KEWAUNEE SOLUTIONS

April 16, 2026

KS-2026-008
TRM Section 10

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

Kewaunee Solutions, Inc.
Facility Operating License No. DPR-43
NRC Docket No. 50-305

Subject: Kewaunee Power Station 2025 Annual Radioactive Effluent Release Report

Enclosed is the Kewaunee Power Station (KPS) 2025 Annual Radioactive Effluent Release Report for January through December 2025. This report is submitted pursuant to the requirements of KPS Technical Requirements Manual (TRM) Section 10.3.2.

If you have any questions or require additional information, please contact me at 508-728-1421.

Respectfully,

Joseph R. Lynch Digitally signed by Joseph R. Lynch
Date: 2026.04.14 13:23:43 -04'00'

Joseph R. Lynch
Regulatory Affairs Director
Kewaunee Solutions, Inc.

Commitments made in this letter: None

ATTACHMENT:

1. Kewaunee Solutions Kewaunee Power Station 2025 Annual Radioactive Effluent Release Report.

cc: Regional Administrator, NRC Region III
Mr. William (Chris) Allen, KPS NRC Project Manager
Mr. Robert Busch, Wisconsin Department of Health Services - Radiation Protection Section - Attn: Radioactive Materials Program
American Nuclear Insurers (ANI)

ATTACHMENT 1

Kewaunee Solutions
Kewaunee Power Station

2025
Annual Radioactive Effluent Release Report

(19 Pages Follow)

KEWAUNEE SOLUTIONS

2025 Annual Radioactive Effluent Release Report

Kewaunee Solutions
Kewaunee Power Station

DOCKET 50-305

KEWAUNEE SOLUTIONS
KEWAUNEE POWER STATION

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

January 1 - December 31, 2025

Table of Contents

0.0 SUMMARY

On February 25, 2013, Dominion Energy Kewaunee (DEK) submitted a certification of permanent cessation of power operations pursuant to 10 CFR 50.82(a)(1)(i), stating that DEK has decided to permanently cease power operation of KPS on May 7, 2013. On May 15, 2013, the NRC docketed the certification for permanent removal of fuel from the reactor vessel pursuant to 10 CFR 50.82(a)(1)(ii). Therefore the 10 CFR Part 50 license no longer authorizes KPS to operate the reactor or emplace or retain fuel in the reactor vessel, as specified in 10 CFR 50.82(a)(2).

On June 15, 2017, the transfer of all spent fuel from the KPS Spent Fuel Pool (SFP) to the Independent Spent Fuel Storage Installation (ISFSI) was completed. All remaining irradiated materials were removed from the SFP in October 2017.

On June 28, 2022, Dominion Energy Kewaunee (DEK) was sold to Energy Solutions and assumed the new company name of Kewaunee Solutions. The sale included the Kewaunee Power Station, ISFSI and transfer of the operating license DPR-43. Kewaunee Solutions transitioned from the SAFSTOR to the DECON method of decommissioning of the Power Station on May 22, 2023.

The current effluent release paths are continuous gaseous radioactive releases from the Auxiliary Building and Containment TORIT and Exhaust Ventilation Systems, and batch liquid radioactive waste releases to Lake Michigan. Batch gaseous radioactive releases and continuous liquid radioactive releases are no longer performed.

In 2025, no gaseous radionuclides were identified in releases from the Auxiliary Building Vent or Containment TORIT and Exhaust Ventilation Systems. During the same period, a total of 23 batch liquid radioactive waste releases were discharged to Lake Michigan.

1.0 INTRODUCTION

This report is being submitted in accordance with the requirements of Kewaunee Technical Requirements Manual, Section 10.3.2 and the Offsite Dose Calculation Manual, Section 15.2. It includes data from all effluent releases made from January 1 - December 31, 2025. The report contains summaries of the gaseous and liquid releases made to the environment including the quantity, characterization, time duration and calculated radiation dose at the site boundary resulting from these releases. The report also includes a summation of solid radioactive waste disposal. Values indicated as 0 (zero) in this report refer to actual values less than the detection limits. A table of these less than detectable (LLD) values is identified in sections 2.1 and 3.1.

1.1 Effluent Dose Limits

Specifications are set to ensure that offsite doses are maintained as low as reasonably achievable while still allowing for practical and dependable evolutions at the Kewaunee Power Station.

The Kewaunee Offsite Dose Calculation Manual (ODCM) describes the methodology and parameters used in:

1. The calculation of radioactive liquid effluent monitoring instrumentation alarm/trip set points.

2. The calculation of radioactive liquid and gaseous concentrations, dose rates and cumulative quarterly and annual doses. The ODCM methodology is acceptable for use in demonstrating compliance with 10 CFR 20.1301/1302; 10 CFR 50, Appendix I; and 40 CFR 190.

2.0 GASEOUS EFFLUENTS

2.1 Lower Limits of Detection (LLD) for Gaseous Effluents

Gaseous radioactive effluents are released in the continuous mode. Batch gaseous radioactive releases are no longer performed. The Auxiliary Building and Containment TORIT and Exhaust Ventilation Systems were sampled continuously for Particulates, Gross Alpha, and Strontium 90. The ventilation systems were also grab-sampled monthly for Tritium.

The LLD's for gaseous radio-analyses, as listed in Table 13.2.1-1 of the Kewaunee ODCM are:

Analysis	LLD (µCi/ml)
Particulate Gamma Emitters	1.00E-11
Particulate Gross Alpha	1.00E-11
Strontium 90	1.00E-11
Tritium (H-3)	1.00E-06

The nominal "a priori" LLD values are shown below.

Isotope	a priori LLD (µCi/ml)
a. Particulate emissions:	
Mn-54	1.11E-13
Co-60	3.57E-13
Cs-134	4.69E-13
Cs-137	1.68E-13
Ce-144	1.24E-12
b. Composite particulate samples:	
Sr-90	1.00E-14
Gross Alpha	1.00E-14

These "a priori" LLDs represent the capabilities of the counting systems in use, not an after the fact "a posteriori" limit for a particular measurement.

2.2 Gaseous Effluent Data

Table 2.1 presents a quarterly summation of the total activity released and average release rates of gaseous effluents (continuous mode). Table 2.2 presents the dose limits for gaseous effluents, and the calculated doses this year from gaseous effluents.

Table 2.1
Gaseous Effluents - Summation of all Releases (Continuous Mode)

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Particulates					
Total Activity Released (Ci)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Average Release Rate (µCi/sec)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tritium					
Total Activity Released (Ci)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Average Release Rate (µCi/sec)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Gross Alpha Released (Ci)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 2.2
Dose from Gaseous Effluents

The offsite dose limits from radioactive materials in gaseous effluents are specified in Section 13.2.3 of the Kewaunee ODCM and can be summarized as follows:

	Organ
Quarterly Limit	7.5 mrem
Annual Limit	15.0 mrem

The following offsite doses were calculated using equation 2.2 from the Kewaunee ODCM. Calculated offsite doses versus quarterly and annual limits are shown below.

In 2025 there were no identified gaseous radionuclides released from the Auxiliary Building Vent or Containment TORIT and Exhaust Ventilation Systems.

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual
Organ Dose					
Specification (mrem)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
Total Body					
Actual Dose (mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
% of Specification	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bone					
Actual Dose (mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
% of Specification	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Liver					
Actual Dose (mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
% of Specification	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 2.2 (continued)
Dose from Gaseous Effluents

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual
Thyroid					
Actual Dose (mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
% of Specification	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kidney					
Actual Dose (mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
% of Specification	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lung					
Actual Dose (mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
% of Specification	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GI-LLI					
Actual Dose (mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
% of Specification	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3.0 LIQUID EFFLUENTS

3.1 Lower Limits of Detection (LLD) for Liquid Effluents

Liquid radioactive effluents are released as batch releases. Continuous liquid radioactive releases are no longer performed. Each batch is sampled prior to release and analyzed for gamma emitters and tritium. A fraction of each sample is retained for a proportional composite which is then analyzed for Gross Alpha, Strontium 90, Iron 55 and Nickel 63.

The LLD's for liquid batch release radio-analyses, as listed in Table 13.1.1-1 of the Kewaunee ODCM are:

Analysis	LLD (µCi/ml)
Principal Gamma Emitters	1.00 E-06
Tritium (H-3)	1.00 E-05
Gross Alpha	5.00 E-07
Strontium 90	5.00 E-08
Iron 55	1.00 E-06
Nickel 63	1.00 E-04

3.2 Liquid Batch Release Statistics

The following is a summation of all liquid batch releases during 2025.

Number of batch releases.....23

Total time for all batch releases (min).....5.23E+03

Maximum time for a batch release (min)…1.38E+03

Minimum time for a batch release (min)....1.28E+02

Average time for a batch release (min).....2.28E+02

3.3 Liquid Effluent Data

The following Table 3.1 presents a quarterly summation of the total activity released (batch mode) and average concentration for all liquid effluents. It also presents the gross alpha activity released, volume of waste released, and volume of dilution water used. Table 3.2 presents the doses from liquid effluents for each quarter and the calculated doses this year from liquid effluents.

Table 3.1
Liquid Effluents - Summation of all Releases (Batch Mode)

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total
Fission and Activation Products					
Total Release (Ci)	0.00E+00	3.86E-05	3.98E-02	3.89E-03	4.38E-02
Average Concentration (µCi/ml)	0.00E+00	2.95E-09	1.33E-06	6.01E-07	8.85E-07
Tritium					
Total Release (Ci)	0.00E+00	1.06E-01	9.11E-01	2.44E-01	1.26E+00
Average Concentration (µCi/ml)	0.00E+00	8.08E-06	3.05E-05	3.76E-05	2.55E-05
Gross Alpha Activity					
Total Release (Ci)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Volume of Waste Released					
Total (liters)	0.00E+00	2.63E+04	5.18E+05	4.84E+04	5.92E+05
Volume of Dilution Water					
Total (liters)	0.00E+00	1.31E+07	2.98E+07	6.47E+06	4.94E+07

Table 3.2
Dose from Liquid Effluents

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual
Total Body					
Specification (mrem)	1.50E+00	1.50E+00	1.50E+00	1.50E+00	3.00E+00
Actual Dose (mrem)	0.00E+00	1.33E-04	7.60E-02	7.07E-03	8.32E-02
% of Specification	0.00E+00	8.87E-03	5.07E+00	4.71E-01	2.77E+00
Organs					
Specification (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Bone					
Actual Dose (mrem)	0.00E+00	2.12E-03	2.23E+00	2.00E-01	2.43E+00
% of Specification	0.00E+00	4.24E-02	4.46E+01	4.00E+00	2.43E+01
Liver					
Actual Dose (mrem)	0.00E+00	2.09E-04	1.55E-01	1.41E-02	1.70E-01
% of Specification	0.00E+00	4.18E-03	3.10E+00	2.82E-01	1.70E+00
Thyroid					
Actual Dose (mrem)	0.00E+00	6.14E-05	5.40E-04	1.40E-04	7.41E-04
% of Specification	0.00E+00	1.23E-03	1.08E-02	2.80E-03	7.41E-03
Kidney					
Actual Dose (mrem)	0.00E+00	6.14E-05	5.40E-04	1.40E-04	7.41E-04
% of Specification	0.00E+00	1.23E-03	1.08E-02	2.80E-03	7.41E-03
Lung					
Actual Dose (mrem)	0.00E+00	6.14E-05	5.40E-04	1.40E-04	7.41E-04
% of Specification	0.00E+00	1.23E-03	1.08E-02	2.80E-03	7.41E-03
GI-LLI					
Actual Dose (mrem)	0.00E+00	9.21E-05	3.90E-02	5.00E-03	4.41E-02
% of Specification	0.00E+00	1.84E-03	7.80E-01	1.00E-01	4.41E-01

3.4 Ground Water Monitoring

The Kewaunee Power Station has 13 monitoring wells (MW) used to sample for groundwater contamination. No plant derived gamma activity was identified. As indicated in the table below, tritium in all wells was below Minimum Detectable Concentration (MDC). There were no voluntary ground water communications, no spills, and no leaks in 2025.

Sample Point Sample Date	Tritium pCi/L	Total Gamma Activity µCi/ml
MW-701		
4/24/2025	<341	None Detected
10/20/2025	<319	None Detected
MW-702		
4/14/2025	<379	None Detected
10/01/2025	<318	None Detected
MW-703		
4/14/2025	<379	None Detected
10/16/2025	<318	None Detected
MW-704		
4/14/2025	<379	None Detected
10/15/2025	<318	None Detected
MW-705		
4/21/2025	<351	None Detected
10/15/2025	<318	None Detected
MW-706		
4/22/2025	<342	None Detected
10/16/2025	<318	None Detected

Sample Point Sample Date	Tritium pCi/L	Total Gamma Activity µCi/ml
MW-702A		
4/14/2025	<379	None Detected
10/01/2025	<318	None Detected
MW-705A		
4/21/2025	<351	None Detected
10/16/2025	<318	None Detected
MW-706A		
4/24/2025	<341	None Detected
10/16/2025	<318	None Detected
MW-707A		
4/21/2025	<351	None Detected
10/16/2025	<318	None Detected
MW-707B		
4/21/2025	<351	None Detected
10/16/2025	<318	None Detected
MW-708A		
4/24/2025	<341	None Detected
10/20/2025	<319	None Detected
MW-708B		
4/22/2025	<342	None Detected
10/20/2025	<319	None Detected

4.0 METEOROLOGICAL DATA

Meteorological data is no longer required to be reported in accordance with the Kewaunee ODCM Rev. 19, Section 15.2.

5.0 SOLID WASTE DISPOSAL

Table 5.1 is a summation of solid radioactive waste shipped during 2025. Presented are the types of waste streams, waste classification, and major nuclides.

Table 5.1
Solid Waste and Irradiated Fuel Shipments

A. Solid Radioactive Waste Shipped Off-Site for Burial or Disposal

1. Type of Waste with Estimate of Major Nuclide Composition

Resins, Filters, And Evaporator Bottoms			
Waste	**Volume**		**Curies**
Class	**ft³**	**m³**	**Shipped**
A	6.75E+01	1.91E+00	1.35E+00
B	7.00E+00	1.98E-01	4.85E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	7.45E+01	2.11E+00	6.20E+00
Major Nuclides for the Above Table:			
H-3, C-14, Fe-55, Co-60, Ni-59, Ni-63, Sr-90, Nb-94, Tc-99, I-129, Cs-137, Ce-144, Am-241, Cm-243, Cm-244			

Dry Active Waste (DAW)			
Waste	**Volume**		**Curies**
Class	**ft³**	**m³**	**Shipped**
A	4.45E+05	1.26E+04	3.07E+01
B	0.00E+00	0.00E+00	0.00E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	4.45E+05	1.26E+04	3.07E+01
Major Nuclides for the Above Table:			
H-3, C-14, Fe-55, Co-60, Ni-59, Ni-63, Nb-94, Tc-99, I-129, Cs-137, Ce-144, Pu-238, Pu-239, Am-241 Cm-243, Cm-244			

Table 5.1 (continued)
Solid Waste and Irradiated Fuel Shipments

Irradiated Components			
Waste	**Volume**		**Curies**
Class	**ft³**	**m³**	**Shipped**
A	1.94E+00	5.49E-02	4.71E-02
B	0.00E+00	0.00E+00	0.00E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	1.94E+00	5.49E-02	4.71E-02
Major Nuclides for the Above Table:			
H-3, C-14, Fe-55, Co-60, Ni-59, Ni-63, Nb-94, Tc-99, I-129, Cs-137, Am-241, Cm-243, Cm-244			

Other Waste			
Waste	**Volume**		**Curies**
Class	**ft³**	**m³**	**Shipped**
A	2.37E+03	6.72E+01	1.01E-01
B	0.00E+00	0.00E+00	0.00E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	2.37E+03	6.72E+01	1.01E-01
Major Nuclides for the Above Table:			
H-3, C-14, Fe-55, Co-60, Ni-59, Ni-63, Nb-94, Tc-99, I-129, Cs-137, Ce-144, Am-241, Cm-243 Cm-244			

Sum Of All Low-Level Waste Shipped From Site			
Waste	**Volume**		**Curies**
Class	**ft³**	**m³**	**Shipped**
A	4.48E+05	1.27E+04	3.22E+01
B	7.00E+00	1.98E-01	4.85E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	4.48E+05	1.27E+04	3.70E+01
Major Nuclides for the Above Table:			
H-3, C-14, Fe-55, Co-60, Ni-59, Ni-63, Sr-90, Nb-94, Tc-99, I-129, Cs-137, Ce-144, Pu-238 Pu-239, Am-241, Cm-243, Cm-244			

Table 5.1 (continued)
Solid Waste and Irradiated Fuel Shipments

B. Irradiated Fuel Shipments

Number of Shipments	Mode of Transportation	Destination
None	NA	NA

No irradiated fuel shipments were made from the Kewaunee Power Station during 2025.

6.0 SUPPLEMENTAL INFORMATION

6.1 Abnormal Releases or Abnormal Discharges

No abnormal releases or abnormal discharges were made from the Kewaunee Power Station during the report period.

6.2 Non-routine Planned Discharges

No non-routine planned discharges were made from the Kewaunee Power Station during the reporting period.

6.3 Program Revisions

In accordance with Technical Requirements Manual Section 10.1.1.c.3 and the Offsite Dose Calculation Manual Section 15.2.f, revisions to the Process Control Program, Offsite Dose Calculation Manual, or the Radiological Environmental Monitoring Program for the report period are listed below.

6.3.1 Process Control Program

There were no revisions to the Process Control Program during the report period.

6.3.2 Offsite Dose Calculation Manual

There were no revisions to the Offsite Dose Calculation Manual during the report period.

6.3.3 Radiological Environmental Monitoring Manual

There were no revisions to Radiological Environmental Monitoring Manual during the report period.

6.4 Major Changes to the Radioactive Liquid, Gaseous and Solid Waste Systems

In support of decommissioning activities, Wastewater Treatment System #1 (WWT-1) was installed to provide temporary wastewater processing and an updated discharge configuration. The system allowed wastewater to be processed, as required, and routed to existing Outfall 1 via the Screenhouse discharge path. The R-18 liquid effluent radiation monitor was relocated to align with the revised discharge path and was installed in-line, in the discharge header to continuously monitor liquid releases. The configuration maintained automatic isolation capability.

These modifications had no adverse effect on predicted releases of radioactive materials in liquid effluents, the expected maximum exposure to plant personnel, individuals in the Unrestricted Area, or to the general public.

All changes were reviewed and approved by the Project Operations Review Committee (PORC) and are included in Revision 03, Section 4.1.2.1.1 of the DSAR, issued Nov 11, 2024.

6.5 Effluent Monitoring System Inoperability

The following effluent monitoring equipment inoperabilities occurred during the reporting period: The Containment TORIT air sampler was not restarted following filter replacement on 12/22/2025 (CR-2025-1504), and R-13 was removed from service due to flow meter issues on 12/22/2025 (CR-2025-1503). These conditions did not adversely impact the monitoring or control of radioactive effluents.

6.6 Corrections to Previous Reports

None.

6.7 Other

6.7.1 Condition Report CR0230 was submitted on 3/6/2025.
Condition Report CR0230 documented excessive duct vibration on B Spent Fuel Pool Exhaust Fan.

6.7.2 Condition Report CR0769 was submitted on 7/8/2025.
Condition Report CR0769 documented Loss of power during A CVCS Monitor Tank discharge.

6.7.3 Condition Report CR0832 was submitted on 7/21/2025
Condition Report CR0832 documented the UDD Pump trip during A CVCS Monitor Tank discharge.

6.7.4 Condition Report CR1423 was submitted on 12/8/2025.
Condition Report CR1423 documented frozen liquid discharge valves prior to scheduled discharge.

6.7.5 Condition Report CR1433 was submitted on 12/9/2025.
Condition Report CR1433 documented a R-18 High Alarm due to plasma cutting.

6.7.6 Condition Report CR1503 was submitted on 12/22/2025.
Condition Report CR1503 documented R-13 flow meter issues.

6.7.7 Condition Report CR1504 was submitted on 12/22/2025.
Condition Report CR1504 documented the Containment Torit Air Sampler not restarted following filter change.