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

10 CFR 50.4

SUSQUEHANNA STEAM ELECTRIC STATION
ANNUAL RADIOLOGICAL ENVIRONMENTAL
OPERATING REPORT
PLA-8219

Docket No. 50-387
50-388

In accordance with the Susquehanna Steam Electric Station (SSES) Units 1 and 2 Technical Specification 5.6.2, the SSES Annual Radiological Environmental Operating Report is hereby submitted for the 2025 calendar year.

There are no new or revised regulatory commitments contained in this submittal.

Should you have any questions regarding this submittal, please contact Ms. Melisa Krick, Manager – Nuclear Regulatory Affairs, at (570) 542-1818.

M. Jones

Attachment: 2025 Annual Radiological Environmental Operating Report

Copy: NRC Region I
Mr. R. Wehrmann, NRC Senior Resident Inspector
Mr. T. Buffone, NRC Project Manager
Mr. M. Shields, PA DEP/BRP

PLA-8219 Attachment

2025 Annual Radiological Environmental Operating Report

SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 and 2

Annual Radiological
Environmental Operating Report

2025

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SUSQUEHANNA STEAM ELECTRIC STATION

Units 1 & 2

2025 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

JANUARY 1 TO DECEMBER 31, 2025

Susquehanna Nuclear, LLC
Berwick, PA
April 2026

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I. Summary

During normal operations of a nuclear power generating station there are permitted releases of small amounts of radioactive material to the environment. To monitor and determine the effects of these releases a Radiological Environmental Monitoring Program (REMP) has been established around the Susquehanna Steam Electric Station (SSES). The results of the REMP are published annually, providing a summary and interpretation of the data collected.

Applied Ecoscience, Inc. was responsible for the collection of environmental samples during 2025. Teledyne Brown Engineering (TBE) was responsible for the analysis of environmental samples during 2025. The results are discussed in this report**.** Landauer provided dosimetry services for SSES during 2025.

This Annual Radiological Environmental Operating Report (AREOR) conducted for SSES covers the period January 1, 2025 through December 31, 2025. During that time period,1356 analyses were performed on 1151 samples.

Historically, Tritium (H-3) has been the only man-made radionuclide detected in the environment by the Susquehanna Steam Electric Station (SSES) Radiological Environmental Monitoring Program (REMP) that is attributable to station operations.

Based on data from the 2025 Radioactive Effluent Monitoring and Control program, approximately 84 Curies of H-3 were discharged in liquid radwaste releases to the Susquehanna River and approximately 144 Curies of H-3 were discharged from the station in airborne effluent releases. H-3 was identified in one REMP surface water sample. Station 4S7 had detectable H-3 in April.

The 2025 average dilution factor for the Susquehanna River was 551, based on the annual average river flow of 6.06E+06 gpm and the annual average cooling tower blowdown flow of 1.10E+04 gpm.

H-3 was identified above analysis detection levels in precipitation samples taken on-site during 2025. Precipitation is analyzed to assess the impact of airborne effluent H-3 on groundwater activities.

Low levels of H-3 were identified in one on-site groundwater sample during 2025. Assuming a Member of the Public was consuming water with the detected concentration of H-3 from the onsite monitoring well sample, the theoretical dose to the total body and maximum organ using the H-3 concentration of 515 pCi/liter and Regulatory Guide 1.109 methodology [Reference 9] was determined to illustrate the effect. The calculated dose would be <0.03 mrem to the child total body and <0.03 mrem to the child liver (critical age group/organ) which is well below SSES Technical Requirements Manual (TRM) limits and applicable regulatory limits.

The REMP Sample Equipment Operability and year-to-year trend comparison is located in Appendix E, Table E-1.

The REMP was conducted in accordance with the SSES Technical Requirements Manual (TRM) and the Offsite Dose Calculation Manual (ODCM) [Reference 5] which are based on the design objectives in 10CFR Part 50, Appendix I, Sections IV.B.2, IV.B.3 and IV.C. The Lower Limit of Detection (LLD) values required by the TRM and SSES ODCM were achieved for the 2025 reporting period. The REMP objectives were also met during this period. The concentration of radioactive material in the environment that could be attributable to SSES operations was only a small fraction of the concentration of naturally occurring and man-made radioactivity. Since these results were comparable to the results obtained during the preoperational phase of the program and combined with historical

results collected since commercial operation, it can be concluded that the levels and fluctuations were as expected and that the operation of the SSES had no significant radiological impact on the environment. Additionally, the REMP sample results for 2025 verify the adequacy of the SSES radioactive effluent control systems.

Samples of air particulates, air iodine, milk, groundwater, drinking water, food products, surface water, fish and sediment were collected and analyzed. External radiation dose measurements were also made in the vicinity of SSES using passive dosimeters.

Air particulate samples were analyzed for concentrations of gross beta weekly and gamma emitting nuclides quarterly. Gross beta and cosmogenically produced beryllium-7 (Be-7) were detected at levels consistent with those detected in previous years. No fission or activation products were detected.

Air charcoal cartridge samples were analyzed for iodine-131 (I-131). All results were less than the minimum detectable concentration.

Environmental gamma radiation measurements were performed quarterly using optically stimulated luminescent dosimeters (OSLD). The levels of radiation detected were consistent with those observed in previous years.

Cow milk samples were analyzed for gamma emitting nuclides. High sensitivity I-131 analyses were performed on cow milk samples. All I-131 results were below the minimum detectable concentration. Naturally occurring potassium-40 (K-40) was detected at levels consistent with those detected in previous years. No fission or activation products were detected.

Groundwater samples were analyzed for concentrations of tritium and gamma emitting nuclides. Tritium activities detected were consistent with those detected in previous years. No fission or activation products were detected.

Drinking water samples were analyzed for concentrations of tritium, gross beta and gamma emitting nuclides. Tritium activities were not detected above the minimum detectable concentration. Gross beta activities detected were consistent with those detected in previous years. No fission or activation products were detected.

Food product (fruits, vegetables and broadleaf vegetation) samples were analyzed for concentrations of gamma emitting nuclides. Naturally occurring Be-7 and K-40 were detected at levels consistent with those detected in previous years. No fission or activation products were detected.

Surface water samples were analyzed for concentrations of tritium, gross beta and gamma emitting nuclides. H-3 was identified in one REMP surface water sample. Station 4S7 had detectable H-3 in April. Low level gross beta activities detected were as expected for environmental surface water samples. No fission or activation products were detected.

Fish and shoreline sediment samples were analyzed for concentrations of gamma emitting nuclides. Naturally occurring K-40 was detected at levels consistent with those detected in previous years. Naturally occurring Actinium-228 (Ac-228) and Th-228 were detected in shoreline sediment at levels consistent with results in previous years. No fission or activation products were detected in fish or sediment samples.

II. The Radiological Environmental Monitoring Program

The Susquehanna Steam Electric Station (SSES) is a nuclear electrical generating station located approximately 5 miles northeast of Berwick, in Luzerne County, Pennsylvania. The station consists of two boiling-water reactor generating units. The SSES is located on approximately a 1,087-acre tract just west of the Susquehanna River. The station was constructed in the 1970's, with Unit 1 beginning commercial operation on June 8, 1983, and Unit 2 beginning commercial operation on February 12, 1985. Units 1 and 2 each generate a net 1,350 megawatts (MWe), for a total station output of 2,700 MWe.

In the 4th quarter of 2021, Susquehanna Nuclear, LLC land ownership was reduced due to land transfers to other Talen Energy entities. Impacts to the SSES REMP resulting from the above referenced land ownership changes are being implemented as appropriate by SSES Chemistry personnel.

In total, Susquehanna Nuclear, LLC presently owns 1,152 acres of land. Generally, this land is characterized by open deciduous woodlands interspersed with grasslands. The area around the site is primarily rural, consisting predominately of forest and agricultural lands.

Approximately 1,087 acres of land is jointly owned between Susquehanna Nuclear, LLC (90%) and Allegheny Electric Cooperative (10%). The land use includes generation and associated maintenance facilities, laydown areas, parking lots, roads, a nature preserve (the Susquehanna Riverlands), and agricultural leases to local farmers.

To the north of the station along the Susquehanna River, Susquehanna Nuclear, LLC owns 100% of the 65-acre Gould Island.

More specific information on the demography, hydrology, meteorology, and land use characteristics of the area in the vicinity of the SSES can be found

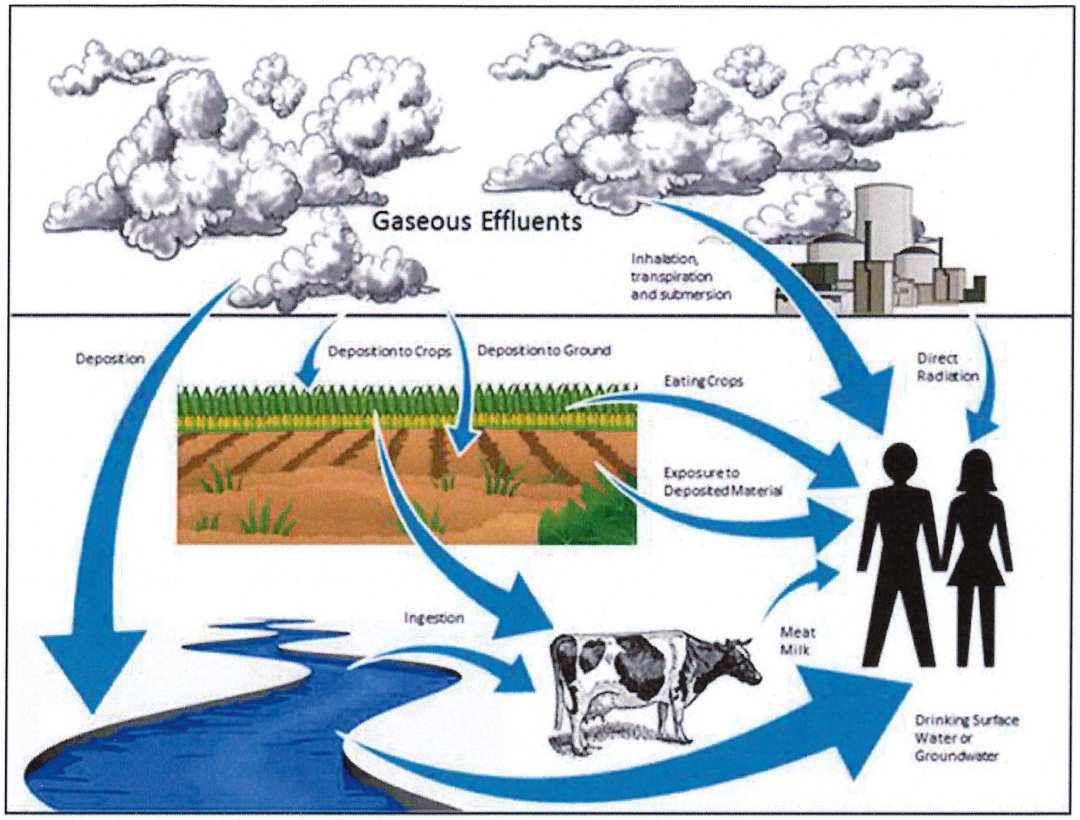
in the Environmental Report [Reference 1], the Final Safety Analysis Report [Reference 2] and the Final Environmental Statement [Reference 3] for the SSES.

The SSES has maintained a Radiological Environmental Monitoring Program (REMP) since April 1972, prior to construction of both units and ten years prior to the initial operation of Unit 1 in September 1982. The purpose of the preoperational REMP (April, 1972 to September, 1982) was to establish a baseline for radioactivity in the local environment that could be compared with the radioactivity levels observed in various environmental media throughout the operational lifetime of the SSES. This comparison facilitates assessments of the radiological impact of the SSES operation.

The REMP supplements the results of the radioactive effluent-monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation in the environment are not higher than expected based on the effluent measurements and modeling of the environment in the vicinity of the SSES.

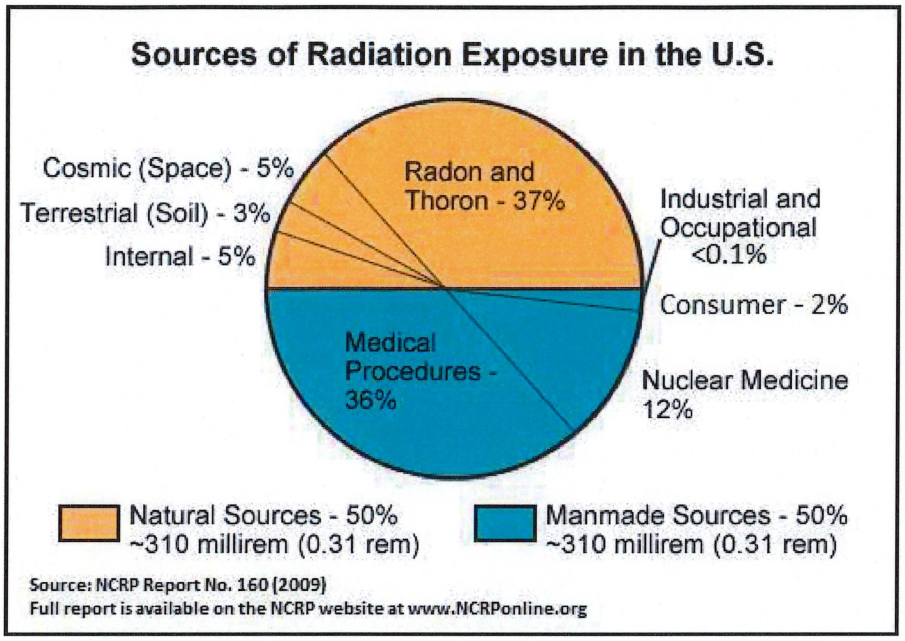
The pathways through which radiation or radioactive material may reach the public from nuclear power plants are direct exposure from the station, atmospheric, terrestrial, and aquatic pathways. (Figure 1 depicts these pathways)

Figure 1 – Radiation Pathways



People are exposed to radiation every day of their lives and have been since the dawn of mankind. Some of this radiation is naturally occurring while some is manmade. There are many factors that will determine the amount of radiation individuals will be exposed to such as where they live, medical treatments, etc. The average person in the United States is exposed to approximately 620 mrem each year. 310 mrem comes from natural sources and 310 from man-made sources. Figure 2 shows what the typical sources of radiation in the U.S.

Figure 2 – Sources of Radiation Exposure in the U.S.



Radioanalytical data from samples collected under the REMP were compared with results from the preoperational phase and historical results during operations. Differences between these periods were examined statistically to determine the effects of station operations. This report presents the results from January 1 through December 31, 2025, for the SSES Radiological Environmental Monitoring Program (REMP).

A. Objectives of the Operational REMP

The objectives of the Operational REMP are to:

1. Document compliance with SSES REMP Technical Requirements and radiological environmental surveillances.

2. Verify proper implementation of SSES radiological effluent controls.

3. Identify, measure and evaluate trends of radionuclide concentrations in environmental pathways near SSES

4. Assess impact of SSES Effluents on the Environment and the public.

5. Verify that SSES operations have no detrimental effects on the health and safety of the public or on the environment.

B. Implementation of the Objectives

1. In order to meet the objectives, an operational REMP was developed. Samples of various media were selected for monitoring due to the radiological dose impact to humans and other organisms. The selection of samples was based on:

   (a) Established critical pathways for the transfer of radionuclides through the environment to man, and

   (b) Experience gained during the preoperational phase. Sampling locations were determined based on local meteorology, Susquehanna River hydrology, local demography, and land uses.

2. Sampling locations were divided into two classes, indicator and control. Indicator locations were sited where it is expected that radiation and radioactive material that might originate from the station would be detectable. Control locations were selected in areas where they would be unaffected by station operations (i.e. Susquehanna River upstream from the station, >10 miles from the station in least prevalent wind directions). Fluctuations in the levels of radionuclides and direct radiation at indicator locations were evaluated with respect to analogous fluctuations

at control locations. Indicator and control location data were also evaluated relative to preoperational data.

3. Appendix A, Program Summary, describes and summarizes the analytical results in accordance with the SSES Technical Specifications.

4. Appendix B, Sample Designation and Locations, describes the coding system which identifies sample type and location. Table B-1 lists the location codes, locations, latitude, longitude, and the types of samples collected at each location. Table B-2 contains sample medium, analysis and sampling details.

5. The sampling locations are indicated on the following maps:

   Map B-1, Direct Radiation Monitoring Locations Within One Mile
   Map B-2, Direct Radiation Monitoring Locations From One to Five Miles
   Map B-3, Direct Radiation Monitoring Locations Greater Than Five Miles
   Map B-4, Environmental Sampling Locations Within One Mile
   Map B-5, Environmental Sampling Locations From One to Five Miles
   Map B-6, Environmental Sampling Locations Greater Than Five Miles

III. Program Description

A. Data Interpretation

Results of analyses are grouped according to sample type and presented in Appendix C, Data Tables. All results above the Lower

Limit of Detection (LLD) are at a confidence level of ± 2 sigma. This represents the range of values into which 95% of repeated analyses of the same sample should fall. As defined in U.S. Nuclear Regulatory Commission Regulatory Guide 4.8 [Reference 6], LLD is the smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability, with only 5% probability of falsely concluding that a blank observation represents a "real signal." LLD is normally calculated as 4.66 times the standard deviation of the background counting rate, or of the blank sample count, as appropriate, divided by counting efficiency, sample size, 2.22 (dpm per picocurie), the radiochemical yield when applicable, the radioactive decay constant and the elapsed time between sample collection and time of counting. LLD represents the capability of the measurement system.

The Minimum Detectable Concentration (MDC) is defined as the smallest concentration of radioactive material that can be detected at a given confidence level. The MDC differs from the LLD in that the MDC takes into consideration the interference caused by the presence of other nuclides while the LLD does not. MDC is an indicator of the performance of the measurement system. The MDC is set to be below the LLD.

Summaries of the average radionuclide concentrations and ranges are included in Table A. If a radionuclide was not detected, zero was used for that isotope in dose calculations and the activity is listed as “<MDC” (less than the minimum detectable concentration) in Table A. <MDC indicates that no activity was positively detected in any sample when samples were analyzed with techniques which achieved the required Lower Limits of Detection (LLD). The following are typical measurement laboratory MDCs for airborne and waterborne REMP samples.

Airborne REMP Typical MDCs

Radionuclide	MDC (pCi/cu.m.)
Mn-54	1.3 E-03
Fe-59	9.2 E-03
Co-58	2.1 E-03
Co-60	1.3 E-03
Zn-65	3.2 E-03
Cs-134	1.2 E-03
Cs-137	1.1 E-03
I-131	7.7 E-01

Waterborne REMP Typical MDCs

Radionuclide	MDC (pCi/L.)
H-3 (DIST)	3.5 E+02
Mn-54	3.9 E+00
Fe-59	1.1 E+01
Co-58	4.1 E+00
Co-60	4.3 E+00
Zn-65	8.2 E+00
Cs-134	3.8 E+00
Cs-137	4.1 E+00
I-131	1.1 E+01
H-3	3.5 E+02
Gross Beta	2.4 E+00

The grouped data were averaged and standard deviations calculated. Thus, the ± 2 sigma of the averaged data represent sample and not analytical variability. For reporting and calculation of averages, any result occurring at or below the LLD is considered to be at the LLD level.

B. Program Exceptions

See Exceptions Table 2025 REMP Atypical Sampling Occurrences

C. Program Changes

There were no program changes in 2025.

2025 REMP Atypical Sampling Occurrences

Date	Sample Type	Location Code(s)	Sample Period Reason for Occurrence(s)	Corrective Action
JAN	Surface Water	6S6	12/30/24 to 01/06/25 (week 1 January composite) No sample flow at ACS upon arrival for week 1 January composite collection. Adequate sample volume for week 1 January composite, with unknown stop date and time. 5S9 grab sample collected for week 1 January.	CA #25-02 CR 2025-00453 01/06/25: Requested I&C perform maintenance ASAP. 01/06/25: 5S9 grab sample collected @ 1056 hours. 01/07/25: I&C performed maintenance and restored operability of sampler. Operability verified at 1256 hours (week 2 January start). *Adequate sample volume collected for week 1 January. 5S9 grab sample sent for comparative analysis for week 1.*
	Surface Water	6S6	01/29/25 (week 1 February composite) Operations reported ACS overflow at river intake on 01/29/25. Invalid sample due to overflow. Steady stream of water flowing through sampling unit. 5S9 grab composite samples sent in February, March, April, and week 1 May while unit was inoperable.	CA #25-03 CR 2025-01536 & 2025-01527 01/29/25: Unit shut off until maintenance performed. CR generated. 01/29/25: Grab sample collected @ 5S9 @ 1349 hours. 05/06/25: I&C restored sampler to service and operability verified @ 1408 hours. *5S9 grab composites sent for analysis for February, March, April, and week 1 May.*
FEB	Air	12S1	02/11/25 to 02/19/25 Loss of 12kV power on 02/16/25. Loss of 0.5 hours, as determined by timer box. Non-continuous sampler operation.	CA #25-04 CR 2025-02392 02/16/25: Air monitor resumed normal operation when power was restored. 02/16/25: Operability verified @ 1500 hours. *Ideal sample collected for sample period: 25,500 cf.*

2025 REMP Atypical Sampling Occurrences (continued)

Date	Sample Type	Location Code(s)	Sample Period Reason for Occurrence(s)	Corrective Action
FEB (cont.)	Air	3S2, 13S6, 9B1	02/11/25 to 02/19/25 Power outages-dates and times unknown. Loss of 5.1 hours at 3S2 and 9B1, and loss of 0.2 hours at 13S6, as determined by timer boxes during weekly collection. Non-continuous sampler operation.	CA #25-05 CR 2025-02512 02/19/25: No action required. Air monitors resumed normal operation when power was restored. 02/19/25: Operability verified @ 0938 hours for 3S2, 0947 hours for 13S6, and 1023 hours for 9B1. *Ideal samples collected for sample period: 24,600 cf (3S2), 25,600 cf (13S6), and 26,200 cf (9B1).*
MAR	Air	13S6	03/05/25 to 03/12/25 Power outage- date and time unknown. Loss of 5.4 hours, as determined by timer box during weekly collection. Non-continuous sampler operation.	CA #25-06 CR 2025-03657 03/12/25: No action required. Air monitor resumed normal operation when power was restored. 03/12/25: Operability verified @ 1007 hours. *Ideal sample collected for sample period: 20,900 cf.*
APR	Air	12S1	04/09/25 to 04/16/25 (momentary loss of 12kV power) Momentary loss of power on 04/13/25 @ 1417 hours. No loss of sampling time, as determined by timer box. Non-continuous sampler operation.	CA #25-07 CR 2025-06541 04/13/25: Air monitor resumed normal operation when power was restored. 04/14/25: Operability verified @ 1058 hours. *Ideal sample collected for sample period: 22,100 cf.*

2025 REMP Atypical Sampling Occurrences (continued)

Date	Sample Type	Location Code(s)	Sample Period Reason for Occurrence(s)	Corrective Action
APR (cont.)	Air	12E1	04/23/25 to 04/30/25 Power outage- date and time unknown. Loss of 0.4 hours, as determined by timer box during weekly collection. Non-continuous sampler operation.	CA #25-08 CR 2025-07745 04/30/25: No action required. Air monitor resumed normal operation when power was restored. 04/30/25: Operability verified @ 1025 hours. *Ideal sample collected for sample period: 22,400 cf.*
MAY	Air	9B1	05/07/25 to 05/14/25 Power outage- date and time unknown. Loss of 4.0 hours, as determined by timer box during weekly collection. Non-continuous sampler operation.	CA #25-09 CR 2025-08631 05/14/25: No action required. Air monitor resumed normal operation when power was restored. 05/14/25: Operability verified @ 1011 hours. *Ideal sample collected for sample period: 21,100 cf.*
JUN	Air	9B1	06/04/25 to 06/11/25 Pump providing inadequate flow rate upon arrival (<0.5 cfm), below the procedural range of 2.0-2.4 cfm. Adequate flow could not be achieved with maximum flow settings. Continuous sampler operation.	CA #25-10 CR 2025-09967 06/11/25: Pump was replaced, and air flow restored to within procedural range. 06/11/25: Operability verified @ 1058 hours. *Ideal sample collected for sample period: 20,700 cf.*

2025 REMP Atypical Sampling Occurrences (continued)

Date	Sample Type	Location Code(s)	Sample Period Reason for Occurrence(s)	Corrective Action
JUN (cont.)	Air	13S6	06/11/25 to 06/18/25 Power outage- date and time unknown. Loss of 2.1 hours, as determined by timer box during weekly collection. Non-continuous sampler operation.	CA #25-11 CR 2025-10256 06/18/25: No action required. Air monitor resumed normal operation when power was restored. 06/18/25: Operability verified @ 0947 hours. *Ideal sample collected for sample period: 22,300 cf.*
	Air	12S1	06/18/25 to 06/25/25 (momentary loss of 12kV power) Momentary loss of power on 06/22/25 @ 0620 hours. No loss of sampling time, as determined by timer box. Non-continuous sampler operation.	CA #25-12 CR 2025-10322 06/22/25: Air monitor resumed normal operation when power was restored. 06/22/25: Operability verified @ 1710 hours. *Ideal sample collected for sample period: 20,800 cf.*
AUG	Air	3S2, 10S3, 9B1	08/06/25 to 08/13/25 Power outages began at approx. 0853 hours at 3S2 and 0851 hours at 9B1 on 08/13/25. Outage began at approx. 1111 hours at 10S3 on 08/09/25. Loss of 1.3 hours at 3S2, loss of 2.0 hours at 9B1, and 95.5 hours at 10S3, as determined by timer boxes during weekly collection. Non-continuous sampler operation.	CA #25-13 CR 2025-12771 08/13/25: Air monitors 3S2 and 9B1 resumed normal operation when power was restored at 1515 hours. 08/15/25: Air monitor 10S3 had pump failure shortly after power was restored. Pump replaced. 08/15/25: Operability verified @ 1743 hours for 3S2, 2005 hours for 10S3, and 1722 hours for 9B1. *Ideal samples collected for sample period: 21,800 cf (3S2), and 22,400 cf (9B1).* *Less than ideal sample collected for sample period: 9,500 cf (10S3).*

2025 REMP Atypical Sampling Occurrences (continued)

Date	Sample Type	Location Code(s)	Sample Period Reason for Occurrence(s)	Corrective Action
AUG (cont.)	Air	12S1	08/06/25 to 08/13/25 (momentary loss of 12kV power) Momentary loss of power on 08/13/25 @ 0853 hours. No loss of sampling time as determined by timer box. Non-continuous sampler operation.	CA #25-14 CR 2025-12732 08/13/25: No action required. Air monitor resumed normal operation when power was restored. 08/13/25: Operability verified @ 1030 hours. *Ideal sample collected for sample period: 22,300 cf.*
OCT	Surface Water	6S6	09/30/25 to 10/07/25 (week 1 October composite) ACS removed from service on 10/05/25 @ 1205 hours for valve maintenance (week 1 stop date and time). Non-continuous sampler operation.	CA #25-15 CR 2025-15261 10/07/25: Grab sample collected @ 5S9 @ 1041 hours. 10/07/25: Valves replaced and sampler returned to service @ 1245 hours (week 2 October composite start date and time). Operability verified @ 1255 hours. *Ideal sample volume collected for week 1 October. 5S9 grab sample sent for comparative analysis for week 1.*
	Air	12S1	10/08/25 to 10/15/25 (momentary loss of 12kV power) Momentary loss of power on 10/11/25 @ 0900 hours. No loss of sampling time as determined by timer box. Non-continuous sampler operation.	CA #25-16 CR 2025-15526 10/11/25: No action required. Air monitor resumed normal operation when power was restored. 10/11/25: Operability verified @ 1220 hours. *Ideal sample collected for sample period: 23,000 cf.*

2025 REMP Atypical Sampling Occurrences (continued)

Date	Sample Type	Location Code(s)	Sample Period Reason for Occurrence(s)	Corrective Action
OCT (cont.)	Air	12S1	10/15/25 to 10/22/25 (momentary loss of 12kV power) Momentary loss of power on 10/19/25. No loss of sampling time as determined by timer box. Non-continuous sampler operation.	CA #25-17 CR 2025-15883 10/19/25: No action required. Air monitor resumed normal operation when power was restored. 10/20/25: Operability verified @ 0605 hours. *Ideal sample collected for sample period: 23,000 cf.*
	Air	12S1	10/15/25 to 10/22/25 (momentary loss of 12kV power) Momentary loss of power on 10/21/25 @ 0845 hours. No loss of sampling time as determined by timer box. Non-continuous sampler operation.	CA #25-18 CR 2025-15942 10/21/25: No action required. Air monitor resumed normal operation when power was restored. 10/21/25: Operability verified @ 1515 hours. *Ideal sample collected for sample period: 23,000 cf.*
	Air	13S6	10/15/25 to 10/22/25 Timer box malfunction. Timer box recorded only 106.9 hours for sampling period. No effect on monitoring. Continuous sampler operation.	CA #25-19 CR 2025-16074 10/22/25: Timer box #3 replaced with timer box #4. Equipment restored to service @ 0951 hours. 10/22/25: Operability verified @ 0951 hours. *Ideal sample collected for sample period: 21,600 cf.*

2025 REMP Atypical Sampling Occurrences (continued)

Date	Sample Type	Location Code(s)	Sample Period Reason for Occurrence(s)	Corrective Action
NOV	Surface Water	6S6	11/18/25 to 11/24/25 (week 4 November composite) Less than normal (but adequate) sample volume for week 4 November sampling period. Diminished flow rate from previous sampling week. Continuous sampler operation.	CA #25-20 CR 2025-17706 11/24/25: Requested FIN/I&C perform maintenance ASAP to maintain constant monitoring. 12/22/25: I&C performed maintenance on sampler. Operability verified @ 1435 hours. *Ideal samples collected for December composites.*
DEC	Air	12S1	12/17/25 to 12/23/25 (momentary loss of 12kV power) Momentary loss of power on 12/19/25 @ 0258 hours. No loss of sampling time as determined by timer box. Non-continuous sampler operation.	CA #25-21 CR 2025-18716 12/19/25: No action required. Air monitor resumed normal operation when power was restored. 12/19/25: Operability verified @ 0846 hours. *Ideal sample collected for sample period: 20,200 cf.*
2nd Q	Direct Radiation	2S2, 4S6	07/22/25 (2nd Quarter 2025) During collection of the 2nd quarter environmental dosimeters, both dosimeters were missing at REMP monitoring location 2S2. One (1) environmental dosimeter from monitoring location 4S6 was able to be analyzed by Landauer. The second dosimeter at 4S6 could not be analyzed due to the damage sustained while in the field as documented in the CR.	CR 2025-11691 07/22/25: New dosimeter canisters with 3rd quarter environmental dosimeters were installed.

D. Quality Assurance Program

Teledyne Brown Engineering

The quality of the results obtained by TBE is ensured by the implementation of the Quality Assurance Program as described in the Teledyne Brown Engineering Quality Assurance Manual and the Teledyne Brown Engineering Procedure Manual.

E. Summary of Results – Inter-Laboratory Comparison Program

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

1. E&Z Analytics Evaluation Criteria

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

2. ERA Evaluation Criteria

   ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's

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

3. DOE Evaluation Criteria

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

- Acceptable (flag = "A") - result within ± 20% of the reference value
- Acceptable with Warning (flag = "W") - result falls in the ± 20% to ± 30% of the reference value
- Not Acceptable (flag = "N") – bias is greater than 30% of the reference value

Note: The Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP) samples are created to mimic conditions found at DOE sites which do not always resemble typical environmental samples obtained at commercial nuclear power facilities.

<u>Teledyne Brown Engineering</u>

For the TBE laboratory, 157 out of 164 analyses performed met the specified acceptance criteria. Seven analyses did not meet the specified acceptance criteria and were addressed through the TBE Corrective Action Program. A summary is found below:

1. NCR 25-04: MAPEP 25, RdV52 vegetation study for Sr-90 evaluated as “Not Acceptable.” Possible sample interference issue. Study results stated 8 out of 18 participants passed the study. All internal data reviewed and deemed accurate with internal quality control measures for sample also passing. The laboratory performed testing with Sr-85 spike with successful outcomes. The following provider study, RdV53, returned with passing results.
2. NCR 25-05: Interlaboratory crosscheck failure: MAPEP 25-MaS52 Ni-63 in soil. A manual data-entry error in the carrier volume for one nuclide/matrix led to an incorrect LIMS value. Manual verification showed that the crosscheck would have passed with the correct volume. The procedure has been revised with more prominent notation to assist technicians. No recurrence identified and the following crosscheck study did not result in repeated error supporting effectiveness of corrective action.
3. NCR 25-06: Interlaboratory crosscheck failure: ERA RAD141 Gr-A in water. The provider’s acceptance range was 10.0–21.2, and their reported value of 15.6 fell within this interval. TBE-ES obtained 22.2 ± 3.76, which satisfied internal QC criteria and would have aligned with the acceptance range if error margins had been considered. The QC duplicate result of 17.8 met internal requirements, and the 22% RPD demonstrated internal consistency. The provider’s Gr-A samples have historically been the lowest spiked. No internal failures identified so no corrective action deemed necessary. The following ERA RAD143 study’s performance evaluation results returned acceptable/passing.
4. NCR 25-10: *IN-PROGRESS* Interlaboratory crosscheck failure: ERA MRAD 43, PU-239/240 (AS) in Air Particulate (filter).
5. NCR 25-11: Interlaboratory crosscheck failure: ERA RAD-143 crosscheck failure of Uranium in water. Provider acceptance range: 48.0 – 60.0. TBE-ES result of 47.1 with internal acceptance ratio of 87.2 and no prior failures. No corrective action deemed necessary.
6. NCR 25-12: *IN-PROGRESS* Interlaboratory crosscheck failure: MAPEP Series 53, Ni-63 in Soil.
7. NCR 25-13: *IN-PROGRESS* Interlaboratory crosscheck failure: MAPEP Series 53, Th-232 in Soil.

The Inter-Laboratory Comparison Program provides evidence of “in control” counting systems and methods, and that the laboratories are producing accurate and reliable data.

IV. Results and Discussion

The analytical results of the 2025 REMP samples are divided into categories based on exposure pathways: atmospheric, direct radiation, terrestrial, and aquatic. The analytical results for the 2025 REMP are summarized in Appendix A, Program Summary. The data for individual samples are presented in Appendix C, Data Tables. The data are compared to the formal preoperational environmental monitoring program data (April 1972 to September 1982) and to data during operations. The data collected demonstrates that the SSES REMP was conducted in compliance with the TRM and the SSES ODCM.

A. Atmospheric

Atmospheric REMP sampling included the collection of air particulates, air iodine and direct radiation samples.

1. Air Particulates

Air particulate samples were collected weekly at six indicator locations (3S2, 9B1, 10S3, 12E1, 12S1 and 13S6) and one control locations (8G1). Each of the samples collected for the year were analyzed for gross beta. Quarterly composites of the weekly samples from each location were analyzed for specific gamma emitters.

Gross Beta

Gross beta activity was detected in 312 of 312 of the indicator location samples at concentrations ranging from 4 to 29 E-3 pCi/m^3 with an average concentration of 14 E-3 pCi/m^3, and in 52 of 52 of the control location samples at concentrations ranging from 4 to 25 E-3 pCi/m^3 with an average of 13 E-3 pCi/m^3. The maximum preoperational level detected was 102 E-3 pCi/m^3 with an average concentration of 62 E-3 pCi/m^3. (Table C–1, Appendix C); Historical levels of gross beta are shown in Figure C-1. Results for gross beta analysis from 1974 to current year are plotted.

Gamma Spectrometry

Gamma spectrometry was performed on each of the 28 quarterly composite samples. Beryllium-7, attributed to cosmic ray activity in the atmosphere, was detected in all 24 indicator location composites at concentrations ranging from 52 E-3 to 136 E-3 pCi/m^3 with an average concentration of 80 E-3 pCi/m^3, and in the four control location composites ranging in concentration from 60 to 86 E-3 pCi/m^3 with an average concentration of 73 E-3 pCi/m^3.

The maximum preoperational level detected was 85 E-3 pCi/m^3 with an average concentration of 74 E-3 pCi/m^3. (Table C–2, Appendix C)

All other gamma emitters were less than the LLD.

2. Air Iodine

Filtered air iodine samples were collected weekly at six indicator locations (3S2, 9B1, 10S3, 12E1, 12S1, and 13S6) and one control locations (8G1). Each of the samples collected for the year were analyzed for I-131.

Iodine-131

Iodine-131 was not detected in any indicator location samples or control location samples. Preoperational data is not available for comparison. (Table C–3, Appendix C)

B. Direct Radiation

Ambient radiation levels in the environs were measured at each monitoring location with a pair of optically stimulated luminescent dosimeters (OSLD) composed of aluminum oxide crystals supplied and processed by Landauer. The Landauer OSLD is designed to meet the ANSI N545 Standard and ANSI/HPS Standard N13.37-2014. Packets containing OSLDs for quarterly exposure were placed in the owner-controlled area and around the site at various distances and in each land-based meteorological sector. Emphasis was placed on special interest areas such as population centers, nearby residences, and schools.

A total of 60 locations were monitored for direct radiation during 2025, including 35 site boundary locations, 14 outer distant locations, six special interest locations and five control locations.

Environmental monitoring of ambient radiation levels began prior to the commencement of SSES operation. The preoperational monitoring period data used in the calculation of dose attributable the SSES

operation is from 1980-1981. The availability of preoperational direct radiation monitoring data and data for control direct radiation monitoring locations provides a basis for distinguishing between the portions of dose received from exposure to sources of natural radiation and that which might have been from man-made sources of radiation.

Pre-operational and operational data are compared for the purpose of determining if dosimeter data may indicate a dose contribution from SSES operation. Ratios of doses for specific indicator locations to the average of the doses for control locations from operational periods are compared to their counterparts from the preoperational period. Comparison of these ratios is performed in lieu of comparing the actual operational and preoperational doses. All indicator-to-control-average dose ratios for operational periods are compared to expected ranges from 1980-81 data for indicator-to-control-average dose ratios from the same locations. If preoperational data does not exist for the location of interest, indicator-to-control-average dose ratios for operational periods are compared to data for control locations monitored during 1980-81. The purpose for these comparisons is to flag possible SSES direct radiation dose contributions and to provide input, if appropriate, for the calculation of SSES direct radiation dose contributions.

Additional details on the statistical method used for determination of direct radiation dose to a member of the public due to SSES operation (based on environmental dosimeter data) can be found in Engineering Calculation EC-ENVR-1012, Interpretation of Environmental Direct Radiation Monitoring Results - Estimation of Direct Radiation Dose to Members of the Public Attributable to SSES Fuel Cycle Operations Rev. 2 [Reference 8].

The indicator locations annual average dose rate was 17.3 milliroentgen per standard quarter. The annual average dose rate for the control locations was 15.9 milliroentgen per standard quarter. The preoperational average for the quarterly direct radiation readings was 17.6 milliroentgen per standard quarter.

In 2025, the maximum direct radiation dose to a member of the public calculated using the methodology in EC-ENVR-1012 [Reference 8] was 0.320 mrem.

The results of the direct radiation measurements for 2025 confirmed that the radiation levels in the vicinity of the SSES were similar to previous years. (Table C–4, Appendix C); Figure C-2 – Ambient Radiation Levels Based on Environmental Dosimetry Data from 1973 to current year are plotted as quarterly averages.

C. Terrestrial

Terrestrial REMP sampling included the collection of milk, groundwater, drinking water, and food products.

1. Milk

Milk samples were collected biweekly when cows were on pasture and monthly when cows were not grazing on pasture. Animals are considered on pasture from April to October of each year. Samples were collected in new polyethylene containers and transported in ice chests with preservatives added to the milk.

Milk samples were collected at local dairy farms from 2 indicator locations (5E2 and 13E3) and one control location

(10G1). Each sample was analyzed for I-131 and gamma emitters.

Iodine-131

Iodine-131 was not detected above minimum detectable concentration in any of the 60 samples analyzed. Preoperational data is not available for comparison. (Table C-5, Appendix C); Figure C-3 – Iodine-131 Activity in Milk results from 1976 to 2025 are plotted.

Gamma Spectrometry

Naturally occurring K-40 was detected in all 60 samples with concentrations for the 40 indicator location samples ranging from 983 to 1,403 pCi/L with an average concentration of 1,197 pCi/L, and the 20 control location sample concentrations ranging from 1,047 to 1,399 pCi/L with an average concentration of 1,242 pCi/L. The maximum preoperational level detected was 1,500 pCi/L with an average concentration of 1,358 pCi/L. (Table C-5, Appendix C).

All other gamma emitters were less than the LLD.

2. Groundwater

An expanded groundwater monitoring network was initiated in 2006 for the SSES as part of a site-wide hydrogeological investigation in accordance with the Nuclear Energy Institute (NEI) Groundwater Protection Initiative (GPI). The additional groundwater monitoring wells are sampled as part of the Radiological Environmental Monitoring Program (REMP) to regularly assess groundwater quality and provide early

detection of any inadvertent leaks or spills of radioactive materials that could reach groundwater. Groundwater is sampled quarterly and analyzed for H-3 and gamma activity. Additionally, precipitation sampling was initiated in 2007 and analyzed for H-3 activity to assess the influence of station airborne H-3 emissions on groundwater H-3 activities.

Precipitation washout monitoring data is not used in dose calculations; however, the data does give a gross indication of H-3 which makes its way into surface water and soil where it eventually seeps into shallow groundwater. The annual average H-3 concentrations in precipitation, groundwater monitoring wells and surface water are summarized in Table C-7 and graphically depicted in Figure C-4 - Annual Average Tritium Activity (pCi/L) in Precipitation and Surface Water Versus Groundwater.

Groundwater samples were collected quarterly at 10 indicator locations (1S3, 1S4, 4S8, 4S9, 8S4, 7S10, 2S8, 6S11A, 6S12 and 7S11) and one control station (13S7). Each sample was analyzed for H-3 and gamma emitters.

Tritium

Tritium activity was detected in one of the 40 indicator location samples with a concentration of 515 pCi/L. Tritium was not detected in any of the four control location samples. The maximum preoperational level detected was 119 pCi/L. (Table C–6, Appendix C); Figure C-4 – Annual Average Tritium Activity (pCi/L) in Precipitation and Surface Water Versus Groundwater results from 2007 to 2025 are plotted.

Gamma Spectrometry

Naturally occurring K-40 was not detected. The Preoperational data is not available for comparison. (Table C-6, Appendix C) All other gamma emitters were less than the LLD.

3. Drinking Water

Drinking water samples were collected monthly from one location (12H2). Each sample was analyzed for gross beta, H-3 and gamma emitters. Drinking Water control samples have not been obtained/analyzed because there are no upstream locations available in reasonable proximity to SSES. As an alternative to an upstream control location, Surface Water pathway control samples are obtained from the Susquehanna River via an auto-composite sampler at the SSES Intake Structure. Surface Water control samples serve as control samples for the Drinking Water pathway since the Surface Water control samples are from the Susquehanna River.

Gross Beta

Gross beta activity was detected in two of the 12 drinking water samples. Sample concentrations ranged from 3 to 4.5 pCi/L with an average concentration of 3.7 pCi/L. The maximum preoperational level detected was 2.8 pCi/L with an average concentration of 1.8 pCi/L. (Table C–8, Appendix C); Figure C-5 – Gross Beta Activity in Drinking Water results from 1977 to 2025 are plotted.

Tritium

Tritium activity was not detected in any of the samples. The

maximum preoperational level detected was 194 pCi/L with an average of 132 pCi/L. (Table C–8, Appendix C)

Gamma Spectrometry

Naturally occurring K-40 was not detected. Preoperational data is not available for comparison. (Table C–8, Appendix C)

All other gamma emitters were less than the LLD.

4. Food Products

Food products from two indicator locations (11S6 and 12F7) were collected throughout the growing season. All samples were analyzed for gamma emitters and included Swiss chard, collards, potatoes, corn, and soybeans.

Gamma Spectrometry

Naturally occurring Be-7, attributed to cosmic ray activity in the atmosphere, was detected in two of the 13 indicator location samples with concentrations ranging from 397 to 431 pCi/kg wet with an average concentration of 414 pCi/kg wet. Preoperational data is not available for comparison.

Naturally occurring K-40 was detected in all 13 indicator location samples with concentrations ranging from 1,847 to 16,540 pCi/kg wet with an average concentration of 3,926 pCi/kg wet. The maximum preoperational level detected was 4,800 pCi/kg wet with an average concentration of 2,140 pCi/kg wet.

Naturally occurring Ac-228 was not detected in any of the indicator or control locations. Preoperational data is not available for comparison.

Naturally occurring Th-228 was not detected in any of the indicator or control locations. Preoperational data is not available for comparison. (Table C-9, Appendix C)

All other gamma emitters were less than the LLD.

D. Aquatic

Aquatic samples include surface water, fish, and sediment samples.

1. Surface Water

Surface water samples were collected routinely at three indicator locations (6S5, 4S7, and LTAW) and two control locations (6S6 and 5S9). Each sample was analyzed for H-3 and gamma emitters and 14 samples were analyzed for gross beta.

Gross Beta

Gross beta analysis of Surface water control samples was initiated in the 2nd quarter of 2024 to coincide with an update to the SSES Technical Requirements Manual (TRM). Gross beta activity was detected in five of the 14 surface water samples. Sample concentrations ranged from 2 to 5 pCi/L with an average concentration of 3 pCi/L.

Tritium

Tritium activity was detected one of the 20 indicator location samples at 495 pCi/L. Tritium was not detected in any of the 15 control location samples. The maximum preoperational level detected was 319 pCi/L, with an average concentration of 140 pCi/L. (Table C-10, Appendix C) Figure C-6 – Tritium Activity in Surface Water, results from 1972 to 2025 are plotted.

Gamma Spectrometry

Naturally occurring K-40 was not detected in any of the indicator or control location samples. Preoperational data is not available for comparison. Iodine-131 was not detected in any of the indicator or control samples. Naturally occurring Th-228 was not detected in any of the indicator or control samples. The maximum preoperational level detected was 0.43 pCi/L, with an average concentration of 0.33 pCi/L. (Table C-10, Appendix C)

All other gamma emitters were less than the LLD.

2. Fish

Edible species of fish were collected in the spring and fall of 2025 at two indicator locations (IND [Susquehanna River] and LTAW (only collected in the fall) and one control location (2H [Susquehanna River]). Each sample was analyzed for gamma emitters.

Gamma Spectrometry

Naturally occurring K-40 was detected in all indicator location samples at concentrations ranging from 3,211 to 4,681 pCi/kg

wet with an average concentration of 3,625 pCi/kg wet, and in all control location samples at concentrations ranging from 2,499 to 4,251 pCi/kg wet with an average concentration of 3,588 pCi/kg wet. The maximum preoperational level detected was 3,600 pCi/kg dry with an average concentration of 3,871 pCi/kg dry. (Table C–11, Appendix C)

All other gamma emitters were less than the LLD.

3. Shoreline Sediment

Sediment samples were collected from the Susquehanna River in the spring and fall at two indicator locations (7B and 12F) and one control location (2B). Each sample was analyzed for gamma emitters.

Gamma Spectroscopy

Naturally occurring K-40 was detected in all four of the indicator location samples at concentrations ranging from 6,305 to 10,650 pCi/kg dry with an average concentration of 9,149 pCi/kg dry, and in all of the control location samples with concentrations ranging from 10,210 to 15,150 pCi/kg dry with an average concentration of 12,680 pCi/kg dry. The maximum preoperational level detected was 11,000 pCi/kg dry with an average concentration of 8,500 pCi/kg dry.

Cesium-137 was not detected in any of the indicator or control location samples. The maximum preoperational level detected was 210 pCi/kg dry with an average concentration of 110 pCi/kg dry.

Naturally occurring Ra-226 was not detected in a control or indicator location. The maximum preoperational level detected was 1,900 pCi/kg dry with an average concentration of 700 pCi/kg dry.

Naturally occurring Ac-228 was detected in all four indicator location samples at concentrations ranging from 800 to 1079 pCi/kg dry with an average concentration of 928 pCi/kg dry, and in both of the control location samples at concentrations ranging from 1,158 to 1,346 pCi/kg dry with an average concentration of 1,252 pCi/kg dry. Preoperational data is not available for comparison.

Naturally occurring Th-228 was detected in all of the four indicator location samples at concentrations ranging from 654 to 839 pCi/kg dry with an average concentration of 775 pCi/kg dry, and in both of the control location samples at concentrations ranging from 914 and 1,142 pCi/kg dry with an average concentration of 1,028 pCi/kg dry. The maximum preoperational level detected was 3,200 pCi/kg dry with an average concentration of 1,300 pCi/kg dry. (Table C 12, Appendix C)

All other gamma emitters were less than the LLD.

E. Land Use Census

SYNOPSIS OF 2025 LAND USE CENSUS

Applied Ecoscience, Inc. conducted a Land Use Census during the 2025 growing season around SSES to comply with the ODCM. The purpose of the survey was to document the nearest milk animal,

residence and garden greater than 50 m^2 (approximately 500 ft^2) producing broad leaf vegetation within a distance of 8 km (approximately 5 miles) in each of the 16 meteorological sectors surrounding the SSES.

Distance in Miles from the SUSQUEHANNA NUCLEAR Reactor Buildings

Sector	Direction[1]	Nearest Residence Distance[1]	Nearest Garden Distance[1]	Nearest Dairy Animal Distance[1]
1	N	1.3 mi	4.6 mi	>5.0 mi
2	NNE	1.0 mi	2.3 mi [a,b,d]	>5.0 mi
3	NE	0.9 mi	2.7 mi	>5.0 mi
4	ENE	2.1 mi	>5.0 mi	>5.0 mi
5	E	1.6 mi	4.9 mi	4.5 mi [c]
6	ESE	0.5 mi	3.1 mi	>5.0 mi
7	SE	0.6 mi	0.6 mi	>5.0 mi
8	SSE	0.7 mi	2.9 mi	>5.0 mi
9	S	1.2 mi	3.5 mi	>5.0 mi
10	SSW	0.9 mi	2.9 mi [e]	>5.0 mi [c]
11	SW	1.5 mi	4.2 mi	>5.0 mi
12	WSW	1.3 mi	1.3 mi	>5.0 mi
13	W	1.4 mi	3.2 mi	5.0 mi
14	WNW	1.1 mi	3.6 mi	>5.0 mi
15	NW	0.8 mi	2.3 mi	>5.0 mi
16	NNW	0.7 mi	4.0 mi	>5.0 mi

[1] Direction and distance = compass direction and number of air miles from the Susquehanna Steam Electric Station standby gas treatment vent.

a Chickens raised for consumption at this location
b Eggs consumed from chickens at this location
c Fruits/vegetables raised for consumption at this location
d Beef cattle raised for consumption at this location

The 2025 Land Use Census results are summarized in the above table.

V. Annotations to Previous AREOR

There are no annotations to the previous AREOR.

VI. Conclusions

The Radiological Environmental Monitoring Program for SSES was conducted during 2025 in accordance with the SSES TRM and ODCM. The LLD values required by the TRM and ODCM were achieved for this reporting period (See Appendix A and Appendix C). The objectives of the program were also met during this period. The data collected assists in demonstrating that SSES was operated in compliance with TRM and ODCM requirements.

The concentration of radioactive material in the environment that could be attributable to SSES operations was only a small fraction of the concentration of naturally occurring and man-made radioactivity. Since these results were comparable to the results obtained during the preoperational phase of the program, which ran from 1972 to 1982, and with results collected since commercial operation, it is concluded that operation of the SSES had no significant radiological impact on the health and safety of the public or the environment.

From the results obtained, it can be concluded that the levels and fluctuations of radioactivity in environmental samples were as expected for the environment surrounding the SSES.

VII. References

[1] Annual Radiological Environmental Operating Report, January 1 to December 31, 2025, prepared by Teledyne Brown Engineering, Knoxville TN.

[2] Final Safety Analysis Report

[3] Final Environmental Statement

[4] Susquehanna Steam Electric Station, 2025 Land Use Census. Prepared for Susquehanna Nuclear, LLC, Berwick, PA. December 2025. Applied Ecoscience, Inc. Berwick, PA.

[5] Susquehanna Nuclear, LLC. Radiological Environmental Monitoring Program, ODCM-QA-008, Rev. 23.

[6] United States Nuclear Regulatory Commission. “An Acceptable Radiological Environmental Monitoring Program.” Radiological Assessment Branch Technical Position. November 1979, Revision 1. USNRC, Washington, DC.

[7] NCRP Report No. 160, “Ionizing Radiation Exposure of the Population of the United States”, (2009).

[8] Engineering Calculation EC-ENVR-1012, Interpretation of Environmental Direct Radiation Monitoring Results – Estimation of Direct Radiation Dose to Members of the Public Attributable to SSES Fuel Cycle Operations, Rev. 2. May 2013

[9] Regulatory Guide 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, Rev. 1 October 1977

APPENDIX A

PROGRAM SUMMARY

TABLE A
SUMMARY OF DATA FOR SSES
OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
NAME OF FACILITY: SUSQUEHANNA STEAM ELECTRIC STATION
LOCATION OF FACILITY: LUZERNE COUNTY, PENNSYLVANIA

Reporting Period: December 30, 2024 to December 31, 2025

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSIS PERFORMED (1)		LOWER LIMIT OF DETECTION (LLD) (2)	ALL INDICATOR LOCATIONS MEAN (3) RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (3) RANGE	CONTROL LOCATION MEAN (3) RANGE	NUMBER OF NONROUTINE REPORTED MEASURMENTS (4)
Air Particulates (E-3 pCi/m^3)	GR-B	364	10	1.412E+01 (312/312) (4.340E+00 - 2.920E+01)	13S6 0.4 MILES W	1.457E+01 (52/52) (4.340E+00 - 2.610E+01)	1.287E+01 (52/52) (4.280E+00 - 2.460E+01)	0
	GAMMA BE-7	28	NA	7.983E+01 (24/24) (5.210E+01 - 1.361E+02)	13S6 0.4 MILES W	8.592E+01 (4/4) (5.877E+01 - 1.361E+02)	7.323E+01 (4/4) (5.975E+01 - 8.627E+01)	0
	K-40		NA	<MDC (0/24)		-	<MDC (0/4)	0
	CS-134		50	<MDC 0/24		-	<MDC (0/4)	0
	CS-137		60	<MDC 0/24		-	<MDC (0/4)	0
Charcoal (E-3 pCi/m^3)	GAMMA I-131	364	70	<MDC (0/312)		-	<MDC (0/4)	0
Ambient Radiation (mR/std. qtr.)	OSLD	239	NA	1.728E+01 (219/219) (1.020E+01 - 3.368E+01)	9S2 0.2 MILES S	2.812E+01 (4/4) (1.952E+01 - 3.368E+01)	1.585E+01 (20/20) (1.123E+01 - 2.266E+01)	0
Milk (pCi/Liter)	I-131 (LOW LVL)	60	1	<MDC (0/40)		-	<MDC (0/20)	0
	GAMMA K-40	60	NA	1.197E+03 (40/40) (9.828E+02 - 1.403E+03)	10G1 C 14 MILES SSW	1.242E+03 (20/20) (1.047E+03 - 1.399E+03)	1.242E+03 (20/20) (1.047E+03 - 1.399E+03)	0
	CS-134		15	<MDC (0/40)		-	<MDC (0/20)	0

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Milk (cont'd) (pCi/Liter)	CS-137		18	<MDC	(0/40)		-	<MDC	(0/20)	0
	BA-140		60	<MDC	(0/40)		-	<MDC	(0/20)	0
	LA-140		15	<MDC	(0/40)		-	<MDC	(0/20)	0
	TH-228		NA	<MDC	(0/40)		-	<MDC	(0/20)	0
Ground Water (pCi/Liter)	H-3	44	2000	5.150E+02	(1/40)	1S3 0.1 MILES N	5.150E+02 (1/4)	<MDC	(0/4)	0
	GAMMA K-40	44	NA	<MDC	(0/40)		-	<MDC	(0/4)	0
	MN-54		15	<MDC	(0/40)		-	<MDC	(0/4)	0
	CO-58		15	<MDC	(0/40)		-	<MDC	(0/4)	0
	FE-59		30	<MDC	(0/40)		-	<MDC	(0/4)	0
	CO-60		15	<MDC	(0/40)		-	<MDC	(0/4)	0

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Reporting Period: December 30, 2024 to December 31, 2025

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSIS PERFORMED (1)		LOWER LIMIT OF DETECTION (LLD) (2)	ALL INDICATOR LOCATIONS MEAN (3) RANGE		LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (3) RANGE	CONTROL LOCATION MEAN (3) RANGE		NUMBER OF NONROUTINE REPORTED MEASURMENTS (4)
Ground Water (cont'd) (pCi/Liter)	ZN-65		30	<MDC	(0/40)		-	<MDC	(0/4)	0
	NB-95		15	<MDC	(0/40)		-	<MDC	(0/4)	0
	ZR-95		30	<MDC	(0/40)		-	<MDC	(0/4)	0
	I-131		15	<MDC	(0/40)		-	<MDC	(0/4)	0
	CS-134		15	<MDC	(0/40)		-	<MDC	(0/4)	0
	CS-137		18	<MDC	(0/40)		-	<MDC	(0/4)	0
	BA-140		60	<MDC	(0/40)		-	<MDC	(0/4)	0
	LA-140		15	<MDC	(0/40)		-	<MDC	(0/4)	0
	TH-228		NA	<MDC	(0/40)		-	<MDC	(0/4)	0
Drinking Water (pCi/Liter)	GR-B	12	4	3.730E+00 (2/12) (2.970E+00 - 4.490E+00)		12H2 26 MILES WSW	3.730E+00 (2/12) (2.970E+00 - 4.490E+00)	NA		0
	H-3	12	400	<MDC	(0/12)		-	NA		0

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LOCATION OF FACILITY: LUZERNE COUNTY, PENNSYLVANIA

Reporting Period: December 30, 2024 to December 31, 2025

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSIS PERFORMED (1)	LOWER LIMIT OF DETECTION (LLD) (2)	ALL INDICATOR LOCATIONS MEAN (3) RANGE		LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (3) RANGE	CONTROL LOCATION MEAN (3) RANGE	NUMBER OF NONROUTINE REPORTED MEASURMENTS (4)
Drinking Water (cont'd) (pCi/Liter)	GAMMA 12							
	K-40	NA	<MDC	(0/12)		-	NA	0
	MN-54	15	<MDC	(0/12)		-	NA	0
	CO-58	15	<MDC	(0/12)		-	NA	0
	FE-59	30	<MDC	(0/12)		-	NA	0
	CO-60	15	<MDC	(0/12)		-	NA	0
	ZN-65	30	<MDC	(0/12)		-	NA	0
	NB-95	15	<MDC	(0/12)		-	NA	0
	ZR-95	30	<MDC	(0/12)		-	NA	0
	I-131	15	<MDC	(0/12)		-	NA	0
	CS-134	15	<MDC	(0/12)		-	NA	0

TABLE A
SUMMARY OF DATA FOR SSES
OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
NAME OF FACILITY: SUSQUEHANNA STEAM ELECTRIC STATION
LOCATION OF FACILITY: LUZERNE COUNTY, PENNSYLVANIA

Reporting Period: December 30, 2024 to December 31, 2025

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSIS PERFORMED (1)	LOWER LIMIT OF DETECTION (LLD) (2)	ALL INDICATOR LOCATIONS MEAN (3) RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (3) RANGE	CONTROL LOCATION MEAN (3) RANGE	NUMBER OF NONROUTINE REPORTED MEASURMENTS (4)
Drinking Water (cont'd) (pCi/Liter)	CS-137	18	<MDC (0/12)		-	NA	0
	BA-140	60	<MDC (0/12)		-	NA	0
	LA-140	15	<MDC (0/12)		-	NA	0
Food/Garden Crops (pCi/kg wet)	GAMMA 13						
	BE-7	NA	4.142E+02 (2/13) (3.971E+02 - 4.312E+02)	11S6 0.5 MILES SW	4.142E+02 (2/10) (3.971E+02 - 4.312E+02)	NA	0
	K-40	NA	3.926E+03 (13/13) (1.847E+03 - 1.654E+04)	12F7 8.3 MILES WSW	7.187E+03 (3/3) (2.079E+03 - 1.654E+04)	NA	0
	I-131	60	<MDC (0/13)		-	NA	0
	CS-134	60	<MDC (0/13)		-	NA	0
	CS-137	80	<MDC (0/13)		-	NA	0
	AC-228	NA	<MDC (0/13)		-	NA	0
	TH-228	NA	<MDC (0/13)		-	NA	0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSIS PERFORMED (1)	LOWER LIMIT OF DETECTION (LLD) (2)	ALL INDICATOR LOCATIONS MEAN (3) RANGE		LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (3) RANGE	CONTROL LOCATION MEAN (3) RANGE	NUMBER OF NONROUTINE REPORTED MEASURMENTS (4)
Food/Garden Crops (cont'd) (pCi/kg wet)	NB-95	NA	<MDC	(0/13)		-	NA	0
	ZR-95	NA	<MDC	(0/13)		-	NA	0
	BA-140	NA	<MDC	(0/13)		-	NA	0
	LA-140	NA	<MDC	(0/13)		-	NA	0

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Surface Water (pCi/Liter)	GR-B	14	4	NA		5S9 C 0.8 MILES E	3.780E+00 (2/5) (3.160E+00 - 4.400E+00)	3.422E+00 (5/14) (2.180E+00 - 4.590E+00)		0
	H-3	35	2000	4.950E+02 (1/20)		4S7 0.4 MILES ENE	4.950E+02 (1/4)	<MDC	(0/15)	0
	GAMMA	35								
	K-40		NA	<MDC	(0/20)		-	<MDC	(0/15)	0
	MN-54		15	<MDC	(0/20)		-	<MDC	(0/15)	0
	CO-58		15	<MDC	(0/20)		-	<MDC	(0/15)	0
	FE-59		30	<MDC	(0/20)		-	<MDC	(0/15)	0
	CO-60		15	<MDC	(0/20)		-	<MDC	(0/15)	0
	ZN-65		30	<MDC	(0/20)		-	<MDC	(0/15)	0
	NB-95		15	<MDC	(0/20)		-	<MDC	(0/15)	0
	ZR-95		30	<MDC	(0/20)		-	<MDC	(0/15)	0

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SUMMARY OF DATA FOR SSES
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LOCATION OF FACILITY: LUZERNE COUNTY, PENNSYLVANIA

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSIS PERFORMED (1)	LOWER LIMIT OF DETECTION (LLD) (2)	ALL INDICATOR LOCATIONS MEAN (3) RANGE		LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (3) RANGE	CONTROL LOCATION MEAN (3) RANGE		NUMBER OF NONROUTINE REPORTED MEASURMENTS (4)
Surface Water (cont'd) (pCi/Liter)	I-131	15	<MDC	(0/20)		-	<MDC	(0/15)	0
	CS-134	15	<MDC	(0/20)		-	<MDC	(0/15)	0
	CS-137	18	<MDC	(0/20)		-	<MDC	(0/15)	0
	BA-140	60	<MDC	(0/20)		-	<MDC	(0/15)	0
	LA-140	15	<MDC	(0/20)		-	<MDC	(0/15)	0
	TH-228	NA	<MDC	(0/20)		-	<MDC	(0/15)	0
Fish (pCi/kg wet)	GAMMA 14 K-40	NA	3.625E+03 (8/8) (3.211E+03 - 4.681E+03)		IND 0.9-1.4 MILES ESE	3.653E+03 (6/6) (3.211E+03 - 4.681E+03)	3.588E+03 (6/6) (2.499E+03 - 4.251E+03)		0
	MN-54	130	<MDC	(0/8)		-	<MDC	(0/6)	0
	CO-58	130	<MDC	(0/8)		-	<MDC	(0/6)	0
	FE-59	260	<MDC	(0/8)		-	<MDC	(0/6)	0
	CO-60	130	<MDC	(0/8)		-	<MDC	(0/6)	0

TABLE A
SUMMARY OF DATA FOR SSES
OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
NAME OF FACILITY: SUSQUEHANNA STEAM ELECTRIC STATION
LOCATION OF FACILITY: LUZERNE COUNTY, PENNSYLVANIA

Reporting Period: December 30, 2024 to December 31, 2025

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSIS PERFORMED (1)	LOWER LIMIT OF DETECTION (LLD) (2)	ALL INDICATOR LOCATIONS MEAN (3) RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (3) RANGE	CONTROL LOCATION MEAN (3) RANGE	NUMBER OF NONROUTINE REPORTED MEASURMENTS (4)
Fish (cont'd) (pCi/kg wet)	ZN-65	260	<MDC (0/8)		-	<MDC (0/6)	0
	CS-134	130	<MDC (0/8)		-	<MDC (0/6)	0
	CS-137	150	<MDC (0/8)		-	<MDC (0/6)	0
Sediment (pCi/kg dry)	GAMMA 6						
	K-40	NA	9.149E+03 (4/4) (6.305E+03 - 1.065E+04)	2B C 1.6 MILES NNE	1.268E+04 (2/2) (1.021E+04 - 1.515E+04)	1.268E+04 (2/2) (1.021E+04 - 1.515E+04)	0
	CS-134	150	<MDC (0/4)		-	<MDC (0/2)	0
	CS-137	180	<MDC (0/4)		-	<MDC (0/2)	0
	RA-226	NA	<MDC (0/4)		-	<MDC (0/2)	0
	AC-228	NA	9.280E+02 (4/4) (8.001E+02 - 1.079E+03)	2B C 1.6 MILES NNE	1.252E+03 (2/2) (1.158E+03 - 1.346E+03)	1.252E+03 (2/2) (1.158E+03 - 1.346E+03)	0
	TH-228	NA	7.745E+02 (4/4) (6.537E+02 - 8.388E+02)	2B C 1.6 MILES NNE	1.028E+03 (2/2) (9.144E+02 - 1.142E+03)	1.028E+03 (2/2) (9.144E+02 - 1.142E+03)	0

1. The total number of analyses does not include duplicates, splits or repeated analyses.
2. The Technical Requirement LLDs are shown when applicable.
3. The mean and range are based on all results above MDC. The ratio indicated in parentheses is the total number of results used to calculate the mean to the total number of samples.
4. USNRC Reporting Levels are specified in the Technical Requirements (i.e., when Reporting Levels in Technical Requirements are exceeded).

APPENDIX B

SAMPLE DESIGNATION AND LOCATIONS

SAMPLE DESIGNATION

All distances from the SSES to monitoring locations are measured from the standby gas treatment vent at 44200/N34117 (Pa. Grid System). The location codes are based on both distance and direction from the SSES. The letters in the location codes indicate if the monitoring locations are on site (within the site boundary) or, if they are not on site, the approximate distances of the location from the SSES as described below:

S	=	On site	E	=	4 – 5 miles
A	=	< 1 mile	F	=	5 – 10 miles
B	=	1 – 2 miles	G	=	10 – 20 miles
C	=	2 – 3 miles	H	=	> 20 miles
D	=	3 – 4 miles			

The numbers preceding the letters in the location codes provide the direction of the monitoring locations from the SSES by indicating the sectors in which they are located. A total number of 16 sectors (numbered one through 16) equally divide an imaginary circle on a map of the SSES and its vicinity, with the SSES at the center of the circle. The middle of sector one is directed due North (N). Moving clockwise from sector one, the sector immediately adjacent to sector one is sector two, the middle of which is directed due north, north east (NNE). Continuing to move clockwise the sector number increases to 16, which is the north northwest sector (NNW).

TABLE B-1

SAMPLING LOCATIONS

Specific information about the individual sampling locations are given in Table B-1. Maps B-1 through B-6 show the locations of sampling stations with respect to the Site. A Portable Global Positioning System (GPS) was used to provide the coordinates of sampling locations.

STATION CODE	STATION LOCATION	LATITUDINAL	LONGITUDINAL	SAMPLE TYPE
LESS THAN ONE MILE FROM THE SSES		DEG.	DEG.	
6S5	0.9 mi.ESE;	41.084639	-76.130642	Surface water
6S6 **	0.8 mi.ESE;	41.088115	-76.131637	Surface water
5S9**	0.8 mi. E	41.093292	-76.130472	Surface water
LTAW	0.7 mi.NE-ESE;	41.098356	-76.135401	Fish. Surface water
4S7	0.4 mi. ENE	41.094418	-76.138236	Surface water
10S3	0.6 mi. SSW;	41.085264	-76.152128	Air
12S1	0.4 mi.WSW;	41.088436	-76.154314	Air
13S6	0.4 mi.W;	41.091771	-76.153869	Air
3S2	0.5 mi NE;	41.095716	-76.140207	Air
1S4	0.1 mi N;	41.093302	-76.145853	Ground water
2S8	0.1 mi.NNE;	41.094991	-76..044207	Ground water
6S11A	0.4 mi.ESE;	41.083448	-76.133412	Ground water
6S12	0.8 mi.ESE;	41.083411	-76.116935	Ground water
7S11	0.3 mi.SE;	41.083527	-76.133513	Ground water
1S3	0.1 mi N;	41.093640	-76.146076	Ground water
4S8	0.1 mi.ENE;	41.092306	-76.144283	Ground water
4S9	0.3 mi.E;	41.093369	-76.141644	Ground water
8S4	0.1 mi.SSE;	41.091424	-76.145531	Ground water
7S10	0.3 mi.SE;	41.089736	-76.142783	Ground water
13S7**	0.2 mi.W;	41.091236	-76.149647	Ground water
11S6	0.5 mi.SW;	41.085305	-76.152022	Broadleaf
Site 1	0.1 mi.ESE;	41.092275	-76.145022	Precipitation
Site 2	0.1 mi.SSE;	41.091309	-76.145708	Precipitation
Site 3	0.1 mi.WSW;	41.091243	-76.147345	Precipitation
Site 4	0.1 mi.NW;	41.093321	-76.147316	Precipitation

**** Control Location**

TABLE B-1 (cont'd)

SAMPLING LOCATIONS

STATION CODE	STATION LOCATION	LATITUDINAL	LONGITUDINAL	SAMPLE TYPE
FROM ONE to FIVE MILES FROM THE SSES		DEG.	DEG.	
IND	0.9 mi.ESE;	41.085141	-76.130174	Fish
IND	1.4 mi.ESE;	41.075618	-76.132682	Fish
2B **	1.6 mi.NNE;	41.112441	-76.134758	Sediment
7B	1.2 mi.SE;	41.078924	-76.131548	Sediment
9B1	1.3 mi. SSW;	41.085264	-76.152128	Air
12E1	4.7 mi.WSW;	41.072418	-76.230554	Air
5E2	4.5 mi.E;	41.085184	-76.061099	Milk
13E3	5.0 mi.W;	41.100259	-76.241102	Milk
11D1	3.3 mi.SW;	41.055212	-76.186797	Food Products
** Control Location				
GREATER THAN FIVE MILES FROM THE SSES				
12H2	26 mi.WSW;	40.947192	-76.604524	Drinking water
2H **	30 mi.NNE;	41.459508	-75.853096	Fish
12F	6.9 mi.WSW;	41.041323	-76.255396	Sediment
12F7	8.3 mi.WSW	41.036689	-76.286776	Food Products
8G1 **	12 mi.SSE;	40.928886	-76.055092	Air
10G1 **	14 mi.SSW;	40.934847	-76.284449	Milk

TABLE B-1 (cont'd)

SAMPLING LOCATIONS

STATION CODE	STATION LOCATION	LATITUDINAL	LONGITUDINAL	SAMPLE TYPE
OSLD LOCATIONS				
LESS THAN ONE MILE FROM THE SSES		DEG.	DEG.	
1S2	0.2 mi.N;	41.09566	-76.146121	OSLD
2S2	0.9 mi.NNE;	41.10207	-76.141192	OSLD
2S3	0.2 mi.NNE;	41.09486	-76.144101	OSLD
3S2	0.5 mi.NE;	41.09574	-76.140086	OSLD
3S3	0.9 mi.NE;	41.10183	-76.133127	OSLD
4S3	0.2 mi.ENE;	41.09322	-76.141934	OSLD
4S6	0.7 mi.ENE;	41.09687	-76.133807	OSLD
5S4	0.8 mi.E;	41.09286	-76.131604	OSLD
5S7	0.3 mi.E;	41.09199	-76.141165	OSLD
6S4	0.2 mi.ESE;	41.09132	-76.142616	OSLD
6S9	0.2 mi.ESE;	41.09067	-76.142966	OSLD
7S6	0.2 mi.SE;	41.08972	-76.14359	OSLD
7S7	0.4 mi.SE;	41.08745	-76.142033	OSLD
8S2	0.2 mi.SSE;	41.08907	-76.14437	OSLD
9S2	0.2 mi.S;	41.08952	-76.14322	OSLD
9S3	0.3 mi. S	41.087544	-76.145369	OSLD
9S4	0.4 mi. S	41.086672	-76.146280	OSLD
10S1	0.4 mi.SSW;	41.08663	-76.150082	OSLD
10S2	0.2 mi.SSW;	41.08894	-76.147881	OSLD
11S7	0.4 mi.SW;	41.08832	-76.15297	OSLD
12S1	0.4 mi.WSW;	41.0887	-76.154112	OSLD
12S3	0.4 mi.WSW;	41.08968	-76.153192	OSLD
13S2	0.4 mi.W;	41.09198	-76.153166	OSLD
13S5	0.4 mi.W;	41.09179	-76.153167	OSLD
13S6	0.4 mi.W;	41.09177	-76.154073	OSLD
14S5	0.5 mi.WNW;	41.09503	-76.153787	OSLD
15S5	0.4 mi.NW;	41.09576	-76.15103	OSLD
16S1	0.3 mi.NNW;	41.09611	-76.147388	OSLD
16S2	0.3 mi.NNW;	41.09599	-76.148922	OSLD
6A4 *	0.6 mi.ESE;	41.08791	-76.136795	OSLD

TABLE B-1 (cont'd)

SAMPLING LOCATIONS

STATION CODE	STATION LOCATION	LATITUDINAL	LONGITUDINAL	SAMPLE TYPE
LESS THAN ONE MILE FROM THE SSES		DEG.	DEG.	
8A3	0.9 mi.SSE;	41.07982	-76.1139078	OSLD
11A1	0.6 mi.SW	41.08536	-76.15326	OSLD
15A3 *	0.9 mi.NW;	41.10003	-76.1585	OSLD
16A2 *	0.8 mi.NNW;	41.1025	-76.151595	OSLD
FROM ONE to FIVE MILES FROM THE SSES				
12S7	1.1 mi.WSW;	41.08621	-76.165914	OSLD
8B2 *	1.4 mi.SSE;	41.07483	-76.130724	OSLD
9B1	1.3 mi.S;	41.07356	-76.147874	OSLD
10B3 *	1.7 mi.SSW;	41.07064	-76.156646	OSLD
1D5	4.0 mi.N;	41.14936	-76.144346	OSLD
8D3	4.0 mi.SSE;	41.03824	-76.121683	OSLD
9D4	3.6 mi.S;	41.04015	-76.144529	OSLD
10D1	3.0 mi.SSW;	41.05446	-76.175026	OSLD
12D2	3.7 mi.WSW;	41.07363	-76.213306	OSLD
14D1	3.6 mi.WNW;	41.10706	-76.211891	OSLD
3E1	4.7 mi NE;	41.13953	-76.082398	OSLD
4E2	4.7 mi.ENE;	41.12157	-76.064115	OSLD
5E2	4.5 mi. E;	41.08539	-76.060486	OSLD
6E1	4.7 mi.ESE;	41.07275	-76.059529	OSLD
7E1	4.2 mi.SE;	41.04891	-76.090309	OSLD
11E1	4.7 mi. SW;	41.05188	-76.218713	OSLD
12E1 *	4.7 mi.WSW;	41.0725	-76.230331	OSLD
13E4	4.1 mi.W;	41.08962	-76.223726	OSLD

* Special Interest Area (other than controls)

TABLE B-1 (cont'd)

SAMPLING LOCATIONS

STATION CODE	STATION LOCATION	LATITUDINAL	LONGITUDINAL	SAMPLE TYPE
GREATER THAN FIVE MILES FROM THE SSES		DEG.	DEG.	
2F1	5.9 mi.NNE;	41.16796	-76.09146	OSLD
15F1	5.4 mi.NW;	41.15595	-76.202506	OSLD
16F1	7.8 mi.NNW;	41.18985	-76.229283	OSLD
3G4 **	17 mi.NE;	41.23431	-76.869061	OSLD
4G1 **	14 mi.ENE;	41.13898	-75.885121	OSLD
7G1 **	14 mi.SE;	40.94636	-76.974184	OSLD
12G1 **	15 mi.WSW;	41.0262	-76.411566	OSLD
12G4 **	10 mi. WSW;	40.03868	-76.327731	OSLD

* Special Interest Area (other than controls)

** Control Location

TABLE B-2

SUSQUEHANNA STEAM ELECTRIC STATION RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Analytical Procedure Number
Ambient Radiation	Dosimeter	Quarterly	SSES, HP-TP-205	Landauer Procedure L313, Inlight Dosimeter Analysis
Air	Gross Beta	Weekly	Applied Ecoscience, Appendix 2	TBE-2008 Gross Alpha and/or Gross Beta Activity in Various Matrices.
Air	I-131	Weekly	Applied Ecoscience, Appendix 2	TBE-2012 Radioiodine in Various Matrices
Air	Gamma	Quarterly	Applied Ecoscience, Appendix 2	TBE-2007 Gamma Emitting Radioisotope Analysis
Drinking Water	Gross Beta	Monthly	Applied Ecoscience, Appendix 4 & 5	TBE-2008 Gross Alpha and/or Gross Beta Activity in Various Matrices.
Surface & Drinking Water	Tritium	Monthly	Applied Ecoscience, Appendix 3, 4, 5, 13	TBE-2010 Beta Activity by Liquid Scintillation (Direct Prep & Simple Distillation)
Surface & Drinking Water	Gamma	Monthly	Applied Ecoscience, Appendix 3, 4, 5, 13	TBE-2007 Gamma Emitting Radioisotope Analysis.
Ground Water	Tritium	Quarterly	Applied Ecoscience, Appendix 6	TBE-2010 Beta Activity by Liquid Scintillation (Direct Prep & Simple Distillation)
Ground Water	Gamma	Quarterly	Applied Ecoscience, Appendix 6	TBE-2007 Gamma Emitting Radioisotope Analysis

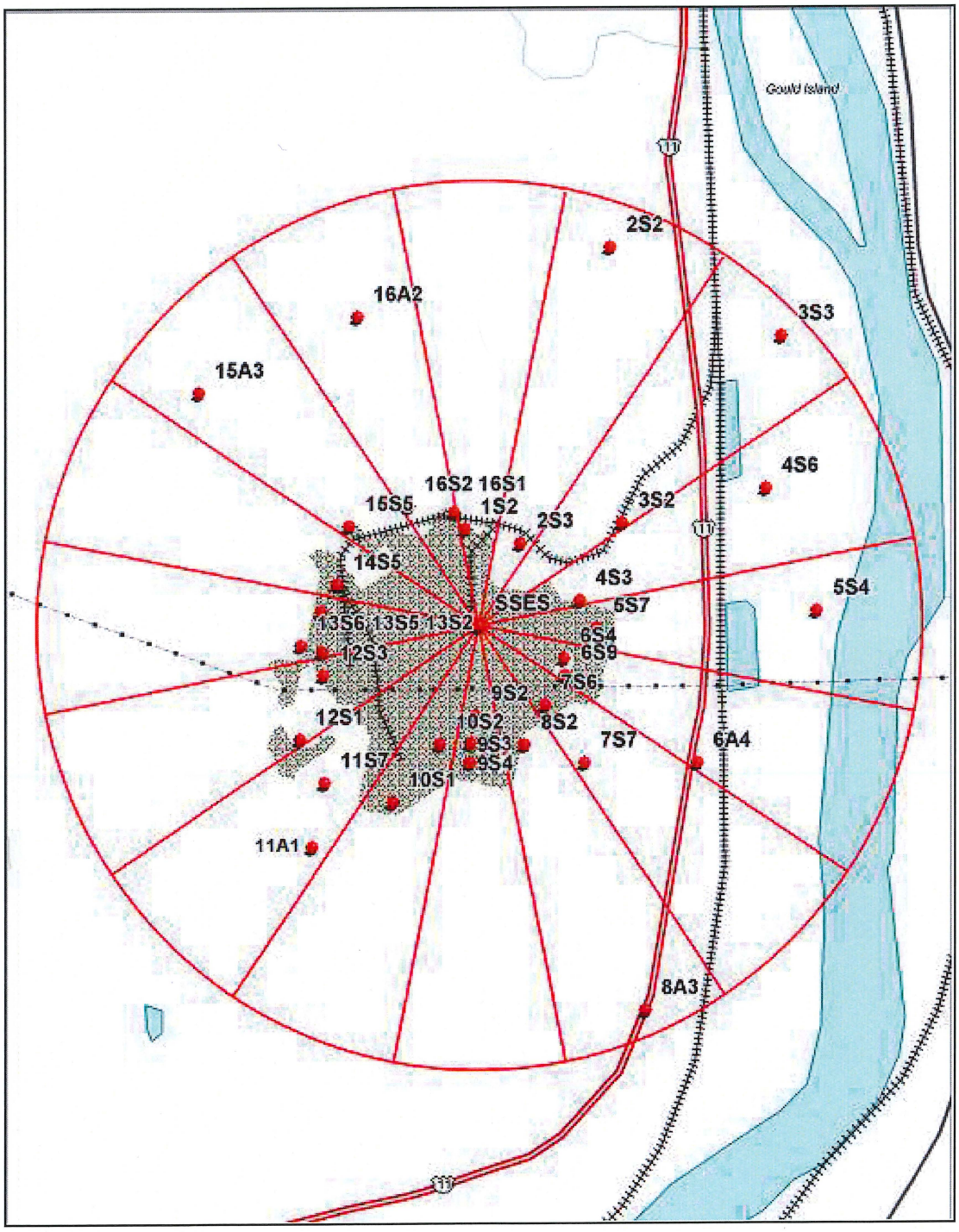
TABLE B-2 (cont'd)

SUSQUEHANNA STEAM ELECTRIC STATION RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Analytical Procedure Number
Precipitation	Tritium	Monthly (Apr – Nov) / Quarterly	Applied Ecoscience, Appendix 8	TBE-2010 Beta Activity by Liquid Scintillation (Direct Prep & Simple Distillation)
Milk	Gamma	Monthly/Bi-Weekly	Applied Ecoscience, Appendix 7	TBE-2007 Gamma Emitting Radioisotope Analysis
Milk	I-131	Monthly/Bi-Weekly	Applied Ecoscience, Appendix 7	TBE-2012 Radioiodine in Various Matrices
Fish	Gamma	Semi-Annually (Spring/Fall)	Applied Ecoscience, Appendix 9	TBE-2007 Gamma Emitting Radioisotope Analysis
Sediment	Gamma	Semi-Annually (Spring/Fall)	Applied Ecoscience, Appendix 10	TBE-2007 Gamma Emitting Radioisotope Analysis
Fruits & Vegetables	Gamma	In Season (When available)	Applied Ecoscience, Appendix 11 Applied Ecoscience, Appendix 12	TBE-2007 Gamma Emitting Radioisotope Analysis

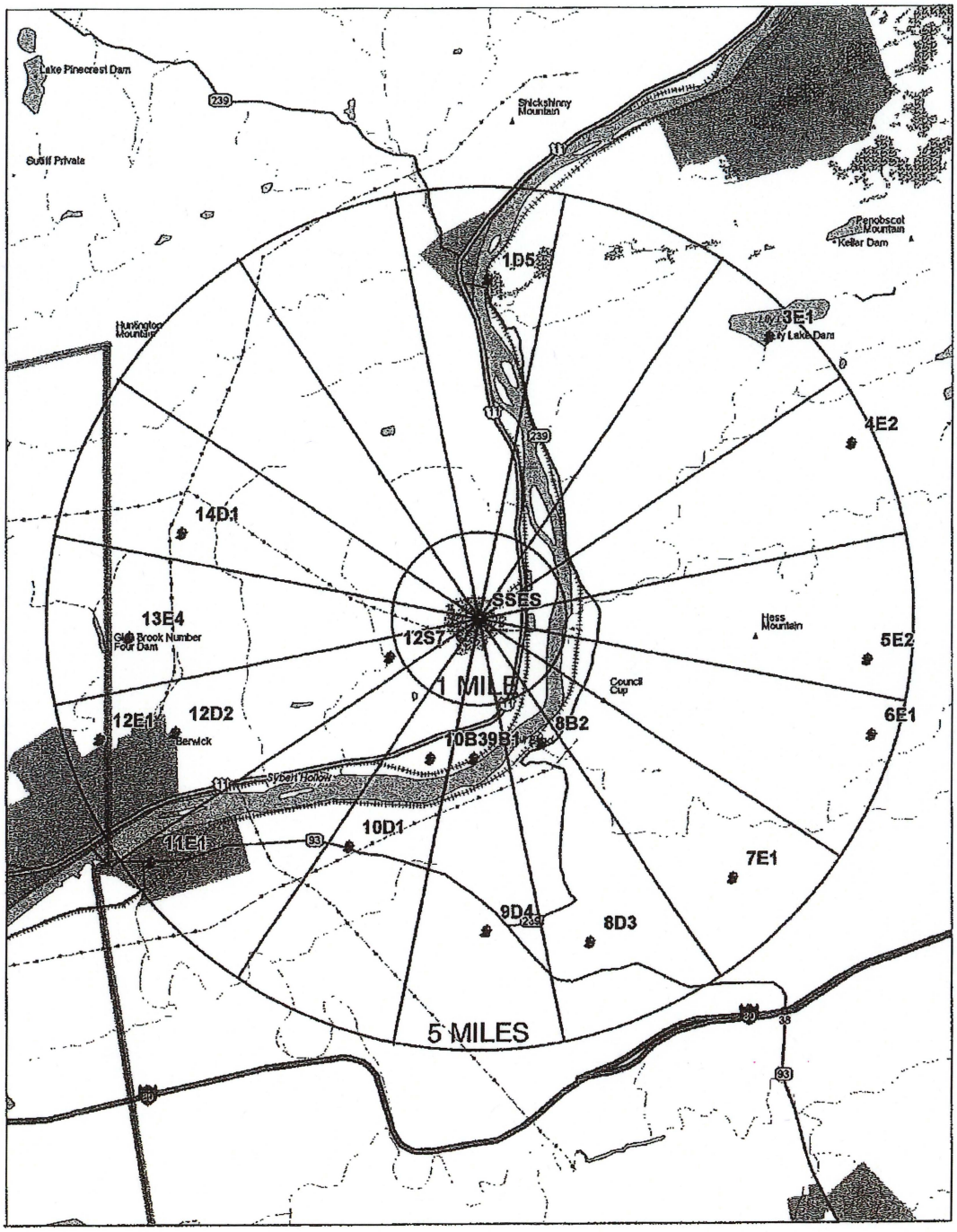
MAP B-1

Direct Radiation Monitoring Locations Within One Mile



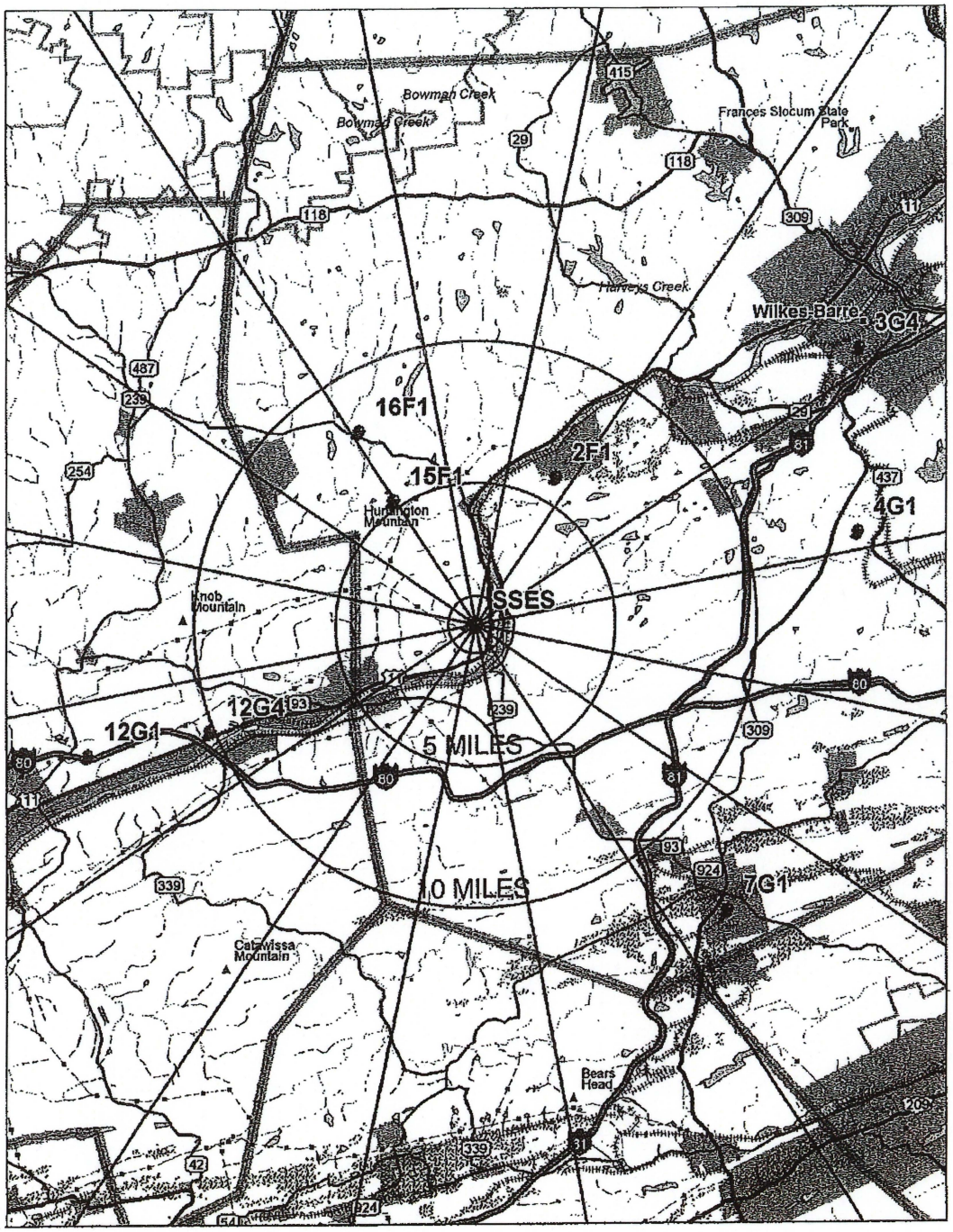
MAP B-2

Direct Radiation Monitoring Locations From One to Five Miles



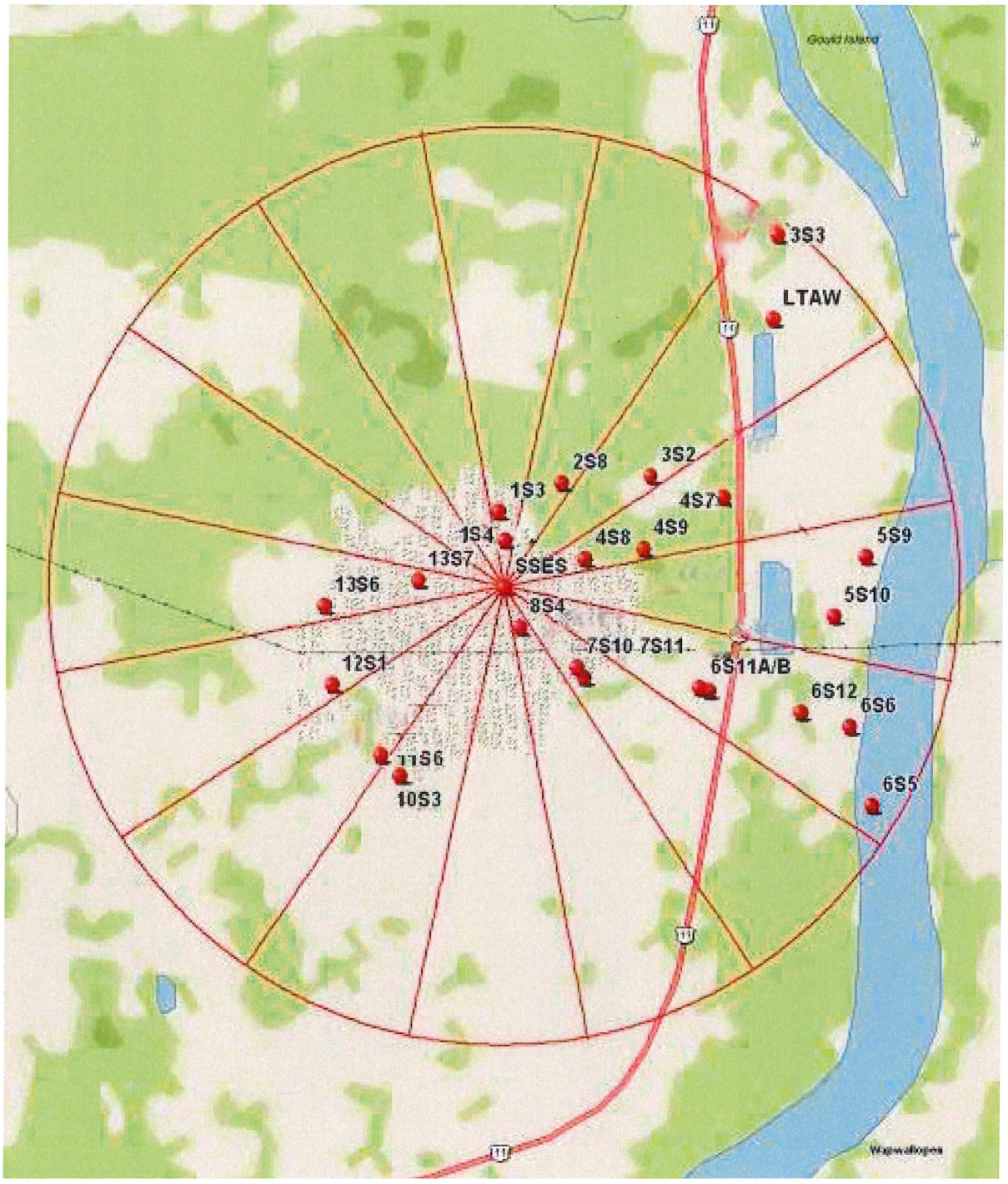
MAP B-3

Direct Radiation Monitoring Locations Greater Than Five Miles



MAP B-4

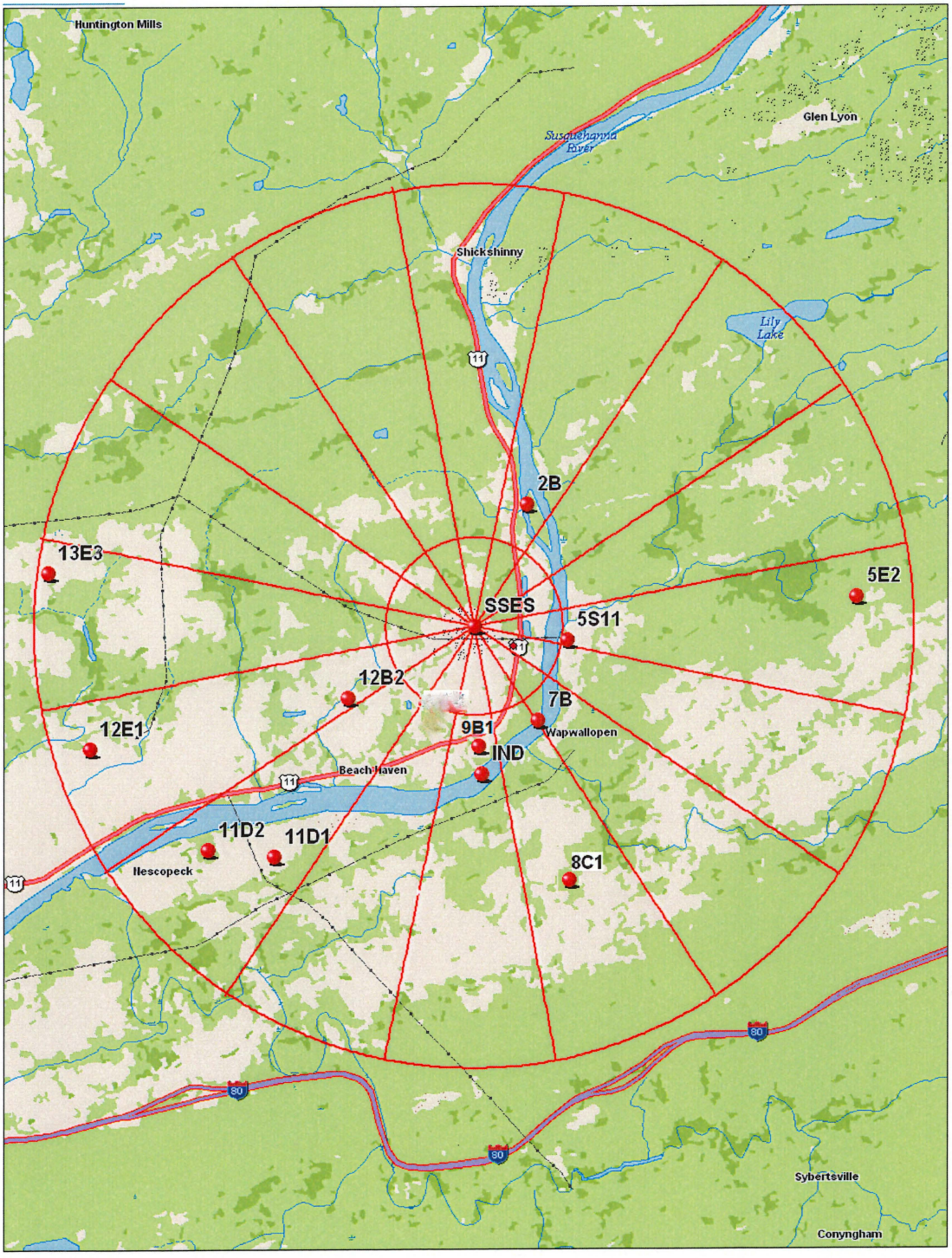
Environmental Sampling Locations Within One Mile



MAP B-5

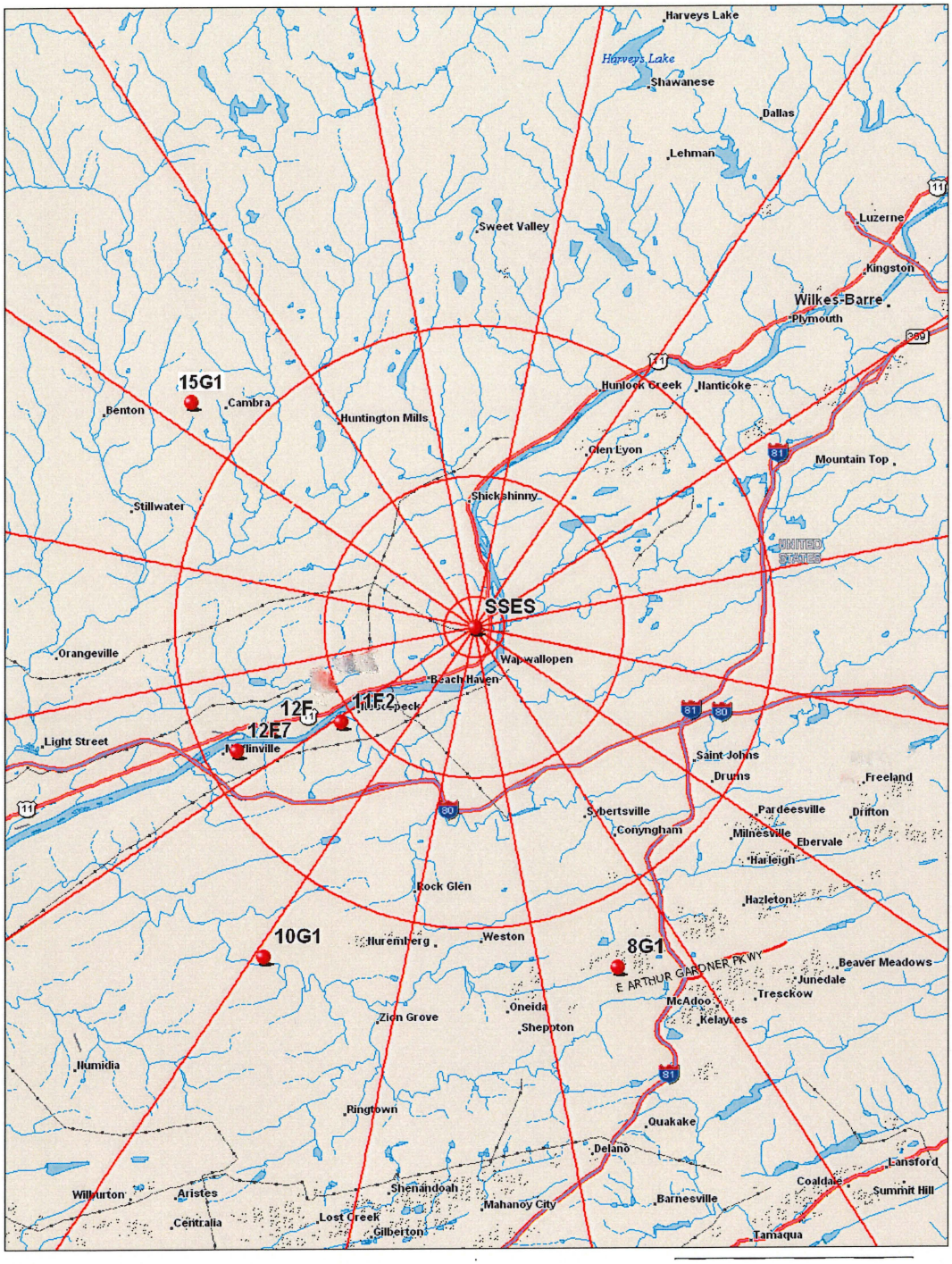
Environmental Sampling Locations

From One to Five Miles



MAP B-6

Environmental Sampling Locations Greater Than Five Miles



APPENDIX C

DATA TABLES

TABLE C-1 **GROSS BETA ANALYSES OF AIR PARTICULATE FILTERS**
SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in units of E-03 pCi/cu.m. ± 2 sigma

COLLECTION PERIOD	3S2	8G1	12E1	12S1	13S6	9B1
12/31/24 - 01/07/25	11 ± 2	10 ± 2	13 ± 2	13 ± 2	12 ± 2	12 ± 2
01/07/25 - 01/14/25	14 ± 2	14 ± 2	13 ± 2	15 ± 2	14 ± 2	15 ± 2
01/14/25 - 01/22/25	16 ± 2	14 ± 2	16 ± 2	15 ± 2	16 ± 2	13 ± 2
01/22/25 - 01/29/25	19 ± 3	16 ± 2	18 ± 2	17 ± 2	17 ± 2	18 ± 2
01/29/25 - 02/05/25	11 ± 2	*11* ± 2	11 ± 2	11 ± 2	11 ± 2	15 ± 2
02/05/25 - 02/11/25	16 ± 3	15 ± 3	18 ± 3	14 ± 3	16 ± 3	15 ± 3
02/11/25 - 02/19/25	12 ± 2	10 ± 2	13 ± 2	10 ± 2	12 ± 2	13 ± 2
02/19/25 - 02/26/25	14 ± 2	11 ± 2	14 ± 2	15 ± 2	15 ± 2	14 ± 2
02/26/25 - 03/05/25	12 ± 2	9 ± 2	13 ± 2	13 ± 2	13 ± 2	11 ± 2
03/05/25 - 03/12/25	13 ± 2	12 ± 2	13 ± 2	11 ± 2	12 ± 2	12 ± 2
03/12/25 - 03/19/25	9 ± 2	11 ± 2	11 ± 2	11 ± 2	12 ± 2	12 ± 2
03/19/25 - 03/26/25	14 ± 2	12 ± 2	12 ± 2	14 ± 2	15 ± 2	14 ± 2
03/26/25 - 04/02/25	12 ± 2	12 ± 2	15 ± 2	11 ± 2	13 ± 2	13 ± 2
04/02/25 - 04/09/25	11 ± 2	10 ± 2	15 ± 2	14 ± 2	16 ± 2	15 ± 2
04/09/25 - 04/16/25	13 ± 2	12 ± 2	13 ± 2	11 ± 2	12 ± 2	14 ± 2
04/16/25 - 04/23/25	13 ± 2	12 ± 2	13 ± 2	13 ± 2	12 ± 2	12 ± 2
04/23/25 - 04/30/25	15 ± 2	13 ± 2	13 ± 2	15 ± 2	14 ± 2	15 ± 2
04/30/25 - 05/07/25	10 ± 2	11 ± 2	10 ± 2	10 ± 2	13 ± 2	9 ± 2
05/07/25 - 05/14/25	9 ± 2	10 ± 2	12 ± 2	11 ± 2	12 ± 2	10 ± 2
05/14/25 - 05/21/25	8 ± 2	6 ± 2	8 ± 2	8 ± 2	9 ± 2	8 ± 2
05/21/25 - 05/28/25	6 ± 2	4 ± 2	5 ± 1	6 ± 2	4 ± 2	5 ± 2
05/28/25 - 06/04/25	10 ± 2	10 ± 2	10 ± 2	9 ± 2	10 ± 2	10 ± 2
06/04/25 - 06/11/25	14 ± 2	13 ± 2	15 ± 2	13 ± 2	15 ± 2	14 ± 2
06/11/25 - 06/18/25	11 ± 2	9 ± 2	11 ± 2	10 ± 2	11 ± 2	11 ± 2
06/18/25 - 06/25/25	17 ± 2	19 ± 3	15 ± 2	16 ± 2	18 ± 2	17 ± 2
06/25/25 - 07/02/25	13 ± 2	12 ± 2	11 ± 2	11 ± 2	14 ± 2	10 ± 2
07/02/25 - 07/09/25	16 ± 2	11 ± 2	16 ± 2	13 ± 2	15 ± 2	15 ± 2
07/09/25 - 07/16/25	17 ± 2	14 ± 2	16 ± 2	14 ± 2	17 ± 2	17 ± 2
07/16/25 - 07/23/25	11 ± 2	11 ± 2	12 ± 2	12 ± 2	12 ± 2	11 ± 2
07/23/25 - 07/30/25	16 ± 2	19 ± 3	19 ± 3	16 ± 2	17 ± 2	19 ± 2
07/30/25 - 08/06/25	16 ± 2	15 ± 2	13 ± 2	16 ± 2	15 ± 2	14 ± 2
08/06/25 - 08/13/25	18 ± 2	15 ± 2	17 ± 2	18 ± 2	21 ± 3	20 ± 3
08/13/25 - 08/20/25	18 ± 2	14 ± 2	15 ± 2	15 ± 2	15 ± 2	17 ± 2
08/20/25 - 08/27/25	11 ± 2	11 ± 2	13 ± 2	10 ± 2	14 ± 2	11 ± 2
08/27/25 - 09/02/25	12 ± 2	12 ± 2	16 ± 3	13 ± 2	15 ± 2	13 ± 2
09/02/25 - 09/10/25	17 ± 2	15 ± 2	16 ± 2	15 ± 2	17 ± 2	17 ± 2
09/10/25 - 09/17/25	26 ± 3	25 ± 3	29 ± 3	23 ± 3	26 ± 3	29 ± 3
09/17/25 - 09/24/25	17 ± 2	16 ± 2	20 ± 2	16 ± 2	21 ± 3	19 ± 2
09/24/25 - 10/01/25	25 ± 3	25 ± 3	23 ± 3	22 ± 3	25 ± 3	26 ± 3
10/01/25 - 10/08/25	17 ± 2	15 ± 2	19 ± 2	20 ± 2	18 ± 2	21 ± 2
10/08/25 - 10/15/25	9 ± 2	9 ± 2	11 ± 2	10 ± 2	13 ± 2	11 ± 2
10/15/25 - 10/22/25	13 ± 2	15 ± 2	15 ± 2	13 ± 2	12 ± 2	15 ± 2
10/22/25 - 10/29/25	9 ± 2	10 ± 2	10 ± 2	8 ± 2	8 ± 2	10 ± 2
10/29/25 - 11/05/25	12 ± 2	11 ± 2	12 ± 2	11 ± 2	14 ± 2	11 ± 2
11/05/25 - 11/12/25	14 ± 2	14 ± 2	15 ± 2	14 ± 2	14 ± 2	13 ± 2
11/12/25 - 11/19/25	13 ± 2	13 ± 2	15 ± 2	12 ± 2	15 ± 2	15 ± 2
11/19/25 - 11/25/25	18 ± 3	17 ± 3	22 ± 3	20 ± 3	23 ± 3	22 ± 3
11/25/25 - 12/03/25	11 ± 2	10 ± 2	8 ± 2	10 ± 2	12 ± 2	11 ± 2
12/03/25 - 12/10/25	14 ± 2	13 ± 2	16 ± 2	13 ± 2	16 ± 2	15 ± 2
12/10/25 - 12/17/25	12 ± 2	13 ± 2	13 ± 2	14 ± 2	13 ± 2	13 ± 2
12/17/25 - 12/23/25	21 ± 3	19 ± 3	21 ± 3	20 ± 3	21 ± 3	21 ± 3
12/23/25 - 12/31/25	12 ± 2	11 ± 2	11 ± 2	11 ± 2	12 ± 2	10 ± 2
AVERAGE	14 ± 8	13 ± 8	14 ± 8	13 ± 7	15 ± 8	14 ± 9

TABLE C-1 **GROSS BETA ANALYSES OF AIR PARTICULATE FILTERS**
SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in units of E-03 pCi/cu.m. ± 2 sigma

COLLECTION PERIOD	10S3
12/31/24 - 01/07/25	10 ± 2
01/07/25 - 01/14/25	15 ± 2
01/14/25 - 01/22/25	16 ± 2
01/22/25 - 01/29/25	18 ± 3
01/29/25 - 02/05/25	10 ± 2
02/05/25 - 02/11/25	16 ± 3
02/11/25 - 02/19/25	12 ± 2
02/19/25 - 02/26/25	16 ± 2
02/26/25 - 03/05/25	12 ± 2
03/05/25 - 03/12/25	12 ± 2
03/12/25 - 03/19/25	12 ± 2
03/19/25 - 03/26/25	14 ± 2
03/26/25 - 04/02/25	13 ± 2
04/02/25 - 04/09/25	12 ± 2
04/09/25 - 04/16/25	12 ± 2
04/16/25 - 04/23/25	13 ± 2
04/23/25 - 04/30/25	16 ± 2
04/30/25 - 05/07/25	14 ± 2
05/07/25 - 05/14/25	12 ± 2
05/14/25 - 05/21/25	7 ± 2
05/21/25 - 05/28/25	6 ± 2
05/28/25 - 06/04/25	9 ± 2
06/04/25 - 06/11/25	17 ± 2
06/11/25 - 06/18/25	12 ± 2
06/18/25 - 06/25/25	17 ± 3
06/25/25 - 07/02/25	14 ± 2
07/02/25 - 07/09/25	15 ± 2
07/09/25 - 07/16/25	19 ± 2
07/16/25 - 07/23/25	13 ± 2
07/23/25 - 07/30/25	15 ± 2
07/30/25 - 08/06/25	16 ± 2
08/06/25 - 08/13/25	18 ± 4
08/13/25 - 08/20/25	16 ± 3
08/20/25 - 08/27/25	11 ± 2
08/27/25 - 09/02/25	12 ± 2
09/02/25 - 09/10/25	16 ± 2
09/10/25 - 09/17/25	28 ± 3
09/17/25 - 09/24/25	19 ± 3
09/24/25 - 10/01/25	26 ± 3
10/01/25 - 10/08/25	19 ± 3
10/08/25 - 10/15/25	10 ± 2
10/15/25 - 10/22/25	15 ± 2
10/22/25 - 10/29/25	10 ± 2
10/29/25 - 11/05/25	12 ± 2
11/05/25 - 11/12/25	15 ± 2
11/12/25 - 11/19/25	12 ± 2
11/19/25 - 11/25/25	21 ± 3
11/25/25 - 12/03/25	12 ± 2
12/03/25 - 12/10/25	16 ± 2
12/10/25 - 12/17/25	13 ± 2
12/17/25 - 12/23/25	20 ± 3
12/23/25 - 12/31/25	12 ± 2
AVERAGE	14 ± 8

TABLE C-2 GAMMA SPECTROSCOPIC ANALYSES OF COMPOSITED AIR PARTICULATE FILTERS SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in units of E-03 pCi/cu.m. ± 2 sigma

SITE	COLLECTION PERIOD	Be-7	K-40	Cs-134	Cs-137
8G1	12/31/24 - 04/02/25	63 ± 20	< 15	< 1	< 1
	04/02/25 - 07/02/25	86 ± 23	< 20	< 1	< 1
	07/02/25 - 10/01/25	84 ± 27	< 23	< 1	< 1
	10/01/25 - 12/31/25	60 ± 16	< 17	< 1	< 1
	AVERAGE	73 ± 28	-	-	-
3S2	12/31/24 - 04/02/25	78 ± 18	< 15	< 1	< 1
	04/02/25 - 07/02/25	73 ± 15	< 23	< 1	< 1
	07/02/25 - 10/01/25	133 ± 38	< 30	< 1	< 1
	10/01/25 - 12/31/25	58 ± 19	< 18	< 1	< 1
	AVERAGE	85 ± 65	-	-	-
12E1	12/31/24 - 04/02/25	60 ± 22	< 21	< 1	< 1
	04/02/25 - 07/02/25	82 ± 20	< 15	< 1	< 1
	07/02/25 - 10/01/25	99 ± 29	< 27	< 1	< 1
	10/01/25 - 12/31/25	52 ± 18	< 20	< 1	< 1
	AVERAGE	73 ± 42	-	-	-
12S1	12/31/24 - 04/02/25	83 ± 19	< 16	< 1	< 1
	04/02/25 - 07/02/25	70 ± 18	< 18	< 1	< 1
	07/02/25 - 10/01/25	86 ± 20	< 15	< 1	< 1
	10/01/25 - 12/31/25	60 ± 19	< 24	< 2	< 1
	AVERAGE	75 ± 24	-	-	-
13S6	12/31/24 - 04/02/25	76 ± 26	< 25	< 1	< 1
	04/02/25 - 07/02/25	73 ± 19	< 20	< 1	< 1
	07/02/25 - 10/01/25	136 ± 32	< 28	< 2	< 1
	10/01/25 - 12/31/25	59 ± 21	< 13	< 1	< 1
	AVERAGE	86 ± 69	-	-	-
9B1	12/31/24 - 04/02/25	88 ± 26	< 17	< 1	< 1
	04/02/25 - 07/02/25	77 ± 20	< 26	< 1	< 1
	07/02/25 - 10/01/25	114 ± 22	< 20	< 1	< 1
	10/01/25 - 12/31/25	55 ± 16	< 17	< 1	< 1
	AVERAGE	84 ± 49	-	-	-
10S3	12/31/24 - 04/02/25	66 ± 22	< 20	< 1	< 1
	04/02/25 - 07/02/25	73 ± 22	< 26	< 2	< 1
	07/02/25 - 10/01/25	108 ± 28	< 28	< 2	< 2
	10/01/25 - 12/31/25	58 ± 18	< 28	< 1	< 1
	AVERAGE	76 ± 44	-	-	-

TABLE C-3 **IODINE-131 ANALYSES OF AIR IODINE SAMPLES**
SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in units of E-03 pCi/cu.m. ± 2 sigma

COLLECTION PERIOD	3S2	8G1	12E1	12S1	13S6	9B1
12/31/24 - 01/07/25	< 20	< 13	< 19	< 18	< 19	< 18
01/07/25 - 01/14/25	< 7	< 19	< 13	< 13	< 13	< 19
01/14/25 - 01/22/25	< 19	< 20	< 19	< 7	< 18	< 19
01/22/25 - 01/29/25	< 22	< 18	< 17	< 18	< 21	< 11
01/29/25 - 02/05/25	< 24	< 24	< 25	< 25	< 24	< 12
02/05/25 - 02/11/25	< 20	< 20	< 21	< 20	< 19	< 14
02/11/25 - 02/19/25	< 23	< 9	< 20	< 20	< 22	< 19
02/19/25 - 02/26/25	< 23	< 23	< 24	< 23	< 23	< 17
02/26/25 - 03/05/25	< 24	< 20	< 24	< 23	< 12	< 20
03/05/25 - 03/12/25	< 20	< 19	< 20	< 20	< 10	< 18
03/12/25 - 03/19/25	< 18	< 19	< 20	< 19	< 18	< 9
03/19/25 - 03/26/25	< 13	< 23	< 24	< 23	< 21	< 9
03/26/25 - 04/02/25	< 24	< 18	< 19	< 18	< 24	< 7
04/02/25 - 04/09/25	< 27	< 26	< 28	< 27	< 27	< 20
04/09/25 - 04/16/25	< 22	< 23	< 24	< 23	< 23	< 15
04/16/25 - 04/23/25	< 24	< 22	< 25	< 24	< 25	< 14
04/23/25 - 04/30/25	< 35	< 26	< 35	< 36	< 28	< 26
04/30/25 - 05/07/25	< 25	< 21	< 10	< 26	< 27	< 21
05/07/25 - 05/14/25	< 35	< 33	< 18	< 36	< 37	< 26
05/14/25 - 05/21/25	< 28	< 27	< 19	< 27	< 29	< 27
05/21/25 - 05/28/25	< 23	< 32	< 17	< 23	< 24	< 33
05/28/25 - 06/04/25	< 38	< 24	< 18	< 39	< 41	< 46
06/04/25 - 06/11/25	< 26	< 26	< 11	< 27	< 24	< 16
06/11/25 - 06/18/25	< 27	< 21	< 21	< 22	< 27	< 9
06/18/25 - 06/25/25	< 23	< 29	< 28	< 30	< 23	< 13
06/25/25 - 07/02/25	< 17	< 25	< 25	< 26	< 17	< 18
07/02/25 - 07/09/25	< 26	< 32	< 26	< 21	< 27	< 32
07/09/25 - 07/16/25	< 28	< 33	< 32	< 34	< 39	< 23
07/16/25 - 07/23/25	< 35	< 23	< 23	< 23	< 36	< 17
07/23/25 - 07/30/25	< 22	< 19	< 19	< 19	< 22	< 14
07/30/25 - 08/06/25	< 28	< 30	< 21	< 27	< 28	< 29
08/06/25 - 08/13/25	< 22	< 18	< 21	< 22	< 23	< 8
08/13/25 - 08/20/25	< 52	< 49	< 49	< 50	< 51	< 60
08/20/25 - 08/27/25	< 32	< 30	< 23	< 31	< 31	< 41
08/27/25 - 09/02/25	< 38	< 22	< 37	< 37	< 26	< 22
09/02/25 - 09/10/25	< 38	< 45	< 19	< 38	< 37	< 43
09/10/25 - 09/17/25	< 34	< 38	< 24	< 33	< 33	< 37
09/17/25 - 09/24/25	< 22	< 25	< 10	< 22	< 22	< 24
09/24/25 - 10/01/25	< 28	< 36	< 26	< 27	< 12	< 25
10/01/25 - 10/08/25	< 35	< 27	< 26	< 26	< 36	< 28
10/08/25 - 10/15/25	< 38	< 56	< 17	< 37	< 40	< 54
10/15/25 - 10/22/25	< 41	< 48	< 46	< 46	< 43	< 32
10/22/25 - 10/29/25	< 58	< 34	< 42	< 57	< 60	< 30
10/29/25 - 11/05/25	< 42	< 29	< 19	< 41	< 44	< 28
11/05/25 - 11/12/25	< 62	< 62	< 61	< 62	< 65	< 46
11/12/25 - 11/19/25	< 57	< 43	< 47	< 48	< 60	< 44
11/19/25 - 11/25/25	< 59	< 18	< 36	< 34	< 62	< 34
11/25/25 - 12/03/25	< 24	< 23	< 25	< 12	< 25	< 24
12/03/25 - 12/10/25	< 33	< 26	< 18	< 33	< 34	< 21
12/10/25 - 12/17/25	< 28	< 30	< 31	< 29	< 28	< 10
12/17/25 - 12/23/25	< 48	< 61	< 50	< 36	< 48	< 56
12/23/25 - 12/31/25	< 16	< 18	< 35	< 33	< 24	< 33
AVERAGE	-	-	-	-	-	-

TABLE C-3 **IODINE-131 ANALYSES OF AIR IODINE SAMPLES**
SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in units of E-03 pCi/cu.m. ± 2 sigma

COLLECTION PERIOD	10S3
12/31/24 - 01/07/25	< 18
01/07/25 - 01/14/25	< 13
01/14/25 - 01/22/25	< 17
01/22/25 - 01/29/25	< 19
01/29/25 - 02/05/25	< 24
02/05/25 - 02/11/25	< 20
02/11/25 - 02/19/25	< 19
02/19/25 - 02/26/25	< 23
02/26/25 - 03/05/25	< 23
03/05/25 - 03/12/25	< 19
03/12/25 - 03/19/25	< 19
03/19/25 - 03/26/25	< 23
03/26/25 - 04/02/25	< 18
04/02/25 - 04/09/25	< 27
04/09/25 - 04/16/25	< 23
04/16/25 - 04/23/25	< 12
04/23/25 - 04/30/25	< 35
04/30/25 - 05/07/25	< 25
05/07/25 - 05/14/25	< 36
05/14/25 - 05/21/25	< 26
05/21/25 - 05/28/25	< 23
05/28/25 - 06/04/25	< 38
06/04/25 - 06/11/25	< 26
06/11/25 - 06/18/25	< 22
06/18/25 - 06/25/25	< 30
06/25/25 - 07/02/25	< 26
07/02/25 - 07/09/25	< 27
07/09/25 - 07/16/25	< 33
07/16/25 - 07/23/25	< 23
07/23/25 - 07/30/25	< 20
07/30/25 - 08/06/25	< 28
08/06/25 - 08/13/25	< 23
08/13/25 - 08/20/25	< 33
08/20/25 - 08/27/25	< 33
08/27/25 - 09/02/25	< 39
09/02/25 - 09/10/25	< 40
09/10/25 - 09/17/25	< 35
09/17/25 - 09/24/25	< 23
09/24/25 - 10/01/25	< 29
10/01/25 - 10/08/25	< 28
10/08/25 - 10/15/25	< 38
10/15/25 - 10/22/25	< 48
10/22/25 - 10/29/25	< 59
10/29/25 - 11/05/25	< 43
11/05/25 - 11/12/25	< 65
11/12/25 - 11/19/25	< 44
11/19/25 - 11/25/25	< 35
11/25/25 - 12/03/25	< 25
12/03/25 - 12/10/25	< 34
12/10/25 - 12/17/25	< 30
12/17/25 - 12/23/25	< 49
12/23/25 - 12/31/25	< 35
AVERAGE	-

TABLE C-4 ENVIRONMENTAL OPTICALLY STIMULATED LUMINESCENCE DOSIMETRY RESULTS SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results (1) are in mR/std. qtr (2) ± 2 sigma (3)

LOCATION	First Quarter 1/15/2025 to 4/14/2025	Second Quarter 4/14/2025 to 7/22/2025	Third Quarter 7/22/2025 to 10/21/2025	Fourth Quarter 10/21/2025 to 1/15/2026
ONSITE				
1S2	26.8 ± 2.8	26.6 ± 3.8	23.9 ± 1.5	24.1 ± 1.9
2S2	10.2 ± 3.6	(4)	13.1 ± 1.1	14.6 ± 1.4
2S3	23.5 ± 1.8	24.7 ± 0.5	23.9 ± 2.1	21.6 ± 1.4
3S2	14.1 ± 1.6	12.5 ± 1.0	15.8 ± 1.8	16.5 ± 1.0
3S3	13.9 ± 1.0	13.0 ± 0.6	14.2 ± 1.1	15.9 ± 0.7
4S3	19.0 ± 4.3	18.8 ± 2.2	16.7 ± 2.0	22.2 ± 0.9
4S6	13.2 ± 3.9	13.3 ± 0.0	13.6 ± 1.8	16.4 ± 0.5
5S4	11.7 ± 2.2	12.4 ± 0.7	12.4 ± 1.8	14.6 ± 0.7
5S7	13.6 ± 0.6	15.4 ± 1.4	15.6 ± 5.0	17.2 ± 0.0
6S4	23.4 ± 4.5	22.5 ± 1.7	19.1 ± 2.7	19.9 ± 0.3
6S9	23.1 ± 1.7	22.4 ± 0.6	19.7 ± 0.7	17.7 ± 2.3
7S6	18.9 ± 0.4	17.2 ± 1.4	20.8 ± 1.1	16.0 ± 0.6
7S7	10.6 ± 0.2	12.7 ± 1.0	12.7 ± 0.9	14.4 ± 0.5
8S2	21.9 ± 0.8	19.1 ± 2.7	20.7 ± 2.3	19.8 ± 2.0
9S2	33.7 ± 0.5	29.4 ± 2.3	29.8 ± 0.2	19.5 ± 1.5
9S3	17.8 ± 1.7	18.9 ± 0.1	21.4 ± 1.8	20.7 ± 2.7
9S4	15.3 ± 2.8	15.5 ± 0.5	15.8 ± 0.1	14.6 ± 0.8
10S1	11.8 ± 3.0	11.8 ± 1.1	10.6 ± 0.6	11.2 ± 1.5
10S2	20.1 ± 2.0	24.7 ± 0.3	22.2 ± 0.6	19.7 ± 5.8
11S7	14.3 ± 1.9	15.3 ± 3.5	18.5 ± 3.1	13.9 ± 2.0
12S1	18.8 ± 0.4	15.7 ± 2.3	14.9 ± 0.1	17.9 ± 2.2
12S3	21.0 ± 0.1	21.0 ± 0.4	21.2 ± 2.5	21.3 ± 2.0
12S7	14.2 ± 1.2	15.1 ± 1.2	14.1 ± 0.7	15.5 ± 1.1
13S2	24.1 ± 2.0	22.2 ± 1.4	22.4 ± 2.7	22.8 ± 3.7
13S5	22.8 ± 0.7	22.1 ± 0.3	25.8 ± 1.8	20.2 ± 1.7
13S6	21.1 ± 0.7	18.8 ± 1.8	17.9 ± 0.2	19.6 ± 2.1
14S5	17.7 ± 1.1	17.4 ± 4.2	19.7 ± 0.8	18.0 ± 1.0
15S5	15.4 ± 0.1	17.4 ± 1.0	19.1 ± 2.4	17.2 ± 0.5
16S1	25.6 ± 1.5	25.0 ± 2.2	22.7 ± 3.2	21.7 ± 2.0
16S2	19.4 ± 0.2	20.6 ± 1.2	18.7 ± 4.4	18.1 ± 0.5

See the comments at the end of this table.

TABLE C-4 ENVIRONMENTAL OPTICALLY STIMULATED LUMINESCENCE DOSIMETRY RESULTS SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results (1) are in mR/std. qtr (2) ± 2 sigma (3)

LOCATION	First Quarter 1/15/2025 to 4/14/2025	Second Quarter 4/14/2025 to 7/22/2025	Third Quarter 7/22/2025 to 10/21/2025	Fourth Quarter 10/21/2025 to 1/15/2026
0-1 MILE OFFSITE				
6A4	18.1 ± 0.5	15.6 ± 1.6	19.0 ± 1.4	19.8 ± 0.7
8A3	13.5 ± 3.6	15.7 ± 1.2	16.7 ± 1.3	15.8 ± 0.7
11A1	14.9 ± 0.3	16.1 ± 0.5	19.7 ± 1.6	18.7 ± 1.4
15A3	15.1 ± 0.5	14.5 ± 1.6	16.2 ± 1.6	14.3 ± 1.7
16A2	13.0 ± 0.1	12.3 ± 0.7	11.7 ± 0.6	13.8 ± 0.9
1-2 MILES OFFSITE				
8B2	14.0 ± 1.2	14.2 ± 0.5	15.8 ± 0.1	16.1 ± 0.4
9B1	12.4 ± 0.5	12.4 ± 0.3	12.0 ± 1.8	13.7 ± 0.5
10B3	14.3 ± 0.4	14.7 ± 0.5	15.5 ± 2.9	14.5 ± 0.5
3-4 MILES OFFSITE				
1D5	17.7 ± 2.5	17.1 ± 0.0	18.6 ± 1.0	16.3 ± 1.5
8D3	17.5 ± 1.0	14.3 ± 1.3	17.2 ± 0.6	16.7 ± 1.1
9D4	14.6 ± 2.0	15.2 ± 0.4	18.0 ± 2.0	15.9 ± 1.6
10D1	15.5 ± 3.0	15.1 ± 0.4	12.1 ± 0.2	16.6 ± 2.3
12D2	17.2 ± 3.5	19.0 ± 0.1	20.2 ± 5.9	19.1 ± 2.9
14D1	15.3 ± 2.2	14.2 ± 1.2	15.2 ± 1.8	16.7 ± 1.1
4-5 MILES OFFSITE				
3E1	14.4 ± 1.1	11.6 ± 0.3	12.9 ± 0.9	12.1 ± 1.1
4E2	20.2 ± 0.9	14.2 ± 0.1	15.8 ± 1.2	16.6 ± 0.7
5E2	19.7 ± 1.4	15.1 ± 0.5	18.2 ± 0.8	17.2 ± 0.5
6E1	18.1 ± 0.8	16.9 ± 0.1	18.0 ± 1.6	17.1 ± 1.0
7E1	18.3 ± 0.9	16.7 ± 0.3	16.3 ± 2.9	16.8 ± 1.2
11E1	14.3 ± 0.4	11.5 ± 1.5	12.8 ± 0.6	11.1 ± 0.1
12E1	15.5 ± 0.1	13.3 ± 0.7	14.9 ± 0.2	12.7 ± 3.1
13E4	17.4 ± 1.8	16.6 ± 1.3	19.0 ± 0.1	17.7 ± 0.7

See the comments at the end of this table.

TABLE C-4 ENVIRONMENTAL OPTICALLY STIMULATED LUMINESCENCE DOSIMETRY RESULTS SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results (1) are in mR/std. qtr (2) ± 2 sigma (3)

LOCATION	First Quarter 1/15/2025 to 4/14/2025	Second Quarter 4/14/2025 to 7/22/2025	Third Quarter 7/22/2025 to 10/21/2025	Fourth Quarter 10/21/2025 to 1/15/2026
5-10 MILES OFFSITE				
2F1	15.4 ± 1.8	14.7 ± 0.3	17.1 ± 1.8	15.7 ± 1.1
15F1	18.0 ± 1.0	17.1 ± 1.4	15.4 ± 1.0	19.1 ± 0.6
16F1	17.5 ± 3.5	17.7 ± 0.2	17.6 ± 4.2	19.6 ± 1.2
10-20 MILES OFFSITE				
3G4	22.7 ± 0.7	17.7 ± 1.8	18.7 ± 2.1	16.3 ± 1.7
4G1	17.5 ± 1.7	16.8 ± 2.5	17.1 ± 3.3	16.4 ± 1.1
7G1	14.1 ± 2.4	13.9 ± 0.7	11.2 ± 1.0	13.5 ± 0.4
12G1	15.8 ± 1.4	13.4 ± 0.7	14.2 ± 0.1	14.7 ± 2.9
12G4	15.3 ± 1.9	15.9 ± 0.0	15.9 ± 1.3	15.8 ± 1.8

See the comments at the end of this table.

LOCATION				
INDICATOR				
Average (5)	17.4 ± 13.5	17.0 ± 10.9	17.5 ± 14.7	17.2 ± 12.3
CONTROL				
Average (5)	17.1 ± 3.8	15.5 ± 3.2	15.4 ± 4.3	15.4 ± 3.9

COMMENTS

(1) Individual monitor location results are normally the average of the elemental doses of four elements from the two dosimeters assigned to each monitoring location.

(2) A standard (std.) quarter (qtr.) is considered to be 91.25 days. Results obtained for monitoring periods of other durations are normalized by multiplying them by 91.25/x, where x is the actual duration in days of the period.

(3) Uncertainties for individual monitoring location results are two standard deviations of the elemental doses of four elements from the two dosimeters assigned to each monitoring location, representing the variability between the elemental doses of each of the four dosimeter elements.

(4) No measurement could be made at this location because the dosimeters were lost, stolen, or damaged. Refer to Appendix A of the Annual Radiological Environmental Operating Report for an explanation of program exceptions to REMP.

(5) Uncertainties associated with quarterly indicator and control averages are two standard deviations, representing the variability between the results of the individual monitoring locations.

TABLE C-5 IODINE-131 AND GAMMA SPECTROSCOPIC ANALYSES OF MILK SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in pCi/Liter ± 2 sigma

SITE	COLLECTION DATE	I-131	<----------GAMMA EMITTERS----------> K-40	Cs-134	Cs-137	Ba-140	La-140	Th-228
10G1	01/06/25	< 0.7	1300 ± 162	< 6	< 8	< 31	< 9	< 14
	02/03/25	< 0.8	1078 ± 135	< 6	< 6	< 23	< 7	< 10
	03/02/25	< 0.9	1224 ± 176	< 7	< 8	< 29	< 10	< 15
	04/07/25	< 0.8	1330 ± 190	< 8	< 8	< 21	< 9	< 11
	04/21/25	< 0.8	1243 ± 177	< 7	< 8	< 24	< 9	< 12
	05/05/25	< 1.0	1329 ± 220	< 6	< 8	< 25	< 10	< 12
	05/19/25	< 0.8	1228 ± 183	< 8	< 7	< 33	< 8	< 14
	06/02/25	< 0.9	1331 ± 180	< 8	< 9	< 28	< 5	< 15
	06/16/25	< 0.8	1115 ± 188	< 8	< 9	< 29	< 12	< 15
	06/30/25	< 0.8	1047 ± 196	< 7	< 9	< 36	< 13	< 13
	07/14/25	< 0.6	1291 ± 170	< 6	< 8	< 28	< 7	< 11
	07/28/25	< 0.6	1319 ± 162	< 7	< 8	< 33	< 5	< 16
	08/11/25	< 1.0	1207 ± 157	< 7	< 7	< 37	< 11	< 13
	08/24/25	< 0.8	1198 ± 146	< 6	< 7	< 26	< 8	< 11
	09/08/25	< 0.9	1225 ± 179	< 7	< 7	< 41	< 7	< 16
	09/22/25	< 0.9	1285 ± 165	< 8	< 9	< 37	< 10	< 16
	10/06/25	< 0.8	1322 ± 173	< 7	< 8	< 42	< 11	< 18
	10/20/25	< 0.9	1222 ± 189	< 8	< 10	< 41	< 9	< 21
	11/03/25	< 0.9	1399 ± 192	< 6	< 7	< 44	< 13	< 16
	12/08/25	< 0.9	1137 ± 192	< 7	< 7	< 26	< 10	< 13
	AVERAGE	-	1242 ± 186	-	-	-	-	-
13E3	01/06/25	< 0.8	1191 ± 170	< 8	< 10	< 27	< 11	< 16
	02/03/25	< 0.9	1321 ± 117	< 4	< 5	< 18	< 4	< 8.4
	03/02/25	< 0.8	1058 ± 158	< 6	< 8	< 29	< 10	< 13
	04/07/25	< 0.8	1285 ± 167	< 6	< 7	< 23	< 4	< 11
	04/21/25	< 0.8	1250 ± 158	< 7	< 8	< 27	< 11	< 14
	05/05/25	< 0.9	1403 ± 159	< 7	< 7	< 29	< 7	< 12
	05/19/25	< 0.8	1203 ± 183	< 7	< 11	< 30	< 12	< 15
	06/02/25	< 0.7	1255 ± 162	< 8	< 8	< 29	< 9	< 16
	06/16/25	< 0.9	1260 ± 157	< 6	< 8	< 23	< 9	< 13
	06/30/25	< 0.8	1207 ± 154	< 6	< 8	< 39	< 11	< 13
	07/14/25	< 0.8	1194 ± 170	< 11	< 12	< 45	< 13	< 20
	07/28/25	< 0.7	1123 ± 199	< 8	< 8	< 28	< 6	< 12
	08/11/25	< 0.9	1401 ± 183	< 8	< 9	< 44	< 12	< 17
	08/24/25	< 0.5	1096 ± 168	< 6	< 7	< 35	< 12	< 14
	09/08/25	< 0.8	1275 ± 192	< 8	< 10	< 48	< 14	< 14
	09/22/25	< 0.8	1139 ± 138	< 5	< 7	< 34	< 12	< 12
	10/06/25	< 0.9	1092 ± 189	< 8	< 8	< 43	< 13	< 15
	10/20/25	< 0.9	1242 ± 185	< 8	< 9	< 36	< 8	< 17
	11/03/25	< 0.8	1275 ± 191	< 6	< 7	< 32	< 14	< 12
	12/08/25	< 0.9	1084 ± 157	< 7	< 6	< 34	< 11	< 12
	AVERAGE	-	1218 ± 197	-	-	-	-	-

TABLE C-5 IODINE-131 AND GAMMA SPECTROSCOPIC ANALYSES OF MILK SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in pCi/Liter ± 2 sigma

SITE	COLLECTION DATE	I-131	<----------GAMMA EMITTERS----------> K-40	Cs-134	Cs-137	Ba-140	La-140	Th-228
5E2	01/06/25	< 0.7	1248 ± 139	< 5	< 7	< 24	< 8	< 12
	02/03/25	< 0.7	1088 ± 135	< 5	< 6	< 24	< 6	< 11
	03/02/25	< 0.9	1130 ± 166	< 7	< 10	< 33	< 9	< 15
	04/07/25	< 0.8	1202 ± 185	< 8	< 7	< 28	< 7	< 15
	04/21/25	< 0.8	1228 ± 163	< 7	< 8	< 31	< 8	< 16
	05/05/25	< 0.9	1281 ± 178	< 7	< 9	< 36	< 9	< 17
	05/19/25	< 0.9	983 ± 157	< 6	< 6	< 29	< 6	< 11
	06/02/25	< 0.9	1197 ± 201	< 7	< 9	< 28	< 12	< 12
	06/16/25	< 0.8	1129 ± 189	< 7	< 7	< 27	< 6	< 12
	06/30/25	< 0.8	1143 ± 164	< 6	< 8	< 41	< 14	< 12
	07/14/25	< 0.7	1284 ± 171	< 6	< 7	< 33	< 7	< 15
	07/28/25	< 0.9	1270 ± 174	< 8	< 9	< 35	< 12	< 15
	08/11/25	< 0.8	1197 ± 166	< 6	< 6	< 33	< 9	< 13
	08/24/25	< 0.7	1199 ± 179	< 6	< 9	< 28	< 11	< 14
	09/08/25	< 0.5	1162 ± 150	< 5	< 7	< 24	< 11	< 10
	09/22/25	< 0.5	1034 ± 178	< 7	< 9	< 38	< 12	< 15
	10/06/25	< 0.9	1354 ± 177	< 8	< 9	< 41	< 8	< 18
	10/20/25	< 0.9	1139 ± 123	< 5	< 6	< 50	< 13	< 10
	11/03/25	< 0.7	1009 ± 136	< 6	< 7	< 37	< 11	< 12
	12/08/25	< 0.8	1266 ± 188	< 7	< 9	< 34	< 10	< 20
	AVERAGE	-	1177 ± 195	-	-	-	-	-

TABLE C-6 **TRITIUM AND GAMMA SPECTROSCOPIC ANALYSES OF GROUNDWATER**
SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in pCi/Liter ± 2 sigma

	COLLECTION		<----------GAMMA EMITTERS---------->													
SITE	DATE	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140	Th-228
2S8	01/17/25	< 324	< 105	< 4	< 4	< 10	< 4	< 8	< 6	< 8	< 8	< 4	< 5	< 23	< 6	< 12
	04/24/25	< 384	< 94	< 6	< 6	< 13	< 7	< 12	< 5	< 11	< 9	< 5	< 6	< 26	< 10	< 11
	07/17/25	< 375	< 119	< 7	< 7	< 16	< 3	< 6	< 8	< 10	< 12	< 7	< 9	< 32	< 13	< 11
	10/17/25	< 316	< 62	< 3	< 3	< 9	< 3	< 7	< 3	< 5	< 9	< 3	< 3	< 20	< 6	< 7
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13S7	01/16/25	< 322	< 94	< 6	< 6	< 11	< 4	< 13	< 6	< 10	< 10	< 5	< 5	< 27	< 9	< 10
	04/22/25	< 387	< 101	< 7	< 7	< 23	< 7	< 12	< 7	< 13	< 11	< 7	< 8	< 33	< 14	< 12
	07/22/25	< 369	< 126	< 7	< 7	< 21	< 6	< 12	< 8	< 13	< 11	< 7	< 7	< 32	< 14	< 13
	10/21/25	< 318	< 50	< 3	< 3	< 9	< 3	< 7	< 3	< 5	< 6	< 3	< 3	< 16	< 5	< 5
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1S3	01/16/25	< 323	< 93	< 5	< 5	< 13	< 6	< 12	< 5	< 9	< 8	< 6	< 6	< 22	< 7	< 11
	04/22/25	515 ± 280	< 91	< 7	< 9	< 17	< 10	< 15	< 9	< 13	< 11	< 7	< 7	< 33	< 14	< 13
	07/22/25	< 376	< 159	< 7	< 6	< 16	< 9	< 14	< 7	< 11	< 13	< 6	< 8	< 41	< 11	< 15
	10/21/25	< 314	< 122	< 6	< 6	< 13	< 7	< 15	< 6	< 12	< 12	< 7	< 7	< 31	< 9	< 14
	AVERAGE	515 ± 280	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4S8	01/16/25	< 331	< 97	< 6	< 5	< 16	< 5	< 14	< 6	< 11	< 9	< 5	< 5	< 23	< 9	< 11
	04/22/25	< 381	< 106	< 7	< 9	< 23	< 8	< 12	< 8	< 9	< 12	< 7	< 7	< 40	< 13	< 13
	07/22/25	< 375	< 133	< 7	< 5	< 17	< 8	< 8	< 8	< 12	< 10	< 4	< 6	< 22	< 4	< 12
	10/21/25	< 319	< 61	< 6	< 6	< 20	< 8	< 13	< 6	< 11	< 11	< 6	< 6	< 28	< 10	< 11
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4S9	01/17/25	< 332	< 112	< 6	< 5	< 15	< 6	< 11	< 6	< 8	< 8	< 4	< 5	< 21	< 9	< 9
	04/17/25	< 380	< 77	< 6	< 7	< 15	< 7	< 12	< 8	< 11	< 10	< 6	< 6	< 29	< 12	< 12
	07/17/25	< 373	< 109	< 6	< 7	< 13	< 9	< 15	< 6	< 7	< 10	< 7	< 5	< 37	< 7	< 11
	10/17/25	< 318	< 34	< 3	< 3	< 8	< 4	< 6	< 3	< 6	< 8	< 3	< 3	< 21	< 6	± 6
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6S11A	01/17/25	< 329	< 149	< 6	< 7	< 14	< 11	< 18	< 6	< 14	< 11	< 7	< 8	< 31	< 11	< 15
	04/17/25	< 383	< 125	< 7	< 8	< 21	< 8	< 14	< 7	< 13	< 12	< 7	< 7	< 35	< 10	< 12
	07/18/25	< 389	< 129	< 6	< 6	< 16	< 7	< 12	< 6	< 12	< 10	< 6	< 6	< 28	< 9	< 12
	10/16/25	< 310	< 176	< 8	< 7	< 22	< 10	< 15	< 9	< 13	< 11	< 8	< 7	< 32	< 10	< 15
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-6 TRITIUM AND GAMMA SPECTROSCOPIC ANALYSES OF GROUNDWATER
SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in pCi/Liter ± 2 sigma

	COLLECTION		<----------GAMMA EMITTERS---------->													
SITE	DATE	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140	Th-228
6S12	01/17/25	< 321	< 81	< 6	< 6	< 14	< 7	< 12	< 7	< 9	< 9	< 5	< 5	< 30	< 12	< 12
	04/17/25	< 384	< 118	< 7	< 5	< 15	< 6	< 14	< 6	< 11	< 13	< 6	< 6	< 29	< 12	< 13
	07/17/25	< 377	< 114	< 8	< 9	< 27	< 10	< 19	< 9	< 12	< 14	< 9	< 8	< 37	< 13	< 15
	10/16/25	< 315	< 27	< 3	< 3	< 8	< 3	< 5	< 3	< 5	< 7	< 2	< 3	< 16	< 5	< 5
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7S10	01/15/25	< 320	< 54	< 4	< 4	< 10	< 4	< 8	< 4	< 8	< 8	< 4	< 4	< 17	< 8	< 9
	04/17/25	< 381	< 117	< 6	< 7	< 17	< 5	< 16	< 9	< 11	< 12	< 8	< 7	< 38	< 14	< 13
	07/18/25	< 371	< 141	< 6	< 7	< 17	< 7	< 13	< 7	< 13	< 13	< 8	< 8	< 37	< 9	< 16
	10/16/25	< 319	< 26	< 3	< 3	< 9	< 3	< 6	< 3	< 5	< 7	< 3	< 3	< 18	< 6	< 5
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7S11	01/15/25	< 319	< 83	< 4	< 4	< 13	< 5	< 9	< 5	< 6	< 8	< 5	< 5	< 19	< 6	< 9
	04/17/25	< 378	< 107	< 5	< 6	< 19	< 7	< 14	< 7	< 13	< 10	< 6	< 7	< 26	< 8	< 11
	07/18/25	< 376	< 97	< 7	< 8	< 16	< 5	< 11	< 6	< 12	< 10	< 6	< 5	< 30	< 7	< 11
	10/16/25	< 328	< 42	< 3	< 3	< 8	< 3	< 6	< 3	< 5	< 7	< 3	< 3	< 19	< 6	< 4
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8S4	01/16/25	< 379	< 110	< 4	< 4	< 14	< 5	< 10	< 6	< 9	< 8	< 4	< 4	< 20	< 5	< 10
	04/22/25	< 376	< 118	< 7	< 7	< 16	< 8	< 12	< 6	< 11	< 10	< 6	< 7	< 31	< 12	< 14
	07/22/25	< 392	< 108	< 7	< 8	< 17	< 7	< 12	< 8	< 12	< 11	< 7	< 7	< 31	< 8	< 13
	10/21/25	< 355	< 52	< 3	< 3	< 11	< 3	< 7	< 3	< 6	< 6	< 3	< 3	< 17	< 6	< 6
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1S4	01/16/25	< 323	< 97	< 7	< 7	< 14	< 7	< 12	< 7	< 13	< 11	< 6	< 7	< 31	< 8	< 11
	04/22/25	< 382	< 86	< 5	< 7	< 14	< 7	< 13	< 6	< 10	< 7	< 5	< 5	< 22	< 11	< 11
	07/22/25	< 378	< 153	< 7	< 8	< 21	< 9	< 17	< 6	< 11	< 12	< 8	< 9	< 36	< 13	< 16
	10/21/25	< 309	< 32	< 3	< 4	< 10	< 4	< 6	< 4	< 6	< 7	< 3	< 3	< 19	< 6	< 7
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-7 **ANNUAL AVERAGE TRITIUM CONCENTRATION IN PRECIPITATION, MONITORING WELLS AND LAKE TOOK-A-WHILE (LTAW) SURFACE WATER DATA SUSQUEHANNA STEAM ELECTRIC STATION, 2025**

Results in pCi/Liter ± 2 sigma

SITE	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Precip Sites 3S2**, 12S1**, 8G1** (offsite, controls)	62*	49	40	38	82	63	51	39	45	32	45	**	**	**	**	**	**	**
Precip Sites 1 and 2 (onsite, East of Station Reactor Bldgs)	370	230*	193	216	242	182	142	250	206	251	325	333	252	336	273	275	635	439
Precipitation Sites 3 and 4 (onsite, West of Station Reactor Bldgs)	414	404*	350	233	169	151	231	258	197	383	494	355	350	382	467	387	416	536
1S3 - MW-1 (43')	248	150	252	131	164	197	115	169	175	130	218	253	200	187	182	168	197	310
1S4 - Tap Water Sample	Not sampled	Not sampled	Not sample	Not sampled	Not sampled	Not sampled	Not sampled	Not sampled	Not sampled	Not sampled	Not sampled	Not sampled	28	44	-17	41	160	86
4S8 - MW-2 (45')	292	154	190	173	137	202	187	138	154	138	191	196	239	194	282	106	189	204
4S9 - MW-3 (94')	127	54	150	64	80	135	94	180	125	55	109	92	77	86	102	205	104	81
8S4 - MW-4 (111')	172	66	105	68	81	109	60	162	145	91	102	155	96	109	181	148	180	225
7S10 - MW-5 (36')	171	69	96	-6	74	106	68	70	73	51	93	125	86	82	62	207	190	89
13S7 - MW-6 (16')	142	134	143	34	80	111	71	79	111	107	122	120	150	110	83	179	101	178
2S8 - MW-7 (85')	Not installed	Not installed	Not installed	22	54	72	70	70	74	56	37	71	63	35	86	62	95	45
6S11A - MW-8A (14')	177	82	165	58	15	72	103	110	63	38	50	83	72	48	30	44	41	13
6S11B - MW-8B (19')	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well	Dry well
6S12 - MW-9 (28')	30	-44	45	18	6	60	21	57	70	5	27	50	47	41	9	76	81	80
7S11 - MW-10 (132')	3	-27	-9	1	-1	23	29	55	13	1	33	16	3	7	23	-29	34	7
**12F3 - Groundwater Control	26	-53	-2	5	-6	45	-26	20	41	61	82	**	**	**	**	**	**	**
**LTAW- Surface Water	179	104	110	132	132	145	27	73	89	77	135	**	**	**	**	20	65	230

* Revised values to reflect full scope of precipitation data.

** Stations were discontinued after 5/30/18.

TABLE C-8 GROSS BETA, TRITIUM AND GAMMA SPECTROSCOPIC ANALYSES OF DRINKING WATER SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in pCi/Liter ± 2 sigma

	COLLECTION PERIOD				<----------GAMMA EMITTERS---------->												
SITE	START	STOP	Gr-B	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
12H2	12/30/24	01/28/25	< 2	< 376	< 14	< 2	< 2	< 6	< 2	< 4	< 2	< 3	< 9	< 1	< 2	< 16	< 5
12H2	01/28/25	02/25/25	< 3	< 338	< 14	< 1	< 2	< 5	< 2	< 3	< 2	< 3	< 8	< 1	< 2	< 15	< 5
12H2	02/25/25	03/25/25	< 2	< 375	< 13	< 1	< 1	< 4	< 1	< 2	< 1	< 2	< 6	< 1	< 1	< 12	< 5
12H2	03/25/25	04/29/25	< 2	< 389	< 20	< 2	< 2	< 7	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 24	< 8
12H2	04/29/25	05/27/25	4 ± 2	< 355	< 16	< 2	< 2	< 6	< 2	< 4	< 2	< 3	< 10	< 2	< 2	< 17	< 6
12H2	05/27/25	06/24/25	< 2	< 390	< 14	< 2	< 2	< 6	< 2	< 3	< 2	< 3	< 8	< 1	< 2	< 15	< 5
12H2	06/24/25	07/29/25	< 3	< 372	< 19	< 1	< 1	< 4	< 2	< 2	< 2	< 2	< 12	< 1	< 1	< 17	< 5
12H2	07/29/25	08/26/25	< 3	< 387	< 13	< 1	< 2	< 5	< 2	< 3	< 2	< 3	< 8	< 1	< 1	< 14	< 5
12H2	08/26/25	09/30/25	< 3	< 383	< 14	< 2	< 2	< 6	< 2	< 3	< 2	< 3	< 12	< 2	< 2	< 20	< 7
12H2	09/30/25	10/28/25	< 3	< 298	< 30	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 10	< 1	< 1	< 16	< 5
12H2	10/28/25	11/24/25	3 ± 2	< 379	< 19	< 2	< 2	< 8	< 2	< 4	< 3	< 5	< 24	< 2	< 2	< 30	< 10
12H2	11/24/25	12/30/25	< 2	< 279	< 26	< 2	< 2	< 6	< 2	< 3	< 2	< 4	< 8	< 2	< 2	< 24	< 8
		AVERAGE	4 ± 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-9 **GAMMA SPECTROSCOPIC ANALYSES OF FOOD PRODUCTS (FRUITS, VEGETABLES AND BROADLEAF) SUSQUEHANNA STEAM ELECTRIC STATION, 2025**

Results in pCi/kg (wet) ± 2 sigma

SITE	COLLECTION DATE	SAMPLE TYPE	Be-7	K-40	I-131	Cs-134	Cs-137	Ac-228	Th-228
11S6	06/30/25	Swiss Chard	< 170	2115 ± 459	< 30	< 20	< 23	< 77	< 33
	06/30/25	Collard	397 ± 183	3557 ± 529	< 35	< 22	< 28	< 85	< 36
	07/21/25	Swiss Chard	< 256	2059 ± 434	< 28	< 20	< 22	< 85	< 41
	07/21/25	Collard	< 273	1847 ± 386	< 27	< 20	< 21	< 111	< 40
	08/18/25	Swiss Chard	< 247	2665 ± 452	< 49	< 25	< 25	< 107	< 44
	08/18/25	Collard	< 277	3893 ± 524	< 52	< 23	< 35	< 107	< 44
	09/15/25	Swiss Chard	< 320	3423 ± 512	< 45	< 27	< 23	< 110	< 51
	09/15/25	Collard	< 230	3471 ± 465	< 36	< 21	< 24	< 98	< 38
	10/13/25	Swiss Chard	< 249	3163 ± 429	< 41	< 23	< 25	< 88	< 38
	10/13/25	Collard	431 ± 172	3290 ± 455	< 48	< 20	< 18	< 96	< 36
	AVERAGE		414 ± 48	2948 ± 1446	-	-	-	-	-
12F7	08/27/25	Potatoes	< 197	2079 ± 489	< 36	< 24	< 26	< 79	< 39
	12/08/25	Corn	< 170	2941 ± 497	< 34	< 18	< 21	< 78	< 38
	12/08/25	Soybean	< 287	16540 ± 1033	< 55	< 30	< 31	< 136	< 52
	AVERAGE			7187 ± 16223					

TABLE C-10 **GROSS BETA, TRITIUM AND GAMMA SPECTROSCOPIC ANALYSES OF SURFACE WATER SUSQUEHANNA STEAM ELECTRIC STATION, 2025**

Results in pCi/Liter ± 2 sigma

SITE	COLLECTION PERIOD	Gr-B	H-3	<----------GAMMA EMITTERS----------> K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140	Th-228
6S6	12/30/24 - 01/28/25	< 2	< 384	< 15	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 9	< 1	< 2	< 15	< 5	< 2
	05/06/25 - 05/27/25	2 ± 1	< 354	< 31	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 6	< 2	< 2	< 14	< 5	< 3
	05/27/25 - 06/24/25	< 3	< 312	< 15	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 8	< 1	< 2	< 16	< 5	< 3
	06/24/25 - 07/29/25	< 3	< 382	< 13	< 1	< 1	< 4	< 2	< 2	< 1	< 2	< 11	< 1	< 1	< 15	< 6	< 2
	07/29/25 - 08/26/25	< 4	< 375	< 21	< 2	< 2	< 7	< 2	< 5	< 2	< 4	< 11	< 2	< 2	< 20	< 7	< 3
	08/26/25 - 09/30/25	< 3	< 390	< 16	< 2	< 2	< 6	< 2	< 3	< 2	< 3	< 12	< 2	< 2	< 20	< 7	< 3
	09/30/25 - 10/28/25	5 ± 2	< 308	< 16	< 2	< 2	< 6	< 2	< 3	< 2	< 3	< 10	< 2	< 2	< 18	< 6	< 3
	10/28/25 - 11/24/25	3 ± 2	< 381	< 26	< 1	< 2	< 5	< 1	< 3	< 2	< 3	< 17	< 1	< 1	< 23	< 7	< 3
	11/24/25 - 12/30/25	< 2	< 289	< 32	< 2	< 3	< 9	< 2	< 4	< 3	< 5	< 13	< 2	< 2	< 50	< 17	< 3
	AVERAGE	3 ± 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6S5	01/06/25 - 01/28/25	-	< 380	< 35	< 2	< 2	< 7	< 2	< 5	< 3	< 5	< 10	< 2	< 2	< 20	< 7	< 4
	02/04/25 - 02/25/25	-	< 337	< 36	< 2	< 2	< 7	< 2	< 4	< 2	< 4	< 8	< 2	< 2	< 15	< 5	< 3
	03/04/25 - 03/25/25	-	< 382	< 34	< 2	< 3	< 7	< 2	< 5	< 3	< 4	< 9	< 2	< 2	< 18	< 6	< 4
	04/01/25 - 04/29/25	-	< 398	< 19	< 2	< 2	< 7	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 22	< 8	< 4
	05/06/25 - 05/27/25	-	< 346	< 35	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 8	< 2	< 2	< 15	< 5	< 4
	06/03/25 - 06/24/25	-	< 318	< 20	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 16	< 5	< 3
	07/01/25 - 07/29/25	-	< 382	< 19	< 1	< 1	< 3	< 2	< 2	< 1	< 2	< 10	< 1	< 1	< 16	< 5	< 2
	08/04/25 - 08/26/25	-	< 378	< 36	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 5	< 4
	09/02/25 - 09/30/25	-	< 386	< 17	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 7	< 3
	10/07/25 - 10/28/25	-	< 304	< 12	< 1	< 1	< 5	< 2	< 3	< 2	< 3	< 7	< 1	< 1	< 13	< 4	< 2
	11/04/25 - 11/24/25	-	< 295	< 37	< 2	< 2	< 7	< 2	< 4	< 2	< 4	< 19	< 2	< 2	< 26	< 8	< 4
	12/01/25 - 12/30/25	-	< 380	< 37	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 20	< 6	< 4
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4S7	01/17/25	-	< 316	< 83	< 4	< 5	< 13	< 5	< 9	< 5	< 10	< 7	< 5	< 6	< 22	< 8	< 9
	04/21/25	-	495 ± 271	< 124	< 8	< 8	< 19	< 8	< 16	< 6	< 12	< 11	< 8	< 8	< 37	< 9	< 12
	07/17/25	-	< 379	< 60	< 6	< 6	< 13	< 5	< 12	< 7	< 10	< 12	< 7	< 7	< 33	< 8	< 14
	10/17/25	-	< 319	< 93	< 5	< 5	< 10	< 5	< 8	< 5	< 8	< 13	< 4	< 5	< 23	< 6	< 8
	AVERAGE	-	495 ± 271	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-10 **GROSS BETA, TRITIUM AND GAMMA SPECTROSCOPIC ANALYSES OF SURFACE WATER SUSQUEHANNA STEAM ELECTRIC STATION, 2025**

Results in pCi/Liter ± 2 sigma

SITE	COLLECTION PERIOD	Gr-B	H-3	<----------GAMMA EMITTERS----------> K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140	Th-228
LTAW	01/17/25	-	< 329	< 86	< 4	< 4	< 8	< 5	< 9	< 5	< 8	< 6	< 4	< 4	< 16	< 5	< 8
	04/21/25	-	< 388	< 151	< 7	< 8	< 19	< 11	< 8	< 8	< 11	< 14	< 8	< 7	< 40	< 14	< 14
	07/17/25	-	< 388	< 135	< 6	< 6	< 20	< 7	< 13	< 7	< 11	< 10	< 7	< 6	< 32	< 10	< 14
	10/17/25	-	< 323	< 29	< 3	< 3	< 8	< 3	< 5	< 3	< 5	< 7	< 2	< 3	< 16	< 6	< 5
	AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5S9	01/06/25	-	< 374	< 12	< 1	< 1	< 4	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 17	< 6	< 2
	01/29/25 - 02/25/25	3 ± 2	< 335	< 29	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 6	< 3
	03/04/25 - 03/25/25	< 2	< 391	< 30	< 2	< 2	< 6	< 2	< 4	< 2	< 3	< 8	< 2	< 2	< 15	< 5	< 3
	04/01/25 - 04/29/25	< 2	< 393	< 32	< 1	< 2	< 5	< 2	< 3	< 2	< 3	< 8	< 1	< 1	< 14	< 5	< 3
	05/06/25	4 ± 2	< 358	< 13	< 2	< 2	< 6	< 2	< 3	< 2	< 3	< 15	< 1	< 2	< 22	< 8	< 3
	10/07/25	< 3	< 301	< 34	< 2	< 2	< 7	< 2	< 4	< 2	< 4	< 22	< 2	< 2	< 30	< 10	< 3
	AVERAGE	4 ± 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-11 **GAMMA SPECTROSCOPIC ANALYSIS OF FISH**
SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in pCi/kg (wet) ± 2 sigma

SITE	COLLECTION DATE	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137
2H									
Channel Catfish	04/25/25	3129 ± 1230	< 71	< 74	< 183	< 97	< 137	< 69	< 86
Northern Hogsucker	04/25/25	3650 ± 998	< 65	< 66	< 197	< 60	< 142	< 63	< 82
Smallmouth Bass	04/25/25	4059 ± 1211	< 71	< 67	< 212	< 78	< 120	< 81	< 80
Northern Hogsucker	10/10/25	4251 ± 1221	< 79	< 71	< 228	< 90	< 189	< 89	< 82
Channel Catfish	10/10/25	2499 ± 984	< 94	< 75	< 209	< 96	< 150	< 77	< 85
Smallmouth Bass	10/10/25	3939 ± 1028	< 81	< 71	< 219	< 80	< 138	< 79	< 83
	AVERAGE	3588 ± 1322	-	-	-	-	-	-	-
IND									
Channel Catfish	04/24/25	3211 ± 891	< 66	< 66	< 158	< 81	< 152	< 60	< 60
Northern Hogsucker	04/24/25	3854 ± 985	< 62	< 53	< 158	< 65	< 125	< 46	< 60
Smallmouth Bass	04/24/25	3242 ± 735	< 45	< 45	< 111	< 49	< 122	< 54	< 46
Northern Hogsucker	10/09/25	3354 ± 1484	< 68	< 76	< 207	< 87	< 213	< 83	< 71
Smallmouth Bass	10/09/25	4681 ± 1349	< 49	< 50	< 197	< 84	< 166	< 66	< 72
Channel Catfish	10/09/25	3577 ± 1307	< 84	< 93	< 221	< 104	< 245	< 94	< 99
	AVERAGE	3653 ± 1116	-	-	-	-	-	-	-
LTAW									
Largemouth Bass	10/10/25	3399 ± 898	< 67	< 72	< 181	< 92	< 158	< 57	< 65
Rainbow Trout	10/10/25	3682 ± 1110	< 84	< 105	< 239	< 73	< 171	< 83	< 92
	AVERAGE	3541 ± 400	-	-	-	-	-	-	-

TABLE C-12 GAMMA SPECTROSCOPIC ANALYSES OF SHORELINE SEDIMENT SUSQUEHANNA STEAM ELECTRIC STATION, 2025

Results in pCi/kg (dry) ± 2 sigma

SITE	COLLECTION DATE	K-40	Cs-134	Cs-137	Ra-226	Ac-228	Th-228
2B	04/01/25	15150 ± 1910	< 102	< 118	< 2375	1158 ± 370	1142 ± 159
	09/16/25	10210 ± 1836	< 106	< 128	< 2730	1346 ± 377	914 ± 214
	AVERAGE	12680 ± 6986	-	-	-	1252 ± 266	1028 ± 322
7B	04/01/25	9551 ± 1372	< 74	< 85	< 1461	1002 ± 290	654 ± 123
	09/16/25	10650 ± 1624	< 85	< 99	< 1685	1079 ± 439	818 ± 218
	AVERAGE	10101 ± 1554	-	-	-	1041 ± 109	736 ± 232
12F	04/01/25	10090 ± 1294	< 57	< 74	< 1450	831 ± 253	839 ± 166
	09/16/25	6305 ± 1697	< 93	< 98	< 1963	800 ± 341	788 ± 180
	AVERAGE	8198 ± 5353	-	-	-	816 ± 44	813 ± 72

FIGURE C-1 - GROSS BETA ACTIVITY IN AIR PARTICULATES

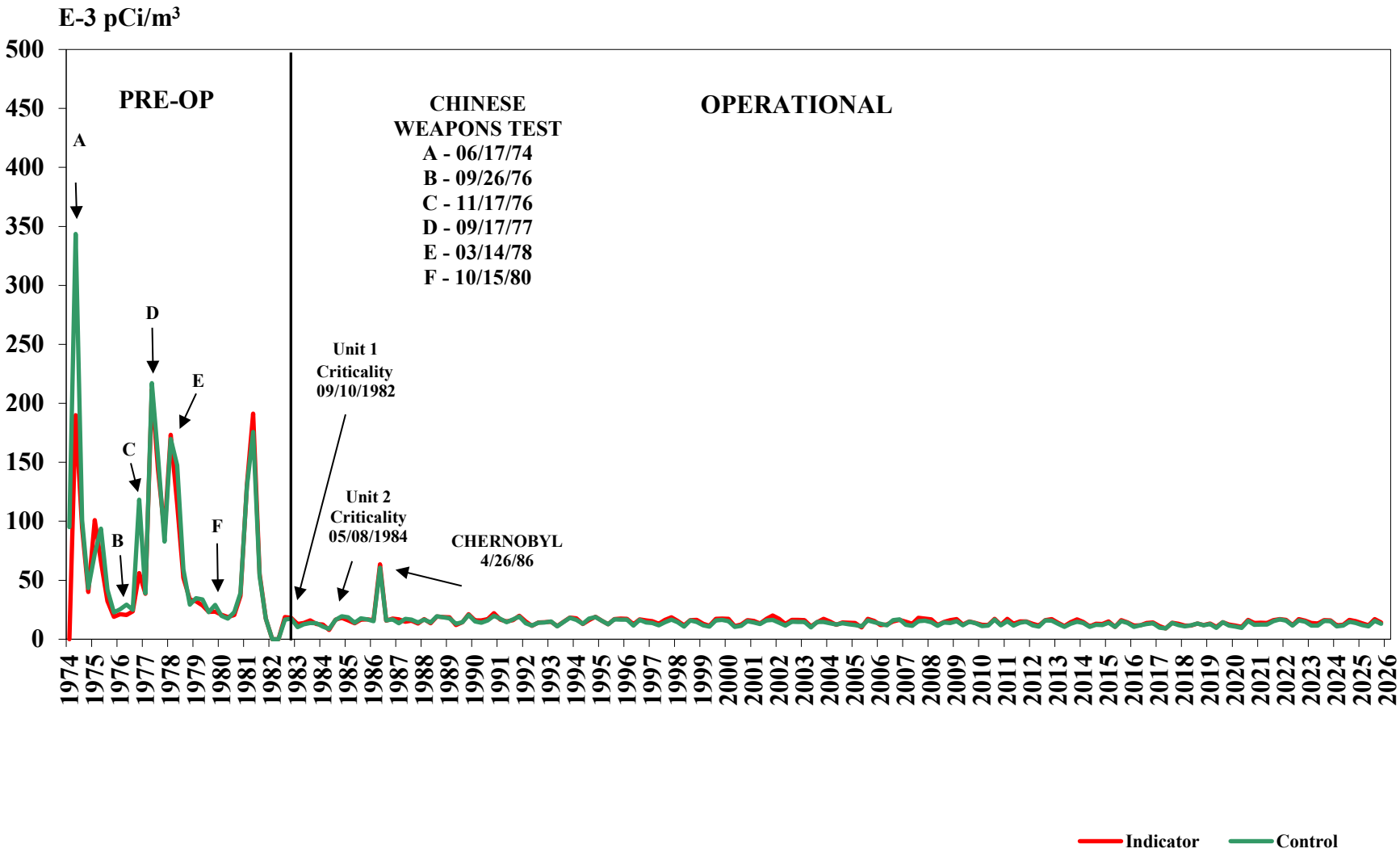


FIGURE C-2 - AMBIENT RADIATION LEVELS BASED ON ENVIRONMENTAL DOSIMETRY DATA

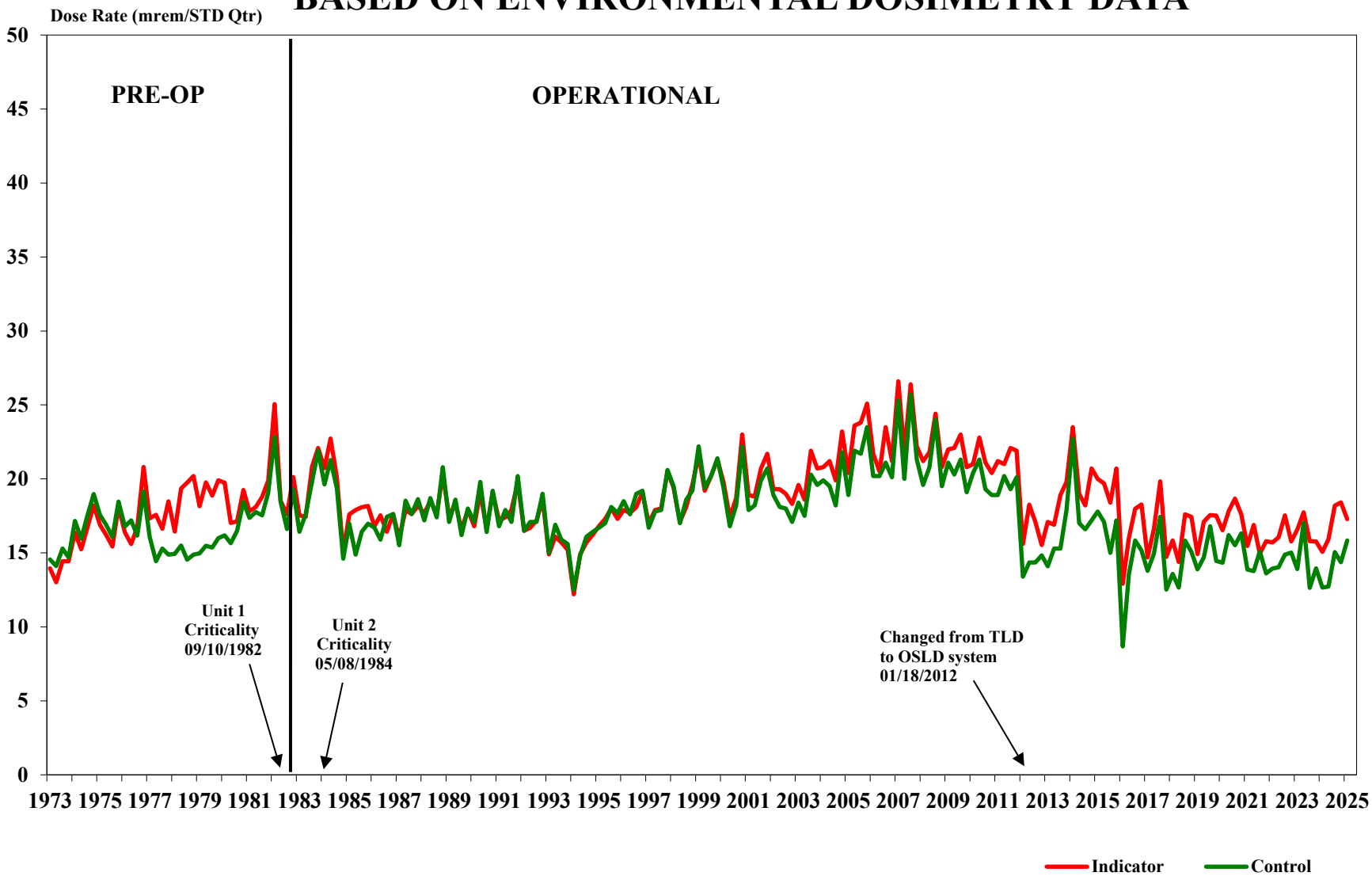


FIGURE C-3 - IODINE-131 ACTIVITY IN MILK

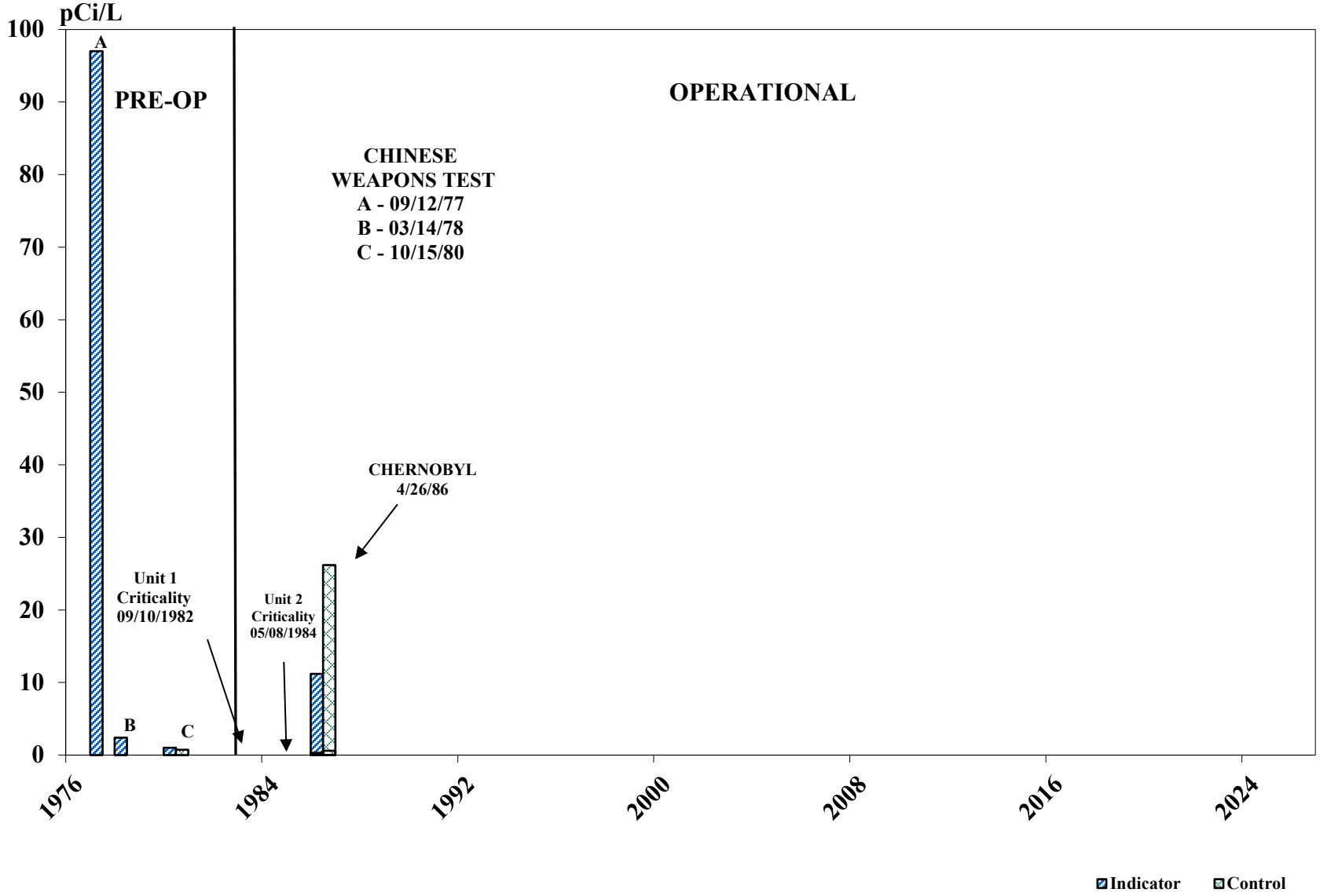


FIGURE C-4 - ANNUAL AVERAGE TRITIUM ACTIVITY IN PRECIPITATION AND SURFACE WATER VERSUS GROUND WATER

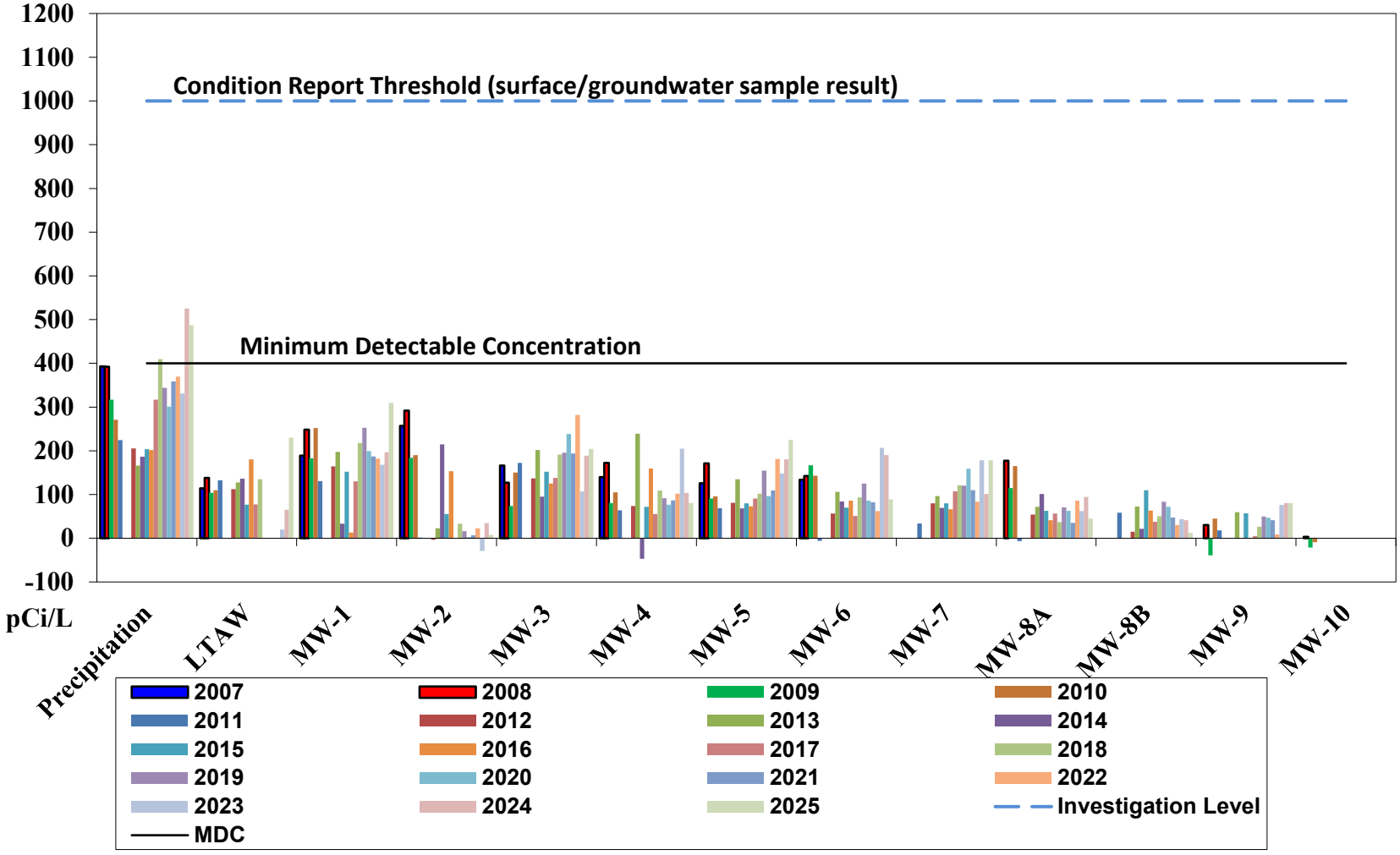


FIGURE C-5 - GROSS BETA ACTIVITY IN DRINKING WATER

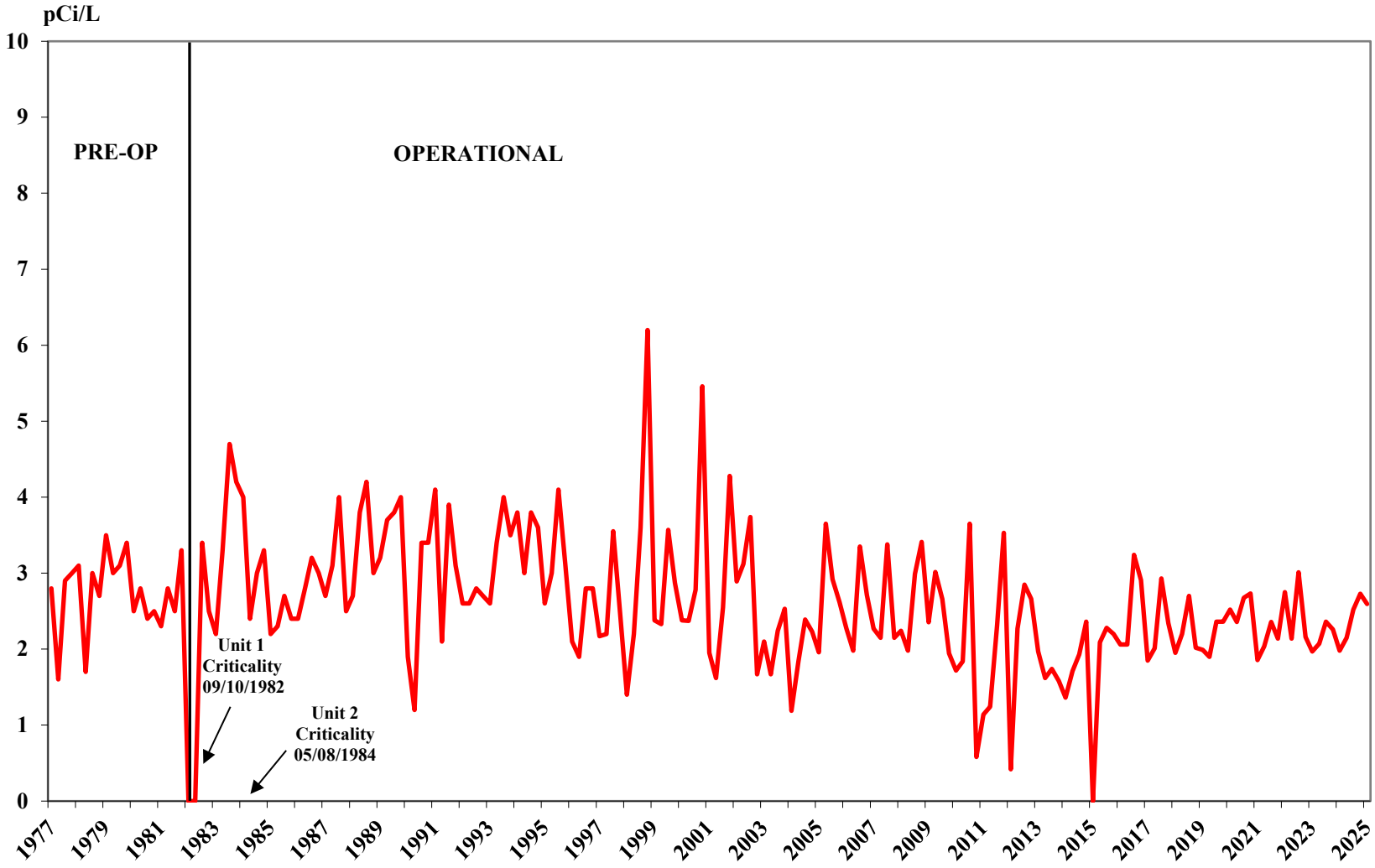
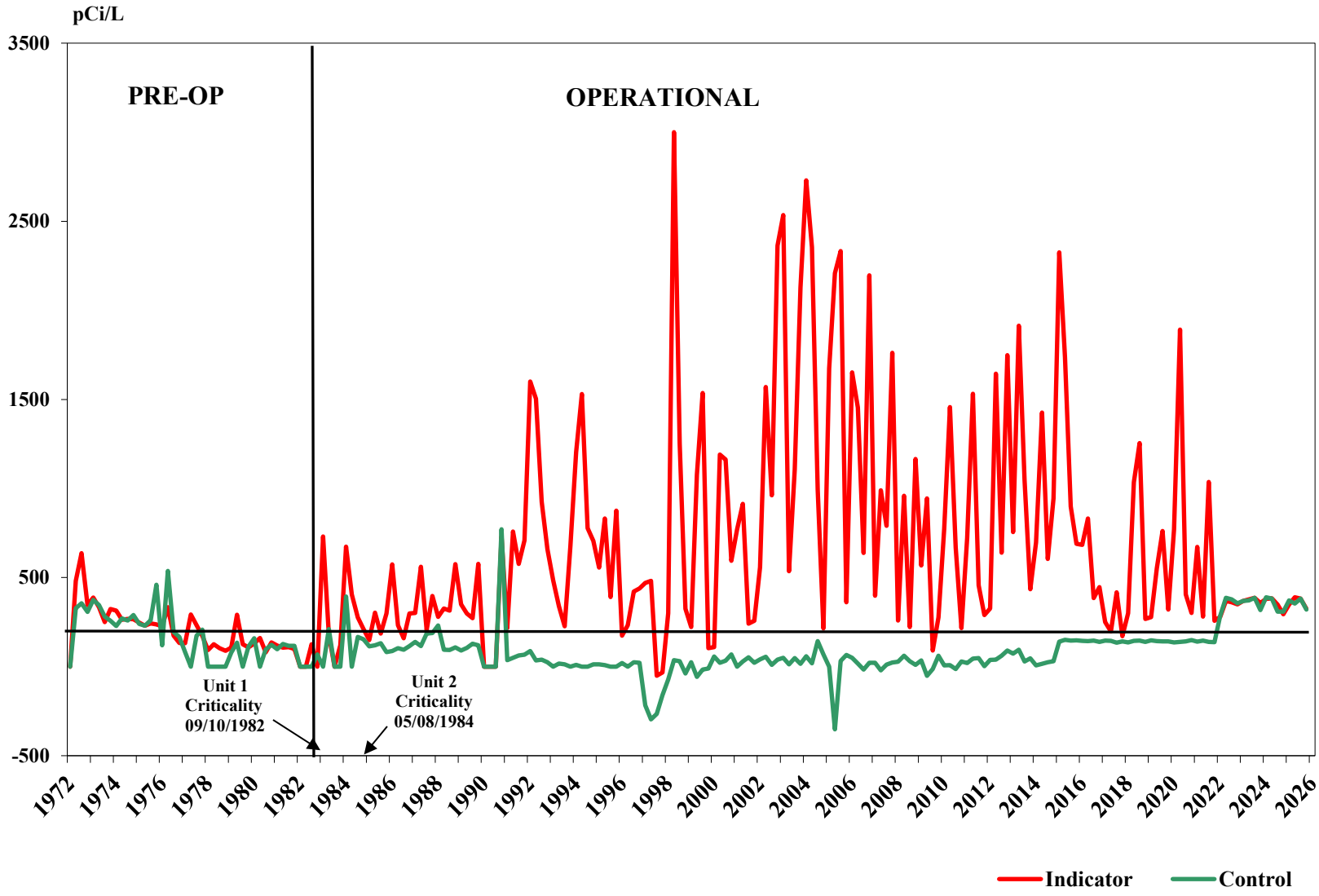


FIGURE C-6 - TRITIUM ACTIVITY IN SURFACE WATER



APPENDIX D

SUMMARY OF RESULTS FROM ANALYTICS, ENVIRONMENTAL RESOURCE ASSOCIATES (ERA), AND DEPARTMENT OF ENERGY (DOE) – MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)

Table D-1 Eckert & Ziegler Analytics
Environmental Radioactivity Crosscheck Program
Teledyne Brown Engineering - Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Ratio (%)	Evaluation [b]
March 2025	E14230	Milk	Ce-141	pCi/L	68.1	75.8	90	A
			Cs-134	pCi/L	121	142	85	A
			Cs-137	pCi/L	154	168	92	A
			Cr-51	pCi/L	278	291	96	A
			Co-58	pCi/L	95.4	105	91	A
			Co-60	pCi/L	169	193	88	A
			Fe-59	pCi/L	125	135	93	A
			Mn-54	pCi/L	172	189	91	A
			Zn-65	pCi/L	229	251	91	A
			I-131 (Low Level)	pCi/L	88.4	94.7	93	A
			Sr-89	pCi/L	84.9	91.9	92	A
			Sr-90	pCi/L	11.1	15.6	71	W
March 2025	E14323	AP	Ce-141	pCi	55.9	54.2	103	A
			Cs-134	pCi	93.0	102	91	A
			Cs-137	pCi	107	120	89	A
			Cr-51	pCi	194	208	93	A
			Co-58	pCi	68.4	75.2	91	A
			Co-60	pCi	142	138	103	A
			Fe-59	pCi	95.0	96.3	99	A
			Mn-54	pCi	123	135	91	A
			Zn-65	pCi	181	179	101	A
			Ni-63	pCi/To	81.5	87.4	93	A
			Sr-89	pCi	81.6	88.5	92	A
			Sr-90	pCi	13.6	15	90	A
March 2025	E14231	Charcoal	I-131	pCi	70.3	66.3	106	A
March 2025	E14233	Soil	Ce-141	pCi/g	0.124	0.129	96	A
			Cs-134	pCi/g	0.283	0.242	117	A
			Cs-137	pCi/g	0.333	0.351	95	A
			Cr-51	pCi/g	0.495	0.494	100	A
			Co-58	pCi/g	0.193	0.179	108	A
			Co-60	pCi/g	0.323	0.327	99	A
			Fe-59	pCi/g	0.231	0.229	101	A
			Mn-54	pCi/g	0.325	0.321	101	A
			Zn-65	pCi/g	0.446	0.426	105	A
March 2025	E14235	Water	Gr-A (Am-241)	pCi/L	79.6	89.4	89	A
			Gr-B (Cs-137)	pCi/L	242	285	85	A

Table D-1 (continued) Eckert & Ziegler Analytics
Environmental Radioactivity Crosscheck Program
Teledyne Brown Engineering - Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Ratio (%)	Evaluation [b]
Sept 2025	E14237	Milk	Ce-141	pCi/L	91.6	89.5	102	A
			Cs-134	pCi/L	121	142	85	A
			Cs-137	pCi/L	115	126	91	A
			Cr-51	pCi/L	280	260	108	A
			Co-58	pCi/L	104	105	99	A
			Co-60	pCi/L	145	150	97	A
			Fe-59	pCi/L	91.4	98.6	93	A
			Mn-54	pCi/L	159	161	99	A
			Zn-65	pCi/L	205	196	105	A
			I-131 (Low Level)	pCi/L	79.5	76.3	104	A
			Sr-89	pCi/L	109	89.8	121	W
			Sr-90	pCi/L	10.9	13.1	83	A
Sept 2025	E14239	AP	Ce-141	pCi	67.5	68.1	99	A
			Cs-134	pCi	103	108	95	A
			Cs-137	pCi	98.4	96.1	102	A
			Cr-51	pCi	227	197	115	A
			Co-58	pCi	79.6	79.9	100	A
			Co-60	pCi	131	114	115	A
			Fe-59	pCi	74.7	75	100	A
			Mn-54	pCi	120	123	98	A
			Zn-65	pCi	133	149	89	A
			Ni-63	pCi/To	71.4	85.1	84	A
			Sr-89	pCi	78.2	84.2	93	A
			Sr-90	pCi	13.7	12.2	112	A
Sept 2025	E14238	Charcoal	I-131	pCi	80.8	79	102	A
Sept 2025	E14240	Soil	Ce-141	pCi/g	0.133	0.149	89	A
			Cs-134	pCi/g	0.166	0.236	70	W
			Cs-137	pCi/g	0.22	0.276	80	A
			Cr-51	pCi/g	0.486	0.432	112	A
			Co-58	pCi/g	0.16	0.175	91	A
			Co-60	pCi/g	0.234	0.251	93	A
			Fe-59	pCi/g	0.154	0.164	94	A
			Mn-54	pCi/g	0.241	0.269	90	A
			Zn-65	pCi/g	0.308	0.326	94	A
Sept 2025	E14242	Water	Gr-A (Am-241)	pCi/L	97.2	99.7	97	A
			Gr-B (Cs-137)	pCi/L	200	201	100	A

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measure
(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 D-2 DOE 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	Acceptance Ratio (%)	Evaluation[b]
Mar 2025	25-MaS52	Soil	Ni-63	Bq/kg	964	1560	1092-2028	61.8	N(1)
			Tc-99	Bq/kg	659	725	508-943	90.9	A
			Th-228	Bq/kg	44.3	44.4	31.1-57.7	99.8	A
			Th-230	Bq/kg	46.4	47	32.9-61.1	98.7	A
			Th-232	Bq/kg	39.9	41.4	29.0-53.8	96.4	A
Mar 2025	25-MaSU52	Urine	Cs-134	Bq/L	-0.0104	False Positive		N/A	A
			Cs-137	Bq/L	0.497	0.608	0.426-0.490	81.7	A
			Co-57	Bq/L	0.0472	False Positive		N/A	A
			Co-60	Bq/L	0.104	0.0765	Sensitivity Eval	N/A	A
			Mn-54	Bq/L	0.0365	False Positive		N/A	A
			U-234	Bq/L	0.0963	0.105	0.074-0.137	91.7	A
			U-238	Bq/L	0.108	0.109	0.076-0.142	99.1	A
			Zn-65	Bq/L	-0.278	False Positive		N/A	A
Mar 2025	25-MaW52	Water	Ni-63	Bq/L	37.3	38.9	27.2-50.6	95.9	A
			Tc-99	Bq/L	6.64	6.34	4.44-8.24	104.7	A
Mar 2025	25-RdV52	Vegetation	Cs-134	Bq/sample	0.0452	False Positive		N/A	A
			Cs-137	Bq/sample	0.558	0.707	0.495-0.919	78.9	W
			Co-57	Bq/sample	2.86	3.40	2.38-4.42	84.1	A
			Co-60	Bq/sample	0.0284	False Positive		N/A	A
			Mn-54	Bq/sample	2.22	2.72	1.90-3.54	81.6	A
			Sr-90	Bq/sample	0.222	0.370	0.259-0.481	60.0	N(2)
			Zn-65	Bq/sample	1.5	1.87	1.31-2.43	80.2	A
			Sr-90	Bq/sample	0.356	0.370	0.259-0.481	96.2	A
			Sr-90	Bq/sample	0.4	0.370	0.259-0.481	108.1	A
Sep 2025	25-MaS53	Soil	Ni-63	Bq/kg	865	1474	1032-1916	58.7	N(3)
			Tc-99	Bq/kg	314	370	259-481	84.9	A
			Th-228	Bq/kg	51.2	41.7	29.2-54.2	123	W
			Th-230	Bq/kg	54.8	45.6	31.9-59.3	120	W
			Th-232	Bq/kg	50.4	38.7	27.1-50.3	130	N(4)
Sep 2025	25-MaW53	Water	Ni-63	Bq/L	23.0	25.0	17.5-32.5	92	A
			Tc-99	Bq/L	0.17	*False Pos*		N/A	A
Sep 2025	25-RdV53	Vegetation	Cs-134	Bq/sample	0.1051	*False Pos*		N/A	A
			Cs-137	Bq/sample	0.9581	0.986	0.69-1.282	97	A
			Co-57	Bq/sample	4.54	4.47	3.13-5.81	102	A
			Co-60	Bq/sample	2.08	2.3	1.61-2.99	90	A
			Mn-54	Bq/sample	2.64	3.1	2.17-4.03	85	A
			Sr-90	Bq/sample	1.5	1.43	1.00-1.86	105	A
			Zn-65	Bq/sample	8.39	9.29	6.50-12.08	90	A

(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
Results Flags:
A = Result acceptable. |Bias| <= 20%
W = Result acceptable with warning. 20% < |Bias| <= 30%
N = Result not acceptable. |Bias| > 30%
RW = Report Warning NR = Not Reported
Uncertainty Flags:
NOT ACCEPTABLE. RP < 2%
ACCEPTABLE. 2% <= RP <= 15%
ACCEPTABLE WITH WARNING. 15% < RP <= 30%
NOT ACCEPTABLE. RP > 30%
Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100
N(1) = NCR 25-05 N(2) = NCR 25-04
(R)= Additional Study for N(2) failure N(3) = NCR 25-12
N(4) = NCR 25-13

Table D-3 ERA
Environmental Radioactivity Crosscheck
Program Teledyne Brown Engineering - Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Range	Acceptance Ratio (%)	Evaluation[b]
Mar 2025	MRAD-42	Soil	Am-241	pCi/kg	955	1060	572-1500	90.1	A
			Pu-238	pCi/kg	1010	1070	534-1630	94.4	A
			Pu-239	pCi/kg	1020	1150	627-1650	88.7	A
			Sr-90	pCi/kg	3540	5710	1780-8890	62.0	A
			U-234	pCi/kg	3598	3500	1640-4590	103	A
			U-238	pCi/kg	3857	3470	1900-4660	111	A
Mar 2025	MRAD-42	AP	Am-241	pCi/Filte	73.5	67.7	48.3-90.3	109	A
			Fe-55	pCi/Filte	224	181	66.1-289	124	A
			Pu-238	pCi/Filte	41.7	40.2	30.4-49.4	104	A
			Pu-239	pCi/Filte	64.5	62.3	46.6-75.2	104	A
			U-234	pCi/Filte	30.8	34.2	25.4-40.1	90.1	A
			U-238	pCi/Filte	29.4	33.9	25.6-40.4	86.7	A
			Gr-A (Th-230)	pCi/Filte	44.8	39.5	20.6-65.1	113	A
			Gr-B (CS-137)	pCi/Filte	62.6	55.2	33.5-83.4	113	A
Mar 2025	MRAD-42	Water	Am-241	pCi/L	40.5	39.5	27.1-50.5	103	A
			Fe-55	pCi/L	892.6	1460	858-2120	61.1	A
			Pu-238	pCi/L	74.9	77.2	46.4-100	97.0	A
			Pu-239	pCi/L	59.2	58.4	36.1-72.0	101	A
Apr 2025	RAD-141	Water	Ba-133	pCi/L	42.7	48.3	34.3-62.3	88.4	A
			Cs-134	pCi/L	19.5	16.5	5.65-27.4	118	A
			Cs-137	pCi/L	47.3	50.8	27.3-74.3	93.1	A
			Co-60	pCi/L	99.2	104	84.4-124	95.4	A
			Zn-65	pCi/L	317	341	279-403	93.0	A
			GR-A	pCi/L	22.2	15.6	10.0-21.2	142.3	N(1)
			GR-B	pCi/L	21.6	22.9	15.0-30.8	94.3	A
			H-3	pCi/L	19900	21200	18200-24200	93.9	A
			I-131 (Low	pCi/L	26.1	26.8	23.2-30.4	97.4	A
			Sr-89	pCi/L	70.8	67.1	51.2-83.0	106	A
			Sr-90	pCi/L	22.5	23.9	19.7-28.1	94.1	A
			U (Total)	pCi/L	48.0	49.6	44.0-55.2	96.8	A
Sept 2025	MRAD-43	Soil	Sr-90	pCi/kg	6790	9490	2950-14800	71.5	A
Sept 2025	MRAD-43	AP	Am-241	pCi/Filter	40.2	39.8	28.4-53.1	101	A
			Fe-55	pCi/Filter	125	166	60.6-265	75.3	A
			Pu-238	pCi/Filter	26	15.1	11.4-18.6	172	N(3)
			U-234	pCi/Filter	57.7	63.4	47.0-74.3	91.0	A
			U-238	pCi/Filter	63.1	62.9	47.5-75.0	100	A
			Gr-A (Th-230)	pCi/Filter	28.2	22	11.5-36.2	128	A
			Gr-B (CS-137)	pCi/Filter	38.6	40.5	24.6-61.2	95.3	A
Sept 2025	MRAD-43	Water	Am-241	pCi/L	69.2	68.6	47.1-87.7	101	A
			Fe-55	pCi/L	304	399	234-580	76.2	A
			Pu-238	pCi/L	104	115	56.7-122	90.4	A
			Pu-239	pCi/L	37.8	39.8	24.6-49.0	95.0	A

Table D-3 ERA (continued)
Environmental Radioactivity Crosscheck
Program Teledyne Brown Engineering - Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [(a)]	Acceptance Range	Acceptance Ratio (%)	Evaluation[(b)]
Oct 2025	RAD	Water	Ba-133	pCi/L	21.3	17.5	6.55-28.5	122	A
			Cs-134	pCi/L	53.8	58	43.0-73.0	92.8	A
			Cs-137	pCi/L	179.5	178	142-214	101	A
			Co-60	pCi/L	58.3	55	40.3-69.7	106	A
			Zn-65	pCi/L	37.04	36.8	5.51-68.1	101	A
			GR-A	pCi/L	64.8	59.9	45.5-74.3	108	A
			GR-B	pCi/L	19.3	19.3	12.2-26.4	100	A
			H-3	pCi/L	18400	21200	18200-24200	86.8	A
			I-131 (Low	pCi/L	23.9	24.3	20.9-27.7	98.4	A
			Sr-89	pCi/L	69.7	64.2	48.6-79.8	109	A
			Sr-90	pCi/L	39.8	43.8	37.6-50.0	90.9	A
			U (Total)	pCi/L	47.1	54	48.0-60.0	87.2	N(2)

KEY

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

(b) ERA evaluation:

A = Acceptable - Reported value falls within the Acceptance Limits

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

$N^{(1)}$ = NCR 25-06 $N^{(2)}$ = NCR 25-11 $N^{(3)}$ = NCR 25-10

APPENDIX E

REMP SAMPLE EQUIPMENT OPERABILITY TRENDING

TABLE E-1
REMP SAMPLING EQUIPMENT OPERABILITY TRENDING
SUSQUEHANNA STEAM ELECTRIC STATION

Percent (%) Operability

SAMPLING MEDIA	SAMPLE LOCATION	DESCRIPTION	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Air Particulate & Charcoal	3S2	SSES Backup Met. Tower	99	100	99.9	99.9	100.0	99.4	99.9	95.5	99.7	99.9	99.9
	12S1	West Building	100	100	99.1	99.7	99.9	99.9	99.9	99.7	98.1	98.0	99.9
	13S6	Former Laydown Area, West of Confers Lane	97	100	100	99.9	99.9	99.9	99.9	99.9	100.0	99.7	99.9
	12E1	Berwick Hospital	98	99.1	100	100	100	100.0	100	100	100	99.9	99.9
	8G1	PPL System Facilities Center, Humboldt Industrial Park	100	99.2	99.9	99.9	99.9	99.9	99.9	100	100	98.8	100
	10S3	E of Confers Lane, S of Towers Club	-	100	99.5	99.9	99.2	98.9	99.9	99.7	99.9	98.6	99.0
	9B1	Transmission Line, E of Route 11	-	100	99.9	99.9	99.9	100.0	99.9	99.9	99.9	99.9	99.9
Drinking Water	12H2	Danville Water Company	100	100	100	100	98.1	100.0	100	100.0	100.0	99.9	100
Surface Water	6S6	River Water Intake Line	98	99.7	99.9	99.9	99.9	88.1**	94.0	99.4	94.0	99.9	72.5*

* Auto- Compsite sampler valve repair issues, January through early May.
** Auto- Compsite sampler taken OOS 8/30/20. New Auto- Compsite sampler installed, placed in service 10/13/20