VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

April 28, 2023

United States Nuclear Regulatory Commission
Attention: Document Control Desk
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Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
2022 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

Enclosed is the Surry Power Station Annual Radioactive Effluent Release Report for January 1, 2022, through December 31, 2022. The report, submitted pursuant to Surry Power Station Technical Specification 6.6.B.3, includes a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released during the 2022 calendar year, as outlined in Regulatory Guide 1.21, Revision 1, June 1974.

If you have any further questions, please contact William Terry at 757-365-2010.

Sincerely,

Cathy Grady
Director Nuclear Safety & Licensing
Surry Power Station

Attachment

Commitments made in this letter: None

cc: U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
ATTN: Division of Reactor Safety – Radiation Safety Branch
245 Peachtree Center Ave., NE Suite 1200
Atlanta, Georgia 30303-1257

NRC Senior Resident Inspector
Surry Power Station

ATTACHMENT

2022 Annual Radioactive Effluent Release Report

Surry Power Station

SURRY POWER STATION UNITS 1 AND 2
VIRGINIA ELECTRIC AND POWER COMPANY

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

SURRY POWER STATION

January 1, 2022 through December 31, 2022

Prepared By: _____

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ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

FOR

SURRY POWER STATION

January 1, 2022 through December 31, 2022

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FORWARD

This report is submitted as required by Appendix A to Operating License Nos. DPR-32 and DPR-37, Technical Specifications for Surry Power Station, Units 1 and 2, Virginia Electric and Power Company, Docket Nos. 50-280, 50-281, Section 6.6.B.3.

EXECUTIVE SUMMARY
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

The Annual Radioactive Effluent Release Report describes the radiological effluent control program conducted at Surry Power Station during the 2022 calendar year. This document summarizes the quantities of radioactive liquid and gaseous effluents and solid waste released from Surry Power Station in accordance with Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants", Revision 1, June 1974. The report also includes an assessment of radiation doses to the maximum exposed member of the public due to the radioactive liquid and gaseous effluents.

During this reporting period, there were no unplanned liquid effluent release and no unplanned gaseous effluent release as classified according to the criteria in the Offsite Dose Calculation Manual.

Based on the 2022 effluent release data, 10CFR50 Appendix I dose calculations were performed in accordance with the Offsite Dose Calculation Manual. The dose calculations are as follows:

1. The total body dose due to liquid effluents was 2.91E-04 mrem, which is 0.005 % of the 6 mrem dose limit. The critical organ dose due to liquid effluents was 3.02E-04 mrem to the GI-LLI, which is 0.002 % of the 20 mrem dose limit.

2. The air dose due to noble gases in gaseous effluents was 1.07E-05 mrad gamma, which is 0.00005 % of the 20 mrad gamma dose limit, and 6.01E-06 mrad beta, which is 0.00002 % of the 40 mrad beta dose limit.

3. The critical organ dose from gaseous effluents due to I-131, I-133, H-3, and particulates with half-lives greater than 8 days is 9.34E-02 mrem, which is 0.3 % of the 30 mrem dose limit.

There were no major changes to the radioactive liquid, gaseous or solid waste treatment systems during this reporting period.

There were no revisions made to VPAP-2103S, Offsite Dose Calculation Manual, during this reporting period.

In accordance with the Nuclear Energy Institute (NEI) Industry Ground Water Protection Initiative, analysis results of ground water monitoring locations not included in the Radiological Environmental Monitoring Program (REMP), will be included in this report. Ground water monitoring well sample results are provided in Attachment 8.

The operation of Surry Power Station in 2022 resulted in a negligible radiation dose consequence to the maximum exposed member of the public in unrestricted areas. This is based on measured radioactivity and dose calculations performed.

Purpose and Scope

Attachment 1 includes a summary of the quantities of radioactive liquid and gaseous effluents and solid waste as outlined in Regulatory Guide 1.21, with data summarized on a quarterly or annual basis following the format of Tables 1, 2 and 3 of Appendix B, thereof. Attachment 2 of this report includes an assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site during 2022.

As required by Technical Specification 6.8.B, changes to the Offsite Dose Calculation Manual (ODCM) for the time period covered by this report are included in Attachment 3. Major changes to the radioactive liquid, gaseous and solid waste treatment systems are reported in Attachment 4, as required by the ODCM, Section 6.7.2. If changes are made to these systems, the report shall include information to support the reason for the change and a summary of the 10CFR50.59 evaluation. In lieu of reporting major changes in this report, major changes to the radioactive waste treatment systems may be submitted as part of the annual FSAR update.

As required by the ODCM, Sections 6.2.2 and 6.3.2, a list and explanation for the inoperability of radioactive liquid and/or gaseous effluent monitoring instrumentation is provided in Attachment 5 of this report.

Attachment 6 provides a summary of unplanned releases that occurred during the reporting period.

Attachment 7 provides the typical lower limit of detection (LLD) capabilities of the radioactive effluent analysis instrumentation.

As required by the ODCM, Section 6.7.5, a summary is provided in Attachment 8 of on-site radioactive leaks or spills and ground water sample analyses that were communicated in accordance with the Industry Ground Water Protection Initiative reporting protocol. Sample analyses from ground water wells that are not part of the Radiological Environmental Monitoring Program are also provided in Attachment 8.

Discussion

The basis for the gaseous critical organ percent technical specification calculation, as documented on Attachment 1, Table 1A, is the ODCM. The requirements of Section 6.3.1 of the ODCM, are site boundary critical organ dose rate for iodine-131, iodine-133, for tritium, and for all radionuclides in particulate form with half-lives greater than 8 days shall be less than or equal to 1500 mrem/yr. The maximum critical receptor was the teen for the 1st, 2nd, 3rd quarters and a child for the 4th quarter.

The basis for the calculation of the percent of technical specification for the total body and skin in Table 1A of Attachment 1 is the ODCM, Section 6.3.1, which requires that the dose rate for noble gases to areas at or beyond site boundary shall be less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin.

The basis for the calculation of the percent of technical specification in Table 2A of Attachment 1 is the ODCM, Section 6.2.1, which states that the concentration of radioactive material released in liquid effluents to unrestricted areas shall not exceed ten times the concentrations specified in 10CFR20, Appendix B, Table 2, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.00E-04 microcuries/mL.

Percent of technical specification calculations are based on the total gaseous or liquid effluents released for the respective quarter.

The annual and quarterly doses, as reported in Attachment 2, were calculated according to the methodology presented in the ODCM. The beta and gamma air doses due to noble gases released from the site were calculated at the site boundary. The maximum exposed member of the public from the release of airborne iodine-131, iodine-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days, was modeled as a teen at site boundary for the 1st, 2nd, and 3rd quarters and a child at site boundary for the 4th quarter. The critical organs for the 1st and 2nd quarters are the liver, thyroid, kidney, lung, and gastrointestinal-lower large intestine. The critical organ for the 3rd quarter is the lung and the critical organ for the 4th quarter is the bone. The maximum exposed member of the public from radioactive materials in liquid effluents in unrestricted areas was modeled as an adult, exposed by either the invertebrate or fish pathway, with the gastrointestinal-lower large intestine as the critical organ. The total body dose was also determined for this individual.

No effluent radiation monitors were inoperable for greater than 30 days in 2022. This is reported in Attachment 5 as required by the ODCM, Section 6.2.2 and 6.3.2.

There were no unplanned liquid releases and no unplanned gaseous releases in 2022. This is reported in Attachment 6 as required by the ODCM, Section 6.7.2.

Discussion

The typical lower limit of detection (LLD) capabilities of the radioactive effluent analysis instrumentation are presented in Attachment 7. These LLD values are based upon conservative conditions (i.e., minimum sample volumes and maximum delay time prior to analysis). Actual LLD values may be lower. If a radioisotope was not detected when effluent samples were analyzed, then the activity of the radioisotope was reported as Not Detected (N/D) on Attachment 1 of this report. When all isotopes listed on Attachment 1 for a particular quarter and release mode are less than the lower limit of detection, then the totals for this period will be designated as Not Applicable (N/A).

Supplemental Information

Section 6.6.1 of the ODCM requires the identification of the cause(s) for the unavailability of milk, or if required, leafy vegetation samples, and the identification for obtaining replacement samples. All milk samples were collected and analyzed as required by the ODCM. Leafy vegetation sampling was not required.

As required by the ODCM, Section 6.6.2, evaluation of the Land Use Census is made to determine if new sample location(s) must be added to the Radiological Environmental Monitoring Program. Evaluation of the Land Use Census conducted for this reporting period identified no change in sample locations for the Radiological Environmental Monitoring Program.

EFFLUENT RELEASE DATA

January 1, 2022 through December 31, 2022

Attachment 1 provides a summary of the quantities of radioactive liquid and gaseous effluents and solid waste as outlined in Regulatory Guide 1.21, Appendix B.

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
A. FISSION & ACTIVATION GASES				
1. TOTAL RELEASE	Ci	N/D	N/D	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	N/A	N/A	
B. IODINE				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	N/A	N/A	
C. PARTICULATE				
1. HALF-LIFE >8 DAYS	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	N/A	N/A	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	Ci	1.58E+01	8.68E+00	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	2.04E+00	1.10E+00	
E. CARBON-14				
1. TOTAL RELEASE	Ci	N/D	N/D	
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	N/A	N/A	
PERCENTAGE OF T.S. LIMITS				
CRITICAL ORGAN DOSE RATE	%	3.11E-03	1.68E-03	
TOTAL BODY DOSE RATE	%	0.00E-00	0.00E-00	
SKIN DOSE RATE	%	0.00E-00	0.00E-00	

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
A. FISSION & ACTIVATION GASES				
1. TOTAL RELEASE	Ci	6.04E-04	1.02E-01	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	7.59E-05	1.28E-02	
B. IODINE				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	N/A	N/A	
C. PARTICULATE				
1. HALF-LIFE >8 DAYS	Ci	3.80E-06	1.03E-04	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	4.78E-07	1.29E-05	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	Ci	5.94E+00	1.13E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	7.47E-01	1.42E+00	
E. CARBON-14				
1. TOTAL RELEASE	Ci	1.11E-01	1.87E+01	
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	1.40E-02	2.35E+00	
PERCENTAGE OF T.S. LIMITS				
CRITICAL ORGAN DOSE RATE	%	1.14E-03	5.72E-03	
TOTAL BODY DOSE RATE	%	1.07E-09	7.99E-06	
SKIN DOSE RATE	%	4.22E-10	2.03E-06	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
GASEOUS EFFLUENTS-MIXED MODE RELEASES

		CONTINUOUS MODE		BATCH MODE	
SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	N/D
Xe-135	Ci	N/D	N/D	N/D	N/D
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
C-14	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
GASEOUS EFFLUENTS-MIXED MODE RELEASES

		CONTINUOUS MODE		BATCH MODE	
SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	3.01E-02	6.04E-04	6.70E-02
Xe-135	Ci	N/D	N/D	N/D	N/D
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	3.01E-02	6.04E-04	6.70E-02
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
C-14	Ci	N/D	5.53E+00	1.11E-01	1.23E+01
TOTAL FOR PERIOD	Ci	N/A	5.53E+00	1.11E-01	1.23E+01

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

		CONTINUOUS MODE		BATCH MODE	
SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	N/D
Xe-135	Ci	N/D	N/D	N/D	N/D
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Zr-95	Ci	N/D	N/D	N/D	N/D
C-14	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

		CONTINUOUS MODE		BATCH MODE	
SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	2.92E-03
Xe-135	Ci	N/D	N/D	N/D	N/D
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	1.86E-03	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	1.86E-03	N/A	2.92E-03
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	3.80E-06	1.03E-04	N/D	9.50E-09
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
C-14	Ci	N/D	3.41E-01	N/D	5.37E-01
TOTAL FOR PERIOD	Ci	3.80E-06	3.41E-01	N/A	5.37E-01

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	1.62E-03	4.26E-04	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	6.73E-13	1.81E-13	
3. PERCENT OF APPLICABLE LIMIT	%	1.44E-06	1.18E-06	
B. TRITIUM				
1. TOTAL RELEASE	Ci	1.27E+02	6.73E+01	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	5.29E-08	2.86E-08	
3. PERCENT OF APPLICABLE LIMIT	%	5.30E-04	2.86E-04	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	N/A	N/A	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.24E+07	5.27E+07	3.00E+00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.41E+12	2.36E+12	3.00E+00

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	2.71E-04	1.12E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	8.71E-14	4.93E-13	
3. PERCENT OF APPLICABLE LIMIT	%	6.69E-07	1.94E-06	
B. TRITIUM				
1. TOTAL RELEASE	Ci	5.35E+02	6.33E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	1.72E-07	2.79E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.72E-03	2.79E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	Ci	N/D	2.52E-04	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	N/A	1.11E-13	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	5.55e-08	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.35E+07	5.48E+07	3.00E+00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.11E+12	2.27E+12	3.00E+00

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
LIQUID EFFLUENTS

SURRY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	2.53E-04	2.56E-04	1.99E-05	N/D
I-131	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	2.24E-04	1.25E-04
Co-60	Ci	N/D	N/D	8.38E-05	4.49E-05
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Cr-51	Ci	N/D	N/D	N/D	N/D
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	N/D	N/D
Sb-125	Ci	N/D	N/D	1.04E-03	N/D
Nd-147	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	2.53E-04	2.56E-04	1.37E-03	1.70E-04
Xe-133	Ci	N/D	N/D	N/D	N/D
Xe-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/22 TO 12/31/22
LIQUID EFFLUENTS

SURRY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	1.97E-04	1.42E-04	N/D	2.27E-04
I-131	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	4.75E-05	5.65E-04
Co-60	Ci	N/D	N/D	2.61E-05	1.29E-04
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Cr-51	Ci	N/D	N/D	N/D	N/D
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	N/D	9.09E-06
Sb-125	Ci	N/D	N/D	N/D	1.62E-05
Nd-147	Ci	N/D	N/D	N/D	N/D
Be-7	Ci	N/D	N/D	N/D	3.14E-05
TOTAL FOR PERIOD	Ci	1.97E-04	1.42E-04	7.36E-05	9.78E-04
Xe-133	Ci	N/D	N/D	N/D	2.52E-04
Xe-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	2.52E-04

TABLE 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
PERIOD: 1/1/22 - 12/31/22

SURRY POWER STATION
A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste		12 month Period		Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	1.10E+01	Note 1	1.00E+01
	Ci	5.62E+00		3.00E+01
b. Dry compressible waste, contaminated equip., etc.	m^3	6.53E+02	Note 2	1.00E+01
	Ci	5.99E-01		3.00E+01
c. Irradiated components, control rods, etc.	m^3	0.00E+00		1.00E+01
	Ci	0.00E+00		3.00E+01
d. Other (Waste oil)	m^3	0.00E+00	Note 3	1.00E+01
	Ci	0.00E-00		3.00E+01

2. Estimate of major nuclide composition (by type of waste)

a. H-3	%	2.03E+00
Cr-51	%	1.09E+00
Fe-55	%	4.57E+00
Co-58	%	4.47E+01
Co-60	%	2.08E+01
Ni-63	%	1.98E+01
Sb-125	%	1.01E+00
Cs-137	%	3.36E+00
b. Mn-54	%	2.15E+00
Fe-55	%	4.44E+00
Co-58	%	3.93E+00
Co-60	%	6.99E+01
Ni-63	%	7.54E+00
Zr-95	%	2.62E+00
Nb-95	%	4.78E+00
Sb-125	%	1.44E+00
Pu-241	%	1.98E+00
c. N/A	%	N/A
d. N/A	%	N/A

TABLE 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
PERIOD: 1/1/22 - 12/31/22
CONTINUED

SURRY POWER STATION

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
10	Truck	EnergySolutions at Oak Ridge, TN (Bear Creek Operations)
14	Truck	EnergySolutions at Oak Ridge, TN (Gallaher Rd Facility)

B. IRRADIATED FUEL SHIPMENT (Disposition)

Number of Shipments	Mode of Transportation	Destination
0		

NOTE 1: Some of this waste was shipped to licensed waste processors for processing and/or volume reduction. Therefore, this volume is not representative of the actual volume buried. The total volume buried for this reporting period is 9.96E+00 m^3.

NOTE 2: Some DAW was shipped to licensed waste processors for processing and/or volume reduction. Therefore, this volume is not representative of the actual volume buried. The total volume buried for this reporting period is 1.38E+01 m^3.

NOTE 3: This waste was shipped to a licensed waste processor for processing and/or volume reduction. Therefore, this volume is not representative of the actual volume buried. The total volume buried for this reporting period is 0.00E+00 m^3.

ANNUAL AND QUARTERLY DOSES

An assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter for the calendar year of this report, along with an annual total of each effluent pathway is made pursuant to the ODCM, Section 6.7.2, requirement.

2022	LIQUID		
	Maximum Receptor - Adult		
	Total Body (mrem)	GI-LLI (mrem)	Liver (mrem)
1st Quarter	2.70E-05	3.03E-05	2.76E-05
2nd Quarter	2.59E-05	2.59E-05	2.70E-05
3rd Quarter	8.48E-05	8.47E-05	8.52E-05
4th Quarter	1.54E-04	1.61E-04	1.55E-04
Annual	2.91E-04	3.02E-04	2.94E-04

2022	GASEOUS - Air Dose	
	Gamma (mrad)	Beta (mrad)
1st Quarter	0.00E-00	0.00E-00
2nd Quarter	0.00E-00	0.00E-00
3rd Quarter	1.62E-09	4.82E-09
4th Quarter	1.07E-05	6.00E-06
Annual	1.07E-05	6.01E-06

2022	GASEOUS - Organ Dose		
	Annual Maximum	Maximum by Quarter	
	Teen/Lung (mrem)	(mrem)	Receptor / Organ
1st Quarter	0.00E-00	1.15E-02	Teen/Multi
2nd Quarter	0.00E-00	6.29E-03	Teen/Multi
3rd Quarter	5.01E-04	4.31E-03	Teen/Lung
4th Quarter	9.29E-02	9.29E-02	Child/Bone
Annual	9.34E-02		

REVISIONS TO OFFSITE DOSE CALCULATION MANUAL (ODCM)

As required by Technical Specification 6.8.B, revisions to the ODCM, effective for the time period covered by this report, are included with this attachment. There were no revisions to the ODCM implemented during this reporting period.

MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT SYSTEMS

There were no major changes to the radioactive liquid, gaseous or solid waste treatment systems during this reporting period.

INOPERABILITY OF RADIOACTIVE LIQUID AND GASEOUS EFFLUENT MONITORING INSTRUMENTATION

The Annual Radioactive Effluent Release Report shall explain why monitoring instrumentation required by Attachments 1 and 5 of the ODCM were determined to be inoperable and were not returned to operable status within 30 days. No radiation monitors referenced on Attachment 1 and Attachment 5 of the ODCM were inoperable greater than 30 days during this reporting period.

UNPLANNED RELEASES

In accordance with the ODCM reporting requirements, there were no unplanned liquid or unplanned gaseous releases that occurred during the reporting period.

LOWER LIMIT OF DETECTION (LLD) FOR EFFLUENT SAMPLE ANALYSIS

	Isotope	Required LLD	Typical LLD
GASEOUS:	Kr-87	1.00E-04	2.32E-06 - 1.95E-05
	Kr-88	1.00E-04	1.34E-06 - 2.05E-05
	Xe-133	1.00E-04	1.13E-06 - 1.25E-05
	Xe-133m	1.00E-04	4.73E-06 - 4.06E-05
	Xe-135	1.00E-04	4.50E-07 - 5.41E-06
	Xe-135m	1.00E-04	1.38E-05 - 9.41E-05
	Xe-138	1.00E-04	2.66E-05 - 9.90E-05
	I-131	1.00E-12	4.06E-13 - 4.06E-13
	I-133	1.00E-10	4.06E-11 - 4.06E-11
	Sr-89	1.00E-11	1.20E-14 - 1.34E-12
	Sr-90	1.00E-11	1.64E-15 - 1.61E-13
	Cs-134	1.00E-11	2.45E-13 - 2.65E-13
	Cs-137	1.00E-11	1.88E-13 - 4.31E-13
	Mn-54	1.00E-11	1.52E-13 - 7.15E-13
	Fe-59	1.00E-11	9.33E-14 - 7.39E-13
	Co-58	1.00E-11	1.74E-13 - 7.35E-13
	Co-60	1.00E-11	2.69E-13 - 9.69E-13
	Zn-65	1.00E-11	5.10E-14 - 1.31E-12
	Mo-99	1.00E-11	4.06E-12 - 4.06E-12
	Ce-141	1.00E-11	1.83E-13 - 3.82E-13
	Ce-144	1.00E-11	6.99E-13 - 1.61E-12
	Alpha	1.00E-11	1.66E-14 - 1.66E-14
	Tritium	1.00E-06	5.13E-08 - 5.23E-08
LIQUID:	Sr-89	5.00E-08	3.51E-08 - 4.22E-07
	Sr-90	5.00E-08	9.22E-09 - 2.10E-08
	Cs-134	5.00E-07	5.30E-09 - 1.49E-07
	Cs-137	5.00E-07	2.16E-08 - 1.48E-07
	I-131	1.00E-06	2.61E-08 - 6.11E-08
	Co-58	5.00E-07	1.96E-08 - 6.94E-08
	Co-60	5.00E-07	2.31E-09 - 8.02E-08
	Fe-59	5.00E-07	1.13E-08 - 1.01E-07
	Zn-65	5.00E-07	3.53E-08 - 1.81E-07
	Mn-54	5.00E-07	2.69E-08 - 7.16E-08
	Mo-99	5.00E-07	4.95E-07 - 4.95E-07
	Ce-141	5.00E-07	3.27E-08 - 7.48E-08
	Ce-144	5.00E-07	1.24E-07 - 3.47E-07
	Fe-55	1.00E-06	3.40E-07 - 9.79E-07
	Alpha	1.00E-07	2.51E-08 - 2.50E-08
	Tritium	1.00E-05	1.27E-06 - 1.29E-06
	Xe-133	1.00E-05	8.63E-08 - 2.10E-07
	Xe-135	1.00E-05	3.33E-08 - 5.74E-08
	Xe-133m	1.00E-05	2.99E-07 - 4.00E-07
	Xe-135m	1.00E-05	1.35E-06 - 2.61E-06
	Xe-138	1.00E-05	2.98E-06 - 7.88E-06
	Kr-87	1.00E-05	1.23E-07 - 2.37E-07
	Kr-88	1.00E-05	5.43E-08 - 2.20E-07

INDUSTRY GROUND WATER PROTECTION INITIATIVE

The following is a summary of 2022 sample analyses of ground water monitoring wells that are not a part of the Radiological Environmental Monitoring Program (REMP).

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
G-08	1/12/22	14900	NA	NA	NA	NA	NA
P-44	1/12/22	1140	NA	NA	NA	NA	NA
P-49	1/12/22	1160	NA	NA	NA	NA	NA
P-52	1/20/22	<1380	ND	NA	NA	NA	NA
P-44	1/24/22	2470	NA	NA	NA	NA	NA
P-49	1/24/22	2000	NA	NA	NA	NA	NA
G-08	2/3/22	12500	NA	NA	NA	NA	NA
P-44	2/3/22	2090	NA	NA	NA	NA	NA
P-49	2/3/22	1920	NA	NA	NA	NA	NA
G-08	2/17/22	13600	NA	NA	NA	NA	NA
P-44	2/17/22	1640	NA	NA	NA	NA	NA
P-49	2/17/22	2120	NA	NA	NA	NA	NA
P-29	2/28/22	<947	ND	NA	NA	NA	ND
P-46	2/28/22	<949	ND	NA	NA	NA	ND
P-48	2/28/22	<954	NA	NA	NA	NA	NA
P-49	2/28/22	2750	ND	<181.4	<4.05	<.948	ND
P-52	2/28/22	<948	NA	NA	NA	<.981	NA
P-06	3/1/22	<945	ND	<190.4	<3.96	<.909	ND
P-07	3/1/22	<945	NA	NA	NA	NA	NA
P-29	3/1/22	823	NA	<44.39	<4.09	<.815	NA
P-43	3/1/22	<946	ND	NA	NA	NA	NA
P-44	3/1/22	2380	ND	<108.7	<4.61	<.88	ND
P-45	3/1/22	<942	ND	<65.15	<4.46	<.856	ND
P-46	3/1/22	287	NA	NA	NA	NA	NA
P-47	3/1/22	<944	ND	<83.03	<4.54	<.993	ND
P-48	3/1/22	455	NA	NA	NA	NA	NA
P-50	3/1/22	<946	ND	NA	NA	NA	NA
P-52	3/1/22	704	NA	NA	NA	NA	NA
G-08	3/2/22	12100	NA	NA	NA	NA	NA
P-04	3/2/22	<945	NA	NA	NA	NA	NA
P-05	3/2/22	3240	ND	<114	<3.75	<.898	ND

NA = Analysis not required.
ND = No non-natural gamma emitting nuclides detected when analyzed to REMP LLDs.
TRU = Transuranics (Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240 and Pu-241)

INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
P-06	3/2/22	0	NA	NA	NA	NA	NA
P-07	3/2/22	0	NA	NA	NA	NA	NA
P-25	3/2/22	0	NA	NA	NA	NA	NA
P-27	3/2/22	0	NA	NA	NA	NA	NA
P-33	3/2/22	0	NA	NA	NA	NA	NA
P-41	3/2/22	381	NA	NA	NA	NA	NA
P-42	3/2/22	0	NA	NA	NA	NA	NA
P-43	3/2/22	0	NA	NA	NA	NA	NA
P-44	3/2/22	2490	NA	NA	NA	NA	NA
P-45	3/2/22	406	NA	NA	NA	NA	NA
P-47	3/2/22	372	NA	NA	NA	NA	NA
P-49	3/2/22	2840	NA	NA	NA	NA	NA
P-50	3/2/22	0	NA	NA	NA	NA	NA
P-44	3/15/22	3210	NA	NA	NA	NA	NA
P-49	3/15/22	2660	NA	NA	NA	NA	NA
G-08	3/30/22	12700	NA	NA	NA	NA	NA
P-44	3/30/22	8420	NA	NA	NA	NA	NA
P-49	3/30/22	2280	NA	NA	NA	NA	NA
P-44	4/7/22	2130	NA	NA	NA	NA	NA
G-08	4/13/22	13400	NA	NA	NA	NA	NA
P-49	4/13/22	3260	NA	NA	NA	NA	NA
P-44	4/16/22	2900	NA	NA	NA	NA	NA
P-51	4/18/22	13900	NA	NA	NA	NA	NA
P-48	4/21/22	431	NA	NA	NA	NA	NA
G-08	4/26/22	13800	NA	NA	NA	NA	NA
P-49	4/26/22	3980	NA	NA	NA	NA	NA
P-51	4/26/22	15400	NA	NA	NA	NA	NA
G-08	5/16/22	13900	NA	NA	NA	NA	NA
P-44	5/16/22	3140	NA	NA	NA	NA	NA
P-51	5/16/22	8500	NA	NA	NA	NA	NA
G-08	5/25/22	15100	NA	NA	NA	NA	NA
P-44	5/25/22	2170	NA	NA	NA	NA	NA
P-49	5/25/22	2730	NA	NA	NA	NA	NA

NA = Analysis not required.

ND = No non-natural gamma emitting nuclides detected when analyzed to REMP LLDs.

INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
P-51	5/25/22	8050	NA	NA	NA	NA	NA
P-29	5/31/22	1200	NA	NA	NA	NA	NA
P-29	5/31/22	1200	NA	NA	NA	NA	NA
P-29	5/31/22	1330	NA	NA	NA	NA	NA
P-46	5/31/22	<970	NA	NA	NA	NA	NA
P-46	5/31/22	<970	NA	NA	NA	NA	NA
P-46	5/31/22	311	NA	NA	NA	NA	NA
P-48	5/31/22	<970	NA	NA	NA	NA	NA
P-48	5/31/22	50.7	NA	NA	NA	NA	NA
P-48	5/31/22	<970	NA	NA	NA	NA	NA
P-49	5/31/22	1570	NA	NA	NA	NA	NA
P-49	5/31/22	1570	NA	NA	NA	NA	NA
P-49	5/31/22	2030	NA	NA	NA	NA	NA
P-50	5/31/22	<972	NA	NA	NA	NA	NA
P-50	5/31/22	0	NA	NA	NA	NA	NA
P-50	5/31/22	<972	NA	NA	NA	NA	NA
P-51	5/31/22	6170	NA	NA	NA	NA	NA
P-51	5/31/22	6590	NA	NA	NA	NA	NA
P-51	5/31/22	6170	NA	NA	NA	NA	NA
P-52	5/31/22	<971	NA	NA	NA	NA	NA
P-52	5/31/22	<971	NA	NA	NA	NA	NA
P-52	5/31/22	0	NA	NA	NA	NA	NA
P-03	6/1/22	242	NA	NA	NA	NA	NA
P-36	6/1/22	158	NA	NA	NA	NA	NA
P-39	6/1/22	28.1	NA	NA	NA	NA	NA
P-37	6/6/22	451	NA	NA	NA	NA	NA
P-38	6/6/22	373	NA	NA	NA	NA	NA
P-40	6/6/22	2770	NA	NA	NA	NA	NA
P-23	6/7/22	972	NA	NA	NA	NA	NA
P-34	6/7/22	381	NA	NA	NA	NA	NA
G-08	6/8/22	10700	NA	NA	NA	NA	NA
P-08	6/8/22	81.3	NA	NA	NA	NA	NA
P-09	6/8/22	92.6	NA	NA	NA	NA	NA
P-22	6/8/22	194	NA	NA	NA	NA	NA
P-44	6/8/22	1990	NA	NA	NA	NA	NA
P-49	6/8/22	5380	NA	NA	NA	NA	NA
P-51	6/8/22	6630	NA	NA	NA	NA	NA
P-20	6/9/22	435	NA	NA	NA	NA	NA
P-24	6/9/22	473	NA	NA	NA	NA	NA

NA = Analysis not required.

ND = No non-natural gamma emitting nuclides detected when analyzed to REMP LLDs.

INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
P-28	6/9/22	0	NA	NA	NA	NA	NA
P-40	6/13/22	1.2	NA	NA	NA	NA	NA
P-06	6/14/22	<731	ND	NA	NA	NA	NA
P-05	6/15/22	2570	ND	NA	NA	NA	NA
P-43	6/15/22	<720	ND	NA	NA	NA	NA
P-44	6/15/22	1190	ND	NA	NA	NA	NA
P-45	6/15/22	<713	ND	NA	NA	NA	NA
P-47	6/15/22	1520	ND	NA	NA	NA	NA
G-08	6/30/22	15900	NA	NA	NA	NA	NA
P-44	6/30/22	2790	NA	NA	NA	NA	NA
P-49	6/30/22	2110	NA	NA	NA	NA	NA
P-51	6/30/22	7810	NA	NA	NA	NA	NA
P-53	6/30/22	638	NA	NA	NA	NA	NA
G-08	7/13/22	18800	NA	NA	NA	NA	NA
P-44	7/13/22	1190	NA	NA	NA	NA	NA
P-49	7/13/22	1440	NA	NA	NA	NA	NA
P-51	7/13/22	5490	NA	NA	NA	NA	NA
G-08	7/28/22	15700	NA	NA	NA	NA	NA
P-44	7/28/22	1310	NA	NA	NA	NA	NA
P-49	7/28/22	937	NA	NA	NA	NA	NA
P-51	7/28/22	6100	NA	NA	NA	NA	NA
G-08	8/18/22	14400	NA	NA	NA	NA	NA
P-49	8/18/22	1720	NA	NA	NA	NA	NA
P-51	8/18/22	3660	NA	NA	NA	NA	NA
P-46	8/23/22	702	NA	NA	NA	NA	NA
P-48	8/23/22	191	NA	NA	NA	NA	NA
P-49	8/18/22	1720	NA	NA	NA	NA	NA
P-51	8/18/22	3660	ND	NA	NA	NA	NA
P-46	8/23/22	702	ND	NA	NA	NA	NA
P-48	8/23/22	191	NA	NA	NA	NA	NA
P-49	8/23/22	1050	ND	NA	NA	NA	NA
P-51	8/23/22	4750	ND	NA	NA	NA	NA
P-52	8/23/22	492	ND	NA	NA	NA	NA
P-04	8/25/22	1070	ND	NA	NA	NA	NA
P-05	8/25/22	4240	ND	NA	NA	NA	NA
P-06	8/25/22	1760	ND	NA	NA	NA	NA
P-43	8/26/22	877	ND	NA	NA	NA	NA
P-07	8/30/22	663	ND	NA	NA	NA	NA

NA = Analysis not required.

ND = No non-natural gamma emitting nuclides detected when analyzed to REMP LLDs.

INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
P-25	8/30/22	925	NA	NA	NA	NA	NA
P-27	8/30/22	944	NA	NA	NA	NA	NA
P-44	8/30/22	1550	ND	NA	NA	NA	NA
P-45	8/30/22	812	ND	NA	NA	NA	NA
P-47	8/30/22	2400	ND	NA	NA	NA	NA
P-50	8/30/22	1090	ND	NA	NA	NA	NA
P-29	9/1/22	9.25	NA	NA	NA	NA	NA
P-33	9/1/22	807	NA	NA	NA	NA	NA
P-41	9/1/22	132	NA	NA	NA	NA	NA
P-42	9/1/22	9.25	NA	NA	NA	NA	NA
G-08	9/12/22	14600	NA	NA	NA	NA	NA
P-44	9/12/22	4310	NA	NA	NA	NA	NA
P-49	9/12/22	6600	NA	NA	NA	NA	NA
P-51	9/12/22	4090	NA	NA	NA	NA	NA
G-08	10/10/22	13500	NA	NA	NA	NA	NA
P-44	10/10/22	1810	NA	NA	NA	NA	NA
P-49	10/10/22	1590	NA	NA	NA	NA	NA
P-44	10/26/22	2450	NA	NA	NA	NA	NA
P-49	10/30/22	2410	NA	NA	NA	NA	NA
P-44	11/3/22	1540	ND	NA	NA	NA	NA
P-47	11/3/22	1210	ND	NA	NA	NA	NA
P-48	11/3/22	623	ND	NA	NA	NA	NA
P-49	11/3/22	2430	ND	NA	NA	NA	NA
P-51	11/3/22	5500	ND	NA	NA	NA	NA
P-52	11/3/22	524	ND	NA	NA	NA	NA
P-05	11/6/22	2860	NA	NA	NA	NA	NA
P-06	11/6/22	409	NA	NA	NA	NA	NA
P-43	11/6/22	398	NA	NA	NA	NA	NA
P-45	11/6/22	952	ND	NA	NA	NA	NA
P-49	11/17/22	2250	NA	NA	NA	NA	NA
P-51	11/17/22	4190	NA	NA	NA	NA	NA
P-49	11/30/22	2240	NA	NA	NA	NA	NA
P-51	11/30/22	4360	NA	NA	NA	NA	NA
P-51	12/20/22	3000	NA	NA	NA	NA	NA
P-49	12/21/22	1720	NA	NA	NA	NA	NA

NA = Analysis not required.

ND = No non-natural gamma emitting nuclides detected when analyzed to REMP LLDs.