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GGNS TS 5.6.2

GNRO2026-00013

April 28, 2026

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

SUBJECT: Grand Gulf Nuclear Station Annual Radiological Environmental Operating Report (AREOR)

Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

In accordance with Grand Gulf Nuclear Station Unit 1 Technical Specification 5.6.2, attached is the Annual Radiological Environmental Operating Report (AREOR) for the time-period of January 1, 2025 through December 31, 2025.

There are no Regulatory Commitments contained in this submittal. If you have any questions or need additional information, please contact me at 802-380-5124.

Sincerely,

JH/ram

Attachment: 1, Annual Radiological Environmental Operating Report

cc: NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

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

Attachment 1

GNRO2026-00013
Annual Radiological Environmental Operating Report

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Grand Gulf Nuclear Station

2025

Annual Radiological Environmental Operating Report

Document Number: GNRO 2026-00010

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ATTACHMENTS

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

Grand Gulf Nuclear Station (GGNS) 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 GGNS 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 GGNS Technical Specification 5.6.2. 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 GGNS for the reporting period of January 1st through December 31st, 2025. During that time period 646 analyses were performed on 630 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 GGNS, did not result in detection of plant related radionuclides in the environment.

2.1 Summary of Conclusions:

No measurable levels of radiation above reporting levels for radioactivity as outlined in ODCM Specifications Table 6.12.1-2 were detected in the vicinity of GGNS. All values were consistent with historical results which indicate no adverse radiological environmental impacts associated with the operation of GGNS. 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].

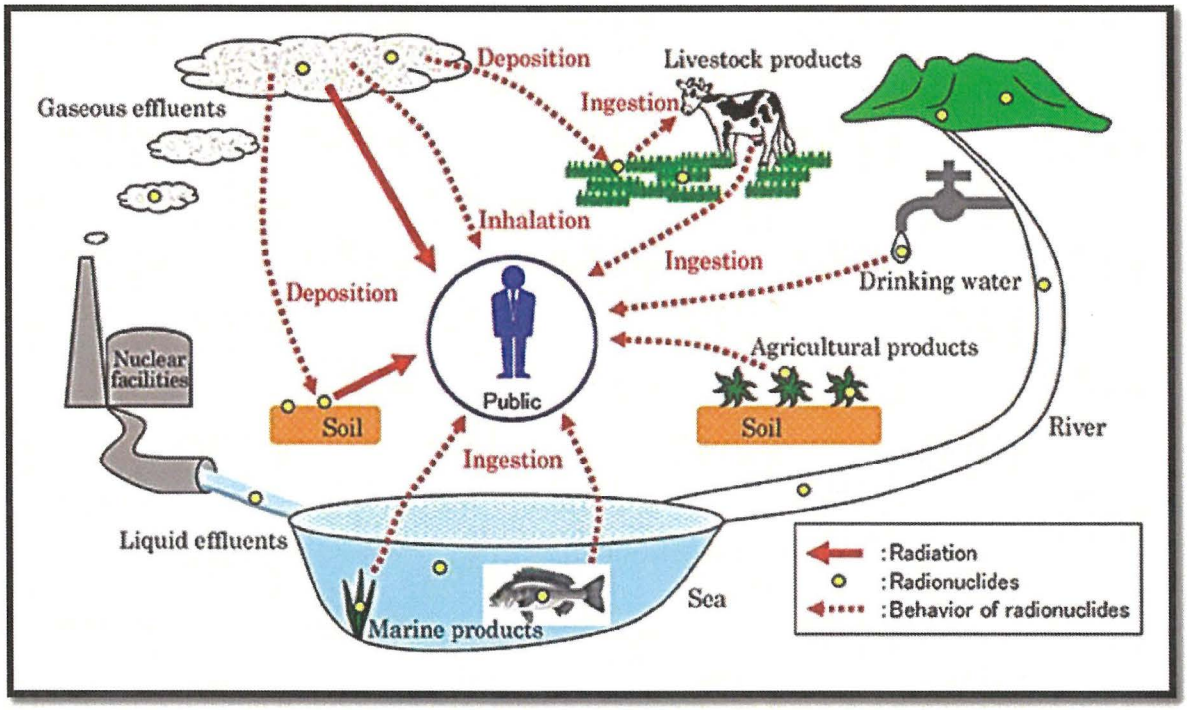

Figure 1, Potential exposure pathways to Members of the Public due to Plant Operations [7]

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 the Mississippi State Department of Health (MSDH), Division of Radiological Health monitoring program, GGNS 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. MSDH and the GGNS REMP entail similar radiological environmental monitoring program requirements. These programs include collecting air samples and splitting or sharing sample media such as water, sediment, and fish. Both programs have obtained similar results over previous years.

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

Grand Gulf Nuclear Station is a commercial nuclear power plant that achieved initial criticality in 1982. The facility is located in Claiborne County, Mississippi, on the east side of the Mississippi River approximately 5 miles northwest of Port Gibson, Mississippi, 25 miles south of Vicksburg and 37 miles north-northeast of Natchez, Mississippi. Grand Gulf Nuclear Station is a BWR-6 boiling water reactor with a rated power level of 4408 megawatts thermal. GGNS established the REMP in 1978 prior to the station becoming operational (1985) to provide data on background radiation and radioactivity normally present in the area.

GGNS 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, Exposure Pathway - Airborne
- Table 2, Exposure Pathway – Direct Radiation
- Table 3, Exposure Pathway – Waterborne
- Table 4, Exposure Pathway – Ingestion
- Table 5, REMP Sampling Locations – Direct Radiation
- Figure 2, REMP Sample Locations (Near Field/Site Boundary)
- Figure 3, REMP Sample Locations (Far Field)

5.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS

Table 1, Exposure Pathway - Airborne

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
RADIOIODINE AND PARTICULATES 1 sample close to the SITE BOUNDARY having the highest calculated annual average ground level D/Q.	AS-7 (Sector H, 0.5 miles) – South-southeast of GGNS at the IBEW Union Hall	7 days, or more frequently if required by dust loading.	• Radioiodine Canisters – I-131 analysis every 7 days • Air Particulate – Gross beta radioactivity analysis following filter change • Air Particulate – Gamma Isotopic composite (by location) every 92 days
RADIOIODINE AND PARTICULATES 1 sample from the vicinity of a community having the highest calculated annual average ground level D/Q.	AS-1 (Sector G, 5.5 miles) – Southeast of GGNS at the Port Gibson City Barn		
RADIOIODINE AND PARTICULATES 1 sample from the vicinity of a community having the highest calculated annual average ground level D/Q.	AS-20 (Sector L, 0.9 miles) – South-southeast of GGNS at the former Glodjo residence		
RADIOIODINE AND PARTICULATES 1 sample from a control location 15 - 30 km distance.	AS-3 (Sector B, 18 miles) – North of the Vicksburg Airport		

Table 2, Exposure Pathway – Direct Radiation

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Direct Radiation 16 stations with two or more dosimeters or one instrument for measuring and recording dose rate continuously. The stations will be placed in accessible sectors alternating between inner and outer ring locations: 1) an inner ring of stations in the general areas of the SITE BOUNDARY 2) an outer ring approximately 3 to 5 miles from the site. 8 additional stations should be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations. 5 additional stations will be placed in locations in the general area of the site boundary to supplement the inner ring monitoring locations.	See Table 5	92 days	Gamma dose; 92 days

Table 3, Exposure Pathway – Waterborne

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
SURFACE WATER 1 sample upstream and 1 sample downstream.	**MRUP** (Sector R, Radius 1.8 Miles) - At least 4500 ft upstream of the GGNS discharge point into the Mississippi River to allow adequate mixing of the Mississippi and Big Black Rivers. **MRDOWN** (Sector N, Radius 1.6 Miles) - At least 5000 ft downstream of the GGNS discharge point in the Mississippi River near Radial Well No. 1.	92 days	Gamma isotopic and tritium analysis; 92 days
1 sample downstream during a Liquid Radwaste Discharge.	**MRDOWN (**Sector P, Radius 1.3 Miles) – Downstream of the GGNS discharge point in the Mississippi River near Radial Well No. 5.	366 days	Gamma isotopic and tritium analysis; 366 days
1 sample from Outfall 007	**OUTFALL 007** (Sector N, Radius 0.2 Miles) – Storm Drain System	31 days	Tritium; 31 days
GROUNDWATER Samples from 2 sources	**PGWELL** (Sector G, Radius 5.0 Miles) - Port Gibson Wells – Taken from distribution system or one of the five wells. **CONSTWELL** (Sector Q, Radius 0.4 Miles) – GGNS Construction Water Well – Taken from distribution system or the well.	366 days	Gamma isotopic and tritium analysis; 366 days

Table 3, Exposure Pathway – Waterborne

SEDIMENT FROM SHORELINE 1 sample from downstream area and 1 sample from upstream area)	**SEDHAM** (Sector N, Radius 1.6 Miles) – Downstream of the GGNS discharge point in the Mississippi River near Hamilton Lake outlet. **SEDCONT** (Minimum of 100 yds) – Upstream of the GGNS discharge point in the Mississippi River.	366 days	Gamma isotopic; 366 days

Table 4, Exposure Pathway – Ingestion

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
MILK If commercially available, 1 sample from milking animals within 8 km distant 1 sample from milking animals at a control location >8 km distant when an indicator location exists.	Currently, no available milking animals within 8 km of GGNS. **ALCONT** (Sector K, Radius 10.5 Miles) - Located South-southwest of GGNS at Alcorn State University. (Control)	92 days when required	Gamma isotopic and I-131; 92 days
FISH AND INVERTEBRATES 1 sample in vicinity of GGNS discharge point. 1 sample uninfluenced by GGNS discharge	**FISHDOWN –** Downstream of the GGNS discharge point into the Mississippi River **FISHUP** – Upstream of the GGNS discharge point into the Mississippi River uninfluenced by plant operations.	366 days	Gamma isotopic on edible portions; 366 days
FOOD PRODUCTS 1 sample of broadleaf vegetation grown in one of two different offsite locations with highest anticipated annual average ground level D/Q if milk sampling is not performed. 1 sample of similar vegetation grown 15 – 30 km distant if milk sampling is not performed.	**VEG-J** (Sector J, Radius 0.4 Miles) – South of GGNS near former Training Center on Bald Hill Road. **VEG-CONT** (Sector K, Radius 10.5 Miles) – Alcorn State University south-southwest of GGNS when available, otherwise a location 15-30 km distant. (Control)	92 days when available	Gamma isotopic and I-131; 92 days

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance (Miles)	Description
M-01	Special Interest	E	3.5	Across the road from Lake Claiborne Entry Gate
M-07	Special Interest	G	5.5	AS-1 PG, Port Gibson City Barn
M-09	Special Interest	D	3.5	Warner Tully Y-Camp
M-10	Special Interest	A	1.5	Grand Gulf Military Park
M-14	Control	B	18	AS361VA, Hwy 61, North of Vicksburg Airport
M-16	Inner	A	0.9	Meteorological Tower
M-19	Inner	E	0.5	Eastern SITE BOUNDARY Property line, North-Northeast of HWSA
M-21	Inner	J	0.4	Near Former Training Center Building on Bald Hill Road
M-22	Inner	G	0.5	Former RR Entrance Crossing On Bald Hill Road
M-23	Inner	Q	0.5	Gin Lake Road 50 Yards North of Heavy Haul Road on Power Pole
M-25	Inner	N	1.6	Radial Well Number 1
M-28	Inner	L	0.9	Bald Hill Road
M-33	Control	P	12.5	Newellton, Louisiana Water Tower
M-36	Outer	P	5	Curve on HW 608, Point Nearest GGNS at Power Pole
M-38	Special	M	9.5	Lake Bruin State Park, Entrance Road
M-39	Special	M	13	St. Joseph, Louisiana, Auxiliary Water Tank

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance (Miles)	Description
M-40	Outer	M	2.3	Headly Drive, Near River Port Entrance
M-48	Outer	K	4.8	0.4 Miles South on Mont Gomer Road on West Side
M-49	Outer	H	4.5	Fork in Bessie Weathers Road/Shaifer Road
M-50	Outer	B	5.3	Panola Hunting Club Entrance
M-55	Outer	D	5	Near Ingelside Karnac Ferry Road/Ashland Road Intersection
M-57	Outer	F	4.5	Hwy 61, Behind the Welcome to Port Gibson Sign at Glensdale Subdivision
M-94	Inner	R	0.8	Near Meteorological Tower
M-95	Inner	F	0.5	Spoils Area, fence of old storage area, near entrance gate
M-96	Inner	B	0.7	North Gate Fence
M-97	Inner	D	0.8	Grand Gulf Road entrance gate to spoils area
M-98	Inner	H	0.5	Bald Hill Road, across from Union Hall, in curve
M-99	Inner	K	0.4	North Fence of old Ball Field near utility pole
M-100	Inner	C	0.6	Grand Gulf Road

6.0 MAPS OF COLLECTION SITES

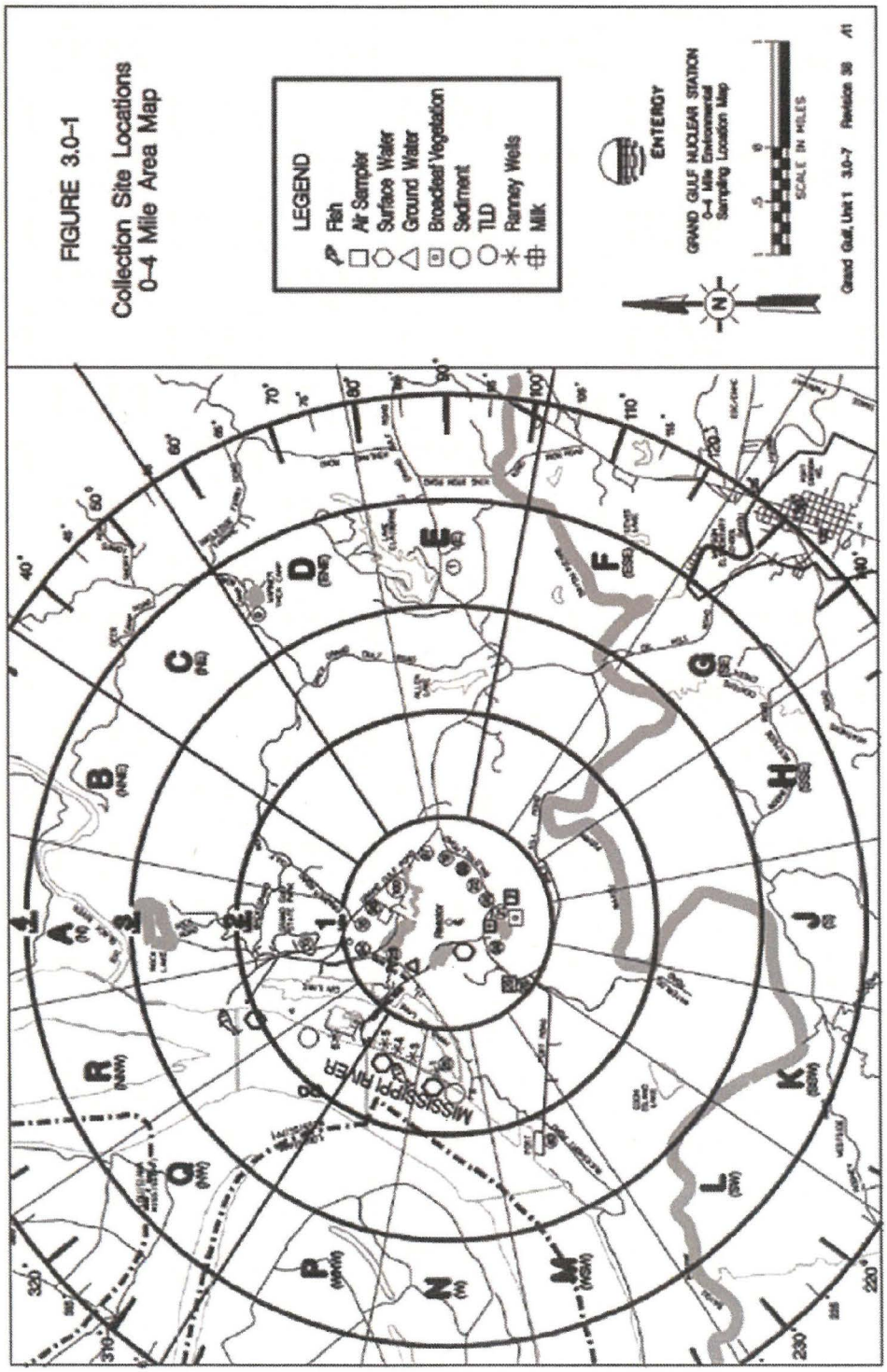

Figure 2, REMP Sample Locations (Near Field/Site Boundary)

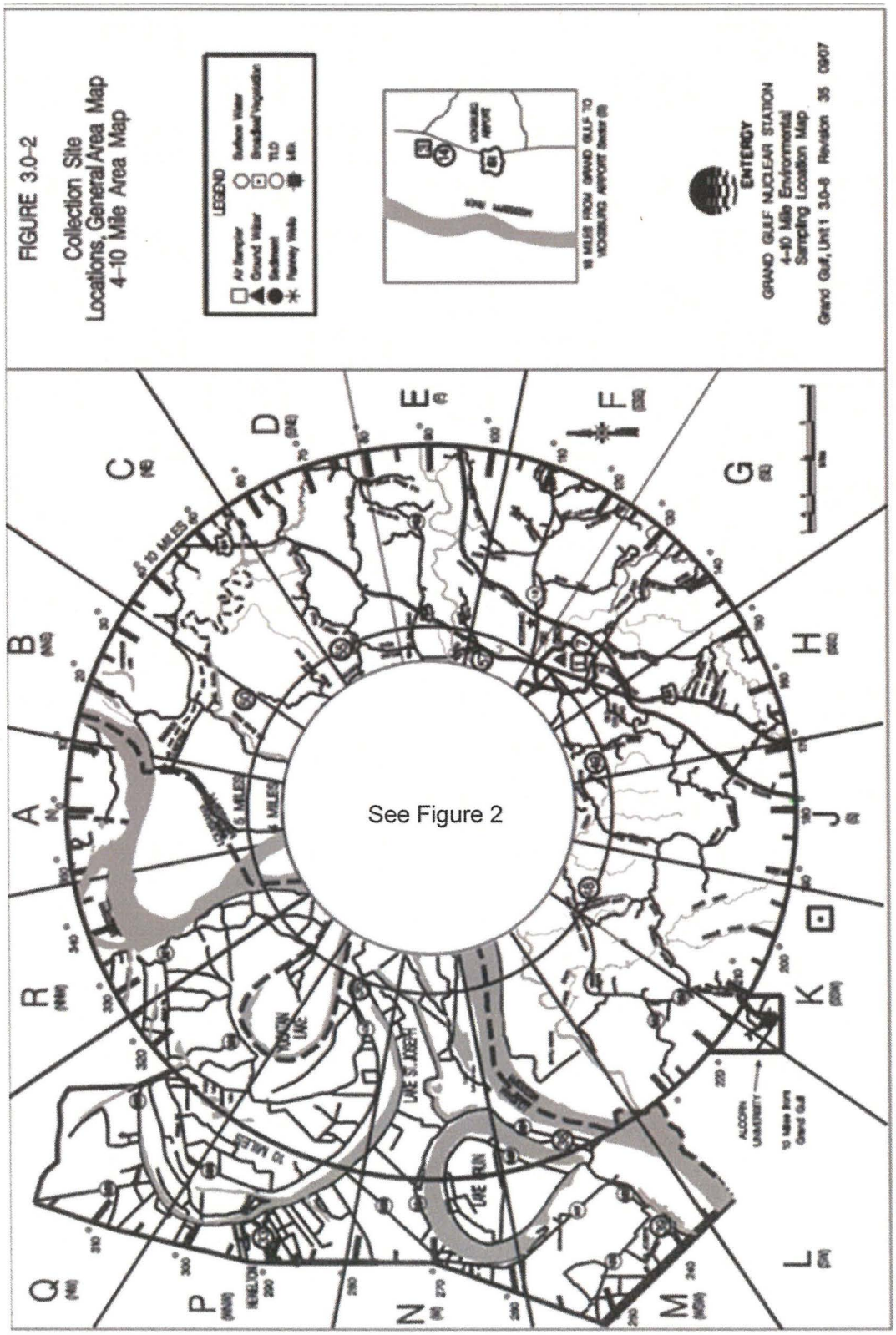

Figure 3, REMP Sample Locations (Far Field)

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

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	N/A	N/A	N/A	N/A
H-3	2,000 [2]	N/A	N/A	N/A	N/A	N/A
Mn-54	15	N/A	130	N/A	N/A	N/A
Fe-59	30	N/A	260	N/A	N/A	N/A
Co-58, Co-60	15	N/A	130	N/A	N/A	N/A
Zn-65	30	N/A	260	N/A	N/A	N/A
Zr-95	30	N/A	N/A	N/A	N/A	N/A
Nb-95	15	N/A	N/A	N/A	N/A	N/A
I-131	1 [3]	0.07	N/A	1	60	N/A
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-La-140	15	N/A	N/A	15	N/A	N/A

[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 3,000 pCi/L** may be used.
[3] **LLD** for drinking water samples. If no drinking water pathway exists, the LLD of gamma isotopic 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 the 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

Grand Gulf Nuclear Station reports measured dose as net exposure (field reading less transit reading) normalized to 92 days and relied on comparison of the indicator locations to the control as a measure of plant impact. Grand Gulf Nuclear Station's comparison of the inner ring and special interest area TLD results to the control, as seen in Table 8, identified no noticeable trend that would indicate that the ambient radiation levels are being affected by plant operations. In addition, the inner ring value of 10.3 millirem/quarter (mR/Qtr) shown in Table 8 for 2025 is comparable to the historical 2015 -2024 annual average results, which have ranged from 9.3 to 10.1 mrem. Overall, Grand Gulf Nuclear Station concluded that the ambient radiation levels are not being affected by plant operations.

Table 8: Direct Radiation Annual Results

Year	Inner Ring (mR/Qtr)	Outer Ring (mR/Qtr)	Control (mR/Qtr)
2015	9.6	9.5	10.8
2016	9.3	9.3	10.7
2017	9.9	9.9	11.3
2018	9.7	9.8	10.6
2019	10.0	9.7	10.7
2020	9.6	9.4	10.7
2021	9.9	10.2	11.7
2022	9.6	9.7	10.8
2023	10.0	10.1	11.2
2024	10.1	10.1	10.9
2025	10.3	10.1	11.0

GGNS is in the process of converting to ANSI/HPS N13.37-2014. Dose is measured as net exposure (field reading less transit reading) normalized to 91-day quarters. Data will be 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 115 locations were monitored and data analyzed in accordance with the requirements in Table 1, 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 TLD measurements were analyzed, and none were found to have radiation levels that had increased over normal background radiation levels. TLD results are in Table 14, Table 15 and Table 16.

8.2 Air Particulate and Radioiodine Sample Results

Air particulate filters and charcoal canisters were collected from locations specified in Table 1, . During the calendar year 2025, a total of 430 of 432 scheduled samples were collected and analyzed for gross beta, gamma emitters and iodine. Two samples were not collected due to equipment failure see Table 10: Sample Deviation Summary. 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. Radioiodine (I-131) analysis is performed weekly on radioiodine sample cartridges. All collected radioiodine samples were below detection limits.

In the absence of plant-related gamma radionuclides, gross beta activity is attributed to naturally occurring radionuclides. Attachment 1, Data Table Summary, which 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 Grand Gulf Nuclear Station operations.

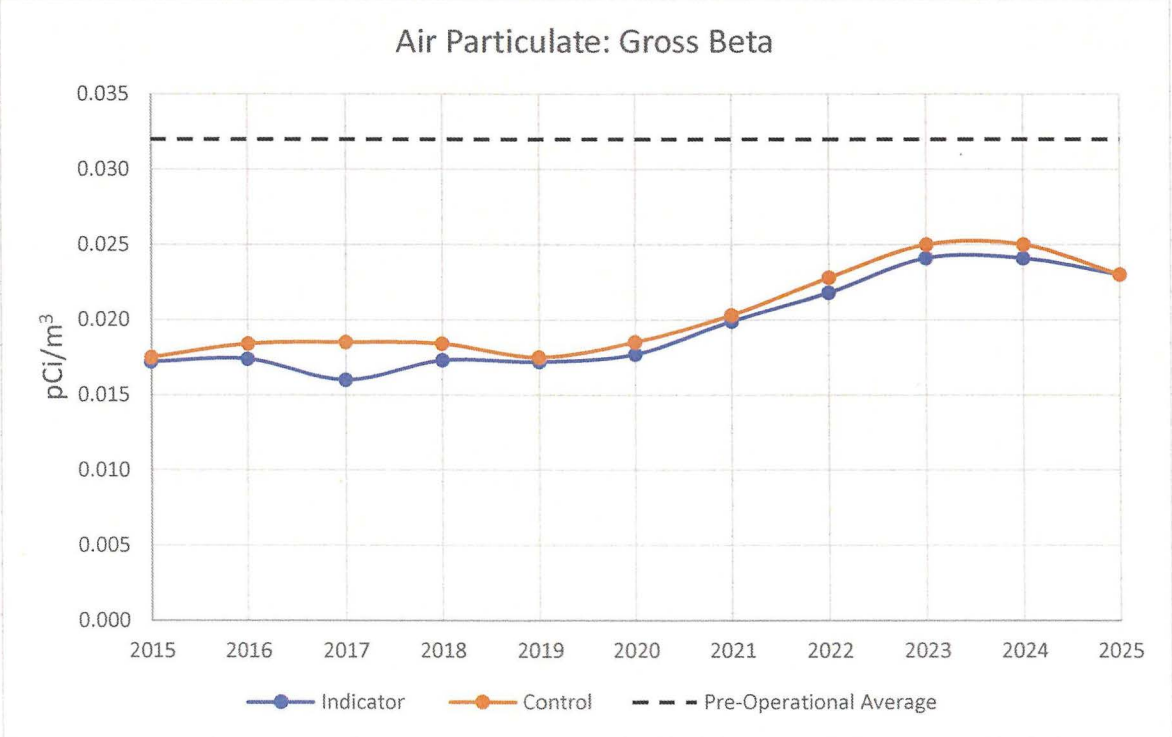

Figure 4, Air Particulate: Analysis for Gross Beta, Average for All Indicator vs. Control Location

Air particulate and radioiodine results from this monitoring period, 2025, were compared to preoperational data as shown in Figure 4, there were no significant changes. Gross beta, iodine and gamma results are in Table 11, Table 12 and Table 13.

8.3 Waterborne Sample Results

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

Surface water samples are collected from two indicator locations (Outfall 007 & MRDOWN) and one control location (MRUP) and analyzed for gamma emitting radionuclides and tritium. During the calendar year 2025, a total of 44 surface water samples were collected and analyzed in accordance with the requirements in the ODCM and shown in Table 3, Exposure Pathway – Waterborne. Plant related gamma emitting radionuclides and tritium remained undetectable in the upstream and downstream Mississippi River locations, Figure 5, Surface Water Tritium Results, which is consistent with previous operational years. Storm waters contribute to Outfall 007 and can include tritium due to washout and entrainment of normal, previously monitored gaseous effluents. As a result, tritium is occasionally observed. Tritium was measured January (16,600 pCi/L), January (2,260 pCi/L), February (992 pCi/L), April (1,400 pCi/L), and December (24,100 pCi/L) at the Outfall 007 location. Tritium was not observed in the remaining Outfall 007 samples collected during 2025. Tritium concentrations in surface water were below the reporting levels of Table 6, Reporting Levels for Radioactivity Concentrations in Environmental Samples, 30,000 pCi/L. Surface water sample results are in Table 18, Table 19 and Table 25.

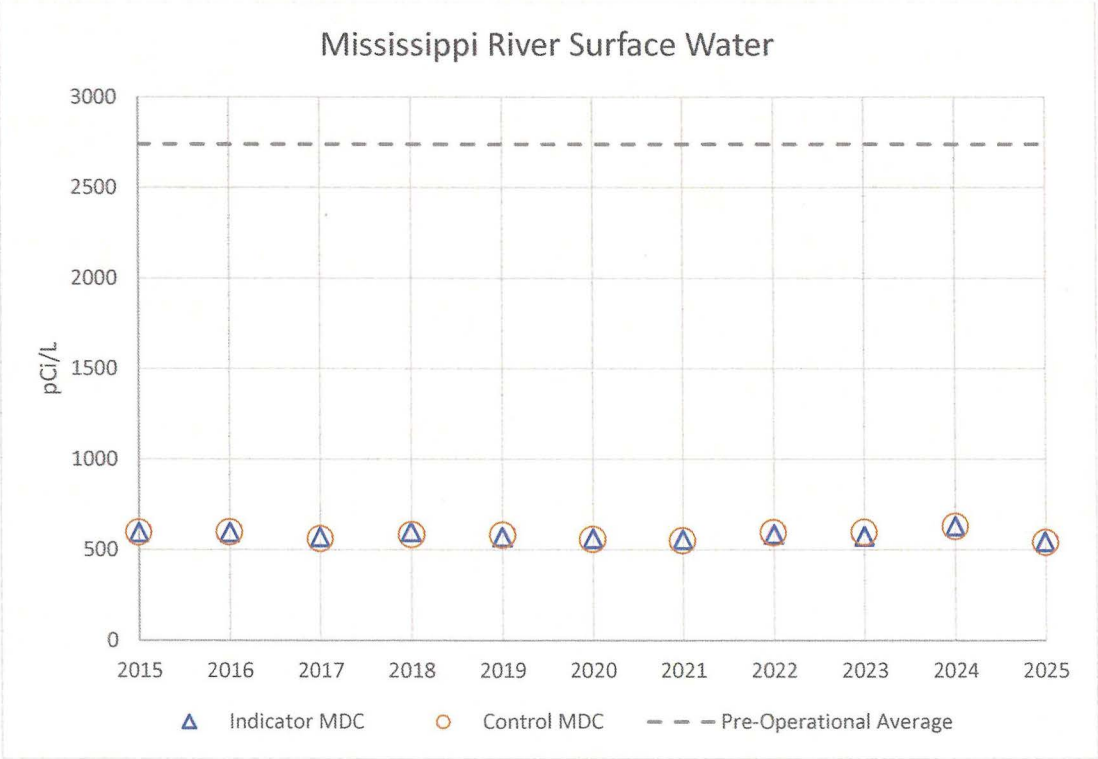

Figure 5, Surface Water Tritium Results

8.3.2 REMP Groundwater

Groundwater monitoring data collected during administration of the Groundwater Protection initiative (GPI) site program are included in the Annual Radioactive Effluent Release Report.

8.3.3 Drinking Water

A total of 6 drinking water samples were obtained in 2025. These samples were analyzed for I-131, gamma radionuclides and tritium in accordance with requirements in the ODCM and shown in Table 3, Exposure Pathway – Waterborne. During 2025, gamma radionuclides, I-131, and tritium concentrations were below the LLD limits at the indicator and control locations, which is consistent with previous operational years. Results are reported as annual average pCi/L.

Analysis	2025	2015-2024	Preoperational
Iodine-131	<LLD	<LLD	<LLD
Gamma	<LLD	<LLD	<LLD
Tritium	<LLD	<LLD	<LLD

Grand Gulf Nuclear Station personnel have noted no definable trends associated with drinking water results at the indicator location. Therefore, the operation of Grand Gulf Nuclear Station had no definable impact on this waterborne pathway during 2025 and levels of radionuclides remain similar to those obtained in previous operational years. Results from 2025 are summarized in Attachment 1 and details are in Table 20 and Table 21.

8.3.4 Sediment from Shoreline

Shoreline sediment collections were made in two locations in 2025 and analyzed for gamma-emitting isotopes. 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, Exposure Pathway – Waterborne.

Listed below is a comparison of 2025 indicator results to the 2015 – 2024 operational years. Grand Gulf Nuclear Station operations had no significant impact on the environment or public by the waterborne pathway. Results are reported as pCi/g. Results from 2025 are summarized in Attachment 1 and details are in Table 22.

Monitoring Period	Result
2015 – 2024 (Minimum Value)	<LLD
2025 Value	<LLD
2015– 2024 (Maximum Value)	<LLD

Preoperational	295.0

8.4 Ingestion Pathway Sample Results

8.4.1 Milk

No milk samples are present within 8 km, broadleaf samples are collected from broad leaf vegetation grown in one of two different offsite locations of highest anticipated annual average ground level atmospheric deposition factors (D/Q).

8.4.2 Fish and Invertebrates

A total of 4 fish and invertebrate samples were collected in 2025. These samples were analyzed for gamma emitting radionuclides, in accordance with requirements of the ODCM and summarized in Table 4, Exposure Pathway – Ingestion. These samples are collected from the indicator and control areas as required by the ODCM.

In 2025, gamma radionuclides were below detectable limits which are consistent with preoperational and operational years. Therefore, based on these measurements, Grand Gulf Nuclear Station operations had no significant radiological impact upon the environment or public by this ingestion pathway. Results are reported as pCi/g. Results from 2025 are summarized in Attachment 1 and details are in Table 23.

8.4.3 Food Products

In accordance with the ODCM and as described in Table 4, Exposure Pathway – Ingestion, 10 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 quarterly. It is common to detect Cs-137 in broadleaf samples at both indicator and control locations. Cs-137 can be attributed to offsite sources such as weapons testing, Chernobyl, and Fukushima events.

In 2025, food product samples were collected from two locations and analyzed for plant related Iodine-131 and gamma radionuclides. The 2025 levels remained undetectable, as has been the case in previous years. Therefore, based on these measurements, Grand Gulf Nuclear Station operations had no significant radiological impact upon the environment or public by this ingestion pathway. Results from 2025 are summarized in Attachment 1 and details are in Table 24.

8.4.4 Special Sample

A total of 1 deer meat sample was analyzed in 2025, for gamma emitting radionuclides. The 2025 levels remained undetectable, as has been the case in previous years. Therefore, based on these measurements, Grand Gulf Nuclear Station operations had no significant radiological impact upon the environment or public by this ingestion pathway. Results from 2025 are summarized in Attachment 1 and details are in Table 26.

9.0 LAND USE CENSUS

A land use census is performed every two years as 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.

A Land Use Census was conducted during the calendar year, 2024, within the growing season to identify changes in land use, receptor locations, and new exposure pathways. The results for the 2024 Land Use Census are listed in Table 9: 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 2024 census.

The land use census identified no milk-producing animals within a five-mile radius of the plant site. In accordance with ODCM Section 6.12.1, Grand Gulf Nuclear Station personnel sampled broadleaf vegetation.

Table 9: Land Use Census – Nearest Receptors within 5 miles				
Sector	**Direction**	**Nearest Residence (Miles)**	**Nearest Milk Animal (Miles)**	**Nearest Garden (Miles)**
A	N	1.02	none within 5 miles	none within 5 miles
B	NNE	1.51	none within 5 miles	1.52
C	NE	0.70	none within 5 miles	none within 5 miles
D	ENE	2.60	none within 5 miles	4.50
E	E	0.83	none within 5 miles	0.91
F	ESE	2.25	none within 5 miles	none within 5 miles
G	SE	3.72	none within 5 miles	4.20
H	SSE	1.10	none within 5 miles	4.31
J	S	3.14	none within 5 miles	none within 5 miles
K	SSW	2.20	none within 5 miles	2.18
L	SW	0.89	none within 5 miles	0.89
M	WSW	none within 5 miles	none within 5 miles	none within 5 miles
N	W	none within 5 miles	none within 5 miles	none within 5 miles
P	WNW	none within 5 miles	none within 5 miles	none within 5 miles
Q	NW	none within 5 miles	none within 5 miles	none within 5 miles
R	NNW	1.44	none within 5 miles	none within 5 miles

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, 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 10: 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
Air – Gross Beta	AS-20	06/24/25– 07/01/25	Sample Deviation - Equipment malfunction	Replaced faulty equipment. CR-GGN-2025-02945
Air – Iodine	AS-20	06/24/25– 07/01/25	Sample Deviation - Equipment malfunction	Replaced faulty equipment. CR-GGN-2025-02945
TLD – Gamma Dose	M-25	03/27/25 – 07/02/25	Sample Unavailability - Inaccessible Due To Environmental Conditions	Replaced faulty equipment. CR-GGN-2025-02968

11.0 OTHER SUPPLEMENTAL INFORMATION

11.1 NEI 07-07 Onsite Radiological Groundwater Monitoring Program

Grand Gulf Nuclear Station 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, 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 Independent Spent Fuel Storage Installation (ISFSI) Monitoring Program

The ISFSI annual report on radioactive releases is submitted as a separate report.

11.3 Interlaboratory Comparison Results

Teledyne Brown Engineering and Stanford Dosimetry analyzed interlaboratory comparison samples to fulfill the requirements of ODCM Specification 6.12.1. Results are shown in Attachment 3.

11.4 Corrections to Previous Reports

There are no corrections to previous AREOR reports identified.

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Attachment 1, Data Table Summary

Sample Type (Units)	Type / Number of Analyses [Note 1]	LLD [Note 2]	Indicator Locations Mean (F)[Note 3] [Range]	Location with the Highest Annual Mean		Control Locations Mean (F)[Note 3] [Range]	Number of Non-Routine Results [Note 5]
				Location [Note 4]	Mean (F)[Note 3] [Range]		
Air Particulates (pCi/m^3)	GB / 207	0.01	0.0229 (155 / 155) [0.0093 – 0.0506]	AS-1 PG (Sector G, 5.5 mi)	0.0234 (52 / 52) [0.0093 - 0.0506]	0.0228 (52 / 52) [0.0124 - 0.0469]	0
	GS / 16						
	Cs-134	0.05	<LLD	N/A	N/A	<LLD	0
	CS-137	0.06	<LLD	N/A	N/A	<LLD	0
Airborne Iodine (pCi/m^3)	I-131 / 207	0.07	< LLD	N/A	N/A	< LLD	0
Inner Ring TLDs (mR/Qtr)	Gamma / 55	[Note 6]	10.3 (55 / 55) [7.0 – 14.6]	M-99 (Sector K, 0.4 mi.)	13.2 (4 / 4) [12.3 – 14.5]	N/A	0
Outer Ring TLDs (mR/Qtr)	Gamma / 28	[Note 6]	10.1 (28 / 28) [5.1 – 12.9]	M-57 (Sector F, 4.5 mi.)	11.8 (4 / 4) [10.8 – 12.4]	N/A	0
Special Interest TLDs (mR/Qtr)	Gamma / 28	[Note 6]	10.1 (28 / 28) [7.7 – 12.5]	M-01 (Sector E, 3.5 mi.)	11.5 (4 / 4) [11.0 – 12.5]	N/A	0
Control TLD (mR/Qtr)	Gamma / 4	[Note 6]	N/A	N/A	N/A	11.0 (4 / 4) [10.2 – 12.1]	0

Attachment 1, Data Table Summary

Sample Type (Units)	Type / Number of Analyses [Note 1]	LLD [Note 2]	Indicator Locations Mean (F)[Note 3] [Range]	Location with the Highest Annual Mean		Control Locations Mean (F)[Note 3] [Range]	Number of Non-Routine Results [Note 5]
				Location [Note 4]	Mean (F)[Note 3] [Range]		
Surface Water (pCi/l)	H-3 / 44	3000	10831 (8 / 36) [1280 – 24100]	Outfall 007 (Sector N, 0.2 mi.)	10831 (8 / 36) [1280 – 24100]	< LLD	0
	GS / 18						
	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

Attachment 1, Data Table Summary

Sample Type (Units)	Type / Number of Analyses [Note 1]	LLD [Note 2]	Indicator Locations Mean (F)[Note 3] [Range]	Location with the Highest Annual Mean		Control Locations Mean (F)[Note 3] [Range]	Number of Non-Routine Results [Note 5]
				Location [Note 4]	Mean (F)[Note 3] [Range]		
Drinking Water (pCi/1)	I-131 / 3	1	< LLD	N/A	N/A	< LLD	0
	H-3 / 6	2000	< LLD	N/A	N/A	< LLD	0
	GS / 3						
	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
Sediment (pCi/kg)	GS / 4						
	Cs-134	150	< LLD	N/A	N/A	N/A	0
	Cs-137	180	< LLD	N/A	N/A	N/A	0

Attachment 1, Data Table Summary

Sample Type (Units)	Type / Number of Analyses [Note 1]	LLD [Note 2]	Indicator Locations Mean (F)[Note 3] [Range]	Location with the Highest Annual Mean		Control Locations Mean (F)[Note 3] [Range]	Number of Non-Routine Results [Note 5]
				Location [Note 4]	Mean (F)[Note 3] [Range]		
Fish (pCi/kg)	GS / 4						
	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
Food Products (pCi/kg)	I-131 / 10	60	< LLD	N/A	N/A	N/A	0
	GS / 14						
	Cs-134	60	< LLD	N/A	N/A	N/A	0
	Cs-137	80	< LLD	N/A	N/A	N/A	0
Surface Water (Special) (pCi/l)	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
	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

Attachment 1, Data Table Summary

Sample Type (Units)	Type / Number of Analyses [Note 1]	LLD [Note 2]	Indicator Locations Mean (F)[Note 3] [Range]	Location with the Highest Annual Mean		Control Locations Mean (F)[Note 3] [Range]	Number of Non-Routine Results [Note 5]
				Location [Note 4]	Mean (F)[Note 3] [Range]		
Meat (Special) (pCi/kg)	GS / 1						
	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

LEGEND:

[Note 1] - GB = Gross beta; I-131 = Iodine-131; H-3 = Tritium; GS = Gamma scan.
[Note 2] - LLD = Required lower limit of detection based on ODCM Table 6.12.1-3.
[Note 3] - Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F).
[Note 4] – Where applicable, locations are specified (1) by name, (2) distance from reactor site, and (3) meteorological sector.
[Note 5] - 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.
[Note 6] - LLD is not defined in ODCM Table 6.12.1-3.

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

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

Table 11, Air Particulate Data Summary Table

Analysis: Gross Beta				Units: pCi/m3	
Start Date	End Date	Station AS-1[Note 1] (Indicator)	Station AS-7 (Indicator)	Station AS-20 (Indicator)	Station AS-3 (Control)
REQUIRED LLD →		0.01	0.01	0.01	0.01
12/31/24	01/07/25	0.0218	0.0229	0.0217	0.0217
01/07/25	01/14/25	0.0239	0.0202	0.0268	0.0209
01/14/25	01/20/25	0.0268	0.0267	0.0254	0.0220
01/20/25	01/28/25	0.0206	0.0219	0.0208	0.0198
01/28/25	02/04/25	0.0305	0.0309	0.0285	0.0298
02/04/25	02/11/25	0.0206	0.0223	0.0209	0.0204
02/11/25	02/18/25	0.0209	0.0256	0.0229	0.0198
02/18/25	02/25/25	0.0219	0.0240	0.0243	0.0241
02/25/25	03/04/25	0.0203	0.0177	0.0203	0.0163
03/04/25	03/11/25	0.0168	0.0212	0.0151	0.0192
03/11/25	03/18/25	0.0227	0.0209	0.021	0.0190
03/18/25	03/25/25	0.0170	0.0165	0.0203	0.0179
03/25/25	04/01/25	0.0187	0.0150	0.0173	0.0145
04/01/25	04/08/25	0.0093	0.0132	0.0144	0.0124
04/08/25	04/15/25	0.0388	0.0264	0.0240	0.0231
04/15/25	04/22/25	0.0203	0.0238	0.0236	0.0219
04/22/25	04/29/25	0.0156	0.0164	0.0142	0.0178
04/29/25	05/06/25	0.0196	0.0169	0.0177	0.0217
05/06/25	05/13/25	0.0163	0.0136	0.0130	0.0138
05/13/25	05/20/25	0.0144	0.0175	0.0200	0.0199
05/20/25	05/27/25	0.0159	0.0143	0.0144	0.0183
05/27/25	06/03/25	0.0157	0.0153	0.0171	0.0162
06/03/25	06/10/25	0.0193	0.0173	0.0206	0.0186
06/10/25	06/17/25	0.0142	0.0143	0.0141	0.0150
06/17/25	06/24/25	0.0265	0.0200	0.0185	0.0205
06/24/25	07/01/25	0.0209	0.0174	See Table 10	0.0212
07/01/25	07/08/25	0.0245	0.0222	0.0273	0.0282

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

Table 11, Air Particulate Data Summary Table

Analysis: Gross Beta				Units: pCi/m3	
Start Date	End Date	Station AS-1[Note 1] (Indicator)	Station AS-7 (Indicator)	Station AS-20 (Indicator)	Station AS-3 (Control)
REQUIRED LLD →		0.01	0.01	0.01	0.01
07/08/25	07/15/25	0.0108	0.0128	0.0137	0.0142
07/15/25	07/22/25	0.0165	0.0135	0.0173	0.0164
07/22/25	07/29/25	0.0198	0.0125	0.0161	0.0169
07/29/25	08/05/25	0.0216	0.0236	0.0214	0.0222
08/05/25	08/12/25	0.0232	0.0211	0.0235	0.0215
08/12/25	08/19/25	0.0178	0.0187	0.0125	0.0157
08/19/25	08/26/25	0.0324	0.0359	0.0357	0.0306
08/26/25	09/02/25	0.0267	0.0256	0.0283	0.0311
09/02/25	09/09/25	0.0298	0.0278	0.0299	0.0337
09/09/25	09/16/25	0.0430	0.0413	0.0381	0.0403
09/16/25	09/23/25	0.0506	0.0435	0.0466	0.0469
09/23/25	09/30/25	0.0267	0.0270	0.0271	0.0264
09/30/25	10/07/25	0.0248	0.0228	0.0248	0.0253
10/07/25	10/14/25	0.0322	0.0276	0.0314	0.0309
10/14/25	10/21/25	0.0296	0.0302	0.0279	0.0260
10/21/25	10/28/25	0.0250	0.0251	0.0207	0.0213
10/28/25	11/04/25	0.0216	0.0249	0.0271	0.0230
11/04/25	11/11/25	0.0280	0.0238	0.0237	0.0246
11/11/25	11/18/25	0.0236	0.0214	0.0238	0.0250
11/18/25	11/25/25	0.0287	0.0244	0.0247	0.0267
11/25/25	12/02/25	0.0207	0.0233	0.0223	0.0177
12/02/25	12/09/25	0.0305	0.0359	0.0332	0.0388
12/09/25	12/16/25	0.0333	0.0279	0.0294	0.0327
12/16/25	12/23/25	0.0221	0.0245	0.0191	0.0221
12/23/25	12/30/25	0.0255	0.0225	0.0238	0.0222

[Note 1] – Station with highest annual mean.

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

Table 12, Radioiodine Cartridge Data Table Summary

Analysis: I-131				Units: pCi/m^3	
Start Date	**End Date**	**AS-1 (Indicator)**	**AS-7 (Indicator)**	**AS-20 (Indicator)**	**AS-3 (Control)**
REQUIRED LLD →		**0.07**	**0.07**	**0.07**	**0.07**
12/31/24	01/07/25	<0.0517	<0.0536	<0.0536	<0.0520
01/07/25	01/14/25	<0.0214	<0.0221	<0.0222	<0.0216
01/14/25	01/20/25	<0.0423	<0.0432	<0.0429	<0.0421
01/20/25	01/28/25	<0.0271	<0.0204	<0.0268	<0.0272
01/28/25	02/04/25	<0.0265	<0.0266	<0.0268	<0.0276
02/04/25	02/11/25	<0.0299	<0.0298	<0.0303	<0.0302
02/11/25	02/18/25	<0.0329	<0.0179	<0.0374	<0.0335
02/18/25	02/25/25	<0.0228	<0.0227	<0.0230	<0.0230
02/25/25	03/04/25	<0.0291	<0.0290	<0.0293	<0.0294
03/04/25	03/11/25	<0.0399	<0.0168	<0.0404	<0.0415
03/11/25	03/18/25	<0.0384	<0.0381	<0.0389	<0.0388
03/18/25	03/25/25	<0.0339	<0.0338	<0.0344	<0.0339
03/25/25	04/01/25	<0.0580	<0.0576	<0.0570	<0.0584
04/01/25	04/08/25	<0.0542	<0.0608	<0.0606	<0.0532
04/08/25	04/15/25	<0.0396	<0.0335	<0.0328	<0.0325
04/15/25	04/22/25	<0.0312	<0.0313	<0.0306	<0.0309
04/22/25	04/29/25	<0.0288	<0.0289	<0.0288	<0.0283
04/29/25	05/06/25	<0.0469	<0.0484	<0.0477	<0.0460
05/06/25	05/13/25	<0.0282	<0.0286	<0.0283	<0.0274
05/13/25	05/20/25	<0.0379	<0.0394	<0.0276	<0.0383
05/20/25	05/27/25	<0.0376	<0.0387	<0.0379	<0.0386
05/27/25	06/03/25	<0.0256	<0.0264	<0.0259	<0.0261
06/03/25	06/10/25	<0.0326	<0.0336	<0.0330	<0.0333
06/10/25	06/17/25	<0.0454	<0.0458	<0.0449	<0.0446
06/17/25	06/24/25	<0.0546	<0.0542	<0.0550	<0.0549
06/24/25	07/01/25	<0.0443	<0.0462	See Table 10	<0.0449

Table 12, Radioiodine Cartridge Data Table Summary

Analysis: I-131				Units: pCi/m^3	
Start Date	**End Date**	**AS-1 (Indicator)**	**AS-7 (Indicator)**	**AS-20 (Indicator)**	**AS-3 (Control)**
REQUIRED LLD →		**0.07**	**0.07**	**0.07**	**0.07**
07/01/25	07/08/25	<0.0421	<0.0427	<0.0416	<0.0426
07/08/25	07/15/25	<0.0535	<0.0545	<0.0550	<0.0543
07/15/25	07/22/25	<0.0348	<0.0355	<0.0345	<0.0354
07/22/25	07/29/25	<0.0469	<0.0486	<0.0483	<0.0480
07/29/25	08/05/25	<0.0470	<0.0454	<0.0457	<0.0481
08/05/25	08/12/25	<0.0345	<0.0349	<0.0345	<0.0343
08/12/25	08/19/25	<0.0332	<0.0331	<0.0334	<0.0332
08/19/25	08/26/25	<0.0468	<0.0506	<0.0521	<0.0497
08/26/25	09/02/25	<0.0495	<0.0483	<0.0353	<0.0487
09/02/25	09/09/25	<0.0446	<0.0441	<0.0456	<0.0453
09/09/25	09/16/25	<0.0402	<0.0393	<0.0401	<0.0404
09/16/25	09/23/25	<0.0434	<0.0477	<0.0438	<0.0439
09/23/25	09/30/25	<0.0171	<0.0122	<0.0172	<0.0176
09/30/25	10/07/25	<0.0454	<0.0480	<0.0352	<0.0462
10/07/25	10/14/25	<0.0263	<0.0269	<0.0263	<0.0263
10/14/25	10/21/25	<0.0638	<0.0652	<0.0544	<0.0647
10/21/25	10/28/25	<0.0382	<0.0396	<0.0381	<0.0388
10/28/25	11/04/25	<0.0472	<0.0470	<0.0463	<0.0465
11/04/25	11/11/25	<0.0540	<0.0543	<0.0381	<0.0546
11/11/25	11/18/25	<0.0324	<0.0321	<0.0314	<0.0328
11/18/25	11/25/25	<0.0434	<0.0429	<0.0460	<0.0440
11/25/25	12/02/25	<0.0373	<0.0371	<0.0174	<0.0378
12/02/25	12/09/25	<0.0467	<0.0353	<0.0468	<0.0498
12/09/25	12/16/25	<0.0641	<0.0618	<0.0640	<0.0634
12/16/25	12/23/25	<0.0659	<0.0643	<0.0655	<0.0651
12/23/25	12/30/25	<0.0474	<0.0459	<0.0346	<0.0473

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

1.0

Table 13, Air Gamma Quarterly Composite

Analysis: Gamma Isotopic		Units: pCi/cu.m	
Location	**Date**	**CS-134**	**CS-137**
REQUIRED LLD →		**0.05**	**0.06**
AS-1	04/01/25	<0.0016	< 0.0013
AS-3		<0.0022	< 0.0021
AS-7		<0.0017	< 0.0019
AS-20		<0.0023	< 0.0017
AS-1	07/01/25	<0.0023	< 0.0017
AS-3		<0.0019	< 0.0016
AS-7		<0.0026	< 0.0022
AS-20		<0.0017	< 0.0023
AS-1	09/30/25	<0.0017	< 0.0021
AS-3		<0.0031	< 0.0024
AS-7		<0.0013	< 0.0011
AS-20		<0.0027	< 0.0017
AS-1	12/30/25	<0.0016	< 0.0019
AS-3		<0.0019	<0.0016
AS-7		<0.0026	< 0.0021
AS-20		<0.0020	< 0.0020

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

Table 14, Thermoluminescent Dosimeters – Inner Ring

Analysis: Gamma Dose			Units: mrem		
Station	**1st Qtr 2025**	**2nd Qtr 2025**	**3rd Qtr 2025**	**4th Qtr 2025**	**Annual Mean 2025**
M-16	10.7	10.5	11.1	12.5	11.2
M-19	10.4	8.5	9.7	11.0	9.9
M-21	11.8	12.1	12.8	14.6	12.8
M-22	8.1	7.9	8.8	9.9	8.6
M-23	8.0	8.6	8.7	10.0	9.0
M-25	9.0	See Table 10	9.2	10.1	9.5
M-28	10.3	8.9	11.2	12.8	10.8
M-94	10.6	9.6	11.1	12.0	10.8
M-95	7.7	7.5	7.1	8.8	7.8
M-96	10.3	9.1	8.8	10.7	9.7
M-97	8.5	7.4	7.8	9.2	8.2
M-98	12.7	11.1	10.8	13.0	11.9
M-99[Note 1]	13.7	12.3	12.5	14.5	13.2
M-100	11.8	10.1	10.4	12.3	11.2

[Note 1] – Station with highest annual mean.

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

Table 15, Thermoluminescent Dosimeters – Outer Ring

Analysis: Gamma Dose			Units: mrem		
Station	**1st Qtr 2025**	**2nd Qtr 2025**	**3rd Qtr 2025**	**4th Qtr 2025**	**Annual Mean 2025**
M-36	8.1	8.2	8.8	10.0	8.8
M-40	6.5	5.1	5.6	7.2	6.1
M-48	8.9	10.2	10.3	11.9	10.3
M-49	11.0	10.8	10.9	12.8	11.4
M-50	10.9	9.2	10.6	11.5	10.5
M-55	12.2	10.8	11.4	12.4	11.7
M-57[Note 1]	10.6	11.5	12.0	12.9	11.8

[Note 1] – Station with highest annual mean.

Table 16, Thermoluminescent Dosimeters – Special Interest Areas

Analysis: Gamma Dose			Units: mrem		
Station	**1st Qtr 2025**	**2nd Qtr 2025**	**3rd Qtr 2025**	**4th Qtr 2025**	**Annual Mean 2025**
M-01[Note 1]	11.3	11.0	11.0	12.5	11.5
M-07	10.0	10.2	10.2	11.5	10.5
M-09	10.6	10.0	9.8	11.3	10.5
M-10	9.7	8.1	7.7	9.0	8.6
M-33	11.2	8.2	10.9	12.3	10.7
M-38	8.6	8.1	10.2	10.6	9.4
M-39	8.3	8.8	9.6	10.5	9.3

[Note 1] – Station with highest annual mean.

Table 17, Thermoluminescent Dosimeters – Control

Analysis: Gamma Dose			Units: mrem		
Station	**1st Qtr 2025**	**2nd Qtr 2025**	**3rd Qtr 2025**	**4th Qtr 2025**	**Annual Mean 2025**
M-14	10.4	10.2	11.4	12.1	11.0

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

Table 18, Surface Water – Gamma

Analysis: Gamma Isotopic			Units: pCi/L										
Location	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
MRDOWN	01/29/25	<9.103	<5.845	<15.10	<12.01	<17.94	<9.094	<11.61	<13.94	<7.886	<7.728	<33.83	<8.574
MRUP	01/29/25	<7.386	<5.992	<10.92	<5.759	<15.71	<7.618	<11.44	<10.96	<7.513	<7.392	<25.23	<8.521
MRDOWN GG	01/29/25	<7.051	<8.133	<15.11	<9.358	<13.05	<6.325	<10.85	<11.39	<8.043	<7.299	<33.65	<9.303
MRUP GG	01/29/25	<7.404	<7.428	<17.37	<7.660	<14.05	<8.039	<15.50	<12.76	<8.039	<7.951	<38.13	<6.579
MRDOWN	04/30/25	<6.881	<5.705	<11.66	<7.190	<12.33	<7.105	<12.19	<10.63	<6.151	<7.174	<34.54	<11.27
MRUP	04/30/25	<5.624	<5.315	<12.74	<8.117	<13.94	<5.533	<8.801	<9.959	<5.543	<6.240	<26.89	<12.08
MRDOWN GG	04/30/25	<4.910	<4.174	<12.86	<6.342	<13.21	<5.516	<9.791	<8.109	<5.097	<5.306	<26.69	<5.398
MRUP GG	04/30/25	<5.638	<5.527	<12.36	<5.611	<9.929	<5.667	<8.706	<9.822	<8.279	<5.869	<27.49	<9.496
MRDOWN	07/30/25	<6.721	<6.100	<13.49	<6.286	<11.59	<6.560	<12.11	<12.41	<8.096	<6.337	<29.01	<11.87
MRUP	07/30/25	<6.707	<6.408	<14.39	<7.470	<13.78	<7.549	<12.13	<10.23	<6.639	<5.838	<24.73	<8.213

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

Table 18, Surface Water – Gamma

Analysis: Gamma Isotopic			Units: pCi/L										
Location	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
MRDOWN GG	07/30/25	<6.645	<6.903	<14.37	<6.900	<12.01	<8.014	<11.85	<12.33	<8.350	<6.979	<29.69	<11.35
MRUP GG	07/30/25	<5.922	<6.443	<11.80	<9.572	<15.11	<8.480	<12.06	<11.70	<7.504	<7.432	<35.79	<11.97
MRDOWN	10/30/25	<4.574	<5.423	<10.83	<5.996	<9.078	<5.652	<7.413	<12.82	<5.767	<4.683	<27.94	<7.529
MRUP	10/30/25	<5.250	<5.684	<14.96	<5.992	<9.247	<5.445	<9.839	<14.42	<5.127	<5.455	<34.50	<11.95
MRDOWN GG	10/30/25	<5.155	<5.224	<11.74	<2.955	<9.356	<5.598	<9.138	<14.12	<4.280	<5.459	<27.74	<13.29
MRUP GG	10/30/25	<4.156	<4.170	<9.799	<4.488	<7.905	<4.893	<7.398	<13.46	<4.660	<4.104	<29.61	<9.742
MRDOWN*	11/06/25	<4.548	<4.870	<10.14	<6.435	<9.085	<5.138	<8.530	<9.501	<5.622	<4.144	<25.33	<9.465
MRDOWN GG*	11/06/25	<6.331	<6.849	<13.61	<6.571	<12.47	<5.539	<9.351	<12.27	<6.706	<6.821	<28.37	<13.92

GG - indicates duplicate sample
* - indicates annual sample collected during liquid effluent discharge

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

Table 19, Surface Water – Tritium

Analysis: H-3		Units: pCi/L
Location	Date	H-3
REQUIRED LLD →		**3000**
OUTFALL 007	01/22/25	15100
OUTFALL 007 GG	01/22/25	16600
MRDOWN	01/29/25	<576
MRUP	01/29/25	<603
MRDOWN GG	01/29/25	<581
MRUP GG	01/29/25	<574
OUTFALL 007	01/30/25	2210
OUTFALL 007 GG	01/30/25	2260
OUTFALL 007	02/24/25	773
OUTFALL 007 GG	02/24/25	992
OUTFALL 007	03/19/25	<602
OUTFALL 007 GG	03/19/25	<607
OUTFALL 007	04/22/25	1400
OUTFALL 007 GG	04/22/25	1280
MRDOWN	04/30/25	<492
MRUP	04/30/25	<490
MRDOWN GG	04/30/25	<498
MRUP GG	04/30/25	<494
OUTFALL 007	05/19/25	<513
OUTFALL 007 GG	05/19/25	<507
OUTFALL 007	06/16/25	<520
OUTFALL 007 GG	06/16/25	<504
OUTFALL 007	07/22/25	<465
OUTFALL 007 GG	07/22/25	<464

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

Table 19, Surface Water – Tritium

Analysis: H-3		Units: pCi/L
Location	Date	H-3
MRDOWN	07/30/25	<524
MRUP	07/30/25	<526
MRDOWN GG	07/30/25	<527
MRUP GG	07/30/25	<519
OUTFALL 007	08/19/25	<708
OUTFALL 007 GG	08/19/25	<701
OUTFALL 007	09/16/25	<583
OUTFALL 007 GG	09/16/25	<591
OUTFALL 007	10/20/25	<575
OUTFALL 007 GG	10/20/25	<569
MRDOWN	10/30/25	<589
MRUP	10/30/25	<569
MRDOWN GG	10/30/25	<561
MRUP GG	10/30/25	<554
MRDOWN*	11/06/25	<559
MRDOWN GG*	11/06/25	<560
OUTFALL 007	11/17/25	<584
OUTFALL 007 GG	11/17/25	<590
OUTFALL 007	12/16/25	23700
OUTFALL 007 GG	12/16/25	24100

GG - indicates duplicate sample
* - indicates Annual Sample collected during liquid discharge

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

Table 20, Drinking Water - Gamma, I-131

Analysis: Gamma Isotopic, I-131						Units: pCi/L							
Location	Date	I-131	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
REQUIRED LLD →		1	15	15	30	15	30	15	30	15	18	60	15
CONSTWELL 3	11/04/25	<0.868	<5.672	<5.849	<11.60	<8.085	<13.58	<6.477	<10.45	<7.233	<6.328	<29.80	<12.51
CONSTWELL 4	11/04/25	<0.863	<5.475	<5.566	<12.83	<5.737	<10.36	<4.501	<10.95	<4.616	<5.530	<23.97	<7.523
PGWELL	11/04/25	<0.852	<6.650	<5.661	<12.56	<5.379	<13.51	<5.720	<13.00	<8.188	<7.386	<35.26	<7.168

GG - indicates duplicate sample

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

Table 21, Drinking Water – Tritium

Analysis: H-3		Units: pCi/L
Location	Date	H-3
REQUIRED LLD →		2000
CONSTWELL 3	11/04/25	<573
CONSTWELL 3 GG	11/04/25	<560
CONSTWELL 4	11/04/25	<573
CONSTWELL 4 GG	11/04/25	<557
PGWELL	11/04/25	<566
PGWELL GG	11/04/25	<567

GG - indicates duplicate sample

Table 22, Sediment

Analysis: Gamma Isotopic		Units: pCi/kg	
Location	Date	Cs-134	Cs-137
REQUIRED LLD →		150	180
SEDHAM	08/27/25	<122.8	<113.2
SEDHAM GG	08/27/25	<101.1	<88.91
SEDCONT	08/27/25	<91.30	<91.04
SEDCONT GG	08/27/25	<76.41	<52.33

GG - indicates duplicate sample

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

Table 23, 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
FISHDOWN	08/26/25	<39.26	<82.85	<119.0	<74.51	<171.1	<66.65	<73.60
FISHDOWN GG	08/26/25	<106.9	<93.14	<226.8	<94.49	<227.8	<95.31	<102.1
FISHUP	08/26/25	<80.83	<86.21	<146.8	<101.3	<163.9	<88.36	<86.10
FISHUP GG	08/26/25	<66.57	<56.80	<137.2	<71.94	<81.18	<56.13	<65.16

GG - indicates duplicate sample

Table 24, Food Products

Analysis: Gamma Isotopic, I-131		Units: pCi/kg		
Location	Collection Date	I-131	Cs-134	Cs-137
REQUIRED LLD →		60	60	80
VEG-CONT	02/10/25	<52.63	<31.75	<23.26
VEG-J	02/10/25	<46.08	<25.73	<29.75
VEG-CONT	05/07/25	<32.59	<23.56	<23.01
VEG-J	05/07/25	<41.05	<30.48	<28.64
VEG-CONT	08/05/25	<31.35	<23.49	<30.47
VEG-J	08/05/25	<48.95	<31.07	<27.14
VEG-CONT	11/04/25	<38.42	<19.40	<19.46
VEG-CONT GG	11/04/25	<29.63	<18.94	<20.09
VEG-J	11/04/25	<27.56	<13.82	<17.77
VEG-J GG	11/04/25	<37.68	<15.32	<19.80

GG - indicates duplicate sample

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

Table 25, Special Samples, Surface Water – Gamma Isotopic

Analysis: Gamma Isotopic			Units: pCi/L										
Location	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
OSN 007	03/19/25	<6.805	<5.183	<15.72	<7.434	<15.05	<8.417	<11.90	<9.510	<5.839	<7.065	<34.24	<6.901
OSN 007 GG	03/19/25	<6.246	<6.329	<14.54	<6.815	<12.58	<7.408	<10.64	<12.92	<6.653	<6.616	<30.64	<14.33
OSN 007	06/16/25	<7.569	<7.302	<18.72	<6.655	<16.07	<6.876	<9.727	<12.20	<6.187	<6.110	<33.65	<12.46
OSN 007 GG	06/16/25	<4.985	<6.531	<12.66	<8.639	<9.253	<5.063	<11.10	<14.23	<7.431	<7.582	<29.23	<8.461
OSN 007	09/30/25	<1.728	<1.877	<3.422	<2.237	<3.303	<1.897	<3.422	<3.863	<1.772	<1.839	<10.18	<3.649
OSN 007 GG	09/30/25	<7.188	<6.399	<14.61	<7.673	<14.12	<6.853	<13.82	<14.01	<8.776	<7.853	<37.48	<13.44
OSN 007	12/16/25	<6.614	<4.829	<11.43	<7.170	<13.25	<7.741	<9.252	<10.15	<6.929	<5.422	<30.68	<10.08
OSN 007 GG	12/16/25	<7.849	<7.427	<12.03	<6.171	<9.627	<6.266	<13.64	<12.69	<7.923	<6.945	<36.92	<10.83

GG - indicates duplicate sample

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

Table 26, Special Samples, Meat

Analysis: Gamma Isotopic			Units: pCi/kg					
Location	Date	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137
REQUIRED LLD →		130	130	260	130	260	130	150
DEER	12/01/25	<94.77	<126.9	<215.3	<102.7	<219.0	<120.3	<94.06

Attachment 3, Cross Check Intercomparison Program

Summary of Cross Check 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.

Teledyne Brown Engineering Environmental Services participated in the following proficiency testing studies provided by Environmental Resource Associates (ERA), and Eckert Ziegler Analytics in 2025. The Laboratory's intercomparison program results for 2025 are summarized below. The Environmental Dosimetry Quality Assurance Status Report for 2025 can be found on page 54.

Teledyne Brown Engineering Summary of Results

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 Eckert & Ziegler (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 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

C. DOE Evaluation Criteria
   MAPEP's evaluation report provides an acceptance range with associated flag values. MAPEP defines three levels of performance:
   1. Acceptable (flag = "A") - result within ± 20% of the reference value
   2. Acceptable with Warning (flag = "W") - result falls in the ± 20% to ± 30% of the reference value
   3. Not Acceptable (flag = "N") - bias is greater than 30% of the reference value

Note: The Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (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:

A. 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.

B. 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.

C. 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.

D. NCR 25-10: *IN-PROGRESS* Interlaboratory crosscheck failure: ERA MRAD 43, PU-239/240 (AS) in Air Particulate (filter).

E. 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.

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

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

Additional details can be found in the report, "4th Quarter 2025 Quality Assurance Report," Teledyne Brown Engineering Environmental Services, 2025.

TLD Annual QA Status Report

SUMMARY OF RESULTS

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.

Additional details can be found in the Environmental Dosimetry Company, 2025 Annual Quality Assurance Status Report.

Direct Radiation Dosimetry Results

Attachment 4, Environmental Direct Radiation Dosimetry Results

Monitoring Location	Quarterly Baseline B_Q (mrem)	Minimum Differential Dose B_Q+5 (mrem)	Normalized Quarterly Monitoring Data M_Q (mrem)				Quarterly Facility Dose $F_Q = M_Q - B_Q$ (mrem)				Annual Baseline B_A (mrem)	Minimum Differential Dose B_A+10.0 (mrem)	Annual Monitoring Data, MA (mrem)	Annual Facility Dose $F_A - M_A - B_A$ (mrem)
			QTR 1	QTR 2	QTR 3	QT$ 4	QTR 1	QTR 2	QTR 3	QTR 4				
M-01	15.0	20.0	14.8	14.3	14.0	14.8	ND	ND	ND	ND	60.0	70.0	57.9	ND
M-07	13.9	18.9	13.6	13.4	17.5	13.9	ND	ND	ND	ND	55.5	65.5	58.4	ND
M-09	13.1	18.1	14.2	13.3	12.9	13.7	ND	ND	ND	ND	52.3	62.3	54.0	ND
M-10	12.0	17.0	13.2	11.4	10.8	11.3	ND	ND	ND	ND	48.1	58.1	46.7	ND
M-14	14.2	19.2	13.9	13.4	14.6	14.5	ND	ND	ND	ND	56.7	66.7	56.3	ND
M-16	14.1	19.1	14.6	13.7	14.1	14.5	ND	ND	ND	ND	56.2	66.2	56.9	ND
M-19	12.7	17.7	13.9	11.7	12.7	13.1	ND	ND	ND	ND	50.7	60.7	51.4	ND
M-21	15.2	20.2	15.3	15.3	15.9	17.0	ND	ND	ND	ND	60.9	70.9	63.4	ND
M-22	11.6	16.6	11.6	11.1	11.9	13.1	ND	ND	ND	ND	46.5	56.5	47.7	ND
M-23	11.8	16.8	14.2	10.2	11.9	12.3	ND	ND	ND	ND	47.6	57.6	48.6	ND
M-25	11.7	16.7	12.5	--	14.1	12.5	ND	--	ND	ND	46.3	56.3	52.1	ND
M-28	14.3	19.3	13.8	13.6	17.0	15.2	ND	ND	ND	ND	57.0	67.0	59.6	ND
M-31	12.0	17.0	10.8	12.2	10.5	14.2	ND	ND	ND	ND	47.9	57.9	47.7	ND
M-33	15.0	20.0	14.7	14.4	14.7	14.7	ND	ND	ND	ND	60.0	70.0	58.6	ND
M-36	11.8	16.8	11.6	11.4	12.0	12.4	ND	ND	ND	ND	47.3	57.3	47.4	ND
M-38	12.9	17.9	12.2	11.4	13.3	13.0	ND	ND	ND	ND	51.6	61.6	49.8	ND
M-39	12.3	17.3	11.8	12.0	12.7	12.8	ND	ND	ND	ND	49.5	59.5	49.4	ND
M-40	8.5	13.5	10.1	8.3	8.8	9.6	ND	ND	ND	ND	34.3	44.3	36.8	ND
M-48	13.5	18.5	12.5	13.4	13.4	14.2	ND	ND	ND	ND	53.9	63.9	53.5	ND
M-49	14.4	19.4	14.5	14.0	14.0	15.1	ND	ND	ND	ND	57.8	67.8	57.6	ND
M-50	13.2	18.2	14.4	12.4	13.7	13.8	ND	ND	ND	ND	52.6	62.6	54.4	ND
M-55	14.5	19.5	15.7	14.0	14.5	14.8	ND	ND	ND	ND	58.1	68.1	59.0	ND

Direct Radiation Dosimetry Results

Monitoring Location	Quarterly Baseline B_Q (mrem)	Minimum Differential Dose B_Q+5 (mrem)	Normalized Quarterly Monitoring Data M_Q (mrem)				Quarterly Facility Dose $F_Q = M_Q - B_Q$ (mrem)				Annual Baseline B_A (mrem)	Minimum Differential Dose B_A+10.0 (mrem)	Annual Monitoring Data, MA (mrem)	Annual Facility Dose $F_A - M_A - B_A$ (mrem)
			QTR 1	QTR 2	QTR 3	QT$ 4	QTR 1	QTR 2	QTR 3	QTR 4				
M-57	15.0	20.0	14.2	14.7	15.1	15.2	ND	ND	ND	ND	59.9	69.9	59.2	ND
M-94	13.7	18.7	14.0	12.8	13.4	14.0	ND	ND	ND	ND	54.7	64.7	54.3	ND
M-95	10.3	15.3	11.7	10.7	10.1	10.9	ND	ND	ND	ND	41.2	51.2	43.5	ND
M-96	11.6	16.6	13.8	12.3	12.4	13.1	ND	ND	ND	ND	46.3	56.3	51.6	ND
M-97	10.9	15.9	12.0	10.6	10.3	11.3	ND	ND	ND	ND	43.6	53.6	44.2	ND
M-98	14.9	19.9	16.2	14.4	14.4	15.3	ND	ND	ND	ND	59.5	69.5	60.2	ND
M-99	15.6	20.6	17.2	15.4	15.7	16.8	ND	ND	ND	ND	62.3	72.3	65.2	ND
M-100	14.0	19.0	15.3	13.4	13.3	14.6	ND	ND	ND	ND	55.8	65.8	56.6	ND

MDD_Q = Quarterly Minimum Differential Dose = 5 mrem
MDD_A = Annual Minimum Differential Dose = 10 mrem
ND = Not Detected, where $M_Q \leq (B_Q + MDD_Q)$ or $M_A \leq (B_A + MDD_A)$