2024
Annual Radiological Environmental Operating Report

Docket Number: 50-010, 50-237, 50-249

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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

Dresden Clean Energy Center 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 Dresden Station REMP is to evaluate the impact of the station on the environment. Environmental samples from different media are monitored as part of the program in accordance with specifications detailed in the Offsite Dose Calculation Manual (ODCM). The program compares data from Indicator locations near the plant, to Control locations farther away from the site to assess operation impacts.

The Annual Radiological Environmental Operating Report (AREOR) provides data obtained through analyses of environmental samples collected at Dresden Station for the reporting period of January 1st through December 31st, 2024. During that time period 1,872 analyses were performed on 1,751 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 Dresden Station, 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. All values were consistent with historical results which indicate no adverse radiological environmental impacts associated with the operation of Dresden Station. 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].

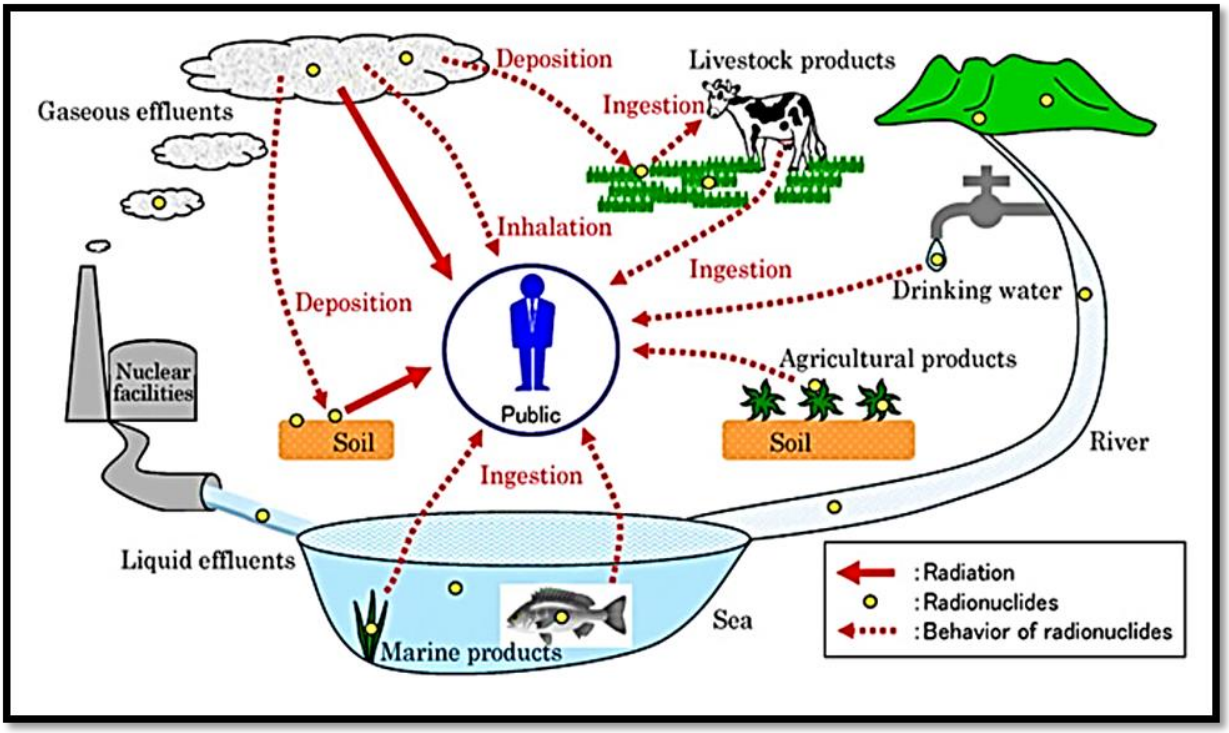

Figure 1, Potential exposure pathways to Members of the Public due to Plant Operations [7]

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 State of Illinois, Dresden Station Technical Specifications, and Offsite Dose Calculation Manual (ODCM). These governing documents dictate the environmental sampling, sample analysis protocols, data reporting and quality assurance requirements for the environmental monitoring program.

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

4.0 SITE DESCRIPTION AND SAMPLE LOCATIONS

The Dresden Nuclear Power Station (DNPS), consisting of one retired reactor and two operating boiling water reactors owned and operated by Constellation Energy Corporation, is located in Grundy County, Illinois. Unit No. 1 went critical in 1960 and was retired in 1978. Unit No. 2 went critical on 16 June 1970. Unit No. 3 went critical on 02 November 1971. The site is located in Northern Illinois, approximately 12 miles southwest of Joliet, Illinois at the confluence of the Des Plaines and Kankakee Rivers where they form the Illinois River.

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

- Table 1, Radiological Environmental Sampling Program – Exposure Pathway – Direct Radiation
- Table 2, Radiological Environmental Sampling Program – Exposure Pathway - Airborne
- Table 3, Radiological Environmental Sampling Program – Exposure Pathway - Waterborne
- Table 4, Radiological Environmental Sampling Program – Exposure Pathway - Ingestion
- Table 5, REMP Sampling Locations – Direct Radiation
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- Figure 2, Dresden Station Inner Ring OSLD Locations, 2024
- Figure 3, Dresden Station Fixed Air Sampling and OSLD Sites, Outer Ring OSLD Locations, 2024

5.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM REQUIREMENTS

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

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Direct Radiation 46 OSLD monitoring stations with two dosimeters placed as follows: An inner ring of stations, one in each compass sector in the general area of the site boundary. An outer ring of stations, one in each compass sector at approximately 5 miles from the site An "other" set located at the thirteen fixed air sampling locations A control location	See Table 5	Quarterly	Gamma dose Quarterly

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

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Airborne Radioiodine and Particulates Samples from 14 locations: Nine locations close to the site boundary in different sectors of the highest calculated annual average ground level relative deposition factor (D/Q). Four samples from the vicinity of a community having the highest calculated annual average D/Q. One sample from a Control Location between 6.2 – 18.6 miles away in the least predominant wind direction.	D-01 Onsite Station 1, 0.8 miles NW D-02 Onsite Station 2, 0.3 miles NNE D-03 Onsite Station 3, 0.4 miles D-04 Collins Road, on Station, 0.8 miles W D-07 Clay Products, Dresden Road, 2.6 miles S D-08 Jugtown Road, Prairie Parks, 3.8 miles SW D-10 Goose Lake Road, Goose Lake Village, 3.5 miles SSW D-12 Quarry Road, Lisbon(C), 10.5 miles NW D-14 Center Street, Channahon,3.7 miles NE D-45 McKinley Woods Road, Channahon, 1.7 miles ENE D-53 Will Road, Hollyhock, 2.1 miles SSE D-55 Ridge Road, Minooka, 4.3 miles N D-56 Will Road, Wildfeather, 1.7 miles SE D-58 Will Road, Marina, 1.1 miles ESE	One-week of continuous air sampling through glass fiber filter paper One week composite of continuous air sampling through charcoal filter	Particulate sampler: Gross Beta analysis following weekly filter change and Gamma isotopic quarterly on composite filters by location on near field and control samples. Radioiodine canister: I-131 analysis weekly on near field and control samples.

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

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Surface Water Two samples upstream (control) and one sample downstream	D-21 Illinois River at EJ&E Bridge, D-52 DesPlaines River at Will Road, Upstream(C), D-57 Kankakee River at Will Road(C),	Monthly composite sample or monthly composite from weekly grab samples. Quarterly composite of monthly composite samples	Gamma isotopic Monthly Gross beta Monthly H-3 Quarterly
Groundwater/Well Water Three indicator locations down gradient from the plant, only if likely to be affected.	D-22 8150 N. Thorsen Rd, IL, 0.8 miles SSE D-35 Dresden Lock & Dam Morris, IL, 0.8 miles NW D-39 3985 Will Rd., Coal City, IL, 3.2 miles SSE	Quarterly grab samples	Gamma isotopic Quarterly H-3 Quarterly
Sediment from Shoreline One sample downstream (indicator)	D-27 Illinois River at Dresden Lock and Dam, Downstream, 0.8 miles NW	Semiannual grab samples	Gamma isotopic Semiannually

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

Requirement	Sample Location Description, Distance, and Direction	Sampling Collection/ Frequency	Type and Frequency of Analyses
Goat Milk Sample from milking animal from a maximum of three locations within 5km (3.1 miles) distance.	D-60* 8270 Duck Pond Road, Coal City, IL. 60416, 4.2 miles S	Semimonthly when animals are on pasture (May through October), monthly at other times (November through April)	Gamma isotopic and I-131 analysis on each sample
Fish One sample upstream and one sample downstream of each commercially and recreationally important species in vicinity of site discharge.	D-28 Dresden Pool of Illinois River, Downstream, 0.9 miles NNW D-46 DesPlaines River, Upstream (C), 1.2 miles ESE	Samples collected twice annually via electroshocking or other techniques	Gamma isotopic analysis on edible portions
Vegetation Five broad leaf vegetation grown nearest each of two different offsite locations of highest predicted annual average ground level D/Q if milk sampling is not performed and one sample collected from the control location.	D-25 Vince Biros Farm, Reed Road(C), 11.3 miles SW D-39* 3985 Will Rd., Coal City, IL, 3.2 miles SSE D-42 Dresden Site Garden, 0.4 miles N D-43 25158 W Elm St, 3.3 miles NE D-44 9980 Ridge Road, 3.0 miles N	Grab samples July through September	Gamma isotopic on each sample

*These locations are currently not listed in the ODCM but are included as sampling is being done. The ODCM will be updated to include these locations with the appropriate sampling frequency (CA 04780725-02).

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
D-101	Inner Ring	N	1.0 miles	
D-102	Inner Ring	NNE	1.4 miles	
D-103	Inner Ring	NE	1.2 miles	
D-104	Inner Ring	ENE	1.7 miles	
D-105	Inner Ring	E	1.5 miles	
D-106	Inner Ring	ESE	1.1 miles	
D-107	Inner Ring	SE	1.4 miles	
D-108	Inner Ring	SSE	1.9 miles	
D-109	Inner Ring	S	0.8 miles	
D-110	Inner Ring	SSW	0.9 miles	
D-111	Inner Ring	SW	0.6 miles	
D-112	Inner Ring	WSW	0.7 miles	
D-113	Inner Ring	W	0.9 miles	
D-114	Inner Ring	WNW	0.9 miles	
D-115	Inner Ring	NW	0.8 miles	
D-116	Inner Ring	NNW	1.0 miles	
D-201	Outer Ring	N	4.8 miles	
D-202	Outer Ring	NNE	5.1 miles	
D-203	Outer Ring	NE	4.7 miles	
D-204	Outer Ring	ENE	5.1 miles	
D-205	Outer Ring	E	4.0 miles	
D-206	Outer Ring	ESE	3.5 miles	
D-207	Outer Ring	SE	4.2 miles	

Table 5, REMP Sampling Locations – Direct Radiation

Site #	Location Type	Sector	Distance	Description
D-208	Outer Ring	SSE	4.9 miles	
D-209	Outer Ring	S	4.1 miles	
D-210	Outer Ring	SSW	4.9 miles	
D-211	Outer Ring	SW	4.8 miles	
D-212	Outer Ring	WSW	6.0 miles	
D-213	Outer Ring	W	4.6 miles	
D-214	Outer Ring	WNW	5.0 miles	
D-215	Outer Ring	NW	4.8 miles	
D-216	Outer Ring	NNW	4.9 miles	
D-01	Other	NW	0.8 miles	Onsite 1
D-02	Other	NNE	0.3 miles	Onsite 2
D-03	Other	S	0.4 miles	Onsite 3
D-04	Other	W	0.8 miles	Collins Road, on Station property
D-07	Other	S	2.6 miles	Clay Products, Dresden Road
D-08	Other	SW	3.8 miles	Jugtown Road, Prairie Parks
D-10	Other	SSW	3.5 miles	Goose Lake Road, Goose Lake Village
D-14	Other	NE	3.7 miles	Center Street, Channahon
D-45	Other	ENE	1.7 miles	McKinley Woods Road, Channahon
D-53	Other	SSE	2.1 miles	Will Road, Hollyhock
D-55	Other	N	4.3 miles	Ridge Road, Minooka
D-56	Other	SE	1.7 miles	Will Road, Wildfeather
D-58	Other	ESE	1.1 miles	Will Road, Marina
D-12	Control	NW	10.5 miles	Lisbon

6.0 MAPS OF COLLECTION SITES

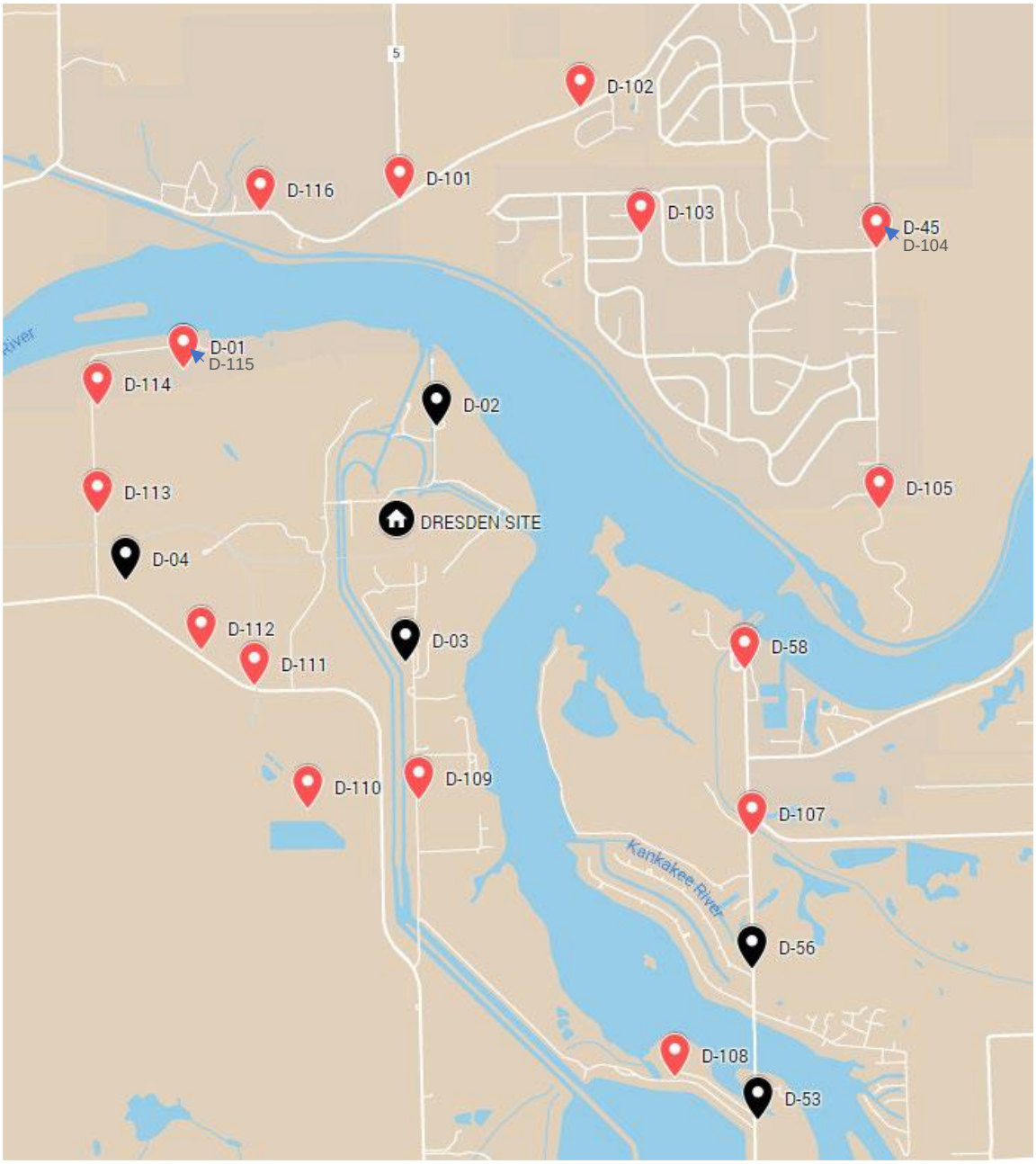


Figure 2, Dresden Station Inner Ring OSLD Locations, 2024

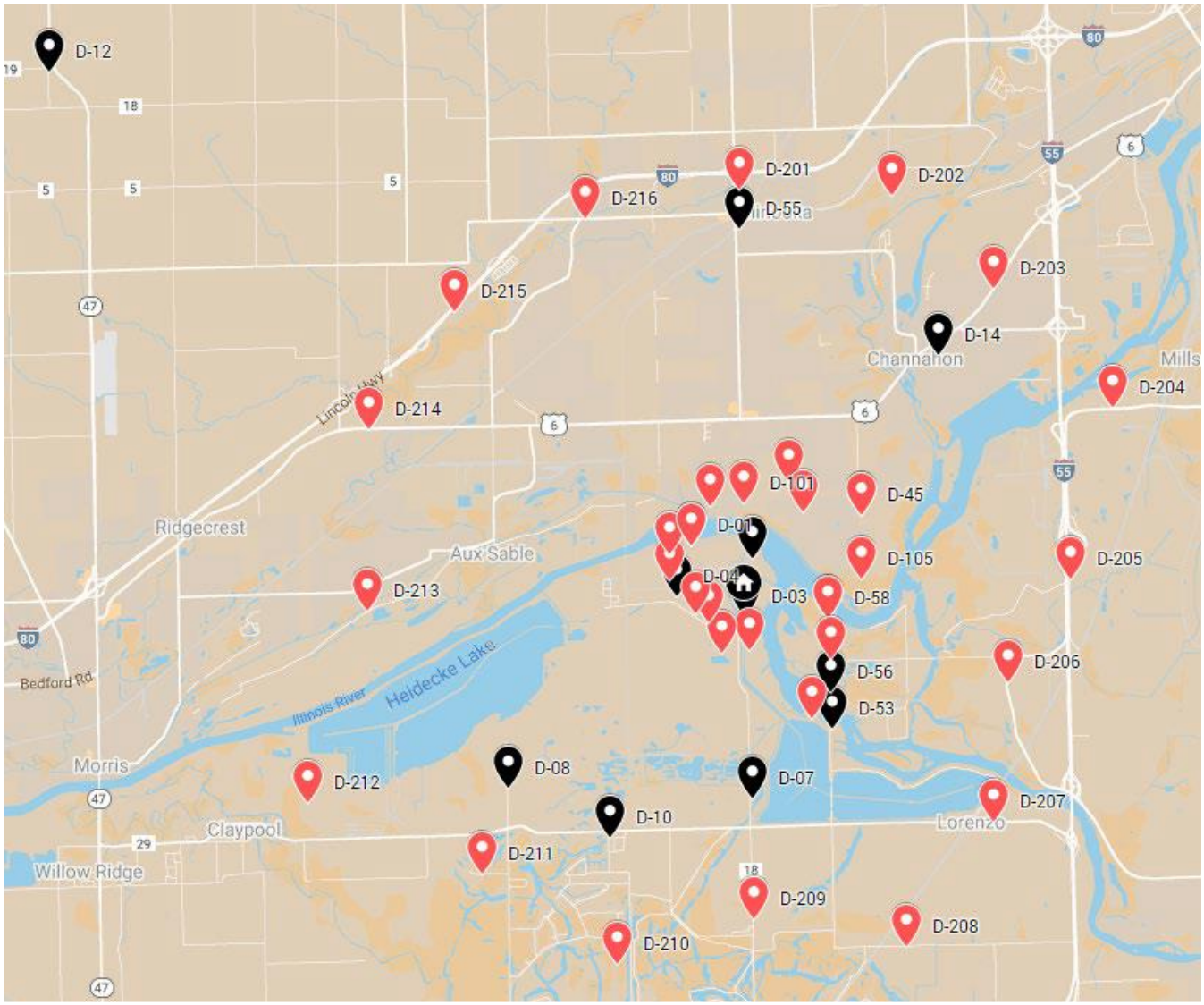


Figure 3, Dresden Station Fixed Air Sampling and OSLD Sites, Outer Ring OSLD Locations, 2024

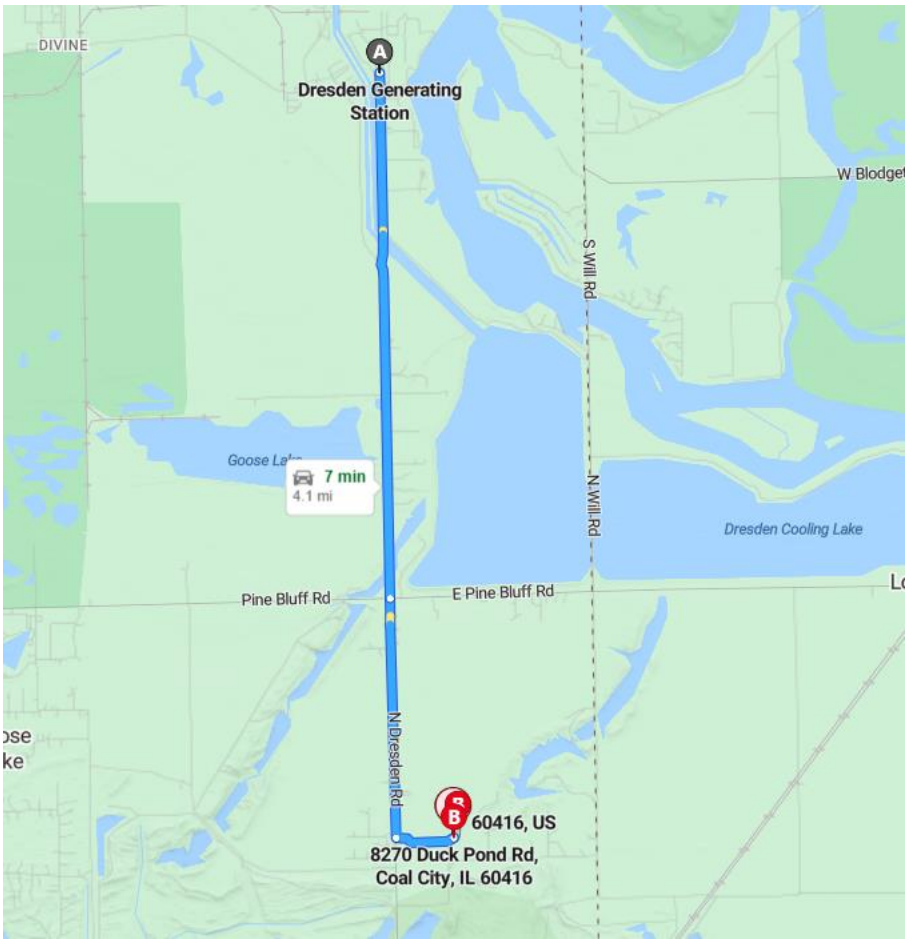


Figure 4, Dresden Goat Milk Sample Location, 2024

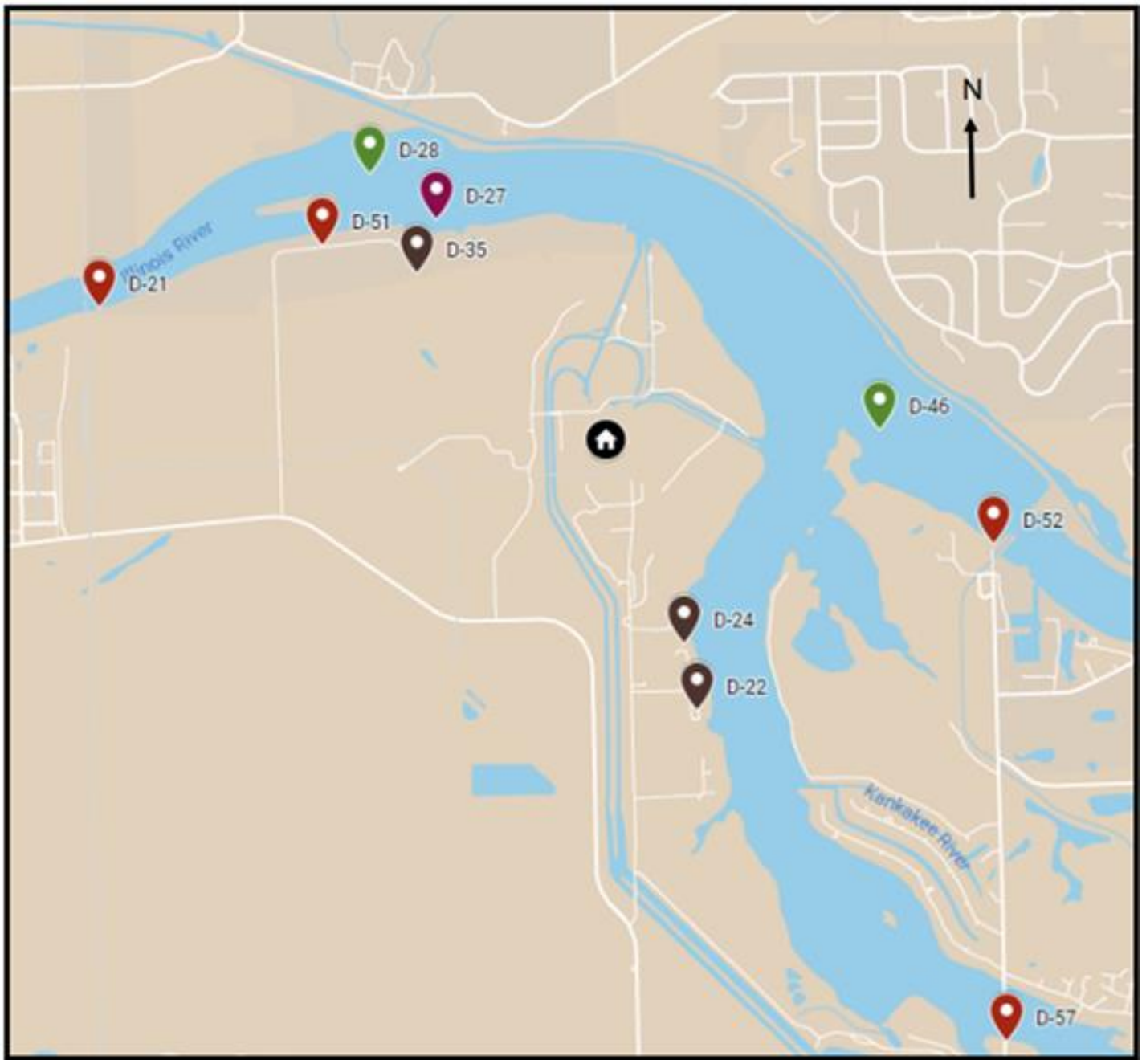


Figure 5, Dresden Station Water, Sediment, and Fish Sampling Locations, 2024

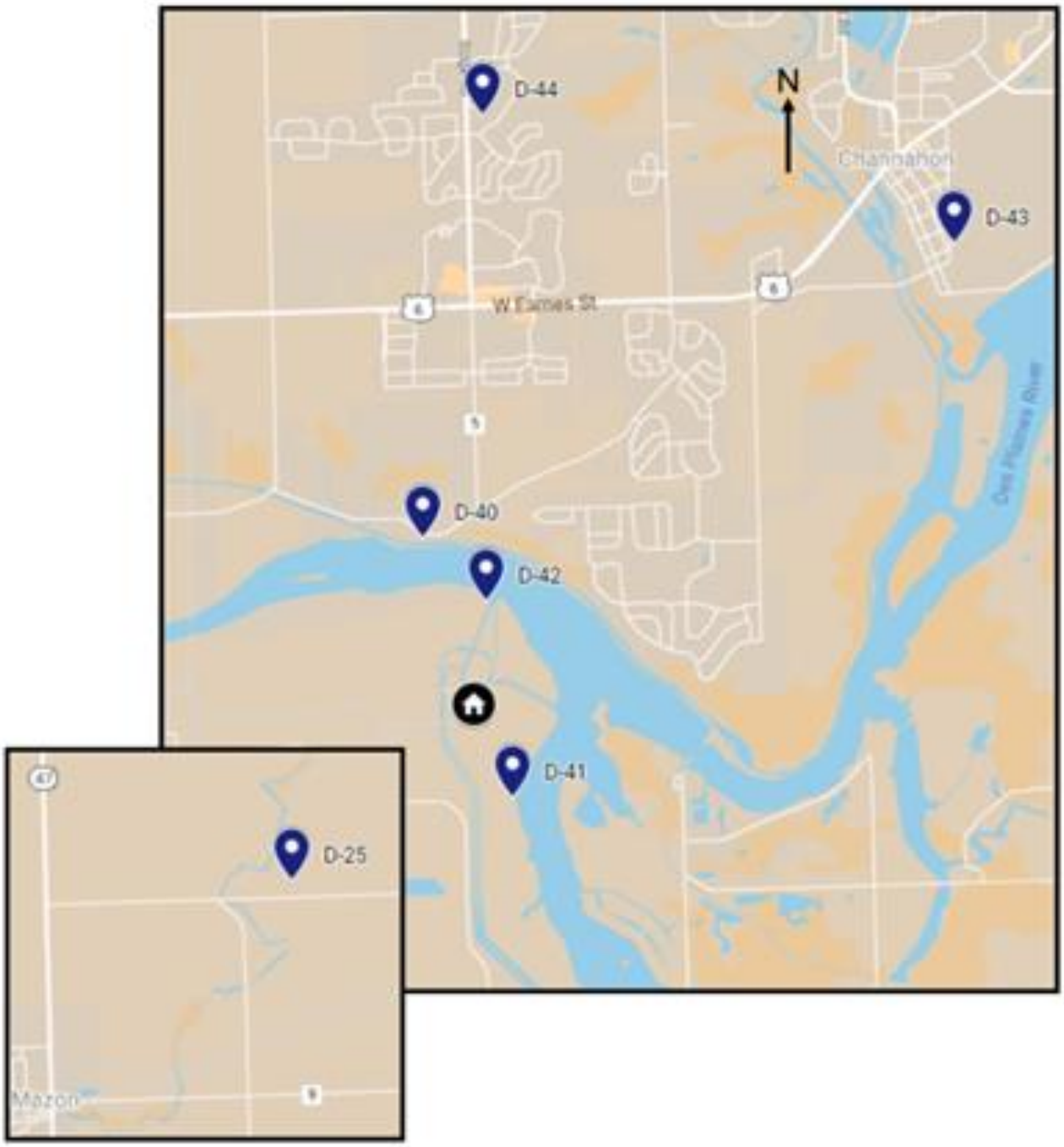


Figure 6, Dresden Station Broadleaf Vegetation Sampling Locations, 2024

7.0 REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Table 6, Reporting Levels for Radioactivity Concentrations in Environmental Samples

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

Table 7, 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	0.01	NA	NA	NA	NA
H-3	2,000 (3)	NA	NA	NA	NA	NA
Mn-54	15	NA	130	NA	NA	NA
Fe-59	30	NA	260	NA	NA	NA
Co-58, Co-60	15	NA	130	NA	NA	NA
Zn-65	30	NA	260	NA	NA	NA
Zr-95	30	NA	NA	NA	NA	NA
Nb-95	15	NA	NA	NA	NA	NA
I-131	1 (4)	0.07	NA	1	60	NA
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180

[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

Table 7, Maximum Values for the Limit of Detection Cont'd

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)
Ba-140	60	NA	NA	60	NA	NA
La-140	15	NA	NA	15	NA	NA

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 results 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, 2024, are described below.

In the following sections, results from direct radiation, air, water, and food products analyzed as part of REMP in 2024 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 2024, a total of 46 locations were monitored and data. Attachment 4, Environmental Direct Radiation Dosimetry Results, provides the annual direct radiation dosimetry analysis.

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

8.2 Air Particulate and Radioiodine Sample Results

Air particulate filters and charcoal canisters were collected from locations specified in Table 2, Radiological Environmental Sampling Program – Exposure Pathway - Airborne. During the calendar year 2024, a total of 727 samples were collected and analyzed for gross beta, gamma emitters and iodine. Particulate samplers are used to continuously collect airborne particulates on a filter. The samples are analyzed for gross beta activity following filter changeout which occurs weekly. Gamma isotopic analysis is also performed on the samples collected at each location and is analyzed quarterly. Radioiodine (I-131) analysis is performed weekly on radioiodine sample cartridges.

All air particulate and radioiodine samples were below detection limit and all air particulate gamma composite samples were below the detection limit except for naturally occurring radionuclides.

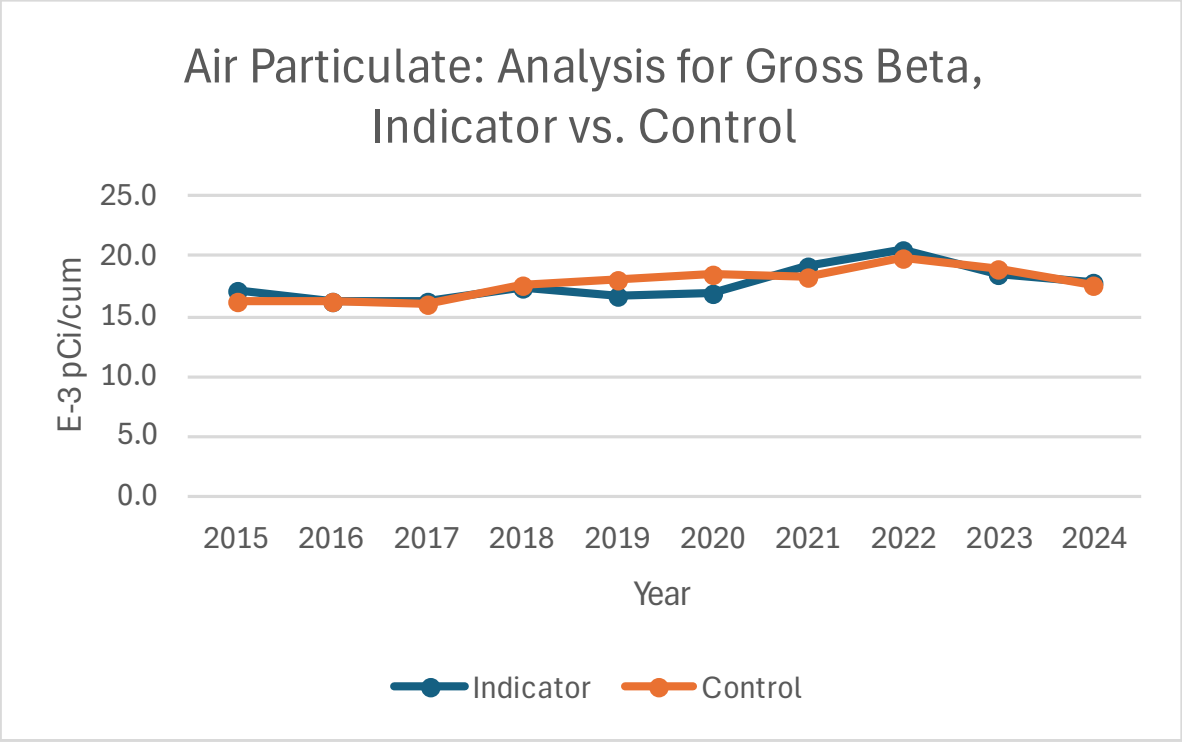


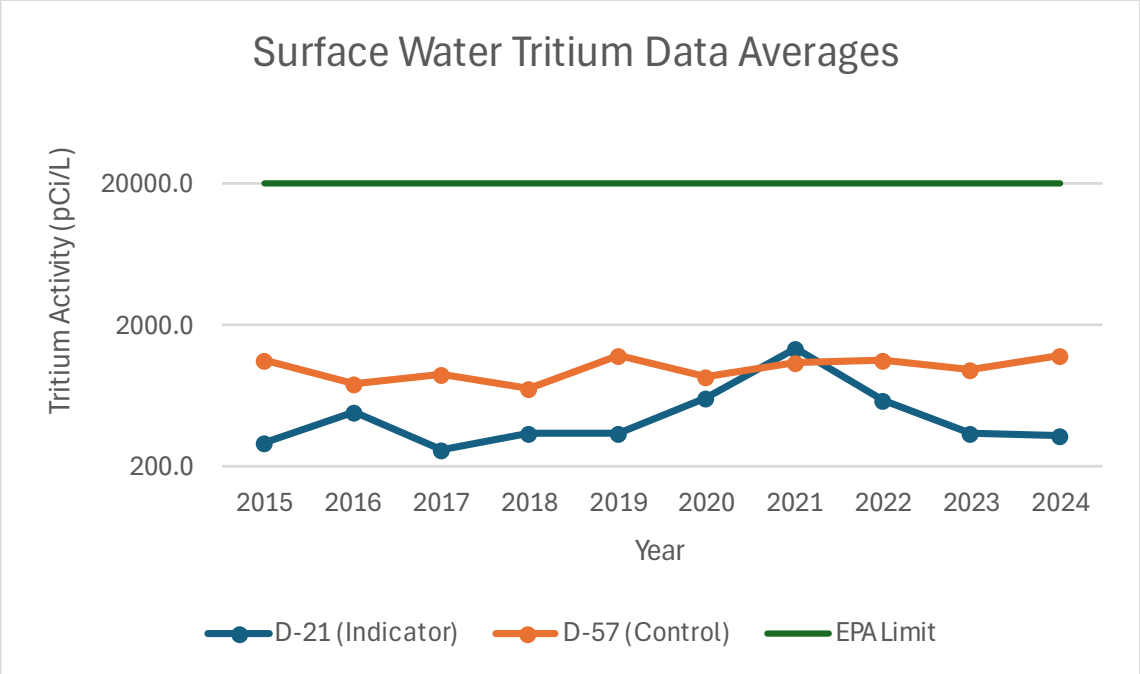
Figure 7, Air Particulate: Analysis for Gross Beta, Average for All Indicator vs. Control Location

Air particulate and radioiodine results from this monitoring period, 2024, were compared to a 10-year average as shown in Figure , and there were no significant change.

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 Gross Beta and gamma emitters. Aliquots from the monthly composites are combined to form a quarterly composite which is then analyzed for tritium. During the calendar year 2024, a total of 36 surface water samples were collected and analyzed in accordance with the requirements in the ODCM and shown in Table 3, Radiological Environmental Sampling Program – Exposure Pathway - Waterborne. Gross Beta was detected in 33 of the 36 samples with a range of 3 to 14 pCi/L. In the 3 samples that were non-detect for gross beta, the required LLD of 4 pCi/L was met. Samples from all locations were analyzed for gamma-emitting nuclides. No gamma-emiting nuclides were detected and all required LLDs were met. Tritium was detected in seven samples with concentrations ranging from 230 to 1780 pCi/L (Table 19, Quarterly Surface Water Tritium (pCi/L ± 2 Sigma)). Tritium concentrations in surface water were well below the EPA tritium drinking water limit of 20,000 pCi/L and were consistent with expected levels as a result of permitted liquid discharges.



*There are no detected tritium results for D-52(Indicator). If there are detected results in the future, it will be added to the graph for trending.

Figure 8: Surface Water Tritium Results

8.3.2 REMP Groundwater

Groundwater samples were collected from control location upgradient from the plant and indicator location down gradient from the plant. During the calendar year 2024, a total of 12 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 three indicator sample locations were collected. These samples were analyzed for tritium and gamma quarterly. All samples were collected in new unused plastic bottles, which were rinsed with source water prior to collection.

Samples from all locations were analyzed for gamma-emitting nuclides. No nuclides were detected and all required LLDs were met. There has been no detectable tritium in any REMP groundwater samples in 2024 or the previous 10 years, therefore, no trend has been established above the detection limit to plot on a trending graph.

8.3.3 Sediment from Shoreline

Shoreline sediment collections were made in May and October, 2024 and analyzed for gamma-emitting isotopes. Samples are collected from an indicator location. A total of 2 shoreline samples were analyzed in accordance with requirements in the ODCM and shown in Table 3, Radiological Environmental Sampling Program – Exposure Pathway - Waterborne.

No nuclides potentially associated with Dresden Station were detected and all required LLDs were met.

8.4 Ingestion Pathway Sample Results

8.4.1 Milk

If there are no milk samples within 5 km, samples may be collected from three areas between 5 – 8 km away from plant center, where doses are calculated to be greater than 1 mrem per year. Milk and vegetation samples were collected June-December and were analyzed for gamma-emitting isotopes and Iodine-131(Low Level).

No nuclides potentially associated with Dresden Station were detected and all required LLDs were met.

A new location for milk sample was found in June 2024. Milk samples were collected on a monthly basis, and the results are provided in Attachment 1 below. However, the ODCM manual was not updated to reflect the new sample location. The sample location will be added to the ODCM manual as part of the REMP sampling (CA 04780725-02).

8.4.2 Fish

A total of 8 fish samples were collected in 2024. These samples were analyzed for gamma emitting radionuclides in edible portions, in accordance with requirements of the ODCM and summarized in Table 4, Radiological Environmental Sampling Program – Exposure Pathway - Ingestion. These samples are collected from the indicator and control areas as required by the ODCM.

No nuclides potentially associated with Dresden Station were detected and all required LLDs were met.

8.4.3 Leafy Vegetation

In accordance with the ODCM and as described in Table 4, Radiological Environmental Sampling Program – Exposure Pathway - Ingestion, 51 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 from the indicator and control locations monthly during growing season. 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 and Fukushima events.

Two locations mentioned in the ODCM, D-40 and D-41, are no longer being sampled. The ODCM will be updated to exclude these two locations.

No nuclides potentially associated with Dresden Station were detected and all required LLDs were met.

9.0 LAND USE CENSUS

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

A Land Use Census was conducted during the calendar year, 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 8: Land Use Census – Nearest Receptors within 11.4 miles. In summary, the highest D/Q locations for nearest livestock and nearest residence did not change following the 2024 census, while there was a change to the milking animal. An additional location for milking animals was added due to the previous location no longer being able to provide milk.

Table 8: Land Use Census – Nearest Receptors within 11.4 miles

Sector	Direction	Nearest Residence	Distance (Miles)	Nearest Milk Animal	Distance (Miles)	Livestock	Distance (Miles)
A	N	27141 Basswood Drive, on Ridge Rd.; east side.	1.5			V. Dollinger, Ridge Road, north of Cemetery Rd.	1.4
B	NNE	John Orr, Off Hansel Rd. just past Bennitt Rd.; house on ridge across from station	0.8				
C	NE	26618 Kimberly Road; Highland Estates	0.8				
D	ENE	Lindstrom, 26605 Highland Drive	0.7			McDonald Farm, east side of McKinley Park Rd.; east side of road at D-45	1.7
E	E	Ray and Janet Page, 26223 Highland Drive, west on Highland Dr. and off Mckinley Road.	1.1				
F	ESE	Harold Klinger, 6579 N. Will Road, near Yacht Club and TLD 106	1.1				
G	SE	McIntosh, 8495 Pheasant Trail, east bank of Kankakee River; on point of land between Des Plaines and Kankakee River	0.6				
H	SSE	Kenneth McMillian, 8110 Blanchard Court, end of Blanchard Road and Kankakee River; west bank	0.5				
J	S	Brian Blottiaux, 6450 Dresden Road, corner of Blanchard Ct. and Dresden Rd.	0.5	8270 Duck Pond Road, Coal City, IL. 60416	4.2		
K	SSW	6990 Pine Bluff Road, David Grohne-owner; Erickson-resident; north side of Pine Bluff Rd., 1st farm west of Dresden Rd.	3.3				

Table 8: Land Use Census – Nearest Receptors within 11.4 miles Cont'd

Sector	Direction	Nearest Residence	Distance (Miles)	Nearest Milk Animal	Distance (Miles)	Livestock	Distance (Miles)
L	SW	Bill Boarshore, 5240 Pine Bluff Road, east of the corner of Jugtown and Pine Bluff Rd.	3.6	Biros Dairy Farm, Reed Road and Rt.47; east one Reed 1.2 miles; farm on north side of road.	11.4		
M	WSW	2605 E. Collins Rd.	5.5				
N	W	Don Ehret, 4897 Cemetery Road	3.5			Constellation Property, just past Dresden Road	0.5
P	WNW	Don Williams, 5480 Commercial Road, near corner of Rt. 6 and Quantum Rd.	3.2			Constellation Property, just past Dresden Road	0.5
Q	NW	Dean Briscoe, 6700 Rt. 6, 0.4 miles from McLindon Road	2.2			Constellation Property, just past Dresden Road	0.5
R	NNW	27231 Deer Hollow Ln. Channahon, IL.	1.5			V. Dollinger, Hansel Road, 0.4 miles west of Ridge Road.	1.0

10.0 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 2024, 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	Location	Collection Date or Period	Reason for not conducting REMP sampling as required by ODCM	Plans for preventing reoccurrence
AP/AI	D-03	01/05/2024	No power at the location during the whole collection period.	Actions have been assigned to address power failure and missing OSLD.
AP/AI	D-03	01/12/2024	No power at the location during the whole collection period.	
AP/AI	D-12	01/12/2024	Power failure at the station. Sample was too small to collect. Volume was calculated to be 12.1 m^3, where typical sample volume is approximately 260-300 m^3. Activity calculations involve division of the sample volume therefore, low sample volume causes erroneously high result.	
AP/AI	D-01	01/19/2024	No power at the station during the whole collection period	
AP/AI	D-03	01/19/2024	No power at the station during the whole collection period	
AP/AI	D-04	01/19/2024	No power at the station during the whole collection period	
SW	D-52	01/19/2024	No sample due to the river being frozen.	
AP/AI	D-03	01/26/2024	No power at the station during the whole collection period	
AP/AI	D-04	01/26/2024	No power at the station during the whole collection period	
OSLD	D-108-1,2	3rd Quarter 2024	Both OSLDs missing, possibly due to vandalism.	
AP/AI	D-02	11/15/2024	Pump stopped running after a short circuit.	
AP/AI	D-53	11/15/2024	Pump found not running due to a power failure.	
AP/AI	D-02	11/22/2024	No power at the station during the whole collection period	
AP/AI	D-02	11/29/2024	No power at the station during the whole collection period	
AP/AI	D-02	12/06/2024	No power at the station during the whole collection period	
SW	D-52	12/06/2024	No sample due to the river being frozen.	
AP/AI	D-02	12/13/2024	No power at the station during the whole collection period	
SW	D-52	12/13/2024	No sample due to the river being frozen.	
AP/AI	D-02	12/20/2024	No power at the station during the whole collection period	
AP/AI	D-02	12/27/2024	No power at the station during the whole collection period	

11.0 OTHER SUPPLEMENTAL INFORMATION

11.1 NEI 07-07 Onsite Radiological Groundwater Monitoring Program

Dresden Clean Energy Center 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 Corrections to Previous Reports

No corrections made to previous reports in 2024.

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Attachment 1, Data Table Summary

Table 10: Dresden Station Data Summary Table

Medium or Pathway Sampled (Units)	Type, Total Number of Analyses performed (e.g., I-131, 400)		Lower Limit of Detection (LLD)	Indicator Mean[5]; (f[6]). Range[5]	Location with Highest Annual Mean		Control Mean[5] (f[6]). Range[5]	Number of Nonroutine Reported Measurements
					Name Distance and Direction	Mean[5] (f[6]) Range[5]		
Air Particulates (E-03 pCi/m^3)	Gross Beta, 727		10	17.9 (673/674) (5.4/59.2)	D-12 Lisbon 10.5 miles NW	26.7 (53/53) (7.1/503)	26.7 (53/53) (7.1/503)	0
	Gamma, 56	Mn-54	N/A	< LLD	< LLD	< LLD	< LLD	0
		Co-58	N/A	< LLD	< LLD	< LLD	< LLD	0
		Fe-59	N/A	< LLD	< LLD	< LLD	< LLD	0
		Co-60	N/A	< LLD	< LLD	< LLD	< LLD	0
		Zn-65	N/A	< LLD	< LLD	< LLD	< LLD	0
		Nb-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		Zr-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		I-131	N/A	< LLD	< LLD	< LLD	< LLD	0
		Cs-134	50	< LLD	< LLD	< LLD	< LLD	0
		Cs-137	60	< LLD	< LLD	< LLD	< LLD	0
		Ba-140	N/A	< LLD	< LLD	< LLD	< LLD	0
		La-140	N/A	< LLD	< LLD	< LLD	< LLD	0
Airborne Radioiodine (E-03 pCi/m^3)	Gamma, 727 I-131		70	< LLD	< LLD	< LLD	N/A	0
Direct Radiation (mrem/qtr.)	Gamma Dose, 183		N/A	20.5 (179/179) (13.2/29.9)	D-110 0.9 miles SSW	25.1 (4/4) (23/29.9)	20.3 (4/4) (17/23.7)	0

[5] Mean and range are based on detectable measurements only.

[6] Fraction are based on detectable measurements at specified locations is indicated in parentheses.

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Table 10: Dresden Station Data Summary Table

Medium or Pathway Sampled (Units)	Type, Total Number of Analyses performed (e.g., I-131, 400)		Lower Limit of Detection (LLD)	Indicator Mean[5]; (f[6]). Range[5]	Location with Highest Annual Mean		Control Mean[5] (f[6]). Range[5]	Number of Nonroutine Reported Measurements
					Name Distance and Direction	Mean[5] (f[6]) Range[5]		
Goat Milk (pCi/L)	I-131 (Low Level), 5		1	< LLD	< LLD	< LLD	N/A	0
	Gamma, 5	Mn-54	N/A	< LLD	< LLD	< LLD	N/A	0
		Co-58	N/A	< LLD	< LLD	< LLD	N/A	0
		Fe-59	N/A	< LLD	< LLD	< LLD	N/A	0
		Co-60	N/A	< LLD	< LLD	< LLD	N/A	0
		Zn-65	N/A	< LLD	< LLD	< LLD	N/A	0
		Nb-95	N/A	< LLD	< LLD	< LLD	N/A	0
		Zr-95	N/A	< LLD	< LLD	< LLD	N/A	0
		I-131	60	< LLD	< LLD	< LLD	N/A	0
		Cs-134	60	< LLD	< LLD	< LLD	N/A	0
		Cs-137	80	< LLD	< LLD	< LLD	N/A	0
		Ba-140	N/A	< LLD	< LLD	< LLD	N/A	0
		La-140	N/A	< LLD	< LLD	< LLD	N/A	0
Vegetation (pCi/Kg-wet)	Gamma, 51	Mn-54	N/A	< LLD	< LLD	< LLD	< LLD	0
		Co-58	N/A	< LLD	< LLD	< LLD	< LLD	0
		Fe-59	N/A	< LLD	< LLD	< LLD	< LLD	0
		Co-60	N/A	< LLD	< LLD	< LLD	< LLD	0
		Zn-65	N/A	< LLD	< LLD	< LLD	< LLD	0
		Nb-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		Zr-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		I-131	60	< LLD	< LLD	< LLD	< LLD	0
		Cs-134	60	< LLD	< LLD	< LLD	< LLD	0
		Cs-137	80	< LLD	< LLD	< LLD	< LLD	0
		Ba-140	N/A	< LLD	< LLD	< LLD	< LLD	0
		La-140	N/A	< LLD	< LLD	< LLD	< LLD	0

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[6] Fraction are based on detectable measurements at specified locations is indicated in parentheses.

Attachment 1, Data Table Summary

Table 10: Dresden Station Data Summary Table

Medium or Pathway Sampled (Units)	Type, Total Number of Analyses performed (e.g., I-131, 400)		Lower Limit of Detection (LLD)	Indicator Mean[5]; (f[6]). Range[5]	Location with Highest Annual Mean		Control Mean[5] (f[6]). Range[5]	Number of Nonroutine Reported Measurements
					Name Distance and Direction	Mean[5] (f[6]) Range[5]		
Surface Water (pCi/lL)	Gross Beta, 36		4	9.9 (11/12) (6.3/14.2)	D-21 IL River at EJ&E Bridge 1.4 miles WNW	9.9 (11/12) (6.3/14.2)	8.3 (22/24) (3.1/14.4)	0
	H-3, 12		200	335.3 (3/4) (230/398)	D-57 Kankakee River at Will Road 2.0 miles SE	1233 (4/4) (322/1780)	1233 (4/4) (322/1780)	0
	Gamma, 36	Mn-54	15	< LLD	< LLD	< LLD	< LLD	0
		Co-58	15	< LLD	< LLD	< LLD	< LLD	0
		Fe-59	30	< LLD	< LLD	< LLD	< LLD	0
		Co-60	15	< LLD	< LLD	< LLD	< LLD	0
		Zn-65	30	< LLD	< LLD	< LLD	< LLD	0
		Nb-95	15	< LLD	< LLD	< LLD	< LLD	0
		Zr-95	30	< LLD	< LLD	< LLD	< LLD	0
		I-131	15	< LLD	< LLD	< LLD	< LLD	0
		Cs-134	15	< LLD	< LLD	< LLD	< LLD	0
		Cs-137	18	< LLD	< LLD	< LLD	< LLD	0
		Ba-140	60	< LLD	< LLD	< LLD	< LLD	0
		La-140	15	< LLD	< LLD	< LLD	< LLD	0

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

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Table 10: Dresden Station Data Summary Table

Medium or Pathway Sampled (Units)	Type, Total Number of Analyses performed (e.g., I-131, 400)		Lower Limit of Detection (LLD)	Indicator Mean[5]; (f[6]). Range[5]	Location with Highest Annual Mean		Control Mean[5] (f[6]). Range[5]	Number of Nonroutine Reported Measurements
					Name Distance and Direction	Mean[5] (f[6]) Range[5]		
Ground Water (pCi/lL)	H-3, 12		200	<LLD	<LLD	<LLD	N/A	0
	Gamma, 12	Mn-54	15	< LLD	< LLD	< LLD	N/A	0
		Co-58	15	< LLD	< LLD	< LLD	N/A	0
		Fe-59	30	< LLD	< LLD	< LLD	N/A	0
		Co-60	15	< LLD	< LLD	< LLD	N/A	0
		Zn-65	30	< LLD	< LLD	< LLD	N/A	0
		Nb-95	15	< LLD	< LLD	< LLD	N/A	0
		Zr-95	30	< LLD	< LLD	< LLD	N/A	0
		I-131	15	< LLD	< LLD	< LLD	N/A	0
		Cs-134	15	< LLD	< LLD	< LLD	N/A	0
		Cs-137	18	< LLD	< LLD	< LLD	N/A	0
		Ba-140	60	< LLD	< LLD	< LLD	N/A	0
		La-140	15	< LLD	< LLD	< LLD	N/A	0

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

Attachment 1, Data Table Summary

Table 10: Dresden Station Data Summary Table

Medium or Pathway Sampled (Units)	Type, Total Number of Analyses performed (e.g., I-131, 400)		Lower Limit of Detection (LLD)	Indicator Mean[5]; (f[6]). Range[5]	Location with Highest Annual Mean		Control Mean[5] (f[6]). Range[5]	Number of Nonroutine Reported Measurements
					Name Distance and Direction	Mean[5] (f[6]) Range[5]		
Fish (pCi/kg Wet)	Gamma, 8	Mn-54	130	< LLD	< LLD	< LLD	< LLD	0
		Co-58	130	< LLD	< LLD	< LLD	< LLD	0
		Fe-59	260	< LLD	< LLD	< LLD	< LLD	0
		Co-60	130	< LLD	< LLD	< LLD	< LLD	0
		Zn-65	260	< LLD	< LLD	< LLD	< LLD	0
		Nb-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		Zr-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		Cs-134	130	< LLD	< LLD	< LLD	< LLD	0
		Cs-137	150	< LLD	< LLD	< LLD	< LLD	0
		Ba-140	N/A	< LLD	< LLD	< LLD	< LLD	0
		La-140	N/A	< LLD	< LLD	< LLD	< LLD	0
Sediment (pCi/kg Dry)	Gamma, 2	Mn-54	N/A	< LLD	< LLD	< LLD	< LLD	0
		Co-58	N/A	< LLD	< LLD	< LLD	< LLD	0
		Fe-59	N/A	< LLD	< LLD	< LLD	< LLD	0
		Co-60	N/A	< LLD	< LLD	< LLD	< LLD	0
		Zn-65	N/A	< LLD	< LLD	< LLD	< LLD	0
		Nb-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		Zr-95	N/A	< LLD	< LLD	< LLD	< LLD	0
		Cs-134	150	< LLD	< LLD	< LLD	< LLD	0
		Cs-137	180	< LLD	< LLD	< LLD	< LLD	0
		Ba-140	N/A	< LLD	< LLD	< LLD	< LLD	0
		La-140	N/A	< LLD	< LLD	< LLD	< LLD	0

[5] Mean and range are based on detectable measurements only.

[6] Fraction are based on detectable measurements at specified locations is indicated in parentheses.

Attachment 2, Complete Data Table for All Analysis Results Obtained In 2024
Note: Throughout Attachment 2, bold data entries are for the reported concentration

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

Collection Date	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
01/05/2024	**18** ± 4	**20** ± 4	(1)	**16** ± 4	**20** ± 4	**18** ± 4	**19** ± 4	**21** ± 4	**18** ± 4
01/12/2024	**19** ± 4	**24** ± 5	(1)	**11** ± 4	**23** ± 4	**23** ± 5	**19** ± 4	**19** ± 4	**23** ± 5
01/19/2024	(1)	**20** ± 4	(1)	(1)	**20** ± 4	**25** ± 5	**21** ± 5	**21** ± 5	**27** ± 5
01/26/2024	**10** ± 4	**13** ± 4	(1)	(1)	**10** ± 4	**9** ± 4	**9** ± 4	**12** ± 4	**11** ± 4
02/02/2024	**13** ± 4	**14** ± 4	**16** ± 9	**14** ± 4	**16** ± 4	**19** ± 4	**15** ± 4	**12** ± 4	**19** ± 4
02/09/2024	**13** ± 4	**14** ± 4	**14** ± 4	**15** ± 4	**14** ± 4	**16** ± 4	**14** ± 4	**13** ± 4	**17** ± 4
02/16/2024	**14** ± 4	**15** ± 4	**20** ± 4	**15** ± 4	**20** ± 4	**19** ± 4	**17** ± 4	**16** ± 4	**19** ± 4
02/23/2024	**13** ± 8	**19** ± 4	**18** ± 4	**21** ± 5	**17** ± 4	**18** ± 4	**14** ± 4	**14** ± 4	**15** ± 4
03/01/2024	**18** ± 4	**17** ± 4	**17** ± 4	**14** ± 4	**14** ± 4	**13** ± 4	**16** ± 4	**15** ± 4	**18** ± 4
03/08/2024	**16** ± 4	**12** ± 4	**12** ± 4	**17** ± 4	**14** ± 4	**15** ± 4	**15** ± 4	**15** ± 4	**17** ± 4
03/15/2024	**14** ± 4	**18** ± 4	**21** ± 5	**13** ± 4	**14** ± 4	**18** ± 4	**15** ± 4	**14** ± 4	**14** ± 4
03/22/2024	**14** ± 4	**11** ± 4	**14** ± 4	**12** ± 4	**14** ± 4	**12** ± 4	**11** ± 4	**10** ± 4	**12** ± 4
03/29/2024	**13** ± 3	**16** ± 4	**15** ± 4	**16** ± 4	**16** ± 4	**13** ± 4	**14** ± 4	**14** ± 4	**17** ± 4
04/05/2024	**7** ± 3	< 5	**12** ± 4	**9** ± 4	**8** ± 4	**8** ± 4	**7** ± 4	**5** ± 3	**8** ± 4
04/12/2024	**9** ± 3	**9** ± 3	**12** ± 4	**13** ± 4	**10** ± 3	**11** ± 4	**12** ± 4	**12** ± 4	**9** ± 3
04/19/2024	**11** ± 4	**11** ± 4	**11** ± 4	**12** ± 4	**11** ± 4	**16** ± 4	**17** ± 4	**13** ± 4	**14** ± 4
04/26/2024	**16** ± 4	**14** ± 4	**16** ± 4	**17** ± 4	**13** ± 4	**14** ± 4	**18** ± 4	**17** ± 4	**17** ± 4
05/03/2024	**15** ± 4	**13** ± 4	**16** ± 4	**16** ± 4	**12** ± 4	**13** ± 4	**19** ± 4	**17** ± 4	**18** ± 4
05/10/2024	**12** ± 4	**11** ± 4	**12** ± 4	**12** ± 4	**11** ± 4	**8** ± 4	**12** ± 6	**13** ± 4	**10** ± 4
05/17/2024	**13** ± 4	**12** ± 4	**12** ± 4	**13** ± 4	**11** ± 3	**13** ± 4	**17** ± 6	**13** ± 4	**13** ± 4
05/24/2024	**13** ± 4	**16** ± 4	**15** ± 4	**16** ± 4	**14** ± 4	**18** ± 4	**18** ± 4	**14** ± 4	**11** ± 4

(1) See Sample Deviations Table (Table 9)

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

Collection Date	D-08	D-10	D-14	D-55	D-12
01/05/2024	**19** ± 4	**18** ± 4	**20** ± 4	**16** ± 4	**18** ± 4
01/12/2024	**18** ± 4	**20** ± 4	**21** ± 4	**20** ± 4	(1)
01/19/2024	**26** ± 5	**17** ± 4	**27** ± 5	**23** ± 5	**21** ± 5
01/26/2024	**11** ± 4	**14** ± 4	**11** ± 4	**10** ± 4	**13** ± 4
02/02/2024	**18** ± 4	**13** ± 4	**15** ± 4	**17** ± 4	**16** ± 4
02/09/2024	**15** ± 4	**16** ± 4	**17** ± 4	**15** ± 4	**14** ± 4
02/16/2024	**16** ± 4	**18** ± 4	**15** ± 4	**17** ± 4	**13** ± 4
02/23/2024	**17** ± 4	**16** ± 4	**16** ± 4	**14** ± 4	**20** ± 4
03/01/2024	**13** ± 4	**14** ± 4	**18** ± 4	**14** ± 4	**20** ± 4
03/08/2024	**15** ± 4	**15** ± 4	**18** ± 4	**14** ± 4	**16** ± 4
03/15/2024	**16** ± 4	**14** ± 4	**18** ± 4	**17** ± 4	**15** ± 4
03/22/2024	**10** ± 4	**15** ± 4	**13** ± 4	**16** ± 4	**14** ± 4
03/29/2024	**14** ± 4	**13** ± 3	**18** ± 4	**14** ± 4	**13** ± 3
04/05/2024	**8** ± 4	**6** ± 3	**7** ± 3	**8** ± 4	**7** ± 4
04/12/2024	**11** ± 4	**12** ± 4	**10** ± 4	**12** ± 4	**9** ± 3
04/19/2024	**13** ± 4	**14** ± 4	**16** ± 4	**11** ± 4	**13** ± 4
04/26/2024	**18** ± 4	**14** ± 4	**13** ± 4	**18** ± 4	**19** ± 4
05/03/2024	**12** ± 4	**14** ± 4	**13** ± 4	**17** ± 4	**15** ± 4
05/10/2024	**7** ± 4	**10** ± 4	**12** ± 4	**11** ± 4	**8** ± 4
05/17/2024	**10** ± 4	**12** ± 4	**14** ± 4	**16** ± 4	**13** ± 4
05/24/2024	**15** ± 4	**14** ± 4	**15** ± 4	**19** ± 4	**15** ± 4

(1) See Sample Deviations Table (Table 9)

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

Collection Date	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
05/31/2024	**10** ± 4	**11** ± 4	**9** ± 4	**10** ± 4	**10** ± 4	**11** ± 4	**13** ± 4	**13** ± 4	**13** ± 4
06/07/2024	**18** ± 4	**15** ± 4	**13** ± 4	**11** ± 4	**14** ± 4	**14** ± 4	**19** ± 4	**14** ± 4	**14** ± 4
06/14/2024	**12** ± 4	**10** ± 4	**8** ± 4	**8** ± 4	**7** ± 4	**10** ± 4	**13** ± 4	**10** ± 4	**14** ± 4
06/21/2024	**16** ± 4	**18** ± 4	**18** ± 4	**14** ± 4	**21** ± 5	**17** ± 4	**16** ± 4	**19** ± 4	**15** ± 4
06/28/2024	**15** ± 4	**13** ± 4	**11** ± 4	**12** ± 4	**10** ± 3	**16** ± 4	**13** ± 4	**12** ± 4	**14** ± 4
07/05/2024	**10** ± 4	**10** ± 4	**11** ± 4	**9** ± 4	**9** ± 4	**17** ± 4	**14** ± 4	**11** ± 4	**14** ± 4
07/12/2024	**15** ± 4	**17** ± 4	**16** ± 4	**16** ± 4	**14** ± 4	**19** ± 4	**16** ± 4	**13** ± 4	**14** ± 4
07/19/2024	**23** ± 8	**15** ± 4	**17** ± 4	**12** ± 4	**13** ± 4	**15** ± 4	**17** ± 4	**20** ± 4	**18** ± 4
07/26/2024	**11** ± 7	**15** ± 5	**14** ± 5	**16** ± 5	**11** ± 4	**14** ± 5	**12** ± 4	**17** ± 5	**16** ± 5
08/02/2024	**15** ± 4	**15** ± 4	**10** ± 4	**15** ± 4	**16** ± 4	**19** ± 4	**16** ± 4	**20** ± 4	**17** ± 4
08/09/2024	**18** ± 4	**18** ± 4	**20** ± 4	**23** ± 4	**14** ± 4	**17** ± 4	**22** ± 4	**25** ± 5	**21** ± 4
08/16/2024	**19** ± 4	**21** ± 5	**20** ± 4	**19** ± 4	**15** ± 4	**20** ± 4	**24** ± 5	**26** ± 5	**21** ± 5
08/23/2024	**12** ± 4	**16** ± 4	**12** ± 4	**12** ± 4	**11** ± 4	**14** ± 4	**13** ± 4	**14** ± 4	**15** ± 4
08/30/2024	**28** ± 5	**25** ± 5	**27** ± 5	**33** ± 5	**22** ± 5	**24** ± 5	**26** ± 5	**29** ± 5	**30** ± 5
09/06/2024	**22** ± 4	**19** ± 4	**20** ± 4	**24** ± 5	**18** ± 4	**19** ± 4	**19** ± 4	**19** ± 4	**21** ± 4
09/14/2024	**18** ± 4	**21** ± 4	**21** ± 4	**21** ± 4	**17** ± 4	**25** ± 4	**21** ± 4	**23** ± 4	**25** ± 4
09/20/2024	**30** ± 5	**29** ± 5	**34** ± 6	**36** ± 6	**30** ± 5	**32** ± 5	**29** ± 5	**35** ± 6	**32** ± 5
09/27/2024	**18** ± 4	**18** ± 4	**22** ± 4	**24** ± 5	**21** ± 4	**22** ± 4	**29** ± 5	**25** ± 5	**20** ± 4
10/04/2024	**21** ± 4	**17** ± 4	**23** ± 5	**23** ± 5	**26** ± 5	**24** ± 5	**21** ± 5	**19** ± 4	**21** ± 4
10/11/2024	**20** ± 5	**23** ± 5	**22** ± 5	**25** ± 5	**22** ± 5	**22** ± 5	**30** ± 5	**27** ± 5	**20** ± 5
10/18/2024	**18** ± 4	**17** ± 4	**20** ± 4	**24** ± 4	**20** ± 4	**25** ± 5	**27** ± 5	**25** ± 5	**23** ± 4
10/25/2024	**24** ± 5	**23** ± 5	**27** ± 5	**30** ± 5	**28** ± 5	**25** ± 5	**34** ± 5	**30** ± 5	**24** ± 5

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

Collection Date	D-08	D-10	D-14	D-55	D-12
05/31/2024	**13** ± 4	**10** ± 4	**10** ± 4	**13** ± 4	**10** ± 4
06/07/2024	**13** ± 4	**13** ± 4	**15** ± 4	**13** ± 4	**13** ± 4
06/14/2024	**8** ± 4	**11** ± 4	**11** ± 4	**10** ± 4	**11** ± 4
06/21/2024	**19** ± 4	**15** ± 4	**15** ± 4	**19** ± 4	**18** ± 4
06/28/2024	**14** ± 4	**12** ± 4	**14** ± 4	**14** ± 4	**14** ± 4
07/05/2024	**10** ± 4	**15** ± 4	**13** ± 4	**17** ± 4	**12** ± 4
07/12/2024	**17** ± 4	**16** ± 4	**19** ± 4	**18** ± 4	**18** ± 4
07/19/2024	**15** ± 4	**14** ± 4	**21** ± 4	**15** ± 5	**16** ± 4
07/26/2024	**16** ± 5	**18** ± 5	**18** ± 5	**15** ± 5	**14** ± 5
08/02/2024	**13** ± 4	**12** ± 4	**22** ± 4	**21** ± 4	**14** ± 4
08/09/2024	**21** ± 4	**20** ± 4	**25** ± 5	**25** ± 5	**20** ± 4
08/16/2024	**20** ± 4	**21** ± 5	**27** ± 5	**23** ± 5	**19** ± 4
08/23/2024	**15** ± 4	**15** ± 4	**14** ± 4	**17** ± 4	**14** ± 4
08/30/2024	**27** ± 5	**26** ± 5	**29** ± 5	**33** ± 5	**26** ± 5
09/06/2024	**20** ± 4	**17** ± 4	**23** ± 4	**21** ± 4	**18** ± 4
09/14/2024	**25** ± 4	**21** ± 4	**22** ± 4	**24** ± 4	**24** ± 4
09/20/2024	**33** ± 5	**31** ± 5	**36** ± 6	**37** ± 6	**27** ± 5
09/27/2024	**22** ± 5	**17** ± 4	**26** ± 5	**20** ± 4	**22** ± 4
10/04/2024	**18** ± 4	**19** ± 4	**19** ± 4	**22** ± 5	**20** ± 4
10/11/2024	**23** ± 5	**21** ± 5	**27** ± 5	**26** ± 5	**22** ± 5
10/18/2024	**18** ± 4	**24** ± 4	**23** ± 4	**28** ± 5	**25** ± 5
10/25/2024	**26** ± 5	**25** ± 5	**25** ± 5	**25** ± 5	**26** ± 5

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

Collection Date	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
11/01/2024	**59** ± 11	**25** ± 5	**26** ± 5	**24** ± 5	**27** ± 5	**26** ± 5	**37** ± 5	**29** ± 5	**24** ± 4
11/08/2024	**11** ± 4	**13** ± 4	**12** ± 4	**13** ± 4	**15** ± 4	**9** ± 4	**12** ± 4	**14** ± 4	**12** ± 4
11/15/2024	**20** ± 4	**43** ± 13	**18** ± 4	**17** ± 4	**24** ± 4	**22** ± 4	(1)	**21** ± 4	**21** ± 4
11/22/2024	**20** ± 4	(1)	**23** ± 5	**24** ± 5	**20** ± 4	**25** ± 5	**26** ± 5	**39** ± 5	**21** ± 4
11/29/2024	**13** ± 4	(1)	**16** ± 4	**20** ± 4	**18** ± 4	**16** ± 4	**15** ± 4	**15** ± 4	**19** ± 4
12/06/2024	**20** ± 4	(1)	**22** ± 5	**23** ± 5	**23** ± 5	**23** ± 5	**20** ± 4	**22** ± 5	**22** ± 4
12/13/2024	**21** ± 4	(1)	**22** ± 4	**28** ± 5	**24** ± 4	**23** ± 4	**23** ± 4	**24** ± 4	**19** ± 4
12/20/2024	**22** ± 5	(1)	**25** ± 5	**32** ± 5	**27** ± 5	**32** ± 5	**35** ± 5	**28** ± 5	**25** ± 5
12/27/2024	**17** ± 4	(1)	**15** ± 4	**37** ± 5	**21** ± 5	**22** ± 5	**18** ± 4	**17** ± 4	**19** ± 5
01/03/2025	**28** ± 4	(1)	**29** ± 5	**24** ± 4	**27** ± 4	**31** ± 5	**30** ± 5	**27** ± 4	**25** ± 4

(1) See Sample Deviations Table (Table 9)

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

Collection Date	D-08	D-10	D-14	D-55	D-12
11/01/2024	**29** ± 5	**34** ± 5	**32** ± 5	**29** ± 5	**26** ± 5
11/08/2024	**14** ± 4	**14** ± 4	**12** ± 4	**15** ± 4	**13** ± 4
11/15/2024	**21** ± 4	**22** ± 4	**21** ± 4	**22** ± 4	**24** ± 4
11/22/2024	**30** ± 5	**26** ± 5	**25** ± 5	**20** ± 4	**26** ± 5
11/29/2024	**19** ± 4	**18** ± 4	**19** ± 4	**18** ± 4	**18** ± 4
12/06/2024	**22** ± 5	**25** ± 5	**28** ± 5	**21** ± 5	**21** ± 5
12/13/2024	**24** ± 4	**26** ± 5	**24** ± 4	**19** ± 4	**19** ± 5
12/20/2024	**21** ± 5	**25** ± 5	**27** ± 5	**33** ± 5	**33** ± 5
12/27/2024	**20** ± 4	**19** ± 4	**21** ± 5	**19** ± 4	**19** ± 4
01/03/2025	**25** ± 4	**23** ± 4	**30** ± 5	**26** ± 4	**27** ± 4

Table 12, Quarterly Air Particulate Gamma Isotopic (pCi/m^3 ± 2 Sigma)

Station	Nuclide	Q1	Q2	Q3	Q4
D-01	Mn-54	< 3	< 3	< 2	< 3
	Co-58	< 2	< 3	< 3	< 3
	Fe-59	< 5	< 8	< 7	< 6
	Co-60	< 2	< 3	< 3	< 4
	Zn-65	< 6	< 5	< 7	< 8
	Nb-95	< 3	< 3	< 3	< 3
	Zr-95	< 4	< 5	< 5	< 5
	Cs-134	< 2	< 3	< 3	< 3
	Cs-137	< 2	< 2	< 3	< 3
	Ba-140	< 12	< 42	< 19	< 23
	La-140	< 5	< 20	< 5	< 9
D-02	Mn-54	< 2	< 2	< 2	< 4
	Co-58	< 1	< 2	< 2	< 7
	Fe-59	< 6	< 6	< 5	< 20
	Co-60	< 3	< 2	< 1	< 5
	Zn-65	< 5	< 2	< 6	< 11
	Nb-95	< 2	< 2	< 2	< 9
	Zr-95	< 3	< 4	< 4	< 12
	Cs-134	< 2	< 2	< 2	< 4
	Cs-137	< 2	< 2	< 2	< 4
	Ba-140	< 16	< 27	< 9	< 416[A]
	La-140	< 3	< 16	< 3	< 222[A]

Station	Nuclide	Q1	Q2	Q3	Q4
D-03	Mn-54	< 3	< 2	< 2	< 2
	Co-58	< 3	< 4	< 2	< 2
	Fe-59	< 9	< 9	< 4	< 4
	Co-60	< 3	< 4	< 2	< 3
	Zn-65	< 7	< 7	< 5	< 5
	Nb-95	< 3	< 3	< 2	< 2
	Zr-95	< 5	< 6	< 3	< 3
	Cs-134	< 3	< 2	< 2	< 2
	Cs-137	< 3	< 3	< 1	< 2
	Ba-140	< 18	< 43	< 10	< 13
	La-140	< 6	< 13	< 5	< 7
D-04	Mn-54	< 2	< 2	< 3	< 2
	Co-58	< 3	< 3	< 3	< 3
	Fe-59	< 6	< 7	< 7	< 7
	Co-60	< 3	< 2	< 3	< 3
	Zn-65	< 7	< 5	< 10	< 7
	Nb-95	< 2	< 2	< 3	< 3
	Zr-95	< 4	< 5	< 6	< 4
	Cs-134	< 3	< 2	< 4	< 2
	Cs-137	< 2	< 2	< 4	< 2
	Ba-140	< 15	< 35	< 19	< 21
	La-140	< 8	< 13	< 7	< 8

[A] Anomalous results identified. Dresden will track the sample and trend the sample location results to ensure there not a trend developing.

Table 12, Quarterly Air Particulate Gamma Isotopic (pCi/m3 ± 2 Sigma) Cont'd

Station	Nuclide	Q1	Q2	Q3	Q4
D-07	Mn-54	< 3	< 3	< 1	< 2
	Co-58	< 3	< 3	< 1	< 2
	Fe-59	< 7	< 8	< 4	< 5
	Co-60	< 3	< 2	< 1	< 3
	Zn-65	< 7	< 5	< 4	< 7
	Nb-95	< 3	< 3	< 1	< 3
	Zr-95	< 5	< 4	< 1	< 5
	Cs-134	< 3	< 2	< 2	< 3
	Cs-137	< 3	< 2	< 1	< 3
	Ba-140	< 14	< 31	< 8	< 22
	La-140	< 9	< 11	< 4	< 9
D-10	Mn-54	< 2	< 2	< 2	< 2
	Co-58	< 2	< 3	< 2	< 2
	Fe-59	< 5	< 2	< 5	< 4
	Co-60	< 2	< 3	< 3	< 2
	Zn-65	< 6	< 6	< 5	< 4
	Nb-95	< 3	< 3	< 2	< 2
	Zr-95	< 5	< 5	< 4	< 4
	Cs-134	< 3	< 3	< 3	< 2
	Cs-137	< 3	< 2	< 1	< 2
	Ba-140	< 15	< 27	< 12	< 17
	La-140	< 4	< 12	< 6	< 5

Station	Nuclide	Q1	Q2	Q3	Q4
D-08	Mn-54	< 2	< 3	< 2	< 3
	Co-58	< 2	< 3	< 2	< 3
	Fe-59	< 2	< 11	< 5	< 5
	Co-60	< 3	< 3	< 2	< 3
	Zn-65	< 6	< 7	< 5	< 6
	Nb-95	< 2	< 5	< 1	< 3
	Zr-95	< 3	< 7	< 2	< 6
	Cs-134	< 2	< 3	< 2	< 3
	Cs-137	< 2	< 3	< 2	< 3
	Ba-140	< 7	< 46	< 12	< 19
	La-140	< 5	< 25	< 4	< 10
D-12	Mn-54	< 3	< 3	< 2	< 2
	Co-58	< 3	< 4	< 2	< 2
	Fe-59	< 7	< 12	< 5	< 5
	Co-60	< 3	< 3	< 3	< 2
	Zn-65	< 8	< 9	< 7	< 5
	Nb-95	< 3	< 4	< 2	< 2
	Zr-95	< 5	< 8	< 4	< 3
	Cs-134	< 3	< 4	< 2	< 1
	Cs-137	< 3	< 3	< 2	< 2
	Ba-140	< 17	< 70	< 13	< 14
	La-140	< 7	< 24	< 5	< 9

Table 12, Quarterly Air Particulate Gamma Isotopic (pCi/m3 ± 2 Sigma) Cont'd

Station	Nuclide	Q1	Q2	Q3	Q4
D-14	Mn-54	< 2	< 1	< 3	< 2
	Co-58	< 2	< 3	< 3	< 2
	Fe-59	< 6	< 6	< 6	< 5
	Co-60	< 3	< 2	< 3	< 3
	Zn-65	< 8	< 4	< 9	< 6
	Nb-95	< 2	< 2	< 4	< 2
	Zr-95	< 3	< 4	< 5	< 4
	Cs-134	< 3	< 2	< 2	< 2
	Cs-137	< 2	< 2	< 3	< 2
	Ba-140	< 13	< 35	< 18	< 21
	La-140	< 6	< 14	< 7	< 10
D-45	Mn-54	< 2	< 3	< 2	< 2
	Co-58	< 2	< 2	< 3	< 2
	Fe-59	< 5	< 6	< 5	< 6
	Co-60	< 2	< 3	< 3	< 3
	Zn-65	< 6	< 6	< 7	< 4
	Nb-95	< 2	< 3	< 3	< 2
	Zr-95	< 5	< 6	< 4	< 5
	Cs-134	< 3	< 3	< 2	< 3
	Cs-137	< 2	< 2	< 2	< 2
	Ba-140	< 11	< 49	< 16	< 17
	La-140	< 5	< 12	< 7	< 10

Station	Nuclide	Q1	Q2	Q3	Q4
D-53	Mn-54	< 2	< 3	< 2	< 2
	Co-58	< 2	< 4	< 1	< 2
	Fe-59	< 5	< 10	< 5	< 6
	Co-60	< 3	< 3	< 2	< 3
	Zn-65	< 5	< 6	< 5	< 6
	Nb-95	< 2	< 3	< 2	< 3
	Zr-95	< 5	< 6	< 3	< 5
	Cs-134	< 2	< 2	< 2	< 3
	Cs-137	< 2	< 2	< 2	< 2
	Ba-140	< 13	< 39	< 11	< 21
	La-140	< 2	< 17	< 5	< 7
D-55	Mn-54	< 3	< 4	< 2	< 3
	Co-58	< 3	< 4	< 2	< 3
	Fe-59	< 7	< 9	< 5	< 6
	Co-60	< 4	< 5	< 2	< 1
	Zn-65	< 6	< 8	< 6	< 4
	Nb-95	< 4	< 4	< 2	< 2
	Zr-95	< 6	< 10	< 5	< 5
	Cs-134	< 4	< 3	< 3	< 3
	Cs-137	< 3	< 4	< 2	< 2
	Ba-140	< 17	< 60	< 17	< 21
	La-140	< 7	< 34	< 7	< 11

Table 12, Quarterly Air Particulate Gamma Isotopic (pCi/m3 ± 2 Sigma) Cont'd

Station	Nuclide	Q1	Q2	Q3	Q4
D-56	Mn-54	< 2	< 2	< 2	< 2
	Co-58	< 2	< 4	< 2	< 2
	Fe-59	< 5	< 8	< 5	< 5
	Co-60	< 2	< 2	< 3	< 2
	Zn-65	< 5	< 6	< 5	< 4
	Nb-95	< 2	< 3	< 2	< 2
	Zr-95	< 4	< 4	< 5	< 4
	Cs-134	< 2	< 3	< 2	< 2
	Cs-137	< 2	< 3	< 1	< 2
	Ba-140	< 11	< 46	< 10	< 17
	La-140	< 3	< 12	< 6	< 7
D-58	Mn-54	< 2	< 3	< 2	< 2
	Co-58	< 2	< 2	< 2	< 2
	Fe-59	< 4	< 8	< 3	< 5
	Co-60	< 1	< 3	< 3	< 2
	Zn-65	< 6	< 5	< 5	< 4
	Nb-95	< 2	< 3	< 2	< 2
	Zr-95	< 5	< 4	< 3	< 3
	Cs-134	< 2	< 3	< 2	< 2
	Cs-137	< 2	< 2	< 2	< 2
	Ba-140	< 10	< 37	< 10	< 15
	La-140	< 7	< 13	< 6	< 6

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

Collection Date	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
01/05/2024	< 47	< 47	(1)	< 47	< 20	< 37	< 36	< 37	< 37
01/12/2024	< 44	< 43	(1)	< 44	< 28	< 51	< 50	< 40	< 40
01/19/2024	(1)	< 24	(1)	(1)	< 58	< 23	< 53	< 53	< 21
01/26/2024	< 41	< 42	(1)	(1)	< 43	< 41	< 40	< 19	< 40
02/02/2024	< 60	< 60	< 61	< 60	< 57	< 54	< 56	< 56	< 56
02/09/2024	< 57	< 57	< 57	< 57	< 25	< 36	< 29	< 29	< 29
02/16/2024	< 27	< 12	< 27	< 27	< 26	< 40	< 37	< 37	< 37
02/23/2024	< 52	< 52	< 52	< 52	< 23	< 35	< 15	< 35	< 34
03/01/2024	< 31	< 31	< 31	< 31	< 22	< 29	< 21	< 28	< 28
03/08/2024	< 24	< 24	< 24	< 16	< 23	< 30	< 36	< 36	< 36
03/15/2024	< 34	< 34	< 34	< 34	< 29	< 37	< 36	< 15	< 36
03/22/2024	< 35	< 32	< 32	< 32	< 31	< 40	< 32	< 32	< 32
03/29/2024	< 17	< 16	< 16	< 17	< 19	< 22	< 11	< 11	< 11
04/05/2024	< 37	< 18	< 38	< 37	< 37	< 35	< 38	< 38	< 38
04/12/2024	< 27	< 21	< 27	< 27	< 27	< 44	< 36	< 36	< 36
04/19/2024	< 33	< 36	< 33	< 33	< 33	< 16	< 42	< 42	< 42
04/26/2024	< 37	< 38	< 38	< 38	< 30	< 28	< 27	< 12	< 27
05/03/2024	< 29	< 30	< 30	< 22	< 30	< 22	< 34	< 34	< 34
05/10/2024	< 31	< 31	< 31	< 31	< 39	< 33	< 43	< 33	< 33
05/17/2024	< 35	< 35	< 15	< 35	< 33	< 16	< 28	< 21	< 21
05/24/2024	< 28	< 28	< 27	< 28	< 21	< 16	< 53	< 53	< 53

(1) See Sample Deviations Table (Table 9)

Table 13, Weekly Air Iodine I-131 (E-3 pCi/m3) Cont'd

Collection Date	D-08	D-10	D-14	D-55	D-12
01/05/2024	< 46	< 28	< 37	< 38	< 37
01/12/2024	< 43	< 51	< 51	< 41	(1)
01/19/2024	< 58	< 58	< 54	< 53	< 58
01/26/2024	< 43	< 43	< 43	< 41	< 18
02/02/2024	< 53	< 53	< 23	< 57	< 54
02/09/2024	< 36	< 36	< 15	< 29	< 36
02/16/2024	< 19	< 39	< 40	< 38	< 40
02/23/2024	< 31	< 31	< 31	< 35	< 31
03/01/2024	< 32	< 32	< 33	< 29	< 33
03/08/2024	< 30	< 15	< 30	< 36	< 30
03/15/2024	< 29	< 29	< 33	< 37	< 29
03/22/2024	< 17	< 40	< 40	< 32	< 40
03/29/2024	< 22	< 9	< 22	< 11	< 22
04/05/2024	< 35	< 27	< 35	< 39	< 35
04/12/2024	< 43	< 18	< 44	< 37	< 44
04/19/2024	< 31	< 31	< 31	< 43	< 31
04/26/2024	< 33	< 30	< 30	< 28	< 30
05/03/2024	< 22	< 22	< 15	< 35	< 22
05/10/2024	< 40	< 17	< 40	< 33	< 40
05/17/2024	< 38	< 38	< 38	< 21	< 38
05/24/2024	< 38	< 38	< 38	< 54	< 38

(1) See sample deviation table (Table 9)

Table 13, Weekly Air Iodine I-131 (E-3 pCi/m3) Cont'd

Collection Date	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
05/31/2024	< 27	< 13	< 27	< 27	< 27	< 31	< 25	< 24	< 24
06/07/2024	< 37	< 38	< 38	< 38	< 16	< 47	< 34	< 34	< 34
06/14/2024	< 31	< 16	< 31	< 31	< 31	< 35	< 34	< 34	< 34
06/21/2024	< 36	< 36	< 36	< 36	< 16	< 38	< 29	< 29	< 29
06/28/2024	< 31	< 31	< 31	< 14	< 31	< 45	< 23	< 23	< 23
07/05/2024	< 49	< 21	< 50	< 49	< 50	< 34	< 43	< 43	< 43
07/12/2024	< 39	< 39	< 39	< 39	< 34	< 21	< 16	< 21	< 21
07/19/2024	< 50	< 32	< 32	< 32	< 34	< 38	< 36	< 36	< 36
07/26/2024	< 40	< 33	< 33	< 33	< 32	< 39	< 37	< 36	< 36
08/02/2024	< 28	< 28	< 28	< 28	< 13	< 28	< 14	< 27	< 27
08/09/2024	< 14	< 32	< 32	< 32	< 32	< 43	< 38	< 38	< 38
08/16/2024	< 35	< 36	< 36	< 35	< 19	< 42	< 34	< 34	< 34
08/23/2024	< 15	< 15	< 15	< 10	< 14	< 33	< 34	< 33	< 33
08/30/2024	< 37	< 16	< 37	< 37	< 37	< 39	< 35	< 35	< 35
09/06/2024	< 24	< 34	< 34	< 34	< 32	< 29	< 25	< 25	< 25
09/14/2024	< 19	< 19	< 19	< 13	< 20	< 31	< 33	< 33	< 32
09/20/2024	< 48	< 49	< 48	< 48	< 22	< 49	< 47	< 47	< 47
09/27/2024	< 20	< 45	< 45	< 45	< 43	< 36	< 40	< 40	< 40
10/04/2024	< 13	< 26	< 26	< 26	< 26	< 25	< 33	< 33	< 33
10/11/2024	< 37	< 37	< 37	< 37	< 27	< 38	< 18	< 37	< 38
10/18/2024	< 19	< 38	< 38	< 38	< 39	< 35	< 41	< 40	< 39
10/25/2024	< 35	< 35	< 35	< 35	< 19	< 34	< 34	< 34	< 22

Table 13, Weekly Air Iodine I-131 (E-3 pCi/m3) Cont'd

Collection Date	D-08	D-10	D-14	D-55	D-12
05/31/2024	< 31	< 31	< 21	< 25	< 31
06/07/2024	< 46	< 46	< 22	< 35	< 46
06/14/2024	< 34	< 26	< 35	< 34	< 35
06/21/2024	< 34	< 34	< 35	< 30	< 34
06/28/2024	< 43	< 43	< 19	< 23	< 43
07/05/2024	< 14	< 33	< 34	< 44	< 34
07/12/2024	< 35	< 35	< 27	< 21	< 35
07/19/2024	< 38	< 38	< 25	< 42	< 38
07/26/2024	< 38	< 38	< 19	< 37	< 39
08/02/2024	< 25	< 25	< 25	< 28	< 25
08/09/2024	< 43	< 22	< 43	< 39	< 43
08/16/2024	< 41	< 41	< 22	< 35	< 42
08/23/2024	< 33	< 33	< 33	< 34	< 24
08/30/2024	< 28	< 39	< 39	< 35	< 39
09/06/2024	< 29	< 29	< 22	< 25	< 29
09/14/2024	< 31	< 13	< 31	< 33	< 31
09/20/2024	< 48	< 48	< 36	< 48	< 49
09/27/2024	< 24	< 36	< 36	< 40	< 36
10/04/2024	< 24	< 24	< 17	< 33	< 25
10/11/2024	< 34	< 34	< 35	< 38	< 35
10/18/2024	< 34	< 34	< 39	< 41	< 34
10/25/2024	< 42	< 42	< 42	< 34	< 42

Table 13, Weekly Air Iodine I-131 (E-3 pCi/m3) Cont'd

Collection Date	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
11/01/2024	< 35	< 34	< 34	< 34	< 34	< 27	< 31	< 31	< 29
11/08/2024	< 29	< 14	< 29	< 29	< 29	< 19	< 35	< 35	< 35
11/15/2024	< 32	< 59	< 32	< 32	< 32	< 35	(1)	< 33	< 31
11/22/2024	< 25	(1)	< 19	< 25	< 25	< 40	< 39	< 28	< 27
11/29/2024	< 39	(1)	< 39	< 39	< 44	< 41	< 40	< 40	< 18
12/06/2024	< 39	(1)	< 39	< 39	< 39	< 47	< 46	< 41	< 38
12/13/2024	< 30	(1)	< 41	< 41	< 41	< 26	< 26	< 24	< 23
12/20/2024	< 40	(1)	< 40	< 40	< 40	< 48	< 47	< 49	< 49
12/27/2024	< 34	(1)	< 34	< 34	< 35	< 35	< 35	< 24	< 25
01/03/2025	< 32	(1)	< 32	< 32	< 32	< 34	< 34	< 26	< 27

(1) See Sample Deviations Table (Table 9)

Table 13, Weekly Air Iodine I-131 (E-3 pCi/m3) Cont'd

Collection Date	D-08	D-10	D-14	D-55	D-12
11/01/2024	< 37	< 37	< 38	< 31	< 37
11/08/2024	< 18	< 18	< 12	< 35	< 18
11/15/2024	< 35	< 17	< 35	< 33	< 35
11/22/2024	< 25	< 19	< 40	< 29	< 40
11/29/2024	< 44	< 44	< 45	< 41	< 32
12/06/2024	< 19	< 46	< 22	< 42	< 47
12/13/2024	< 41	< 26	< 26	< 24	< 30
12/20/2024	< 19	< 22	< 49	< 50	< 48
12/27/2024	< 26	< 35	< 17	< 24	< 35
01/03/2025	< 25	< 34	< 16	< 26	< 34

Table 14, Monthly/Bi-Weekly Milk I-131 (pCi/L ± 2 Sigma)

Collection Date	Control Farm D-60
06/18/2024	< 0.7
07/09/2024	< 0.9
08/27/2024	< 0.9
09/10/2024	< 0.8
12/03/2024	< 0.8

Table 15, Monthly/Bi-Weekly Milk Gamma Isotopic (pCi/L ± 2 Sigma)

Station	Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-60	06/18/2024	< 10	< 13	< 25	< 13	< 25	< 11	< 19	< 11	< 11	< 43	< 12
	07/09/2024	< 11	< 10	< 24	< 12	< 27	< 10	< 18	< 14	< 11	< 46	< 11
	08/13/2024	< 11	< 13	< 30	< 10	< 27	< 12	< 19	< 12	< 10	< 59	< 10
	09/10/2024	< 9	< 10	< 20	< 8	< 18	< 8	< 17	< 9	< 8	< 31	< 9
	12/03/2024	< 7	< 9	< 23	< 12	< 20	< 10	< 15	< 10	< 9	< 36	< 9

Table 16, Annual Vegetation Gamma Isotopic (pCi/kg Wet ± 2 Sigma)

Station		Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-25	Collard greens	07/10/2024	< 30	< 25	< 66	< 25	< 51	< 25	< 41	< 35	< 30	< 27	< 107	< 27
	Red beets	07/10/2024	< 17	< 20	< 46	< 22	< 47	< 23	< 34	< 30	< 23	< 19	< 96	< 25
	Red beets leaves	07/10/2024	< 25	< 28	< 71	< 33	< 77	< 35	< 56	< 34	< 25	< 31	< 121	< 45
	Swiss chard	07/10/2024	< 19	< 19	< 42	< 27	< 46	< 19	< 35	< 24	< 19	< 19	< 81	< 28
	Collard greens	08/14/2024	< 37	< 32	< 66	< 32	< 94	< 30	< 48	< 33	< 35	< 34	< 133	< 25
	Swiss chard	08/14/2024	< 28	< 20	< 73	< 30	< 55	< 20	< 41	< 22	< 30	< 20	< 87	< 20
	Turnips	08/14/2024	< 21	< 19	< 47	< 22	< 42	< 22	< 29	< 27	< 25	< 27	< 80	< 22
	Collard greens	09/20/2024	< 36	< 34	< 73	< 35	< 68	< 32	< 58	< 48	< 36	< 40	< 144	< 36
	Red beet leaves	09/20/2024	< 19	< 17	< 41	< 19	< 44	< 20	< 32	< 22	< 23	< 19	< 75	< 25
	Swiss chard	09/20/2024	< 34	< 35	< 86	< 32	< 109	< 37	< 66	< 44	< 39	< 43	< 166	< 44
	Collard	10/18/2024	< 47	< 40	< 82	< 32	< 81	< 40	< 72	< 48	< 44	< 39	< 165	< 52
	Red beet leaves	10/18/2024	< 32	< 35	< 89	< 42	< 87	< 43	< 56	< 50	< 41	< 37	< 129	< 52
	Swiss chard	10/18/2024	< 33	< 30	< 62	< 28	< 69	< 28	< 43	< 35	< 34	< 32	< 108	< 34
D-39	Cabbage	07/12/2024	< 33	< 32	< 67	< 26	< 66	< 26	< 51	< 37	< 33	< 34	< 138	< 23
	Kohlrabi	07/12/2024	< 23	< 25	< 59	< 31	< 72	< 27	< 43	< 37	< 28	< 30	< 105	< 39

Table 16, Annual Vegetation Gamma Isotopic (pCi/kg Wet ± 2 Sigma) Cont'd

Station		Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-42	Kale	07/19/2024	< 21	< 23	< 55	< 27	< 61	< 22	< 47	< 31	< 24	< 25	< 101	< 21
	Swiss chard	07/19/2024	< 27	< 32	< 76	< 33	< 79	< 34	< 59	< 43	< 32	< 32	< 124	< 53
	Turnip	07/19/2024	< 24	< 25	< 45	< 32	< 61	< 27	< 48	< 35	< 26	< 25	< 96	< 23
	Cabbage	08/16/2024	< 20	< 18	< 45	< 32	< 53	< 25	< 34	< 26	< 22	< 24	< 89	< 18
	Kale	08/16/2024	< 26	< 25	< 50	< 26	< 68	< 29	< 53	< 35	< 30	< 28	< 128	< 34
	Turnip	08/16/2024	< 20	< 20	< 44	< 23	< 49	< 22	< 37	< 26	< 24	< 22	< 87	< 28
	Collard	09/20/2024	< 36	< 23	< 77	< 40	< 84	< 30	< 62	< 40	< 27	< 32	< 143	< 24
	Kale	09/20/2024	< 31	< 29	< 52	< 23	< 69	< 32	< 51	< 39	< 30	< 29	< 112	< 39
	Rutabaga	09/20/2024	< 28	< 34	< 64	< 26	< 64	< 27	< 48	< 33	< 30	< 31	< 111	< 37
	Collard	10/18/2024	< 31	< 29	< 61	< 30	< 58	< 24	< 43	< 35	< 31	< 29	< 124	< 44
	Kale	10/18/2024	< 34	< 36	< 58	< 38	< 77	< 31	< 66	< 44	< 40	< 35	< 138	< 35
	Turnip	10/18/2024	< 21	< 19	< 42	< 17	< 51	< 20	< 38	< 30	< 23	< 21	< 87	< 22

Table 16, Annual Vegetation Gamma Isotopic (pCi/kg Wet ± 2 Sigma) Cont'd

Station		Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-43	Kale	07/26/2024	< 35	< 35	< 75	< 42	< 81	< 35	< 58	< 44	< 40	< 38	< 122	< 43
	Turnip	07/26/2024	< 27	< 34	< 58	< 40	< 74	< 31	< 62	< 46	< 39	< 35	< 160	< 42
	Collard	07/26/2024	< 40	< 39	< 82	< 44	< 92	< 39	< 68	< 49	< 46	< 41	< 153	< 53
	Kale	08/16/2024	< 20	< 20	< 46	< 21	< 50	< 21	< 37	< 24	< 23	< 22	< 85	< 18
	Turnip	08/16/2024	< 11	< 14	< 26	< 12	< 26	< 11	< 20	< 15	< 13	< 13	< 48	< 15
	Collard	08/16/2024	< 33	< 31	< 62	< 40	< 83	< 37	< 65	< 46	< 36	< 41	< 149	< 36
	Swiss chard	09/20/2024	< 9	< 10	< 19	< 12	< 22	< 10	< 16	< 13	< 11	< 10	< 41	< 12
	Turnip	09/20/2024	< 19	< 16	< 27	< 19	< 36	< 16	< 31	< 23	< 21	< 19	< 70	< 10
	Collard	09/20/2024	< 31	< 40	< 80	< 36	< 76	< 35	< 62	< 46	< 40	< 34	< 182	< 46
	Kale	10/18/2024	< 38	< 31	< 85	< 40	< 91	< 40	< 68	< 48	< 38	< 39	< 162	< 44
	Swiss chard	10/18/2024	< 29	< 27	< 59	< 36	< 80	< 33	< 54	< 37	< 33	< 26	< 107	< 42
	Turnip	10/18/2024	< 15	< 13	< 27	< 15	< 34	< 13	< 23	< 17	< 18	< 14	< 61	< 15

Table 16, Annual Vegetation Gamma Isotopic (pCi/kg Wet ± 2 Sigma) Cont'd

Station		Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-44	Kale	07/19/2024	< 33	< 33	< 76	< 37	< 50	< 38	< 60	< 39	< 39	< 30	< 142	< 46
	Swiss chard	07/19/2024	< 30	< 26	< 73	< 34	< 78	< 28	< 45	< 39	< 32	< 32	< 152	< 49
	Turnip	07/19/2024	< 33	< 40	< 70	< 41	< 64	< 40	< 74	< 48	< 39	< 38	< 118	< 19
	Collard	08/16/2024	< 28	< 24	< 49	< 27	< 61	< 22	< 42	< 32	< 26	< 28	< 107	< 29
	Kale	08/16/2024	< 34	< 30	< 69	< 33	< 70	< 31	< 55	< 45	< 34	< 33	< 115	< 37
	Swiss chard	08/16/2024	< 26	< 30	< 64	< 40	< 68	< 35	< 53	< 42	< 32	< 35	< 133	< 35
	Collard	09/20/2024	< 25	< 29	< 57	< 36	< 65	< 24	< 42	< 45	< 28	< 28	< 136	< 30
	Swiss chard	09/20/2024	< 42	< 26	< 70	< 37	< 80	< 31	< 58	< 43	< 33	< 37	< 136	< 33
	Turnip	09/20/2024	< 23	< 22	< 71	< 40	< 59	< 26	< 48	< 43	< 29	< 31	< 120	< 40
	Collard	10/18/2024	< 37	< 36	< 92	< 36	< 81	< 37	< 57	< 47	< 36	< 40	< 134	< 50
	Swiss chard	10/18/2024	< 31	< 28	< 72	< 37	< 83	< 26	< 55	< 47	< 36	< 35	< 125	< 36
	Turnip	10/18/2024	< 19	< 22	< 50	< 18	< 67	< 20	< 28	< 23	< 22	< 20	< 74	< 25

Table 17, Monthly Surface Water Gross Beta (pCi/L ± 2 Sigma)

Station	Collection Dates	Gr-B
D-52	1/5/2024 - 1/26/2024	**9** ± 3
	2/2/2024 - 2/23/2024	**6** ± 2
	3/1/2024 - 3/29/2024	**13** ± 4
	4/5/2024 - 4/26/2024	**8** ± 3
	5/3/2024 - 5/31/2024	**9** ± 3
	6/7/2024 - 6/28/2024	**10** ± 3
	7/5/2024 - 7/26/2024	**10** ± 3
	8/2/2024 - 8/30/2024	**3** ± 2
	9/6/2024 - 9/27/2024	**14** ± 4
	10/4/2024 - 10/25/2024	**13** ± 4
	11/1/2024 - 11/29/2024	**9** ± 2
	12/20/2024 - 12/27/2024	**14** ± 3
D-21	12/29/2023 - 1/26/2024	**12** ± 2
	1/26/2024 - 2/23/2024	**6** ± 2
	2/23/2024 - 3/29/2024	**12** ± 4
	3/29/2024 - 4/26/2024	< 3
	4/26/2024 - 5/31/2024	**6** ± 2
	5/31/2024 - 6/28/2024	**7** ± 2
	6/28/2024 - 7/26/2024	**8** ± 3
	7/26/2024 - 8/30/2024	**14** ± 3
	8/30/2024 - 9/27/2024	**14** ± 4
	9/27/2024 - 10/25/2024	**12** ± 4
	10/25/2024 - 11/29/2024	**6** ± 2
	11/29/2024 - 12/27/2024	**12** ± 3
D-57	1/26/2024 - 1/26/2024	**14** ± 3
	2/23/2024 - 2/23/2024	**4** ± 2
	3/29/2024 - 3/29/2024	< 4
	4/26/2024 - 4/26/2024	**4** ± 2
	5/31/2024 - 5/31/2024	**6** ± 2
	6/28/2024 - 6/28/2024	< 3
	7/26/2024 - 7/26/2024	**7** ± 3
	8/30/2024 - 8/30/2024	**10** ± 3
	9/27/2024 - 9/27/2024	**6** ± 2
	10/25/2024 - 10/25/2024	**5** ± 3
	11/29/2024 - 11/29/2024	**5** ± 2
	12/27/2024 - 12/27/2024	**5** ± 2

Table 18, Monthly Surface Water Gamma Isotopic (pCi/L ± 2 Sigma)

Station	Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-21	12/29/2023 - 01/26/2024	< 8	< 10	< 18	< 10	< 12	< 7	< 13	< 12	< 10	< 8	< 40	< 11
	01/26/2024 - 02/23/2024	< 8	< 6	< 14	< 9	< 15	< 8	< 13	< 10	< 8	< 7	< 25	< 14
	02/23/2024 - 03/29/2024	< 7	< 8	< 11	< 7	< 20	< 8	< 14	< 11	< 9	< 7	< 29	< 9
	03/29/2024 - 04/26/2024	< 7	< 7	< 18	< 7	< 13	< 7	< 13	< 9	< 9	< 6	< 32	< 10
	04/26/2024 - 05/31/2024	< 5	< 7	< 14	< 8	< 10	< 7	< 10	< 9	< 7	< 7	< 27	< 14
	05/31/2024 - 06/28/2024	< 6	< 7	< 15	< 8	< 14	< 7	< 9	< 11	< 8	< 6	< 32	< 15
	06/28/2024 - 07/26/2024	< 5	< 4	< 10	< 5	< 11	< 4	< 9	< 7	< 5	< 6	< 16	< 6
	07/26/2024 - 08/30/2024	< 8	< 8	< 17	< 9	< 16	< 8	< 14	< 11	< 9	< 8	< 34	< 9
	08/30/2024 - 09/27/2024	< 7	< 7	< 12	< 8	< 17	< 8	< 14	< 12	< 10	< 6	< 40	< 12
	09/27/2024 - 10/25/2024	< 4	< 4	< 6	< 4	< 8	< 4	< 8	< 7	< 4	< 5	< 20	< 7
	10/25/2024 - 11/29/2024	< 7	< 7	< 16	< 7	< 14	< 8	< 12	< 12	< 9	< 8	< 40	< 7
	11/29/2024 - 12/27/2024	< 6	< 6	< 12	< 7	< 13	< 6	< 12	< 11	< 6	< 7	< 22	< 8
D-52	01/05/2024 - 01/26/2024	< 7	< 7	< 13	< 7	< 15	< 7	< 9	< 12	< 8	< 7	< 31	< 10
	02/02/2024 - 02/23/2024	< 5	< 5	< 12	< 7	< 10	< 6	< 12	< 11	< 6	< 7	< 32	< 8
	03/01/2024 - 03/29/2024	< 7	< 8	< 9	< 7	< 15	< 7	< 10	< 12	< 8	< 5	< 33	< 14
	04/05/2024 - 04/26/2024	< 5	< 7	< 15	< 7	< 16	< 8	< 12	< 7	< 7	< 8	< 31	< 11
	05/03/2024 - 05/31/2024	< 7	< 7	< 16	< 8	< 12	< 6	< 12	< 10	< 7	< 7	< 30	< 8
	06/07/2024 - 06/28/2024	< 7	< 8	< 17	< 11	< 13	< 7	< 13	< 10	< 5	< 8	< 27	< 9
	07/05/2024 - 07/26/2024	< 6	< 5	< 14	< 8	< 13	< 6	< 10	< 7	< 6	< 6	< 24	< 10
	08/02/2024 - 08/30/2024	< 8	< 9	< 16	< 8	< 17	< 8	< 10	< 10	< 7	< 7	< 32	< 13
	09/06/2024 - 09/27/2024	< 8	< 8	< 20	< 10	< 16	< 9	< 16	< 12	< 7	< 9	< 30	< 11
	10/04/2024 - 10/25/2024	< 7	< 8	< 14	< 10	< 14	< 7	< 13	< 13	< 7	< 7	< 34	< 12
	11/01/2024 - 11/29/2024	< 6	< 7	< 13	< 7	< 12	< 7	< 12	< 8	< 7	< 6	< 30	< 10
	12/20/2024 - 12/27/2024	< 4	< 4	< 9	< 5	< 9	< 4	< 9	< 8	< 4	< 4	< 19	< 8

Table 18, Monthly Surface Water Gamma Isotopic (pCi/L ± 2 Sigma) Cont'd

Station	Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-57	01/26/2024 - 01/26/2024	< 7	< 8	< 19	< 7	< 17	< 8	< 11	< 12	< 9	< 8	< 34	< 11
	02/23/2024 - 02/23/2024	< 7	< 7	< 17	< 6	< 17	< 8	< 11	< 9	< 7	< 6	< 31	< 11
	03/29/2024 - 03/29/2024	< 5	< 6	< 14	< 5	< 15	< 5	< 13	< 10	< 8	< 6	< 25	< 8
	04/26/2024 - 04/26/2024	< 6	< 7	< 15	< 9	< 16	< 7	< 12	< 11	< 8	< 7	< 24	< 7
	05/31/2024 - 05/31/2024	< 8	< 6	< 17	< 7	< 17	< 8	< 15	< 10	< 8	< 7	< 30	< 8
	06/28/2024 - 06/28/2024	< 6	< 6	< 13	< 7	< 15	< 6	< 11	< 10	< 8	< 8	< 33	< 8
	07/26/2024 - 07/26/2024	< 5	< 5	< 10	< 5	< 13	< 6	< 11	< 8	< 6	< 6	< 21	< 9
	08/30/2024 - 08/30/2024	< 7	< 6	< 14	< 6	< 17	< 8	< 12	< 10	< 8	< 6	< 35	< 14
	09/27/2024 - 09/27/2024	< 8	< 7	< 16	< 9	< 15	< 7	< 13	< 12	< 9	< 7	< 37	< 12
	10/25/2024 - 10/25/2024	< 6	< 6	< 15	< 7	< 17	< 7	< 12	< 9	< 7	< 7	< 27	< 9
	11/29/2024 - 11/29/2024	< 8	< 6	< 15	< 6	< 15	< 8	< 12	< 10	< 7	< 7	< 30	< 9
	12/27/2024 - 12/27/2024	< 4	< 3	< 9	< 5	< 10	< 4	< 7	< 6	< 4	< 4	< 17	< 6

Table 19, Quarterly Surface Water Tritium (pCi/L ± 2 Sigma)

Station	Collection Dates	H-3
D-21	12/29/2023 - 03/29/2024	**398** ± 129
	03/29/2024 - 06/28/2024	< 197
	06/28/2024 - 09/27/2024	**378** ± 129
	09/27/2024 - 12/27/2024	**230** ± 119
D-52	01/05/2024 - 03/29/2024	< 183
	04/05/2024 - 06/28/2024	< 197
	07/05/2024 - 09/27/2024	< 180
	10/04/2024 - 12/27/2024	< 177
D-57	12/29/2023 - 03/29/2024	**1540** ± 221
	03/29/2024 - 06/28/2024	**322** ± 133
	06/28/2024 - 09/27/2024	**1780** ± 249
	09/27/2024 - 12/27/2024	**1290** ± 198

Table 20, Quarterly Ground Water Tritium
(pCi/L ± 2 Sigma)

Collection Date	D-22	D-35	D-39
01/12/2024	< 195	< 185	< 186
04/12/2024	< 194	< 198	< 199
07/12/2024	< 185	< 190	< 188
10/11/2024	< 190	< 189	< 189

Table 21, Quarterly Ground Water Gamma Isotopic (pCi/L ± 2 Sigma)

Station	Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-22	01/12/2024 - 01/12/2024	< 6	< 6	< 12	< 7	< 15	< 7	< 8	< 11	< 6	< 6	< 34	< 13
	04/12/2024 - 04/12/2024	< 5	< 8	< 17	< 10	< 14	< 6	< 12	< 11	< 6	< 6	< 25	< 12
	07/12/2024 - 07/12/2024	< 5	< 5	< 10	< 4	< 12	< 5	< 9	< 8	< 7	< 6	< 19	< 8
	10/11/2024 - 10/11/2024	< 6	< 7	< 15	< 9	< 15	< 7	< 11	< 11	< 8	< 8	< 27	< 12
D-35	01/12/2024 - 01/12/2024	< 6	< 6	< 14	< 8	< 15	< 7	< 8	< 14	< 8	< 7	< 38	< 14
	04/12/2024 - 04/12/2024	< 6	< 6	< 15	< 7	< 12	< 6	< 11	< 9	< 6	< 8	< 32	< 7
	07/12/2024 - 07/12/2024	< 4	< 4	< 8	< 5	< 10	< 4	< 7	< 7	< 5	< 5	< 18	< 5
	10/11/2024 - 10/11/2024	< 7	< 8	< 13	< 10	< 17	< 8	< 15	< 11	< 7	< 7	< 36	< 12
D-39	01/12/2024 - 01/12/2024	< 6	< 6	< 14	< 5	< 12	< 6	< 8	< 14	< 6	< 5	< 33	< 10
	04/12/2024 - 04/12/2024	< 5	< 7	< 13	< 7	< 17	< 7	< 14	< 11	< 8	< 7	< 34	< 9
	07/12/2024 - 07/12/2024	< 3	< 3	< 7	< 4	< 7	< 4	< 7	< 5	< 4	< 3	< 14	< 6
	10/11/2024 - 10/11/2024	< 6	< 7	< 11	< 7	< 15	< 7	< 13	< 11	< 9	< 7	< 31	< 12

Table 22, Semi-Annual Fish Gamma Isotopic (pCi/kg Wet ± 2 Sigma)

Station		Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-28	Black Buffalo	06/03/2024	< 44	< 40	< 101	< 72	< 80	< 45	< 80	< 45	< 44	< 215	< 74
	Common Carp	06/03/2024	< 50	< 58	< 91	< 57	< 106	< 59	< 85	< 57	< 58	< 284	< 104
	Black Buffalo	09/24/2024	< 79	< 101	< 186	< 60	< 196	< 98	< 157	< 80	< 78	< 893	< 261
	Common Carp	09/24/2024	< 67	< 77	< 154	< 70	< 168	< 83	< 119	< 77	< 71	< 675	< 229
D-46	Black Buffalo	06/03/2024	< 50	< 48	< 97	< 47	< 90	< 41	< 80	< 49	< 41	< 227	< 71
	Common Carp	06/03/2024	< 34	< 37	< 85	< 49	< 88	< 32	< 57	< 46	< 42	< 172	< 49
	Common Carp	09/24/2024	< 67	< 66	< 158	< 55	< 147	< 83	< 137	< 68	< 69	< 773	< 236
	Largemouth Bass	09/24/2024	< 68	< 69	< 135	< 59	< 144	< 83	< 134	< 71	< 71	< 815	< 176

Table 23, Semi-Annual Shoreline Sediment Gamma Isotopic (pCi/kg Dry ± 2 Sigma)

Station	Collection Dates	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-27	05/15/2024	< 69	< 63	< 138	< 102	< 144	< 65	< 111	< 82	< 84	< 308	< 69
	10/16/2024	< 122	< 83	< 205	< 115	< 272	< 104	< 161	< 117	< 115	< 411	< 138

Attachment 3, Cross Check Intercomparison Program

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

Teledyne Brown Engineering Inc. (TBE) participated in the following proficiency testing studies provided by Eckert Ziegler Analytics, DOE's Mixed Analyte Performance Evaluation Program (MAPEP), and/or Environmental Resource Associates (ERA) in 2024. The Laboratory's intercomparison program results for 2024 are summarized below.

For the TBE laboratory, 152 out of 167 analyses performed met the specified acceptance criteria. Fifteen analyses did not meet the specified acceptance criteria and were addressed through the TBE Corrective Action Program. A summary is found below:

I. NCR 24-02: ERA March MRAD-40 study with Air Particulate AM-241 evaluated as "Not Acceptable." TBE reported 38.8 pCi/filter and the known value returned at 55.0 pCi/filter (range 39.3-73.3). The root cause investigation determined that the sample was not logged into the system correctly and therefore not prepared with the required tracer. To correct and prevent recurrence, personnel involved are to utilize a template to ensure all analyses are logged as required and the QA Manager will perform sample log review as a back up to ensure accuracy. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

II. NCR 24-03: ERA March MRAD-40 air particulate study GR-B evaluated as "Not Acceptable." TBE reported 42.1 pCi/filter and the known value returned at 22.2 pCi/filter (range 13.5-33.5). The root cause investigation determined that alpha-to-beta crosstalk was more significant than normal which caused the beta activity to report falsely high data. To correct and prevent recurrence, personnel involved are to adjust the alpha-to-beta crosstalk via correction calculation measures when high alpha activities are observed. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

III. NCR 24-05: ERA April RAD-137 water study GR-A evaluated as "Not Acceptable." TBE reported 35.2 pCi/L and the known value returned at 52.6 pCi/L (range 39.6-65.6). The root cause investigation determined that the provided samples contained a solids content that was significantly higher than the typical client samples tested by the laboratory. A set aliquot volume for prior ERA samples was used and not adjusted to account for the sudden increase in solid content. To correct and prevent recurrence, new sample types were ordered from ERA that used Am-241 to better reflect client sample testing and acceptable results were achieved. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

IV. NCR 24-06: E&Z Analytics March E14092 air particulate study Co-60 evaluated as "Not Acceptable." TBE reported 168 pCi and the known value returned at 126 pCi.

Additionally, March E14093 soil Ce-141 evaluated as “Not Acceptable.” TBE reported 0.106pCi/g and the known value returned at 0.071pCi/g. The root cause investigation was unable to determine any anomaly thus no proposed corrective action. No recurrence has occurred.

V. CAR 24-02 (CAR 23-31): MAPEP February 24-MaS50 soil study Fe-55 evaluated as “Not Acceptable.” TBE reported 297 Bg/Kg and the known value returned at 650 Bg/Kb (range 455-845). The root cause investigation suspects that the current analytical procedure is not sufficient to add the interferences added to the sample by MAPEP. This investigation is still ongoing (See NCR 24-16) as the suggested corrective action did not provide desired results.

VI. NCR 24-08: MAPEP February 24-MaS50 soil study Ni-63 evaluated as “Not Acceptable.” TBE reported 1070 Bg/Kg and the known value returned at 1530 Bg/Kb (range 1071-1989). The root cause investigation suspected that the sample contained added interferences that are not typically seen in client samples. All QC efforts associated with the sample were acceptable and no anomalies found, even after reanalysis. To correct and prevent recurrence, samples suspected of additional interferences will include the addition of Ni-59 tracer to determine yield results when calculating results. TBE analytical procedure TBE-2013 was updated to include this change.

VII. NCR 24-09: MAPEP February 24-MaSU50 urine study Zn-65 evaluated as “Not Acceptable.” The root cause investigation determined that the sample was spiked lower than TBE’s typical detection limit and client requirements. The report was revised by MAPEP indicating “Not Evaluated,” resulting in this nuclide to not be considered a failure.

VIII. NCR 24-10: MAPEP February 24-MaW50 water study Tc-99 evaluated as “Not Acceptable.” TBE reported 9.95Bg/L and the known value returned 7.47Bg/L (range 5.23-9.71). The root cause investigation suspects Thorium interference that was not removed during the column separation process of the analytical procedure; however, it cannot be confirmed as all QC efforts associated with the sample were acceptable and with no anomalies found. To potentially correct and prevent recurrence, an additional rinse step was added to the procedure. Acceptable results returned in a later sample study, supporting effectiveness of corrective action.

IX. NCR 24-11: MAPEP February 24-RdV50 vegetation study Sr-90 evaluated as “Not Acceptable.” TBE reported 0.276Bg/sample and the known value returned 0.529Bg/sample (range 0.370-0.688). The root cause investigation determined a laboratory accident resulting in a spilled (loss) of sample. No corrective action was performed as the cause was an unintentional sample spill.

X. NCR 24-14: ERA September MRAD-41 air particulate study U-234/238 evaluated as “Not Acceptable.” TBE reported 14.0/14.2 pCi/filter and the known value returned at 31.1/30.9 pCi/filter (range 23.1-36.9). The root cause investigation determined that the laboratory technician placed double the amount of tracer in the sample by error. To correct and prevent recurrence, samples that have been digested/leached with carrier/tracer added will have a label placed over the cap indicating it has already been added. Additionally, the beaker that aliquot is put in should have markings to indicate

carrier/tracer has already been added to the sample.

XI. NCR 24-15: ERA September MRAD-41 water study Fe-55 evaluated as “Not Acceptable.” TBE reported 615 pCi/L and the known value returned at 1230 pCi/L (range 723-1790). The root cause is still under investigation.

XII. NCR 24-16: MAPEP August 24-MaS50 soil study Fe-55 evaluated as “Not Acceptable.” TBE did not report a value, and the known value returned 780Bg/Kg (range 546-1014). The root cause is still under investigation.

XIII. NCR 24-17: MAPEP August 24-RdV51 vegetation study Sr-90 evaluated as “Not Acceptable.” TBE reported 0.95Bg/sample and the known value returned 2.39Bg/sample (range 1.67-3.11). The root cause is still under investigation.

Table 24: Analytics Environmental Radioactivity Cross Check Program

Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
March 2024	E14089	Milk	Sr-89	pCi/L	79.6	78.2	1.02	A
			Sr-90	pCi/L	12.6	11.9	1.06	A
	E14090	Milk	Ce-141	pCi/L	75.6	85.0	0.89	A
			Co-58	pCi/L	-0.069	Not Measured		
			Co-60	pCi/L	139	158	0.88	A
			Cr-51	pCi/L	212	230	0.92	A
			Cs-134	pCi/L	167	198	0.84	A
			Cs-137	pCi/L	158	171	0.93	A
			Fe-59	pCi/L	81.1	86.5	0.94	A
			I-131	pCi/L	80.9	90.8	0.89	A
			Mn-54	pCi/L	173	183	0.95	A
			Zn-65	pCi/L	165	176	0.93	A
	E14091	Charcoal	I-131	pCi	90.1	90.3	1.00	A
	E14092	AP	Ce-141	pCi	68.1	67.5	1.01	A
			Co-58	pCi	1.73	Not Measured		
			Co-60	pCi	168	126	1.34	N(1)
			Cr-51	pCi	182	183	0.99	A
			Cs-134	pCi	157	157	1.00	A
			Cs-137	pCi	132	136.0	0.97	A
			Fe-59	pCi	70.3	68.6	1.02	A
			Mn-54	pCi	144	145	0.99	A
			Zn-65	pCi	125	140	0.89	A
	E14093	Soil	Ce-141	pCi/g	0.106	0.071	1.48	N(1)
			Co-58	pCi/g	-0.005	Not Measured		
			Co-60	pCi/g	0.121	0.133	0.91	A
			Cr-51	pCi/g	0.198	0.194	1.02	A
			Cs-134	pCi/g	0.206	0.166	1.24	W
			Cs-137	pCi/g	0.207	0.209	0.99	A
			Fe-59	pCi/g	0.063	0.073	0.87	A
			Mn-54	pCi/g	0.140	0.153	0.91	A
			Zn-65	pCi/g	0.149	0.148	1.01	A
	E14094	AP	Sr-89	pCi	83.9	90.6	0.93	A
			Sr-90	pCi	11.7	13.8	0.85	A

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:
A = Acceptable - reported result falls within ratio limits of 0.80-1.20
W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30
N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

(*1*) See **NCR 24-06**

Table 24: Analytics Environmental Radioactivity Cross Check Program Cont'd

Teledyne Brown Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
September 2024	E14095	Milk	Sr-89	pCi/L	88.0	92.3	0.95	A
			Sr-90	pCi/L	12.4	15.2	0.82	A
	E14096	Milk	Ce-141	pCi/L	124	124	1.00	A
			Co-58	pCi/L	154	150	1.03	A
			Co-60	pCi/L	232	236	0.98	A
			Cr-51	pCi/L	284	274	1.04	A
			Cs-134	pCi/L	180.0	187	0.96	A
			Cs-137	pCi/L	126	127	0.99	A
			Fe-59	pCi/L	127.0	113	1.12	A
			I-131	pCi/L	85.3	89.0	0.96	A
			Mn-54	pCi/L	162	162	1.00	A
			Zn-65	pCi/L	294	275	1.07	A
	E14097	Charcoal	I-131	pCi	98.8	92.6	1.07	A
	E14098	AP	Ce-141	pCi	82.0	76.7	1.07	A
			Co-58	pCi	91.0	92.6	0.98	A
			Co-60	pCi	180	146	1.23	W
			Cr-51	pCi	208	170	1.22	W
			Cs-134	pCi	116	116	1.00	A
			Cs-137	pCi	83.1	78.9	1.05	A
			Fe-59	pCi	75.6	70.2	1.08	A
			Mn-54	pCi	101	100	1.01	A
			Zn-65	pCi	167	170	0.98	A
	E14099	Soil	Ce-141	pCi/g	0.224	0.222	1.01	A
			Co-58	pCi/g	0.249	0.268	0.93	A
			Co-60	pCi/g	0.420	0.423	0.99	A
			Cr-51	pCi/g	0.492	0.492	1.00	A
			Cs-134	pCi/g	0.278	0.336	0.83	A
			Cs-137	pCi/g	0.276	0.295	0.94	A
			Fe-59	pCi/g	0.233	0.204	1.14	A
			Mn-54	pCi/g	0.279	0.290	0.96	A
			Zn-65	pCi/g	0.538	0.494	1.09	A
	E14100	AP	Sr-89	pCi	79.8	82.7	0.96	A
			Sr-90	pCi	12.0	13.6	0.88	A
	E14197	Liquid	Gr-A (Am241)	pCi/L	47.6	50.1	0.95	A
			Gr-B (Cs137)	pCi/L	248	270	0.92	A

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

Table 25: DOE's Mixed Analyte Performance Evaluation Program (MAPEP)

Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value (a)	Acceptance Range	Evaluation (b)
February 2024	24-MaS50	Soil	Fe-55	Bq/kg	297	650	455 - 845	N(3)
			Ni-63	Bq/kg	1070	1530	1071 - 1989	N(4)
			Tc-99	Bq/kg	325	336	235 - 437	A
			Th-228	Bq/kg	34.6	48.8	34.2 - 63.4	W
			Th-230	Bq/kg	49.7	54.0	38.0 - 70.0	A
			Th-232	Bq/kg	36.4	45.1	31.6 - 58.6	A
	24-MaSU50	Urine	Cs-134	Bq/L	1.12	1.36	0.95 - 1.77	A
			Cs-137	Bq/L	2.00	2.23	1.56 - 2.90	A
			Co-57	Bq/L	1.06	1.26	0.88 - 1.64	A
			Co-60	Bq/L	2.26	2.38	1.67 - 3.09	A
			K-40	Bq/L	-1.80	NR	-	
			Mn-54	Bq/L	1.44	1.51	1.06 - 1.96	A
			U-234	Bq/L	0.00101		*(1)*	A
			U-238	Bq/L	0.00228		*(1)*	A
			Zn-65	Bq/L	-0.42	0.84	0.59 - 1.09	NE(5)
	24-MaW50	Water	Ni-63	Bq/L	0.338	0.80	*(2)*	A
			Tc-99	Bq/L	9.95	7.47	5.23 - 9.71	N(6)
	24-RdV50	Vegetation	Cs-134	Bq/sample	2.80	3.67	2.57 - 4.77	W
			Cs-137	Bq/sample	2.21	2.57	1.80 - 3.34	A
			Co-57	Bq/sample	2.23	2.53	1.77 - 3.29	A
			Co-60	Bq/sample	2.42	2.96	2.07 - 3.85	A
			Mn-54	Bq/sample	0.033		*(1)*	A
			Sr-90	Bq/sample	0.276	0.529	0.370 - 0.688	N(7)
			Zn-65	Bq/sample	6.83	8.02	5.61 - 10.43	A

(a) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) DOE/MAPEP evaluation:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

(1) False positive test

(2) Sensitivity evaluation

(3) See **CAR 23-31 - Analyte not on XCHK list**

(4) See **NCR 24-08**

(5) Not Evaluated

(6) See **NCR 24-10**

(7) See **NCR 24-11**

(8) Not Reported

(9) See **NCR 24-16**

(10) See **NCR 24-17**

Table 25: DOE's Mixed Analyte Performance Evaluation Program (MAPEP) Cont'd

Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value (a)	Acceptance Range	Evaluation (b)
August 2024	24-MaS51	Soil	Fe-55	Bq/kg	*(8)*	780	546 - 1014	N(9)
			Ni-63	Bq/kg	1140.00	1450.00	1015 - 1885	W
			Tc-99	Bq/kg	155.00	171.00	120 - 222	A
			Th-228	Bq/kg	38.00	43.30	30.3 - 56.3	A
			Th-230	Bq/kg	46.10	44.00	30.8 - 57.2	A
			Th-232	Bq/kg	38.90	42.60	29.8 - 55.4	A
	24-MaW51	Water	Ni-63	Bq/L	0.60	-	*(1)*	A
			Tc-99	Bq/L	11.90	11.20	7.8 - 14.6	A
	24-RdV51	Vegetation	Cs-134	Bq/sample	3.12	2.89	2.02 - 3.76	A
			Cs-137	Bq/sample	2.18	1.91	1.34 - 2.48	A
			Co-57	Bq/sample	0.00	-	*(1)*	A
			Co-60	Bq/sample	2.24	2.01	1.41 - 2.61	A
			Mn-54	Bq/sample	3.76	3.53	2.47 - 4.59	A
			Sr-90	Bq/sample	0.95	2.39	1.67 - 3.11	N(10)
			Zn-65	Bq/sample	10.30	9.13	6.39 - 11.87	A

(a) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) DOE/MAPEP evaluation:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

(1) False positive test

(2) Sensitivity evaluation

(3) See **CAR 23-31 - Analyte not on XCHK list**

(4) See **NCR 24-08**

(5) Not Evaluated

(6) See **NCR 24-10**

(7) See **NCR 24-11**

(8) Not Reported

(9) See **NCR 24-16**

(10) See **NCR 24-17**

Table 26: ERA Environmental Radioactivity Cross Check Program

Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Limits	Evaluation [b]
March 2024	MRAD-40	Water	Am-241	pCi/L	101	139	95.4 - 178	A
			Fe-55	pCi/L	2185	2480	1460- 3610	A
			Pu-238	pCi/L	62.0	70.4	42.3 - 91.2	A
			Pu-239	pCi/L	61.2	76.5	47.3 - 94.3	A
		Soil	Am-241	pCi/kg	NR	1880	1020 - 2660	
			Pu-238	pCi/kg	667	512	255 - 778	A
			Pu-239	pCi/kg	562	545	297 - 784	A
			Sr-90	pCi/kg	4050	3630	1130 - 5650	A
			U-234	pCi/kg	3040	4360	2040 - 5710	A
			U-238	pCi/kg	3270	4320	2370 - 5800	A
		AP	Am-241	pCi/filter	38.8	55.0	39.3 - 73.3	N(1)
			Fe-55	pCi/filter	387	386	141 - 616	A
			Pu-238	pCi/filter	45.9	41.1	31.0 - 50.5	A
			Pu-239	pCi/filter	54.9	56.1	41.9 - 67.7	A
			U-234	pCi/filter	11.1	11.6	8.60 - 13.6	A
			U-238	pCi/filter	12.8	11.5	8.68 - 13.7	A
			GR-A	pCi/filter	116	95.9	50.1 - 158	A
			GR-B	pCi/filter	42.1	22.2	13.5 - 33.5	N(2)
April 2024	RAD-137	Water	Ba-133	pCi/L	62.8	65.9	50.1 - 81.7	A
			Cs-134	pCi/L	51.0	57.8	42.8 - 72.8	A
			Cs-137	pCi/L	153	186	149 - 223	A
			Co-60	pCi/L	92.1	98.8	79.7 - 118	A
			Zn-65	pCi/L	208	240	188 - 292	A
			GR-A	pCi/L	35.2	52.6	39.6 - 65.6	N(3)
			GR-B	pCi/L	49	46.5	33.9 - 59.1	A
			U-Nat	pCi/L	56.0	59.3	52.8-65.8	A
			H-3	pCi/L	19,000	21,300	18,200 - 24,400	A
			Sr-89	pCi/L	48.9	52.2	37.8 - 66.6	A
			Sr-90	pCi/L	32.6	37.6	32.0 - 43.2	A
			I-131	pCi/L	21.8	25.1	21.7 - 28.5	A

(a) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(b) ERA evaluation:

A = Acceptable - Reported value falls within the Acceptance Limits

N = Not Acceptable - Reported value falls outside of the Acceptance Limits

*(1) See **NCR 24-02***

*(2) See **NCR 24-03***

*(3) See **NCR 24-05***

*(4) See **NCR 24-15***

*(5) See **NCR 24-14***

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				
D-01	27.7	40.5	17.4	21.3	19.7	23.7	ND	ND	ND	ND	110.7	155.1	82.1	ND
D-02	28.8	41.6	17.7	22.6	16.5	22.5	ND	ND	ND	ND	115.4	159.8	79.4	ND
D-03	23.9	36.7	21.1	18.5	18.7	21.2	ND	ND	ND	ND	95.6	140	79.4	ND
D-04	27.4	40.2	19.4	20.6	19.7	22.4	ND	ND	ND	ND	109.7	154.1	82.1	ND
D-07	26.7	39.5	22.8	20.8	17.1	23.4	ND	ND	ND	ND	106.6	151	84	ND
D-08	24.4	37.2	22.1	20.4	19	23.8	ND	ND	ND	ND	97.8	142.2	85.3	ND
D-10	28.6	41.4	23.1	21.9	20.2	23.4	ND	ND	ND	ND	114.5	158.9	88.6	ND
D-12	23.7	36.5	18.8	21.6	17	23.7	ND	ND	ND	ND	90.2	134.6	81	ND
D-14	23.5	36.3	20.4	17.9	17.3	22.6	ND	ND	ND	ND	93.8	138.2	78.2	ND
D-45	23.2	36	23.8	21.6	20.1	24.9	ND	ND	ND	ND	92.9	137.3	90.4	ND
D-53	27.5	40.3	15.8	18.7	18.3	21.2	ND	ND	ND	ND	110	154.4	73.9	ND
D-55	27.2	40	18.2	20.3	17.4	21	ND	ND	ND	ND	108.8	153.2	76.9	ND
D-56	25.3	38.1	17.3	19.1	16.1	21	ND	ND	ND	ND	101.1	145.5	73.5	ND
D-58	26.5	39.3	16.2	15.8	15.5	18.9	ND	ND	ND	ND	105.9	150.3	66.4	ND
D-101	26.6	39.4	22.3	19.8	20.7	24.2	ND	ND	ND	ND	106.5	150.9	87	ND
D-102	28.6	41.4	26.7	23.2	20.4	25.4	ND	ND	ND	ND	114.3	158.7	95.7	ND
D-103	26.4	39.2	20.5	22.7	19.4	21.9	ND	ND	ND	ND	105.6	150	84.4	ND
D-104	28.3	41.1	23.5	22.2	17.6	22.6	ND	ND	ND	ND	107.4	151.8	86	ND
D-105	27.1	39.9	20	22.9	20.8	23.4	ND	ND	ND	ND	108.6	153	87.1	ND
D-106	24.1	36.9	14.8	14.9	14.1	19.1	ND	ND	ND	ND	91.7	136.1	62.9	ND

MDD_Q = Quarterly Minimum Differential Dose = 12.8 mrem
MDD_A = Annual Minimum Differential Dose = 44.4 mrem
ND = Not Detected, where $M_Q \leq (B_Q+MDD_Q)$ or $M_A \leq (B_A+MDD_A)$

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 $F_Q \le MDD_Q$)				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 $F_A \le MDD_A$)
			1	2	3	4	1	2	3	4				
D-107	23.8	36.6	19	16.9	18.4	18.9	ND	ND	ND	ND	95.3	139.7	73.1	ND
D-108	26.8	39.6	18.6	19.9	(1)	21.6	ND	ND	(1)	ND	107.3	151.7	80.1	ND
D-109	27	39.8	19.2	22.8	19.1	24.1	ND	ND	ND	ND	108.2	152.6	85.2	ND
D-110	31.1	43.9	23	24.2	23.2	29.9	ND	ND	ND	ND	124.6	169	100.3	ND
D-111	28.6	41.4	22.4	22.7	19.7	23.9	ND	ND	ND	ND	103.1	147.5	88.6	ND
D-112A	25.3	38.1	16.1	17.5	16.9	21.9	ND	ND	ND	ND	101.2	145.6	72.4	ND
D-113	25.1	37.9	21.7	19.2	19.6	22.4	ND	ND	ND	ND	95.5	139.9	82.9	ND
D-114	24.6	37.4	20	16.2	17.4	19.2	ND	ND	ND	ND	98.2	142.6	72.7	ND
D-115	27.5	40.3	23.2	21.5	21.8	22.4	ND	ND	ND	ND	110.2	154.6	88.8	ND
D-116	29.4	42.2	24.6	23.8	22.3	27	ND	ND	ND	ND	117.7	162.1	97.7	ND
D-201	30.8	43.6	22.2	23	21.2	27.2	ND	ND	ND	ND	110.8	155.2	93.5	ND
D-202	27.6	40.4	23	19.3	21.8	23.8	ND	ND	ND	ND	104.9	149.3	87.9	ND
D-203	26.2	39	20.1	20.1	19.5	23.4	ND	ND	ND	ND	94.4	138.8	83.1	ND
D-204	24.4	37.2	19.3	19.3	17	20.2	ND	ND	ND	ND	97.8	142.2	75.8	ND
D-205	23.3	36.1	22.2	21.6	20.5	21.6	ND	ND	ND	ND	93.4	137.8	85.9	ND
D-206	26.6	39.4	23.8	20	18.6	21	ND	ND	ND	ND	101.1	145.5	83.4	ND
D-207	24.8	37.6	18.6	17.1	14.9	19.5	ND	ND	ND	ND	99.1	143.5	70.1	ND
D-208	23	35.8	18	17.9	16.2	19	ND	ND	ND	ND	91.9	136.3	71.1	ND
D-209	23.1	35.9	17.5	18.5	13.2	22	ND	ND	ND	ND	92.4	136.8	71.1	ND

MDD_Q = Quarterly Minimum Differential Dose = 12.8 mrem
MDD_A = Annual Minimum Differential Dose = 44.4 mrem
ND = Not Detected, where $M_Q \le (B_Q+MDD_Q)$ or $M_A \le (B_A+MDD_A)$
(1) See Sample Deviations Table (Table 9)

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				
D-210	26.1	38.9	23.3	23.3	21.6	22.1	ND	ND	ND	ND	104.6	149	90.3	ND
D-211	27.7	40.5	20.5	20.2	19.4	23.9	ND	ND	ND	ND	111	155.4	83.9	ND
D-212	24.5	37.3	17.8	18	16.7	19	ND	ND	ND	ND	98	142.4	71.5	ND
D-213	23.1	35.9	19.5	16.7	15.6	17.9	ND	ND	ND	ND	92.6	137	69.6	ND
D-214	31	43.8	21	21.5	17.4	23.2	ND	ND	ND	ND	123.8	168.2	83	ND
D-215	29.9	42.7	21.5	26.8	22	25.4	ND	ND	ND	ND	119.8	164.2	95.7	ND
D-216	28	40.8	20.1	21	19	20.9	ND	ND	ND	ND	106.3	150.7	80.9	ND

MDD_Q = Quarterly Minimum Differential Dose = 12.8 mrem
MDD_A = Annual Minimum Differential Dose = 44.4 mrem
ND = Not Detected, where $M_Q \leq (B_Q+MDD_Q)$ or $M_A \leq (B_A+MDD_A)$