48E-02 |
| 05/27/2025 | 1.33E-02 | 1.47E-02 | 1.51E-02 | 1.36E-02 | 1.53E-02 |
| 06/10/2025 | 1.44E-02 | 2.12E-02 | 1.57E-02 | 2.11E-02 | 1.93E-02 |
| 06/24/2025 | 1.48E-02 | 1.81E-02 | 1.51E-02 | 1.83E-02 | 1.89E-02 |
| 07/08/2025 | 1.68E-02 | 2.22E-02 | 1.81E-02 | 2.05E-02 | 1.85E-02 |
| 07/22/2025 | 1.47E-02 | 1.97E-02 | 1.63E-02 | 1.74E-02 | 1.66E-02 |
| 08/05/2025 | 2.00E-02 | 2.08E-02 | 1.93E-02 | 2.08E-02 | 1.94E-02 |
| 08/19/2025 | 2.73E-02 | 3.11E-02 | 2.81E-02 | 2.73E-02 | 2.51E-02 |
| 09/02/2025 | 2.64E-02 | 2.99E-02 | 2.47E-02 | 2.31E-02 | 2.80E-02 |
| 09/16/2025 | 2.94E-02 | 3.56E-02 | 3.28E-02 | 3.23E-02 | 3.38E-02 |
| 09/30/2025 | 2.35E-02 | 3.45E-02 | 3.34E-02 | 3.14E-02 | No Sample |
| 10/14/2025 | 3.11E-02 | 3.92E-02 | 3.34E-02 | 3.10E-02 | 2.64E-02 |
| 10/28/2025 | 2.21E-02 | 4.47E-02 | 2.59E-02 | 2.46E-02 | 1.92E-02 |
| 11/11/2025 | 2.16E-02 | 3.23E-02 | 2.45E-02 | 2.47E-02 | 1.88E-02 |
| 11/25/2025 | 2.15E-02 | 2.54E-02 | 2.46E-02 | 2.32E-02 | 1.66E-02 |
| 12/9/2025 | 3.00E-02 | 3.51E-02 | 3.73E-02 | 3.41E-02 | 3.13E-02 |
| 12/16/2025 | 2.32E-02 | 3.22E-02 | 2.92E-02 | 2.82E-02 | 2.83E-02 |
| 12/30/2025 | 1.94E-02 | 2.33E-02 | 1.99E-02 | 5.24E-03 | 1.98E-02 |

Table 11: Air Particulate Data Summary Tables (I-131 – pCi/m3)

| Date/ Sample ID | Station 1 | Station 2 | Station 56 | Station 6 | Station 7 |
|-----------------|------------|------------|------------|------------|------------------|
| 01/14/2025 | < 1.68E-02 | < 1.68E-02 | < 1.28E-02 | < 1.67E-02 | < 1.67E-02 |
| 01/28/2025 | < 1.31E-02 | < 1.72E-02 | < 1.72E-02 | < 1.72E-02 | < 1.71E-02 |
| 02/11/2025 | < 1.28E-02 | < 1.69E-02 | < 1.69E-02 | < 1.68E-02 | < 1.67E-02 |
| 02/17/2025 | < 4.03E-02 | < 4.03E-02 | < 2.70E-02 | < 4.02E-02 | < 4.03E-02 |
| 03/03/2025 | < 2.98E-02 | < 2.98E-02 | < 2.98E-02 | < 2.97E-02 | < 2.15E-02 |
| 03/18/2025 | < 2.63E-02 | < 1.20E-02 | < 2.64E-02 | < 2.63E-02 | < 2.62E-02 |
| 04/01/2025 | < 2.15E-02 | < 2.15E-02 | < 1.64E-02 | < 2.14E-02 | < 2.13E-02 |
| 04/15/2025 | < 2.26E-02 | < 1.63E-02 | < 8.32E-03 | < 1.62E-02 | < 1.62E-02 |
| 04/29/2025 | < 1.34E-02 | < 1.35E-02 | < 1.35E-02 | < 1.34E-02 | < 1.02E-02 |
| 05/13/2025 | < 1.81E-02 | < 1.82E-02 | < 1.38E-02 | < 1.81E-02 | < 1.81E-02 |
| 05/27/2025 | < 2.02E-02 | < 2.02E-02 | < 8.56E-03 | < 2.01E-02 | < 2.01E-02 |
| 06/10/2025 | < 2.36E-02 | < 3.27E-02 | < 3.27E-02 | < 3.25E-02 | < 3.22E-02 |
| 06/24/2025 | < 3.24E-02 | < 3.24E-02 | < 2.47E-02 | < 3.24E-02 | < 3.24E-02 |
| 07/08/2025 | < 1.44E-02 | < 3.04E-02 | < 3.04E-02 | < 3.03E-02 | < 3.02E-02 |
| 07/22/2025 | < 2.93E-02 | < 2.94E-02 | < 1.39E-02 | < 2.91E-02 | < 2.90E-02 |
| 08/05/2025 | < 2.19E-02 | < 2.19E-02 | < 2.19E-02 | < 2.19E-02 | < 2.42E-02 |
| 08/19/2025 | < 2.69E-02 | < 2.69E-02 | < 1.23E-02 | < 2.68E-02 | < 2.68E-02 |
| 09/02/2025 | < 4.00E-02 | < 4.01E-02 | < 2.90E-02 | < 3.99E-02 | < 3.98E-02 |
| 09/16/2025 | < 1.74E-02 | < 1.74E-02 | < 1.74E-02 | < 1.74E-02 | < 6.44E-02 |
| 09/30/2025 | < 9.58E-03 | < 9.57E-03 | < 1.06E-02 | < 9.54E-03 | No Sample |
| 10/14/2025 | < 2.79E-02 | < 2.79E-02 | < 2.80E-02 | < 2.78E-02 | < 2.03E-02 |
| 10/28/2025 | < 5.81E-02 | < 5.56E-02 | < 5.82E-02 | < 5.80E-02 | < 5.79E-02 |
| 11/11/2025 | < 3.06E-02 | < 2.40E-02 | < 3.07E-02 | < 3.05E-02 | < 3.02E-02 |
| 11/25/2025 | < 6.42E-02 | < 6.42E-02 | < 6.42E-02 | < 6.40E-02 | < 3.37E-02 |
| 12/9/2025 | < 3.05E-02 | < 1.61E-02 | < 3.07E-02 | < 3.05E-02 | < 3.05E-02 |
| 12/16/2025 | < 3.07E-02 | < 3.89E-02 | < 3.88E-02 | < 3.87E-02 | < 3.86E-02 |
| 12/30/2025 | < 3.08E-02 | < 3.08E-02 | < 2.44E-02 | < 3.08E-02 | < 3.06E-02 |

Table 12, Surface Water – Gamma

| Analysis: Gamma Isotopic | | | Units: pCi/L | | | | | | | | | | | | |
|--------------------------|-----------------------|------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|
| Location | Start Date | End Date | Mn-54 | Co-58 | Fe-59 | Co-60 | Zn-65 | Nb-95 | Zr-95 | I-131 | Cs-134 | Cs-137 | Ba-140 | La-140 | |
| | REQUIRED LLD → | | 15 | 15 | 30 | 15 | 30 | 15 | 30 | 15 | 15 | 18 | 60 | 15 | |
| Station 8 (Indicator) | 12/31/2024 | 01/31/2025 | < 1.53 | < 1.88 | < 4.20 | < 1.92 | < 3.54 | < 1.97 | < 3.31 | < 14.4 | < 1.82 | < 1.63 | < 20.3 | < 7.59 | |
| Station 10 (Control) | 12/31/2024 | 01/30/2025 | < 5.36 | < 6.68 | < 13.0 | < 5.99 | < 12.4 | < 6.25 | < 10.9 | < 14.0 | < 5.87 | < 5.34 | < 36.1 | < 12.2 | |
| Station 8 (Indicator) | 01/30/2025 | 02/28/2025 | < 1.11 | < 1.43 | < 3.17 | < 1.22 | < 2.33 | < 1.48 | < 2.26 | < 8.99 | < 1.29 | < 1.18 | < 13.6 | < 5.58 | |
| Station 10 (Control) | 01/30/2025 | 02/28/2025 | < 5.42 | < 5.41 | < 13.4 | < 4.68 | < 13.8 | < 6.28 | < 11.2 | < 13.2 | < 6.46 | < 6.17 | < 26.9 | < 11.0 | |
| Station 8 (Indicator) | 02/28/2025 | 03/31/2025 | < 1.21 | < 1.30 | < 2.89 | < 1.35 | < 2.32 | < 1.39 | < 2.18 | < 5.96 | < 1.19 | < 1.12 | < 10.6 | < 3.94 | |
| Station 10 (Control) | 02/28/2025 | 03/31/2025 | < 4.09 | < 5.94 | < 9.95 | < 6.02 | < 11.4 | < 4.15 | < 9.86 | < 6.89 | < 7.03 | < 4.08 | < 18.3 | < 7.05 | |
| Station 8 (Indicator) | 03/31/2025 | 04/30/2025 | < 1.32 | < 1.60 | < 3.92 | < 1.49 | < 2.78 | < 1.53 | < 2.88 | < 14.7 | < 1.52 | < 1.32 | < 21.1 | < 6.15 | |
| Station 10 (Control) | 03/31/2025 | 04/30/2025 | < 3.85 | < 6.05 | < 11.4 | < 6.43 | < 11.5 | < 6.42 | < 11.2 | < 12.7 | < 6.68 | < 6.43 | < 41.1 | < 12.7 | |
| Station 8 (Indicator) | 04/30/2025 | 05/31/2025 | < 1.24 | < 1.34 | < 3.08 | < 1.84 | < 2.49 | < 1.37 | < 2.42 | < 5.87 | < 1.38 | < 1.18 | < 11.2 | < 3.32 | |
| Station 10 (Control) | 04/30/2025 | 05/31/2025 | < 6.95 | < 7.32 | < 15.6 | < 10.3 | < 18.8 | < 7.32 | < 13.7 | < 10.7 | < 8.18 | < 8.00 | < 31.4 | < 11.1 | |

Table 12, Surface Water – Gamma

| Analysis: Gamma Isotopic | | | Units: pCi/L | | | | | | | | | | | |
|--------------------------|------------|------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Location | Start Date | End Date | Mn-54 | Co-58 | Fe-59 | Co-60 | Zn-65 | Nb-95 | Zr-95 | I-131 | Cs-134 | Cs-137 | Ba-140 | La-140 |
| Station 8 (Indicator) | 05/31/2025 | 06/30/2025 | < 1.64 | < 1.91 | < 4.51 | < 1.69 | < 3.32 | < 1.94 | < 3.26 | < 11.3 | < 1.77 | < 1.70 | < 18.5 | < 6.03 |
| Station 10 (Control) | 05/31/2025 | 06/30/2025 | < 3.58 | < 6.39 | < 13.0 | < 6.52 | < 12.0 | < 7.21 | < 10.3 | < 10.9 | < 7.99 | < 6.06 | < 32.5 | < 9.48 |
| Station 8 (Indicator) | 06/30/2025 | 07/31/2025 | < 1.46 | < 2.01 | < 4.08 | < 1.96 | < 3.38 | < 1.91 | < 3.22 | < 13.4 | < 1.66 | < 1.55 | < 21.7 | < 7.60 |
| Station 10 (Control) | 06/30/2025 | 07/31/2025 | < 7.70 | < 8.42 | < 16.7 | < 8.45 | < 13.3 | < 6.53 | < 15.9 | < 12.1 | < 9.73 | < 8.29 | < 42.3 | < 11.9 |
| Station 8 (Indicator) | 07/31/2025 | 08/31/2025 | < 1.15 | < 1.49 | < 3.19 | < 1.77 | < 2.61 | < 1.55 | < 2.71 | < 9.81 | < 1.52 | < 1.16 | < 14.1 | < 4.41 |
| Station 10 (Control) | 07/31/2025 | 08/31/2025 | < 5.31 | < 5.32 | < 11.6 | < 5.43 | < 11.6 | < 6.22 | < 9.15 | < 14. | < 5.93 | < 5.99 | < 33.3 | < 9.95 |
| Station 8 (Indicator) | 08/31/2025 | 09/30/2025 | < 1.87 | < 2.18 | < 4.97 | < 2.11 | < 3.64 | < 2.25 | < 4.10 | < 10.4 | < 2.14 | < 2.02 | < 19.8 | < 6.57 |
| Station 10 (Control) | 08/31/2025 | 09/30/2025 | < 6.02 | < 6.27 | < 10.8 | < 6.85 | < 12.8 | < 6.40 | < 12.9 | < 13.3 | < 7.40 | < 5.87 | < 28.3 | < 13.6 |
| Station 8 (Indicator) | 09/29/2025 | 10/31/2025 | < 1.31 | < 1.49 | < 3.68 | < 1.61 | < 3.07 | < 1.82 | < 3.07 | < 9.06 | < 1.52 | < 1.38 | < 15.7 | < 5.21 |
| Station 10 (Control) | 09/29/2025 | 10/31/2025 | < 2.68 | < 4.71 | < 10.3 | < 7.44 | < 12.5 | < 4.98 | < 7.88 | < 8.49 | < 6.31 | < 5.73 | < 24.9 | < 8.85 |
| Station 8 (Indicator) | 10/31/2025 | 11/30/2025 | < 1.91 | < 2.08 | < 5.03 | < 1.94 | < 3.62 | < 2.18 | < 3.80 | < 12.8 | < 1.96 | < 1.80 | < 21.1 | < 7.62 |

Table 12, Surface Water – Gamma

| Analysis: Gamma Isotopic | | Units: pCi/L | | | | | | | | | | | | |
|--------------------------|------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Location | Start Date | End Date | Mn-54 | Co-58 | Fe-59 | Co-60 | Zn-65 | Nb-95 | Zr-95 | I-131 | Cs-134 | Cs-137 | Ba-140 | La-140 |
| Station 10 (Control) | 10/31/2025 | 11/30/2025 | < 5.51 | < 4.40 | < 9.39 | < 6.11 | < 11.9 | < 5.19 | < 10.1 | < 7.67 | < 6.63 | < 6.42 | < 19.0 | < 7.99 |
| Station 8 (Indicator) | 11/30/2025 | 12/31/2025 | < 1.39 | < 1.74 | < 4.31 | < 1.58 | < 3.11 | < 1.82 | < 3.04 | < 16.4 | < 1.57 | < 1.50 | < 22.1 | < 7.69 |
| Station 10 (Control) | 11/30/2025 | 12/31/2025 | < 5.53 | < 6.21 | < 11.4 | < 5.98 | < 12.4 | < 6.41 | < 12.2 | < 12.3 | < 7.65 | < 7.26 | < 31.2 | < 13.6 |

Table 13, Surface Water – Tritium

| Analysis: H-3 | | Units: pCi/L | |
|-----------------------|------------|--------------|------------|
| Location | Start Date | End Date | H-3 |
| REQUIRED LLD → | | | |
| Station 8 (Indicator) | 12/31/2024 | 03/31/2025 | <388 |
| Station 10 (Control) | 12/31/2024 | 03/31/2025 | <359 |
| Station 8 (Indicator) | 03/31/2025 | 06/30/2025 | 484 |
| Station 10 (Control) | 03/31/2025 | 06/30/2025 | <385 |
| Station 8 (Indicator) | 06/30/2025 | 09/30/2025 | 950 |
| Station 10 (Control) | 06/30/2025 | 09/30/2025 | <325 |
| Station 8 (Indicator) | 09/30/2025 | 12/31/2025 | 652 |
| Station 10 (Control) | 09/30/2025 | 12/31/2025 | <294 |

Table 14, Drinking Water –Gamma, GB, I-131

| Analysis: Gamma Isotopic, Gross Beta, I-131 | | Units: pCi/L | | | | | | | | | | | | |
|---------------------------------------------|-----------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|
| Location | Collection Date | Gross Beta | Mn-54 | Co-58 | Fe-59 | Co-60 | Zn-65 | Nb-95 | Zr-95 | I-131 | Cs-134 | Cs-137 | Ba-140 | La-140 |
| | REQUIRED LLD → | 4.0 | 15 | 15 | 30 | 15 | 30 | 15 | 30 | 1.0 | 15 | 18 | 60 | 15 |
| Station 14 (Indicator) | 01/07/2025 | < 1.62 | < 5.28 | < 3.95 | < 9.10 | < 5.09 | < 11.8 | < 3.96 | < 8.59 | < 9.21 | < 4.78 | < 5.27 | < 28.6 | < 8.91 |
| Station 57 (Control) | 01/07/2025 | < 1.70 | < 5.53 | < 6.19 | < 8.26 | < 4.52 | < 12.8 | < 6.11 | < 8.87 | < 12.5 | < 4.81 | < 4.94 | < 28.9 | < 11.0 |
| Station 14 (Indicator) | 04/22/2025 | < 2.15 | < 4.04 | < 5.73 | < 13.7 | < 5.74 | < 10.7 | < 3.26 | < 8.04 | < 6.41 | < 6.20 | < 5.84 | < 16.2 | < 5.02 |
| Station 57 (Control) | 04/22/2025 | < 2.28 | < 4.25 | < 6.13 | < 8.05 | < 5.48 | < 11.2 | < 5.39 | < 8.42 | < 6.05 | < 5.51 | < 5.97 | < 18.3 | < 5.62 |
| Station 14 (Indicator) | 07/22/2025 | < 1.84 | < 7.12 | < 6.70 | < 13.8 | < 6.96 | < 14.1 | < 5.90 | < 10.9 | < 8.97 | < 7.25 | < 6.59 | < 26.0 | < 7.47 |
| Station 57 (Control) | 07/22/2025 | < 1.97 | < 7.95 | < 4.98 | < 14.0 | < 7.53 | < 14.6 | < 6.30 | < 14.9 | < 9.31 | < 8.81 | < 8.22 | < 24.4 | < 7.60 |
| Station 14 (Indicator) | 10/21/2025 | 1.89 | < 3.87 | < 4.40 | < 9.64 | < 4.57 | < 7.65 | < 5.26 | < 7.66 | < 12.7 | < 4.21 | < 4.61 | < 28.6 | < 9.52 |
| Station 57 (Control) | 10/21/2025 | 2.29 | < 4.41 | < 4.28 | < 9.33 | < 7.26 | < 8.77 | < 4.14 | < 8.72 | < 13.3 | < 5.00 | < 4.30 | < 28.9 | < 13.0 |

Table 15, Drinking Water – Tritium

| Analysis: H-3 | | Units: pCi/L |
|------------------------|-----------------------|--------------|
| Location | Collection Date | H-3 |
| | REQUIRED LLD → | 2000 |
| Station 14 (Indicator) | 01/07/2025 | < 349 |
| Station 57 (Control) | 01/07/2025 | < 348 |
| Station 14 (Indicator) | 04/22/2025 | < 380 |
| Station 57 (Control) | 04/22/2025 | < 385 |
| Station 14 (Indicator) | 07/22/2025 | < 374 |
| Station 57 (Control) | 07/22/2025 | < 386 |
| Station 14 (Indicator) | 10/21/2025 | < 329 |
| Station 57 (Control) | 10/21/2025 | < 332 |

Table 16, Fish

| Analysis: Gamma Isotopic | | Units: pCi/kg | | | | | | |
|--------------------------|-----------------------|---------------|------------|------------|------------|------------|------------|------------|
| Location | Collection Date | Mn-54 | Co-58 | Fe-59 | Co-60 | Zn-65 | Cs-134 | Cs-137 |
| | REQUIRED LLD → | 130 | 130 | 260 | 130 | 260 | 130 | 150 |
| Station 8 (Indicator) | 2/27/2025 | <57.3 | <59.9 | <171 | <70.0 | <138 | <46.6 | <57.6 |
| Station 16 (Control) | 04/23/2025 | <75.1 | <109 | <187 | <120 | <159 | <95.2 | <99.0 |

Table 17, Sediment

| Analysis: Gamma Isotopic | | Units: pCi/kg | |
|--------------------------|-----------------------|---------------|------------|
| Location | Collection Date | Cs-134 | Cs-137 |
| | REQUIRED LLD → | 150 | 180 |
| Station 8 (Indicator) | 05/08/2025 | < 135 | < 103 |
| Station 16 (Control) | 05/08/2025 | < 98.1 | < 105 |

Table 18, Food Products

| Analysis: I-131, Gamma Isotopic | | Units: pCi/kg | | |
|---------------------------------|-----------------------|---------------|-----------|-----------|
| Location | Collection Date | I-131 | Cs-134 | Cs-137 |
| | REQUIRED LLD → | 60 | 60 | 80 |
| Station 13 (Indicator) | 06/10/2025 | < 55.7 | < 35.0 | < 29.5 |
| Station 55 (Control) | 06/10/2025 | < 54.8 | < 34.8 | < 30.8 |
| Station 13 (Indicator) | 07/08/2025 | < 40.0 | < 28.9 | < 26.5 |
| Station 55 (Control) | 07/08/2025 | < 55.2 | < 30.4 | < 24.7 |
| Station 13 (Indicator) | 08/05/2025 | < 53.3 | < 28.5 | < 30.0 |
| Station 55 (Control) | 08/05/2025 | < 51.5 | < 28.5 | < 26.2 |

Table 19, Groundwater - Gamma and Iodine

| Analysis: Gross Beta, I-131, Gamma Isotopic | | Units: pCi/L | | | | | | | | | | | | |
|---------------------------------------------|-----------------------|--------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Location | Collection Date | Gr-B | Mn-54 | Co-58 | Fe-59 | Co-60 | Zn-65 | Nb-95 | Zr-95 | I-131 | Cs-134 | Cs-137 | Ba-140 | La-140 |
| | REQUIRED LLD → | | | | | | | | | | | | | |
| Station 58 (Control) | 3/18/2025 | < 1.90 | < 4.54 | < 5.63 | < 9.58 | < 3.27 | < 9.19 | < 5.22 | < 7.99 | < 8.41 | < 5.31 | < 4.22 | < 21.5 | < 8.94 |
| Station 62 (Control) | 3/18/2025 | < 3.65 | < 4.38 | < 4.21 | < 10.9 | < 4.60 | < 8.66 | < 5.79 | < 7.24 | < 9.28 | < 5.68 | < 3.58 | < 24.0 | < 7.63 |
| Station 63 (Indicator) | 3/18/2025 | < 3.61 | < 5.22 | < 5.41 | < 12.7 | < 5.02 | < 11.1 | < 5.27 | < 12.3 | < 8.65 | < 7.29 | < 5.66 | < 27.4 | < 8.59 |
| Station 64 (Indicator) | 3/19/2025 | < 3.47 | < 6.38 | < 5.27 | < 9.58 | < 6.17 | < 12.7 | < 6.50 | < 10.5 | < 13.0 | < 7.28 | < 7.28 | < 31.6 | < 10.1 |
| Station 58 (Control) | 6/17/2025 | < 3.55 | < 6.68 | < 6.43 | < 16.3 | < 8.17 | < 15.1 | < 10.1 | < 12.3 | < 14.5 | < 9.18 | < 8.26 | < 39.2 | < 13.3 |
| Station 62 (Control) | 6/17/2025 | < 2.69 | < 5.60 | < 9.24 | < 16.9 | < 10.2 | < 11.3 | < 6.48 | < 10.2 | < 9.43 | < 4.35 | < 7.77 | < 31.7 | < 12.9 |
| Station 63 (Indicator) | 6/18/2025 | < 3.24 | < 8.70E | < 9.50 | < 18.1 | < 8.84 | < 20.9 | < 9.50 | < 14.3 | < 12.6 | < 9.20 | < 8.69 | < 35.5 | < 14.1 |
| Station 64 (Indicator) | 6/18/2025 | < 2.98 | < 8.70 | < 9.50 | < 18.1 | < 8.84 | < 20.9 | < 9.50 | < 14.3 | < 12.6 | < 9.20 | < 8.69 | < 35.5 | < 14.1 |
| Station 58 (Control) | 9/16/2025 | 2.48 | < 7.18 | < 7.41 | < 16.6 | < 8.36 | < 14.3 | < 7.57 | < 8.30 | < 14.4 | < 7.86 | < 7.15 | < 35.7 | < 10.9 |

Table 19, Groundwater - Gamma and Iodine

| Analysis: Gross Beta, I-131, Gamma Isotopic | | Units: pCi/L | | | | | | | | | | | | |
|---------------------------------------------|-----------------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Location | Collection Date | Gr-B | Mn-54 | Co-58 | Fe-59 | Co-60 | Zn-65 | Nb-95 | Zr-95 | I-131 | Cs-134 | Cs-137 | Ba-140 | La-140 |
| | REQUIRED LLD → | N/A ¹ | 15 | 15 | 30 | 15 | 30 | 15 | 30 | 15 | 15 | 18 | 60 | 15 |
| Station 62 (Control) | 9/16/2025 | < 3.61 | < 6.82 | < 6.14 | < 14.0 | < 5.27 | < 10.9 | < 6.68 | < 14.0 | < 13.8 | < 7.94 | < 6.84 | < 32.3 | < 13.0 |
| Station 63 (Indicator) | 9/16/2025 | < 3.37 | < 4.87 | < 4.81 | < 14.8 | < 5.96 | < 11.3 | < 7.13 | < 11.3 | < 11.7 | < 6.04 | < 7.29 | < 35.9 | < 7.60 |
| Station 64 (Indicator) | 9/16/2025 | < 3.68 | < 6.73 | < 7.96 | < 14.2 | < 9.92 | < 16.0 | < 8.70 | < 6.80 | < 12.8 | < 8.17 | < 7.71 | < 33.6 | < 9.74 |
| Station 58 (Control) | 12/16/2025 | < 2.18 | < 4.58 | < 3.88 | < 10.4 | < 4.89 | < 8.93 | < 4.15 | < 7.70 | < 12.2 | < 5.40 | < 4.60 | < 27.5 | < 9.75 |
| Station 62 (Control) | 12/16/2025 | < 3.95 | < 4.90 | < 4.55 | < 9.92 | < 7.18 | < 9.95 | < 4.54 | < 9.23 | < 14.0 | < 4.84 | < 5.24 | < 33.1 | < 10.4 |
| Station 63 (Indicator) | 12/16/2025 | < 3.95 | < 3.88 | < 4.26 | < 9.84 | < 4.30 | < 10.2 | < 4.29 | < 7.70 | < 10.8 | < 4.79 | < 4.19 | < 28.7 | < 9.76 |
| Station 64 (Indicator) | 12/17/2025 | < 3.51 | < 4.46 | < 4.53 | < 10.3 | < 5.85 | < 13.6 | < 5.75 | < 8.25 | < 11.8 | < 5.46 | < 4.96 | < 31.8 | < 12.8 |

1 - Per ANO's ODCM there is no Gross Beta LLD for groundwater or a reportable detectable concentration.

Table 20, Groundwater – Tritium

| Analysis: H-3 | | Units: pCi/L |
|------------------------------|-----------------|--------------|
| Location | Collection Date | H-3 |
| <u>REQUIRED LLD</u> → | | |
| Station 58 (Control) | 3/18/2025 | <326 |
| Station 62 (Control) | 3/18/2025 | <331 |
| Station 63 (Indicator) | 3/18/2025 | <336 |
| Station 64 (Indicator) | 3/19/2025 | <325 |
| Station 58 (Control) | 6/17/2025 | <375 |
| Station 62 (Control) | 6/17/2025 | <395 |
| Station 63 (Indicator) | 6/18/2025 | <383 |
| Station 64 (Indicator) | 6/18/2025 | <373 |
| Station 58 (Control) | 9/16/2025 | <323 |
| Station 62 (Control) | 9/16/2025 | <328 |
| Station 63 (Indicator) | 9/16/2025 | <322 |
| Station 64 (Indicator) | 9/16/2025 | <325 |
| Station 58 (Control) | 12/16/2025 | <370 |
| Station 62 (Control) | 12/16/2025 | <364 |
| Station 63 (Indicator) | 12/16/2025 | <363 |
| Station 64 (Indicator) | 12/16/2025 | <367 |

| | | |
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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 ODCM. 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.

Teledyne Brown Engineering (TBE) participated in the following proficiency testing studies provided by Eckert & Ziegler Analytics in 2025. The Laboratory's intercomparison program results for 2025 are summarized below.

Environmental Dosimetry Company (EDC) participated in the following proficiency testing studies provided by EDC in 2025. The Laboratory's intercomparison program results for 2025 are summarized below.

Summary of Results (TBE) – Inter-laboratory Comparison Program (ICP)

The Teledyne Brown Engineering Environmental Services (TBE-ES) laboratory analyzed Performance Evaluation (PE) samples of air particulate (AP), milk, soil, vegetation, and water matrices that represent test and matrix combinations available for REMP programs. The PE samples supplied by E&Z Analytics Inc., Environmental Resource Associates (ERA), and Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

A. E&Z Analytics Evaluation Criteria

Analytics' evaluation report provides a ratio of TBE's result and E&Z Analytics' known value. Since flag values are not assigned by E&Z Analytics, TBE evaluates the reported ratios based on internal Quality Control (QC) requirements based on the DOE MAPEP criteria.

1. A = Acceptable - reported result falls within ratio limits of 0.80-1.20
2. W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30
3. N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

B. ERA Evaluation Criteria

ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the US EPA, National Environmental Laboratory Accreditation Conference (NELAC), state-specific Performance Testing (PT) program requirements or ERA's SOP for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

1. A = Acceptable - Reported value falls within the Acceptance Limits
2. N = Not Acceptable - Reported value falls outside of the Acceptance Limits

| | | |
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C. DOE Evaluation Criteria

MAPEP's evaluation report provides an acceptance range with associated flag values. MAPEP defines three levels of performance:

Acceptable (flag = "A") - result within $\pm 20\%$ of the reference value

Acceptable with Warning (flag = "W") - result falls in the $\pm 20\%$ to $\pm 30\%$ of the reference value

Not Acceptable (flag = "N") - bias is greater than 30% of the reference value

Note: The DOE MAPEP samples are created to mimic conditions found at DOE sites which do not always resemble typical environmental samples obtained at commercial nuclear power facilities.

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data. For the TBE laboratory, 157 out of 164 analyses performed met the specified acceptance criteria. Seven analyses did not meet the specified acceptance criteria and were addressed through the TBE Corrective Action Program. A summary is found below:

1. NCR 25-04: MAPEP 25, RdV52 vegetation study for Sr-90 evaluated as "Not Acceptable." Possible sample interference issue. Study results stated 8 out of 18 participants passed the study. All internal data reviewed and deemed accurate with internal quality control measures for sample also passing. The laboratory performed testing with Sr-85 spike with successful outcomes. The following provider study, RdV53, returned with passing results.
2. 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.
3. NCR 25-06: Interlaboratory crosscheck failure: ERA RAD141 Gr-A in water. The provider's acceptance range was 10.0–21.2, and their reported value of 15.6 fell within this interval. TBE-ES obtained 22.2 ± 3.76 , which satisfied internal QC criteria and would have aligned with the acceptance range if error margins had been considered. The QC duplicate result of 17.8 met internal requirements, and the 22% RPD demonstrated internal consistency. The provider's Gr-A samples have historically been the lowest spiked. No internal failures identified so no corrective action deemed necessary. The following ERA RAD143 study's performance evaluation results returned acceptable/passing.
4. NCR 25-10: *IN-PROGRESS* Interlaboratory crosscheck failure: ERA MRAD 43, PU-239/240 (AS) in Air Particulate (filter).

| | | |
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5. NCR 25-11: Interlaboratory crosscheck failure: ERA RAD-143 crosscheck failure of Uranium in water. Provider acceptance range: 48.0 – 60.0. TBE-ES result of 47.1 with internal acceptance ratio of 87.2 and no prior failures. No corrective action deemed necessary.

6. NCR 25-12: *IN-PROGRESS* Interlaboratory crosscheck failure: MAPEP Series 53, Ni-63 in Soil.

7. NCR 25-13: *IN-PROGRESS* Interlaboratory crosscheck failure: MAPEP Series 53, Th-232 in Soil.

ENVIRONMENTAL DOSIMETRY COMPANY

ANNUAL QUALITY ASSURANCE STATUS REPORT

January - December 2025

Prepared By: Jim Scanlon

Date: 2/24/26

Approved By: Madeline Faulk

Date: 2/25/26

**Environmental Dosimetry Company
10 Ashton Lane
Sterling, MA 01564**

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EXECUTIVE SUMMARY

Routine quality control (QC) testing was performed for dosimeters issued by the Environmental Dosimetry Company (EDC) .

During this annual period 100% (72/72) of the individual dosimeters, evaluated against the EDC internal performance acceptance criteria (high-energy photons only), met the criterion for accuracy and 100% (72/72) met the criterion for precision (Table 1). In addition, 100% (12/12) of the dosimeter sets evaluated against the internal tolerance limits met EDC acceptance criteria (Table 2) and 100% of independent testing passed the performance criteria (Table 3). Trending graphs, which evaluate performance statistic for high-energy photon irradiations and co-located stations are given in Appendix A.

One internal assessment was performed in 2025. There were no findings.

I. INTRODUCTION

The TLD systems at the Environmental Dosimetry Company (EDC) are calibrated and operated to ensure consistent and accurate evaluation of TLDs. The quality of the dosimetric results reported to EDC clients is ensured by in-house performance testing and independent performance testing by EDC clients, and both internal and client directed program assessments.

The purpose of the dosimetry quality assurance program is to provide performance documentation of the routine processing of EDC dosimeters. Performance testing provides a statistical measure of the bias and precision of dosimetry processing against a reliable standard, which in turn points out any trends or performance changes. Two programs are used:

A. QC Program

Dosimetry quality control tests are performed on EDC Panasonic 814 Environmental dosimeters. These tests include: (1) the in-house testing program coordinated by the EDC QA Officer and (2) independent test perform by EDC clients. In-house test are performed using six pairs of 814 dosimeters, a pair is reported as an individual result and six pairs are reported as the mean result. Results of these tests are described in this report.

Excluded from this report are instrumentation checks. Although instrumentation checks represent an important aspect of the quality assurance program, they are not included as process checks in this report. Instrumentation checks represent between 5-10% of the TLDs processed.

B. QA Program

An internal assessment of dosimetry activities is conducted annually by the Quality Assurance Officer (Reference 1). The purpose of the assessment is to review procedures, results, materials or components to identify opportunities to improve or enhance processes and/or services.

II. PERFORMANCE EVALUATION CRITERIA

A. Acceptance Criteria for Internal Evaluations

1. Bias

For each dosimeter tested, the measure of bias is the percent deviation of the reported result relative to the delivered exposure. The percent deviation relative to the delivered exposure is calculated as follows:

$$\frac{(H'_i - H_i)}{H_i} 100$$

where:

H'_i = the corresponding reported exposure for the i th dosimeter (i.e., the reported exposure)

H_i = the exposure delivered to the i th irradiated dosimeter (i.e., the delivered exposure)

2. Mean Bias

For each group of test dosimeters, the mean bias is the average percent deviation of the reported result relative to the delivered exposure. The mean percent deviation relative to the delivered exposure is calculated as follows:

$$\sum \left(\frac{(H'_i - H_i)}{H_i} \right) 100 \left(\frac{1}{n} \right)$$

where:

H'_i = the corresponding reported exposure for the i^{th} dosimeter (i.e., the reported exposure)

H_i = the exposure delivered to the i^{th} irradiated test dosimeter (i.e., the delivered exposure)

n = the number of dosimeters in the test group

Precision

For a group of test dosimeters irradiated to a given exposure, the measure of precision is the percent deviation of individual results relative to the mean reported exposure. At least two values are required for the determination of precision. The measure of precision for the i^{th} dosimeter is:

$$\left(\frac{(H'_i - \bar{H})}{\bar{H}} \right) 100$$

where:

H'_i = the reported exposure for the i^{th} dosimeter (i.e., the reported exposure)

\bar{H} = the mean reported exposure; i.e., $\bar{H} = \sum H'_i \left(\frac{1}{n} \right)$

n = the number of dosimeters in the test group

3. EDC Internal Tolerance Limits

All evaluation criteria are taken from the “EDC Quality System Manual,” (Reference 2). These criteria are only applied to individual test dosimeters irradiated with high-energy photons (Cs-137) and are as follows for Panasonic Environmental dosimeters: $\pm 15\%$ for bias and $\pm 12.8\%$ for precision.

B. QC Investigation Criteria and Result Reporting

EDC Quality System Manual (Reference 2) specifies when an investigation is required due to a QC analysis that has failed the EDC bias criteria. The criteria are as follows:

1. No investigation is necessary when an individual QC result falls outside the QC performance criteria for accuracy.
2. Investigations are initiated when the mean of a QC processing batch is outside the performance criterion for bias.

C. **Reporting of Environmental Dosimetry Results to EDC Customers**

1. All results are to be reported in a timely fashion.
2. If the QA Officer determines that an investigation is required for a process, the results shall be issued as normal unless if the QC results prompting the investigation have a mean bias from the known of greater than $\pm 20\%$, then the results shall be issued with a note indicating that they may be updated in the future, pending resolution of a QA issue.
3. Environmental dosimetry results do not require updating if the investigation has shown that the mean bias between the original results and the corrected results, based on applicable correction factors from the investigation, does not exceed $\pm 15\%$.

III. **DATA SUMMARY FOR ISSUANCE PERIOD JANUARY-DECEMBER 2025**

A. **General Discussion**

Results of performance tests conducted are summarized and discussed in the following sections. Summaries of the performance tests for the reporting period are given in Tables 1 through 3 and Figures 1 through 4.

Table 1 provides a summary of individual dosimeter results evaluated against the EDC internal acceptance criteria for high-energy photons only. During this period 100% (72/72) of the individual dosimeters, evaluated against these criteria, met the tolerance limits for accuracy and 100% (72/72) met the criterion for precision. A graphical interpretation is provided in Figures 1 and 2.

Table 2 provides the bias and standard deviation results for each group (N=6) of dosimeters evaluated against the internal tolerance criteria. Overall, 100% (12/12) of the dosimeter sets, evaluated against the internal tolerance performance criteria, met these criteria. A graphical interpretation is provided in Figure 3.

Table 3 presents the independent blind spike results for dosimeters processed during this annual period. All results passed the performance acceptance criterion. Figure 4 is a graphical interpretation of Seabrook Station blind co-located station results.

B. **Result Trending**

One of the main benefits of performing quality control tests on a routine basis is to identify trends or performance changes. The results of the Panasonic environmental dosimeter performance tests are presented in Appendix A. The results are evaluated against each of the performance criteria listed in Section II, namely: individual dosimeter accuracy, individual dosimeter precision, and mean bias.

All of the results presented in Appendix A are plotted sequentially by processing date.

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IV. STATUS OF EDC CONDITION REPORTS (CR)

No condition reports were issued during this annual period.

V. STATUS OF AUDITS/ASSESSMENTS

1. Internal

EDC Internal Quality Assurance Assessment was conducted during the fourth quarter 2025. There were no findings identified.

2. External

None.

VI. PROCEDURES AND MANUALS REVISED DURING JANUARY - DECEMBER 2025

Manual 1 and several procedures were reissued with no changes as part of the 5-year review cycle.

VII. CONCLUSION AND RECOMMENDATIONS

The quality control evaluations continue to indicate the dosimetry processing programs at the EDC satisfy the criteria specified in the Quality System Manual. The EDC demonstrated the ability to meet all applicable acceptance criteria.

VIII. REFERENCES

1. EDC Quality Control and Audit Assessment Schedule, 2025.
2. EDC Manual 1, Quality System Manual, Rev. 4, September 29, 2025.

**TABLE 1
PERCENTAGE OF INDIVIDUAL DOSIMETERS THAT PASSED EDC INTERNAL CRITERIA
JANUARY – DECEMBER 2025^{(1), (2)}**

| Dosimeter Type | Number Tested | % Passed Bias Criteria | % Passed Precision Criteria |
|-------------------------|---------------|------------------------|-----------------------------|
| Panasonic Environmental | 72 | 100 | 100 |

⁽¹⁾This table summarizes results of tests conducted by EDC.

⁽²⁾Environmental dosimeter results are free in air.

**TABLE 2
MEAN DOSIMETER ANALYSES (N=6)
JANUARY – DECEMBER 2025^{(1), (2)}**

| Process Date | Exposure Level | Mean Bias % | Standard Deviation % | Tolerance Limit +/-15% |
|--------------|----------------|-------------|----------------------|------------------------|
| 4/23/2025 | 35 | -2.6 | 1.5 | Pass |
| 4/29/2025 | 53 | 1.5 | 1.2 | Pass |
| 5/13/2025 | 77 | 2.6 | 1.9 | Pass |
| 7/21/2025 | 26 | 0.2 | 0.8 | Pass |
| 7/26/2025 | 107 | -2.1 | 1.3 | Pass |
| 7/28/2025 | 43 | -0.2 | 1.2 | Pass |
| 10/22/2025 | 38 | 1.7 | 1.0 | Pass |
| 10/27/2025 | 88 | 0.9 | 2.1 | Pass |
| 11/26/2025 | 119 | 2.9 | 1.0 | Pass |
| 01/24/2026 | 65 | -0.3 | 1.3 | Pass |
| 01/27/2026 | 96 | -0.3 | 1.2 | Pass |
| 02/22/2026 | 47 | -3.3 | 2.3 | Pass |

⁽¹⁾This table summarizes results of tests conducted by EDC for TLDs issued in 2025.

⁽²⁾Environmental dosimeter results are free in air.

**TABLE 3
SUMMARY OF INDEPENDENT DOSIMETER TESTING
JANUARY – DECEMBER 2025^{(1), (2)}**

| Issuance Period | Client | Mean Bias % | Standard Deviation % | Pass / Fail |
|---------------------------|-----------|-------------|----------------------|-------------|
| 1 st Qtr. 2025 | Millstone | 1.5 | 1.4 | Pass |
| 2 nd Qtr.2025 | Seabrook | 7.3 | 1.0 | Pass |
| 2 nd Qtr. 2025 | Millstone | 2.8 | 1.1 | Pass |
| 3 rd Qtr. 2025 | SONGS | -4.4 | 2.4 | Pass |
| 3 rd Qtr. 2025 | Millstone | 8.6 | 3.5 | Pass |
| 4 th Qtr.2025 | Millstone | 3.3 | 3.5 | Pass |

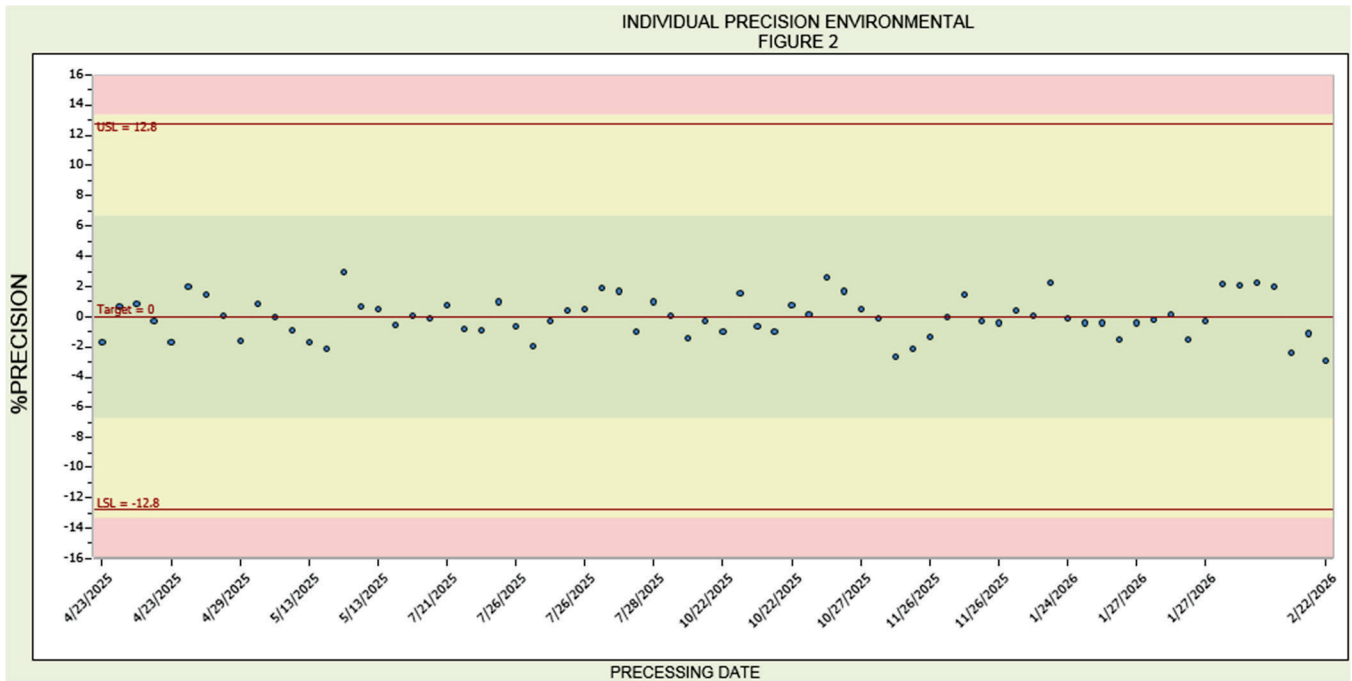
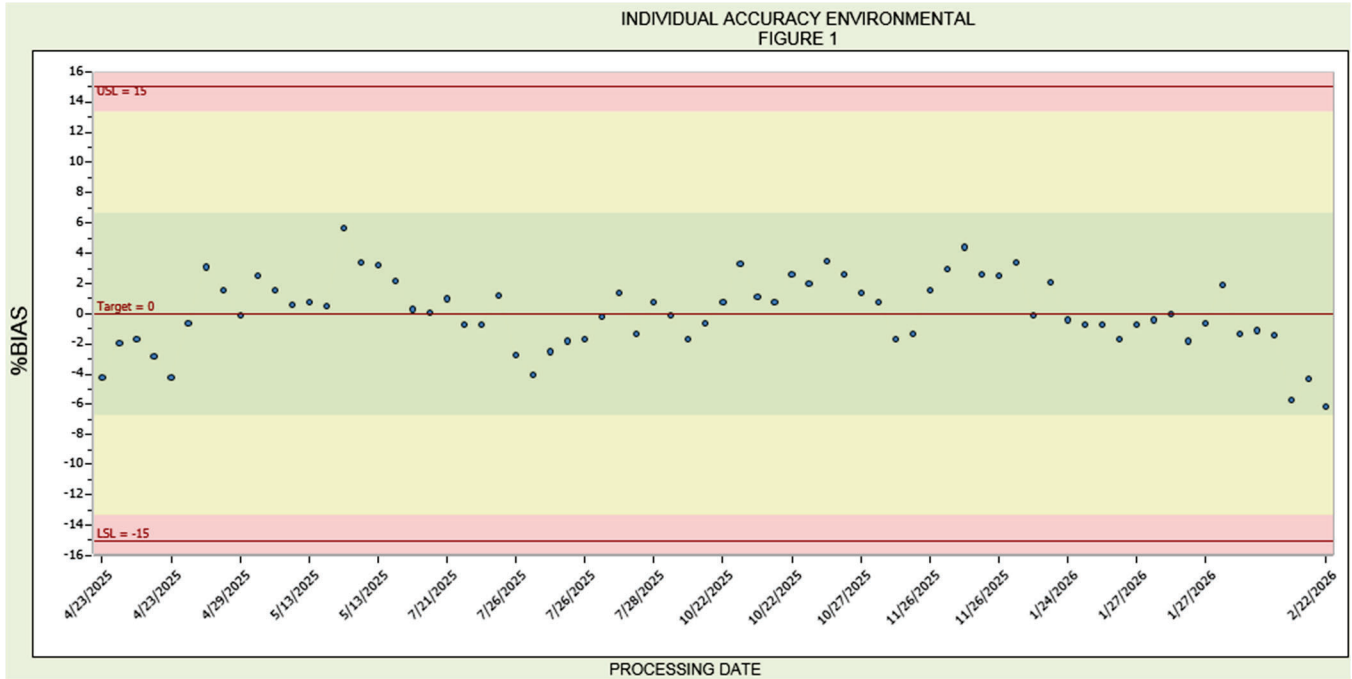
⁽¹⁾Performance criteria are +/- 15%.

⁽²⁾Blind spike irradiations using Cs-137

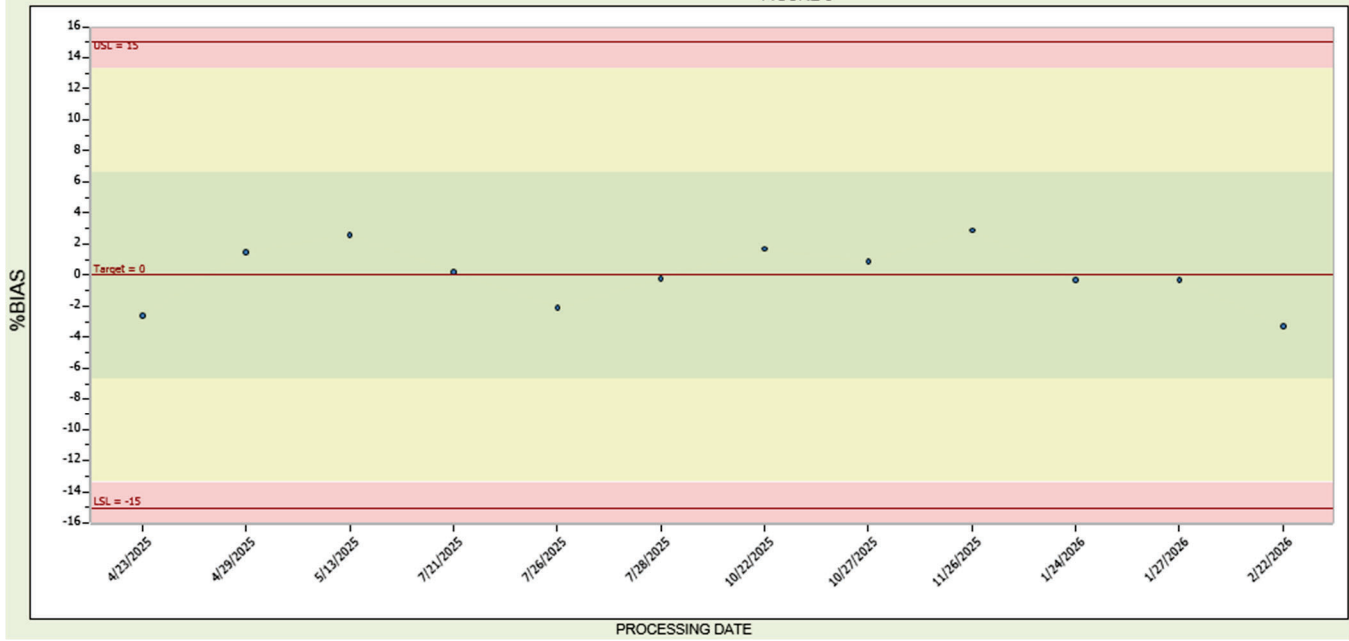
APPENDIX A

DOSIMETRY QUALITY CONTROL TRENDING GRAPHS

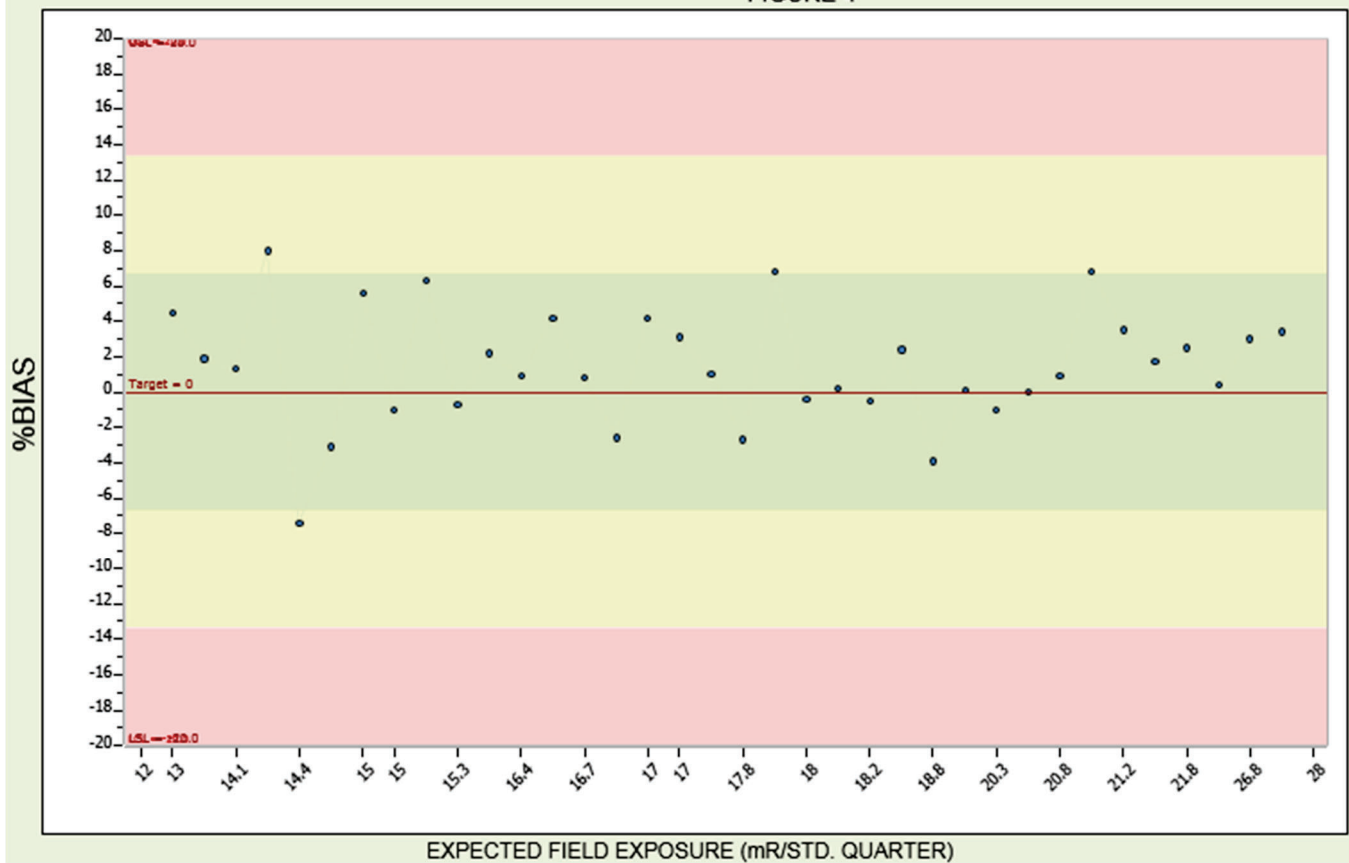
ISSUE PERIOD JANUARY - DECEMBER 2025



MEAN ACCURACY ENVIRONMENTAL
FIGURE 3



SEABROOK CO-LOCATE ACCURACY
FIGURE 4



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 | | | | |
| | | | STA-01 | 12.9 | 17.9 | 11.0 | 11.8 | 10.9 | 11.8 | ND | | | | |
| STA-02 | 12.4 | 17.4 | 11.5 | 11.4 | 11.0 | 11.7 | ND | ND | ND | ND | 49.4 | 59.4 | 45.6 | ND |
| STA-03 | 9.9 | 14.9 | 7.9 | 7.9 | 7.9 | 8.4 | ND | ND | ND | ND | 39.4 | 49.4 | 32.1 | ND |
| STA-04 | 12.4 | 17.4 | 9.8 | 10.4 | 10.4 | 10.4 | ND | ND | ND | ND | 49.8 | 59.8 | 41.1 | ND |
| STA-06 | 11.5 | 16.5 | 9.8 | 10.3 | 9.7 | 10.5 | ND | ND | ND | ND | 45.8 | 55.8 | 40.3 | ND |
| STA-07 | 10.8 | 15.8 | 9.5 | 10.0 | 10.1 | 10.7 | ND | ND | ND | ND | 43.1 | 53.1 | 40.3 | ND |
| STA-56 | 14.1 | 19.1 | 12.0 | 12.3 | 11.8 | 19.5 | ND | ND | ND | 5.4 | 56.4 | 66.4 | 55.6 | ND |
| STA-108 | 12.7 | 17.7 | 10.3 | 11.4 | 10.8 | 10.6 | ND | ND | ND | ND | 50.9 | 60.9 | 43.2 | ND |
| STA-109 | 12.8 | 17.8 | 10.9 | 11.6 | 10.8 | 11.5 | ND | ND | ND | ND | 51.1 | 61.1 | 44.8 | ND |
| STA-110 | 12.3 | 17.3 | 9.8 | 10.7 | 10.4 | 11.2 | ND | ND | ND | ND | 49.2 | 59.2 | 42.1 | ND |
| STA-111 | 9.9 | 14.9 | 8.1 | 8.3 | 8.1 | 9.0 | ND | ND | ND | ND | 39.7 | 49.7 | 33.6 | ND |
| STA-116 | 12.9 | 17.9 | 10.7 | 10.6 | 10.1 | 11.2 | ND | ND | ND | ND | 51.4 | 61.4 | 42.6 | ND |
| STA-125 | 9.6 | 14.6 | 7.6 | 7.8 | 7.6 | 8.3 | ND | ND | ND | ND | 38.6 | 48.6 | 31.4 | ND |
| STA-127 | 11.7 | 16.7 | 10.7 | 9.9 | 10.0 | 10.4 | ND | ND | ND | ND | 46.6 | 56.6 | 41.0 | ND |
| STA-137 | 12.7 | 17.7 | 10.6 | 11.3 | 10.8 | 11.0 | ND | ND | ND | ND | 51.2 | 61.2 | 43.7 | ND |
| STA-145 | 12.1 | 17.1 | 9.9 | 11.1 | 9.9 | 11.2 | ND | ND | ND | ND | 48.3 | 58.3 | 42.0 | ND |
| STA-146 | 11.9 | 16.9 | 10.0 | 10.3 | 9.8 | 10.4 | ND | ND | ND | ND | 47.4 | 57.4 | 40.5 | ND |
| STA-147 | 11.3 | 16.3 | 9.6 | 9.3 | 9.2 | 10.2 | ND | ND | ND | ND | 45.2 | 55.2 | 38.4 | ND |
| STA-148 | 12.6 | 17.6 | 10.6 | 11.0 | 10.8 | 11.5 | ND | ND | ND | ND | 50.5 | 60.5 | 43.9 | ND |
| STA-149 | 12.2 | 17.2 | 10.1 | 11.2 | 10.4 | 11.2 | ND | ND | ND | ND | 48.9 | 58.9 | 42.8 | ND |
| STA-150 | 13.4 | 18.4 | 8.5 | 8.9 | 9.8 | NS | ND | ND | ND | NS | 53.6 | 63.6 | 36.3 | ND |
| STA-151 | 13.1 | 18.1 | 10.2 | 10.5 | 12.2 | 11.0 | ND | ND | ND | ND | 52.2 | 62.2 | 43.8 | ND |
| STA-152 | 11.1 | 16.1 | 9.0 | 9.5 | 9.8 | 9.9 | ND | ND | ND | ND | 44.4 | 54.4 | 38.2 | ND |
| STA-153 | 11.9 | 16.9 | 9.6 | 10.5 | 9.6 | 11.2 | ND | ND | ND | ND | 47.5 | 57.5 | 40.8 | ND |

NS = No Sample MDD_q = Quarterly Minimum Differential Dose = XX mrem MDD_A = Annual Minimum Differential Dose = YY mrem ND = Not Detected, where $M_q \leq (B_q + MDD_q)$ or $M_A \leq (B_A + MDD_A)$