PSEG Nuclear LLC

Salem & Hope Creek Generating Stations

Annual Radioactive Effluent Release Report 2025

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SALEM Unit 1	SALEM Unit 2	HOPE CREEK Unit 1
DOCKET NO 50-272	DOCKET NO 50-311	DOCKET NO. 50-354
OPERATING LICENSE	OPERATING LICENSE	OPERATING LICENSE
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1.0 EXECUTIVE SUMMARY

Salem & Hope Creek Generating Stations (SGS/HCGS) Radiological Effluent Control (REC) Program was established to limit the quantities of radioactive material that may be released based on calculated radiation doses or dose rates. Dose to Members of the Public due to radioactive materials released from the plants are limited by 10 CFR 20.1301, Appendix I of 10 CFR 50, 10 CFR 72.104, and 40 CFR 190. Operational doses to the public during 2025 were calculated to be very small compared to the limits required by the regulations and when compared to other sources of radiation dose (Section 3.2) pose no health hazard.

In 2025 Dose assessments showed that the critical dose receptor for Salem & Hope Creek Generating Stations was the Teenager at the Site Boundary in the N sector, due to the pathways of Inhalation and Ground Plane. The maximum Annual Organ Dose calculated for this receptor was 3.76E-02 mrem, to the Thyroid. This annual dose represents 0.08 percent of the 10 CFR 50, Appendix I guideline of 45 mrem to the Maximum Organ from the three Units.

Salem solid radioactive waste shipped offsite for disposal included 1.55E+01 curies and 3.14E+02 m^3, shipped in 12 shipments. Hope Creek solid radioactive waste shipped offsite for disposal included 1.28E+04 curies and 8.08E+01 m^3, shipped in 17 shipments.

During 2025, the mass flux within the shallow, water bearing unit and deeper groundwater was estimated to be 3.40E-03 curies and 1.35E-02 curies, respectively. Therefore, the total potential estimated mass flux of tritium in groundwater reaching the Delaware River during 2025 was 1.69E-02 curies.

In addition to monitoring radioactive effluents, Salem & Hope Creek Generating Stations have a Radiological Environmental Monitoring Program (REMP) that monitors for buildup of radioactivity in the offsite environment. Data from the REMP is published in the Annual Radiological Environmental Operating Report (AREOR).

1.1 Summary of Conclusions:

During 2025 all liquid, and gaseous radioactive effluents from Salem & Hope Creek Generating Stations were well below regulatory limits. For individual effluent streams, the quarterly limit most closely approached was the Liquid Effluent Maximum Total Body for the first quarter and the Organ Dose for the second quarter for Salem Unit 1 at 0.31 and 0.15 percent, respectively (Table 1, Salem Generating Station Unit 1 Dose Summary, 2025).

The annual summary of doses by unit were as follows:

Release Source / Dose Pathway	Salem Unit 1	Salem Unit 2	Hope Creek Unit 1
Liquid Releases			
Total Body	1.38E-02	7.81E-03	4.94E-04
Organ	2.30E-02	1.54E-02	1.11E-03
Gaseous Releases			
NG Gamma Air Dose	3.12E-05	5.33E-05	1.04E-04
NG Beta Air Dose	1.31E-05	1.89E-05	3.66E-05
NG Total Body Dose	2.96E-05	5.07E-05	9.86E-05
NG Skin Dose	4.41E-05	7.41E-05	1.44E-04
Particulate & Iodine Organ Dose	2.50E-02	6.87E-03	5.92E-03
Sources: Table 1, Table 2, and Table 3			

40 CFR 190 [1] and 10 CFR 72.104 [2] limit the total dose to a the maximum exposed Member of the Public to 25 mrem to the total body, 75 mrem to the thyroid and 25 mrem to other organs other than the thyroid. The maximum annual total body and organ doses from gaseous and liquid pathways with all other uranium fuel cycle sources present on site were calculated as required by section 3.11.4 (Total Dose) of the SGS and HCGS ODCMs. The direct dose from the ISFSI pad was determined using the Radiological Environmental Monitoring Program (REMP) and the guidance provided in Regulatory Guide 4.13 [3].

For consistency of comparing doses in Table 5 from different age groups and organs it was determined that the age group adult was the critical age group for both Total Body and Thyroid doses from the gaseous and liquid dose pathways and the child was the critical age group and bone was the critical organ due to the dose from carbon-14..

The doses from the gaseous radioactive effluents released from SGS Unit 1 and Unit 2 and HCGS Unit 1 in 2025 resulted in a calculated total body, thyroid and organ doses of 6.45E-02 mrem, 6.48E-02 mrem, and 4.84E-01 mrem, respectively. The majority of the gaseous dose was from C-14 (4.84E-01 mrem) to the child bone (Table 5, Total Annual Offsite-Dose Comparison to 40 CFR 190 Regulatory Limits for SGS/HCGS, 2025).

The doses from the liquid radioactive effluents released from SGS Unit 1 and Unit 2 and HCGS Unit 1 in 2025 resulted in a calculated total body, thyroid and bone organ doses of 2.21E-02 mrem, 1.97E-02 mrem, and 3.29E-03 mrem, respectively (Table 5).

The direct shine dose from the ISFSI to the highest dose potential receptor located at 3.7 miles in the NW sector was conservatively estimated at 5.27E-03 mrem. Adding in the direct shine dose from the ISFSI to the gaseous and liquid doses, results in total doses to the Total Body (9.19E-02 mrem), Thyroid (8.97E-02 mrem), and Max Organ[1] (4.93E-01 mrem). The max organ dose represented 1.97**%** percent of the 25 mrem limit (Table 5).

The maximum calculated TEDE dose from ISFSI direct shine and gaseous effluents to Members of the Public working on site was calculated at 2.13E+00 mrem for Sewage Treatment Plant Operators. The Maximum TEDE dose to the Wind Port workers was esitmated at 1.32E+00 mrem at location 01W4. These doses represents 2.13% and 1.32%, respectively of the 10 CFR 20.1301 dose limit of 100 mrem per year (Table 6, Summary of TEDE Doses to Members of the Public Due to Activities Inside the Site Boundary**,** 2025).

[1] For consistency, the maximum organ is the bone.

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2.0 LIST OF ACRONYMS AND DEFINITIONS

1. Airborne Activity Sampling: Sampling of air through the collection of particulates and radionuclides on filter media, collection of noble gases in a container, and collection of water vapor containing tritium.
2. amsl: above mean seal level.
3. Alpha Particle (α): A charged particle emitted from the nucleus of an atom having a mass and charge equal in magnitude of a helium nucleus.
4. AREOR: Annual Radiological Environmental Operating Report.
5. ARERR: Annual Radioactive Effluent Release Report.
6. Abnormal Release: is an unplanned or uncontrolled release of licensed radioactive material from the plant. Abnormal releases may be categorized as either batch or continuous depending on the circumstances.
7. Abnormal Discharge: is an unplanned or uncontrolled release of licensed radioactive material to the unrestricted area. Abnormal discharges may also be categorized as either batch or continuous depending on the circumstances.
8. bgs: below ground surface.
9. BWR: Boiling Water Reactor.
10. CDE: The committed effective dose equivalent (for internal exposures).
11. cfm: cubic feet per minute.
12. Composite Sample: A series of single collected portions (aliquots) analyzed as one sample. The aliquots making up the sample are collected at time intervals that are very short compared to the composite period.
13. Control: A sampling station in a location not likely to be affected by plant effluents due to its distance and/or direction from the Plant.
14. Counting Error: An estimate of the two-sigma uncertainty associated with the sample results based on respective count times.
15. Critical Receptor: Represents the MEMBER(S) of the Public in the Unrestricted Area who because of the combination of age group and existing local dose exposure pathways has the potential to receive the highest dose.
16. Curie (Ci): A measure of radioactivity; equal to 3.7×10^{10} disintegrations per second, or 2.22×10^{12} disintegrations per minute.
17. Direct Radiation Monitoring: The measurement of radiation dose at various distances from the plant is assessed using thermoluminescent dosimeters (TLDs).
18. Grab Sample: A single discrete sample drawn at one point in time.
19. Indicator: A sampling location that is likely to be affected by plant effluents due to its proximity and/or direction from the plant.
20. Ingestion Pathway: The ingestion pathway includes saltwater fish, saltwater invertebrates, cow milk, garden produce, and meat.

21. INOP: Inoperable, Inoperability.
22. ISFSI: Independent Spent Fuel Storage Installation.
23. JFD: Joint Frequency Distribution.
24. Lower Limit of Detection (LLD): 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 a 5% probability of a false conclusion that a blank observation represents "real" signal.
25. LUC: Land Use Census.
26. m/s: Meters per second.
27. MDA: Minimum Detectable Activity.
28. MDC: Minimum Detectable Concentration, essentially synonymous with MDA for the purposes of radiological monitoring.
29. Mean: The average, i.e., the sum of results divided by the number of results.
30. Microcurie (µCi): 3.7×10^4 disintegrations per second, or 2.22×10^6 disintegrations per minute.
31. millirem (mrem): 1/1000 rem; a unit of radiation dose equivalent in tissue.
32. Milliroentgen (mR): 1/1000 Roentgen; a unit of exposure to X- or gamma radiation.
33. MWe: Megawatts Electric.
34. MWTh: Megawatts Thermal.
35. N/A: Not Applicable.
36. N/D: Not Detectable.
37. NEI: Nuclear Energy Institute.
38. Nonroutine, planned discharge—An effluent release from a release point that is not defined in the ODCM but that has been planned, monitored, and discharged in accordance with 10 CFR 20.2001.
39. NRC: Nuclear Regulatory Commission.
40. ODCM: Offsite Dose Calculation Manual.
41. Protected Area: The fenced area immediately surrounding the Plant. Access to the protected area requires a security badge or escort.
42. PWR: Pressurized Water Reactor.
43. RAPR: Remedial Action Progress Report.
44. RAWP: Remedial Action Work Plan.
45. Rad: A rad (radiation absorbed dose) measures the amount of energy deposited by ionizing radiation in a material. A millirad (mrad) is $1 \text{ mrad} = 0.001 \text{ rad}$
46. RCA: Radiation Controlled Area.

47. REC: Radiological Effluent Control.
48. REMP: Radiological Environmental Monitoring Program.
49. Restricted Area: Any area where access is controlled for the purpose of protecting individuals from exposure to radiation or radioactive materials.
50. RGPP: Radiological Ground Water Protection Program.
51. RPD: Relative to plant datum.
52. SLCs: Selected Licensee Commitments.
53. TEDE: The sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).
54. TLD: Thermoluminescent Dosimeter.
55. TRM: Technical Requirements Manual.
56. TS: Technical Specification.
57. Unrestricted Area: an area, access to which is neither limited nor controlled by the licensee.

2.1 Comparison to Regulatory Limits

During 2025 all solid, liquid, and gaseous radioactive effluents from Salem & Hope Creek Generating Stations were well below regulatory limits, as summarized in Table 1 through Table 5.

Table 1, Salem Generating Station Unit 1 Dose Summary, 2025[1]

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Liquid Effluents					
Limit	**1.5 mrem**	**1.5 mrem**	**1.5 mrem**	**1.5 mrem**	**3 mrem**
Total Body Dose[2]	4.66E-03	1.76E-03	3.64E-03	3.77E-03	1.38E-02
% Of Limit	0.31	0.12	0.24	0.25	0.46
Limit	**5 mrem**	**5 mrem**	**5 mrem**	**5 mrem**	**10 mrem**
Maximum Organ Dose[3]	5.97E-03	7.74E-03	4.83E-03	4.48E-03	2.30E-02
% Of Limit	0.12	0.15	0.10	0.09	0.23
Gaseous Effluents					
Limit	**5 mrad**	**5 mrad**	**5 mrad**	**5 mrad**	**10 mrad**
Gamma Air Dose[4]	1.48E-05	5.60E-06	5.60E-06	5.23E-06	3.12E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**10 mrad**	**10 mrad**	**10 mrad**	**10 mrad**	**20 mrad**
Beta Air Dose[5]	5.21E-06	3.14E-06	2.50E-06	2.22E-06	1.31E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**2.5 mrem**	**2.5 mrem**	**2.5 mrem**	**2.5 mrem**	**5 mrem**
NG Total Body Dose[6]	1.41E-05	5.29E-06	5.30E-06	4.95E-06	2.96E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**15 mrem**
NG Skin Dose[7]	2.05E-05	8.30E-06	7.89E-06	7.34E-06	4.41E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**15 mrem**
Maximum Organ Dose[8]	1.42E-03	5.61E-03	6.81E-03	1.11E-02	2.50E-02
% Of Limit	0.02	0.07	0.09	0.15	0.17

[1] Table 1 is meant to demonstrate compliance to 10 CFR Part 50, Appendix I Limits. It does not include dose from C-14.
[2] 0.75 mi. N of Salem / Adult
[3] 0.75 mi. N of Salem / Adult, GI-Lli
[4] SB 0.83 mi. N / All Age Groups
[5] SB 0.83 mi. N / All Age Groups
[6] SB 0.83 mi. N / All Age Groups
[7] SB 0.83 mi. N / All Age Groups
[8] SB 0.83 mi. N / Teenager, Lung

Table 2, Salem Generating Station Unit 2 Dose Summary, 2025[1]

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Liquid Effluents					
Limit	**1.5 mrem**	**1.5 mrem**	**1.5 mrem**	**1.5 mrem**	**3 mrem**
Total Body Dose[2]	3.69E-03	8.95E-04	9.47E-04	2.28E-03	7.81E-03
% Of Limit	0.25	0.06	0.06	0.15	0.26
Limit	**5 mrem**	**5 mrem**	**5 mrem**	**5 mrem**	**10 mrem**
Maximum Organ Dose[3]	4.55E-03	5.22E-03	1.41E-03	4.18E-03	1.54E-02
% Of Limit	0.09	0.10	0.03	0.08	0.15
Gaseous Effluents					
Limit	**5 mrad**	**5 mrad**	**5 mrad**	**5 mrad**	**10 mrad**
Gamma Air Dose[4]	1.27E-05	1.03E-05	1.32E-05	1.71E-05	5.33E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**10 mrad**	**10 mrad**	**10 mrad**	**10 mrad**	**20 mrad**
Beta Air Dose[5]	4.54E-06	3.63E-06	4.69E-06	6.07E-06	1.89E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**2.5 mrem**	**2.5 mrem**	**2.5 mrem**	**2.5 mrem**	**5 mrem**
NG Total Body Dose[6]	1.21E-05	9.78E-06	1.25E-05	1.63E-05	5.07E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**15 mrem**
NG Skin Dose[7]	1.77E-05	1.43E-05	1.83E-05	2.38E-05	7.41E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**15 mrem**
Maximum Organ Dose[8]	1.16E-03	5.03E-04	2.69E-03	2.51E-03	6.87E-03
% Of Limit	0.02	0.01	0.04	0.03	0.05

[1] Table 2 is meant to demonstrate compliance to 10 CFR Part 50, Appendix I Limits. It does not include dose from C-14.
[2] 0.75 mi. N of Salem / Adult
[3] 0.75 mi. N of Salem / Adult, GI-Lli
[4] SB 0.83 mi. N / All Age Groups
[5] SB 0.83 mi. N / All Age Groups
[6] SB 0.83 mi. N / All Age Groups
[7] SB 0.83 mi. N / All Age Groups
[8] SB 0.83 mi. N / Teenager / Lung

Table 3, Hope Creek Generating Station Unit 1 Dose Summary, 2025[1]

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Liquid Effluents					
Limit	**1.5 mrem**	**1.5 mrem**	**1.5 mrem**	**1.5 mrem**	**3 mrem**
Total Body Dose[2]	2.77E-05	7.46E-05	3.79E-04	1.90E-05	4.94E-04
% Of Limit	< 0.01	< 0.01	0.03	< 0.01	0.02
Limit	**5 mrem**	**5 mrem**	**5 mrem**	**5 mrem**	**10 mrem**
Maximum Organ Dose[3]	9.08E-05	1.58E-04	8.32E-04	3.34E-05	1.11E-03
% Of Limit	< 0.01	< 0.01	0.02	< 0.01	0.01
Gaseous Effluents					
Limit	**5 mrad**	**5 mrad**	**5 mrad**	**5 mrad**	**10 mrad**
Gamma Air Dose[4]	0.00E+00	0.00E+00	0.00E+00	1.04E-04	1.04E-04
% Of Limit	N/A	N/A	N/A	< 0.01	< 0.01
Limit	**10 mrad**	**10 mrad**	**10 mrad**	**10 mrad**	**20 mrad**
Beta Air Dose[5]	0.00E+00	0.00E+00	0.00E+00	3.66E-05	3.66E-05
% Of Limit	N/A	N/A	N/A	< 0.01	< 0.01
Limit	**2.5 mrem**	**2.5 mrem**	**2.5 mrem**	**2.5 mrem**	**5 mrem**
NG Total Body Dose[6]	0.00E+00	0.00E+00	0.00E+00	9.86E-05	9.86E-05
% Of Limit	N/A	N/A	N/A	< 0.01	< 0.01
Limit	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**15 mrem**
NG Skin Dose[7]	0.00E+00	0.00E+00	0.00E+00	1.44E-04	1.44E-04
% Of Limit	N/A	N/A	N/A	< 0.01	< 0.01
Limit	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**15 mrem**
Maximum Organ Dose[8]	1.37E-03	2.05E-03	1.85E-03	6.48E-04	5.92E-03
% Of Limit	0.02	0.03	0.02	0.01	0.04

[1] Table 3 is meant to demonstrate compliance to 10 CFR Part 50, Appendix I Limits. It does not include dose from C-14.
[2] 0.75 mi. N of Salem / Child
[3] 0.75 mi. N of Salem / Adult, GI-Lli
[4] SB 0.5 mi. N / All Age Groups
[5] SB 0.5 mi. N / All Age Groups
[6] SB 0.5 mi. N / All Age Groups
[7] SB 0.5 mi. N / All Age Groups
[8] Max Site Boundary / Teenager, Thyroid

Table 4, Salem & Hope Creek Generating Stations Site Dose Summary, 2025[1]

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Liquid Effluents					
Limit	**4.5 mrem**	**4.5 mrem**	**4.5 mrem**	**4.5 mrem**	**9 mrem**
Total Body Dose[2]	8.38E-03	2.73E-03	4.95E-03	6.06E-03	2.21E-02
% Of Limit	0.19	0.06	0.11	0.13	0.49
Limit	**15 mrem**	**15 mrem**	**15 mrem**	**15 mrem**	**30 mrem**
Maximum Organ Dose[3]	1.06E-02	1.31E-02	7.08E-03	8.69E-03	3.95E-02
% Of Limit	0.07	0.09	0.05	0.06	0.13
Gaseous Effluents					
Limit	**15 mrad**	**15 mrad**	**15 mrad**	**15 mrad**	**30 mrad**
Gamma Air Dose[4]	2.75E-05	1.59E-05	1.88E-05	1.26E-04	1.88E-04
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**30 mrad**	**30 mrad**	**30 mrad**	**30 mrad**	**60 mrad**
Beta Air Dose[5]	9.75E-06	6.77E-06	7.19E-06	4.49E-05	6.86E-05
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**7.5 mrem**	**15 mrem**
NG Total Body Dose[6]	2.62E-05	1.51E-05	1.78E-05	1.20E-04	1.79E-04
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**22.5 mrem**	**22.5 mrem**	**22.5 mrem**	**22.5 mrem**	**45 mrem**
NG Skin Dose[7]	3.82E-05	2.26E-05	2.62E-05	1.75E-04	2.62E-04
% Of Limit	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Limit	**22.5 mrem**	**22.5 mrem**	**22.5 mrem**	**22.5 mrem**	**45 mrem**
Maximum Organ Dose[8]	3.95E-03	8.16E-03	1.13E-02	1.42E-02	3.76E-02
% Of Limit	0.02	0.04	0.05	0.06	0.08

[1] Compliance to 10 CFR Part 50, Appendix I Limits is demonstrated from Table 1 through Table 3 for each unit. Table 4 is a summary of the cumulative dose from all three units.
[2] 0.75 mi. N of Salem / Adult
[3] 0.75 mi. N of Salem / Adult, GI-Lli
[4] SB 0.5 mi. N / All Age Groups
[5] SB 0.5 mi. N / All Age Groups
[6] SB 0.5 mi. N / All Age Groups
[7] SB 0.5 mi. N / All Age Groups
[8] Max Site Boundary / Teenager, Thyroid

Table 5, Total Annual Offsite-Dose Comparison to 40 CFR 190 Regulatory Limits for SGS/HCGS, 2025[1]

	Whole Body[2]	**Thyroid[2]**	**Max Organ[3]**
Limit	**25 mrem**	**75 mrem**	**25 mrem**
Gaseous			
Salem 1 NG	2.96E-05	2.96E-05	2.96E-05
Salem 1 Particulates/Iodines	2.47E-02	2.47E-02	1.94E-05
Carbon 14	7.23E-03	7.23E-03	1.28E-01
Salem 2 NG	5.07E-05	5.07E-05	5.07E-05
Salem 2 Particulates/Iodines	6.87E-03	6.87E-03	0.00E+00
Carbon 14	8.44E-03	8.44E-03	1.50E-01
Hope Creek 1 NG	9.86E-05	9.86E-05	9.86E-05
Hope Creek 1 Particulates/Iodines	5.53E-03	5.79E-03	1.66E-04
Carbon 14	1.16E-02	1.16E-02	2.06E-01
Total Gaseous mrem	6.45E-02	6.48E-02	4.84E-01
Total C-14 Dose mrem	2.73E-02	2.73E-02	**4.84E-01**
% Contribution to Gaseous Dose	42%	42%	**100%**
Liquid			
Salem 1	1.38E-02	1.26E-02	1.17E-03
Salem 2	7.81E-03	7.10E-03	1.86E-03
Hope Creek 1	4.74E-04	4.14E-05	2.66E-04
Total Liquid mrem	**2.21E-02**	**1.97E-02**	**3.29E-03**
Direct Shine[4]	**5.27E-03**	**5.27E-03**	**5.27E-03**
Other Nearby Facility[5]	N/A	N/A	N/A
Total mrem	**9.19E-02**	**8.97E-02**	**4.93E-01**
% Of Limit	**0.37%**	**0.12%**	**1.97%**

[1] Table 5 is a summation of all Units to show compliance with 40 CFR Part 190 Limits.
[2] Critical Age Group is the Adult
[3] Critical Age Group/Organ is the Child/Bone.
[4] Critical Residence 3.7 miles NW sector.
[5] Other fuel cycle sources within 5 miles of the site are considered in this analysis; however, there are none.

3.0 INTRODUCTION

3.1 About Nuclear Power

Commercial nuclear power plants are generally classified as either Boiling Water Reactors (BWR) or Pressurized Water Reactors (PWR), based on their design. A BWR includes a single coolant system where water used as reactor coolant boils as it passes through the core and the steam generated is used to turn the turbine generator for power production [4]. A PWR, in contrast, includes two separate water systems: radioactive reactor coolant and a secondary system. Reactor coolant is maintained under high pressure, preventing boiling. The high-pressure coolant is passed through a heat exchanger called a steam generator where the secondary system water is boiled, and the steam is used to turn the turbine generator for power production [5].

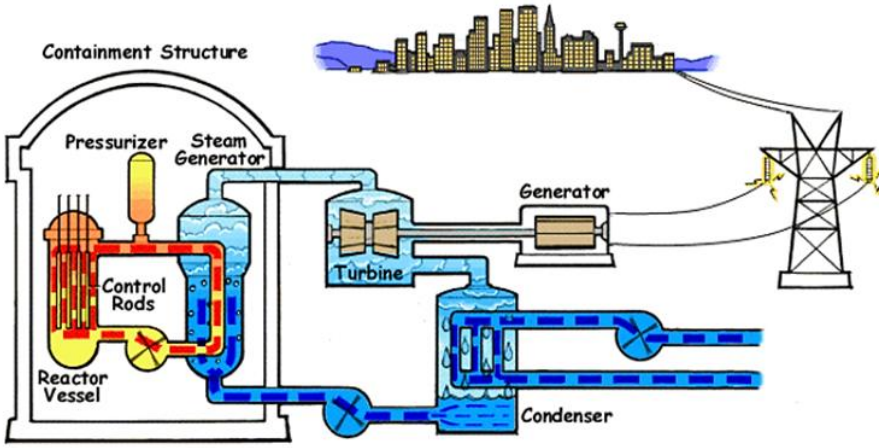

Figure 1, Pressurized Water Reactor (PWR)

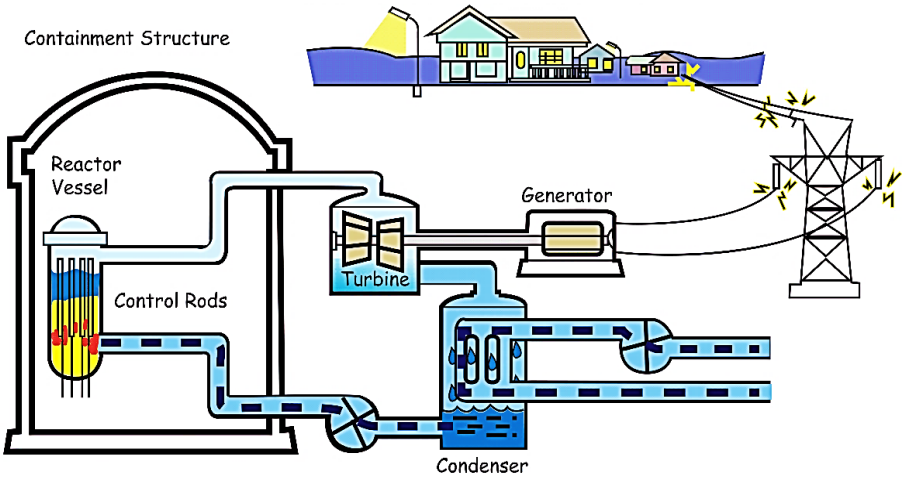

Figure 2, Boiling Water Reactor (BWR)

Electricity is generated by a nuclear power plant similarly to the way that electricity is generated at other conventional types of power plants, such as those driven by coal or natural gas. Water is boiled to generate steam; the steam rotates a turbine that is attached to a generator and the steam is condensed back into water to be returned to the boiler. What makes nuclear power different from these other types of power plants is that the heat is generated by fission and decay reactions occurring within and around the core containing fissionable uranium (U-235).

Nuclear fission occurs when certain nuclides (primarily U-233, U-235, or Pu-239) absorb a neutron and break into several smaller nuclides (called fission products) as well as some additional neutrons.

Fission results in production of radioactive materials including gases and solids that must be contained to prevent release or treated prior to release. These effluents are generally treated by filtration and/or hold-up prior to release. Releases are generally monitored by sampling and by continuously indicating radiation monitors. The effluent release data is used to calculate doses to ensure that dose to the public due to plant operation remains within required limits.

3.2 About Radiation Dose

Ionizing radiation, including alpha, beta, and gamma radiation from radioactive decay, has enough energy to break chemical bonds in tissues and results in damage to tissue or genetic material. The amount of ionization that will be generated by a given exposure to ionizing radiation is quantified as dose. The units for dose are generally given in millirem (mrem) in the US.

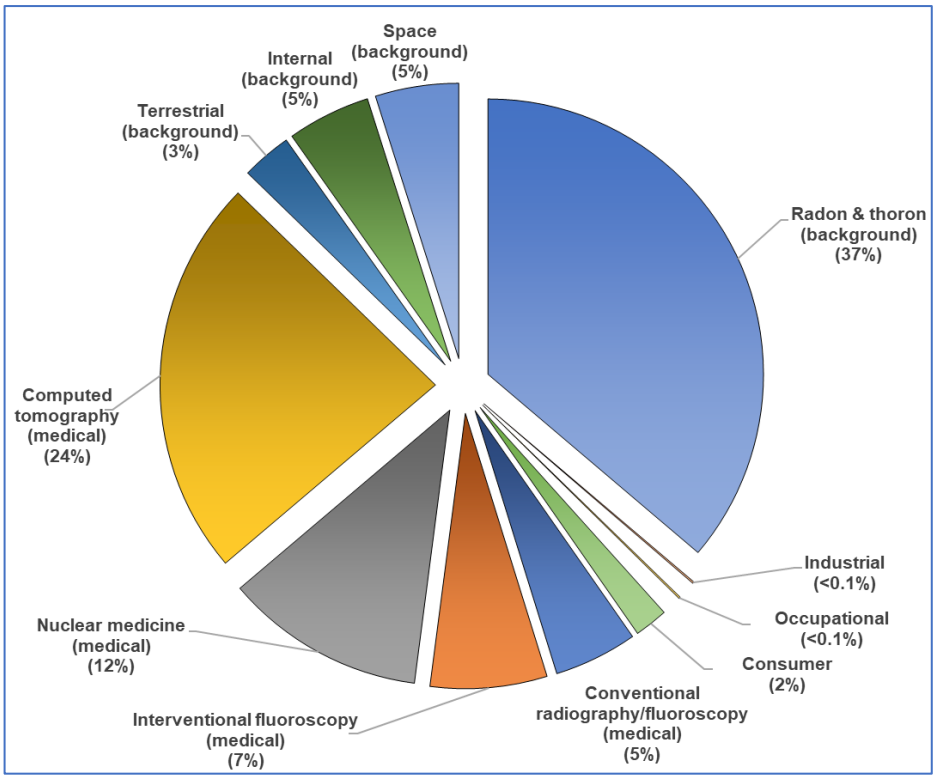

Figure 3, Sources of Radiation Exposure (ICRP Report No. 160) [6]

3.2 (Continued)

The National Council on Radiation Protection (NCRP) has evaluated the population dose for the US and determined that the average individual is exposed to approximately 620 mrem per year. There are many sources for radiation dose, ranging from natural background sources to medical procedures, air travel, and industrial processes. Approximately half (310 mrem) of the average exposure is due to natural sources of radiation including exposure to Radon, cosmic radiation, and internal radiation and terrestrial due to naturally occurring radionuclides. The remaining 310 mrem of exposure is due to man-made sources of exposure, with the most significant contributors being medical (48%) due to radiation used in various types of medical scans and treatments. Of the remaining 2% of dose, most is due to consumer activities such as air travel, smoking cigarettes, and building materials. A small fraction of this 2% is due to industrial activities including the generation of nuclear power.

Readers that are curious about common sources and effects of radiation dose that they may encounter can find excellent sources of information from the Health Physics Society, including the Radiation Fact Sheets [7], and from the US Nuclear Regulatory Commission website [8].

3.3 About Dose Calculation

The concentrations of radioactive material in the environment resulting from plant operations are very small and it is not possible to determine doses directly using measured activities of environmental samples. To overcome this, Dose Calculations based on measured activities of effluent streams are used to model the dose impact for Members of the Public due to plant operation and effluents. There are several mechanisms that can result in doses to Members of the Public, including: Ingestion of radionuclides in food or water; Inhalation of radionuclides in air; Immersion in a plume of noble gases; and Direct Radiation from the ground, the plant or from an elevated plume.

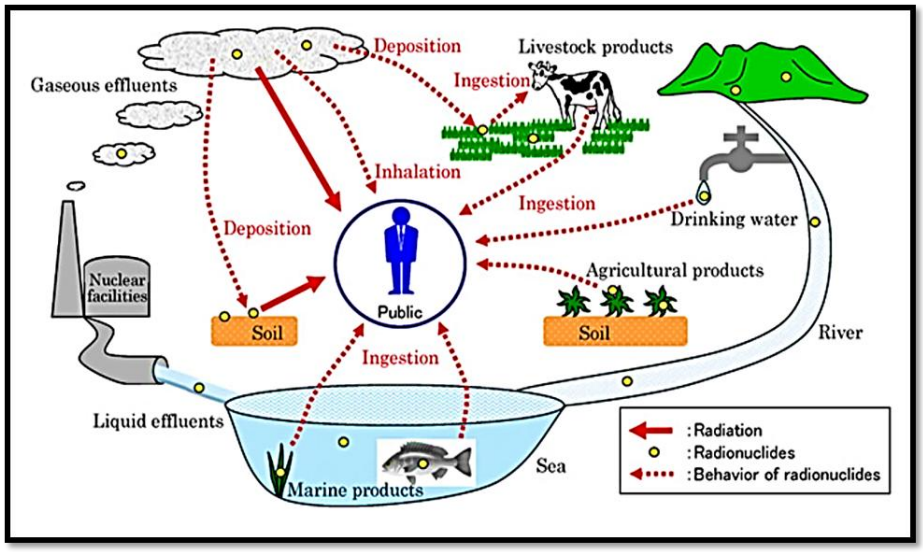

Figure 4, Potential exposure pathways to Members of the Public due to Plant Operations [9]

3.3 (Continued)

The Offsite Dose Calculation Manual (ODCM) specifies the methodology used to obtain the doses in the Dose Assessment section of this report. The methodology in the ODCM is based on NRC Regulatory Guide 1.109 [10] and NUREG-0133 [11]. Doses are calculated by determining what the nuclide concentration will be in air, water, on the ground, or in food products based on plant effluent releases. Release points are continuously monitored to quantify what concentrations of nuclides are being released. For gaseous releases meteorological data is used to determine how much of the released activity will be present at a given location outside of the plant either deposited onto the ground or in gaseous form. Intake patterns and nuclide bio-concentration factors are used to determine how much activity will be transferred into animal milk or meat. Finally, human ingestion factors and dose factors are used to determine how much activity will be consumed and how much dose the consumer will receive. Inhalation dose is calculated by determining the concentration of nuclides and how much air is breathed by the individual.

For liquid releases, dilution and mixing factors are used to model the environmental concentrations in water. Drinking water pathways are modeled by determining the concentration of nuclides in the water at the point where the drinking water is sourced. Fish and invertebrate pathways are determined by using concentration at the release point, bioaccumulation factors for the fish or invertebrate and an estimate of the quantity of fish consumed.

Each year a Land Use Census is performed to determine what potential dose pathways exist within a five-mile radius from the plant, which are the areas most affected by plant operations. The Annual Land Use Census identifies the locations of vegetable gardens, nearest residences, milk animals and meat animals. The data from the census is used to determine who is the most likely to be exposed to radiation dose due to plant operations.

There is significant uncertainty in dose calculation results, due to modeling dispersion of material released and bioaccumulation factors, as well as assumptions associated with consumption and land-use patterns. Even with these sources of uncertainty, the calculations do provide a reasonable estimate of the order of magnitude of the exposure. Conservative assumptions are made in the calculation inputs such as the number of various foods and water consumed, the amount of air inhaled, and the amount of direct radiation exposure from the ground or plume, such that the actual dose received are likely lower than the calculated dose. Even with the built-in conservatism, doses calculated for the highest hypothetical exposed individual due to plant operation are a very small fraction of the annual dose that is received due to other sources. The low calculated doses due to plant effluents, along with REMP results indicating low levels of detectible radioactive material due to plant operations, serve to provide assurance that the site is not having a negative impact on the environment or people living near the plant.

4.0 DOSE ASSESSMENT FOR PLANT OPERATIONS

4.1 Regulatory Limits

Regulatory limits are detailed in the Station's Licensing documents such as the Offsite Dose Calculation Manual (ODCM) and Selected Licensing Commitments. These documents contain the limits to which SGS/HCGS must adhere. SGS/HCGS drives to maintain the philosophy to keep dose "as low as reasonably achievable" (ALARA) and actions are taken to reduce the amount of radiation released to the environment. Liquid and gaseous release data show that the dose from SGS/HCGS is well below the ODCM limits. The concentration of liquid radioactive material released shall be limited to the Maximum Permissible Concentration specified in 10 CFR 20, Appendix B, Table II, Column 2 (pre-1994), for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the total concentration released shall be limited to 2.0E-04 µCi/ml. This data reveals that radioactive effluents have an overall minimal dose contribution to the surrounding environment.

The annual whole body, skin and organ doses were computed using the 2025 source term and using the dose calculation methodology provided in the ODCM. The calculated doses due to liquid and gaseous effluents to demonstrate compliance with offsite dose limits are presented in Table 1, Salem Generating Station Unit 1 Dose Summary, 2025, Table 2, Salem Generating Station Unit 2 Dose Summary, 2025, Table 3, Hope Creek Generating Station Unit 1 Dose Summary, 2025, and Table 4, Salem & Hope Creek Generating Stations Site Dose Summary, 2025.

The total annual dose summary compared to 40 CFR 190 limits are presented in Table 5, Total Annual Offsite-Dose Comparison to 40 CFR 190 Regulatory Limits for SGS/HCGS, 2025. This table also includes projected direct shine doses from the ISFSI.

4.2 Regulatory Limits for Gaseous Effluent Doses:

1. Fission and activation gases:

   a. Noble gases dose rate due to radioactive materials released in gaseous effluents from the areas at and beyond the site boundary shall be limited to the following for the three (3) units:

      1) Less than or equal to 500 mrem/year to the total body

      2) Less than or equal to 3000 mrem/year to the skin

   b. Noble gas air dose due to noble gases released in gaseous effluents to areas at and beyond the site boundary shall be limited to the following for each unit:

      1) Quarterly

         a) Less than or equal to 5 mrads gamma

         b) Less than or equal to 10 mrads beta

4.2 (Continued)

2) Yearly

a) Less than or equal to 10 mrads gamma

b) Less than or equal to 20 mrads beta

c) Less than or equal to 5 mrem total body[1]

d) Less than or equal to 15 mrem skin[1]

2. Iodine, tritium, carbon-14, and all radionuclides in particulate form with half-lives greater than 8 days.

a. The dose rate for iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following for the three (3) units:

1) Less than or equal to 1500 mrem/year to any organ

b. The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, carbon-14, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following for each unit:

1) Quarterly

a) Less than or equal to 7.5 mrem to any organ

2) Yearly

a) Less than or equal to 15 mrem to any organ

4.3 <u>Regulatory Limits for Liquid Effluent Doses</u>

1. The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released to unrestricted areas shall be limited to the following for each unit:

a. Quarterly

1) Less than or equal to 1.5 mrem total body

2) Less than or equal to 5 mrem critical organ

[1] 10 CFR 50, Appendix I, B.2(b)

4.3 (Continued)

b. Yearly

1) Less than or equal to 3 mrem total body

2) Less than or equal to 10 mrem critical organ

4.4 40 CFR 190 Regulatory Dose Limits for a Member of the Public

1. Total Dose (40 CFR 190)

a. The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC in the unrestricted area due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to the following:

1) Less than or equal to 25 mrem, Total Body or any Organ except Thyroid.

2) Less than or equal to 75 mrem, Thyroid.

4.5 Onsite Doses (Within Site Boundary)

This section evaluates dose to non-occupationally exposed workers that may be onsite for various reasons. Groups of concern include plant personnel that are not RCA badged including Sewage Treatment Plant Operators, Emergency Responders (National Guard, State Police, etc.) at the Site Security Gate, and various areas that cover the Wind Turbine Laydown Areas. These workers are considered not to be occupationally exposed, because the work activities are not related to plant-operational activities. Use of a conservative assumption of 3000 hours/year spent inside the site boundary by these groups conservatively represents the most-exposed individual. Doses to these groups are required per 10 CFR 20.1301(a) and (b) to limit the dose to a Member of the Public Dose to $\leq$ 100 mrem. Actions to be taken for these workers are clarified in RIS-2002-21 [12].

Available dose pathways for these receptors were noble gas plume dose, ground plane dose and inhalation dose. The adult age group was the only age group considered. In addition, the doses calculated were adjusted for an occupancy of 34%. The locations for the special dose calculation for the Wind Turbine Laydown Area are in Figure 5, Special Wind Turbine Laydown Areas, 16W4, 01W4, 02W5, and 03W2.

The annual total body and organ doses were computed using the 2025 gaseous source terms from Salem Unit 1, Salem Unit 2 and Hope Creek Unit 1 using the NRC dose code GASPAR and the 2015 – 2020 five-year annual average meteorological dispersion (X/Q) and deposition (D/Q) data. The calculated doses due to gaseous effluents for non-rad workers onsite are presented in Table 6, Summary of TEDE Doses to Members of the Public Due to Activities Inside the Site Boundary, 2025 and in Attachment 6, Doses to Onsite Receptors Using NRC Code GASPAR.

Table 6, Summary of TEDE Doses to Members of the Public Due to Activities Inside the Site Boundary, 2025

Location	Operating Unit	CDE Dose mrem	Total Body Dose mrem	TEDE Dose mrem	% of Limit (100 mrem) per 10 CFR 20.1301
Sewage Treatment Plant	SGS SITE	1.64E-02	1.64E-02		
	HCGS SITE	2.31E-02	8.17E-03		
	ISFSI	N/A	2.07E+00		
	Total	**3.95E-02**	**2.09E+00**	**2.13E+00**	**2.13%**
Emergency Responders	SGS SITE	5.93E-03	5.91E-03		
	HCGS SITE	2.45E-03	8.65E-04		
	ISFSI	N/A	1.74E-02		
	Total	**8.39E-03**	**2.41E-02**	**3.25E-02**	**0.03%**
Wind Turbine Laydown Area					
03W2	SGS SITE	2.74E-02	2.73E-02		
	HCGS SITE	8.99E-03	3.18E-03		
	ISFSI	N/A	1.06E-01		
	Total	**3.64E-02**	**1.36E-01**	**1.73E-01**	**0.17%**
16W4	SGS SITE	1.01E-02	1.00E-02		
	HCGS SITE	1.43E-02	5.04E-03		
	ISFSI	N/A	6.03E-01		
	Total	**2.43E-02**	**6.18E-01**	**6.42E-01**	**0.64%**
01W4	SGS SITE	1.00E-02	1.00E-02		
	HCGS SITE	9.79E-03	3.46E-03		
	ISFSI	N/A	1.28E+00		
	Total	**1.98E-02**	**1.30E+00**	**1.32E+00**	**1.32%**
02W5	SGS SITE	1.18E-02	1.18E-02		
	HCGS SITE	1.14E-02	4.03E-03		
	ISFSI	N/A	5.13E-01		
	Total	**2.33E-02**	**5.28E-01**	**5.52E-01**	**0.55%**

Figure 5, Special Wind Turbine Laydown Areas, 16W4, 01W4, 02W5, and 03W2

5.0 SUPPLEMENTAL INFORMATION

5.1 Gaseous Batch Releases

5.1.1 Salem Unit 1

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Number of Batch Releases		7	13	5	5	30
2. Total duration of batch releases	minutes	1.30E+05	6.76E+04	1.33E+05	1.33E+05	4.62E+05
3. Maximum batch release duration	minutes	4.46E+04	4.32E+04	4.46E+04	4.46E+04	4.46E+04
4. Average batch release duration	minutes	1.85E+04	5.20E+03	2.65E+04	2.65E+04	1.54E+04
5. Minimum batch release duration	minutes	1.00E+00	3.50E+01	2.80E+01	4.10E+01	1.00E+00

5.1.2 Salem Unit 2

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Number of Batch Releases		9	4	5	7	25
2. Total duration of batch releases	minutes	1.30E+05	1.31E+05	1.33E+05	1.33E+05	5.26E+05
3. Maximum batch release duration	minutes	4.46E+04	4.46E+04	4.46E+04	4.46E+04	4.46E+04
4. Average batch release duration	minutes	1.45E+04	3.28E+04	2.65E+04	1.89E+04	2.11E+04
5. Minimum batch release duration	minutes	4.40E+01	1.07E+02	3.70E+01	5.00E+00	5.00E+00

5.1.3 Hope Creek Unit 1

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Number of Batch Releases		0	0	1	3	4
2. Total duration of batch releases	minutes	0.00E+00	0.00E+00	2.10E+03	2.65E+03	4.75E+03
3. Maximum batch release duration	minutes	0.00E+00	0.00E+00	2.10E+03	1.18E+03	2.10E+03
4. Average batch release duration	minutes	0.00E+00	0.00E+00	2.10E+03	8.84E+02	1.19E+03
5. Minimum batch release duration	minutes	0.00E+00	0.00E+00	2.10E+03	5.48E+02	5.48E+02

5.2 Liquid Batch Releases

5.2.1 Salem Unit 1

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Number of Batch Releases		23	33	13	10	79
2. Total duration of batch releases	minutes	9.76E+03	1.27E+04	5.13E+03	3.97E+03	3.15E+04
3. Maximum batch release duration	minutes	6.38E+02	1.16E+03	6.23E+02	6.11E+02	1.16E+03
4. Average batch release duration	minutes	4.24E+02	3.84E+02	3.95E+02	3.97E+02	3.99E+02
5. Minimum batch release duration	minutes	2.48E+02	8.40E+01	2.00E+02	7.90E+01	7.90E+01
6. Avg stream flow during periods of release of liquid effluent into a flowing stream	Ft^3/sec	*	*	*	*	*

5.2.2 Salem Unit 2

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Number of Batch Releases		21	16	11	13	61
2. Total duration of batch releases	minutes	9.18E+03	7.05E+03	5.39E+03	5.78E+03	2.74E+04
3. Maximum batch release duration	minutes	7.44E+02	5.92E+02	7.89E+02	7.64E+02	7.89E+02
4. Average batch release duration	minutes	4.37E+02	4.41E+02	4.90E+02	4.45E+02	4.49E+02
5. Minimum batch release duration	minutes	1.37E+02	3.21E+02	3.13E+02	7.90E+01	7.90E+01
6. Avg stream flow during periods of release of liquid effluent into a flowing stream	Ft^3/sec	*	*	*	*	*

5.2.3 Hope Creek Unit 1

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Number of Batch Releases		26	33	99	82	240
2. Total duration of batch releases	minutes	1.97E+03	2.52E+03	7.05E+03	5.76E+03	1.73E+04
3. Maximum batch release duration	minutes	9.20E+01	8.90E+01	9.10E+01	8.60E+01	9.20E+01
4. Average batch release duration	minutes	7.56E+01	7.63E+01	7.12E+01	7.02E+01	7.21E+01
5. Minimum batch release duration	minutes	4.20E+01	4.70E+01	3.20E+01	2.90E+01	2.90E+01
6. Avg stream flow during periods of release of liquid effluent into a flowing stream	Ft^3/sec	*	*	*	*	*

* Salem and Hope Creek do not use average stream flow in calculating dose. The Delaware River is a tidal river making the calculation difficult to perform.

5.3 Abnormal Releases

5.3.1 Gaseous Abnormal Releases

1. Salem Unit 1

None

2. Salem Unit 2

None

3. Hope Creek Unit 1

None

5.3.2 Liquid Abnormal Releases

1. Salem Unit 1

None

2. Salem Unit 2

None

3. Hope Creek Unit 1

None

5.4 Non-Routine Planned Discharges

5.4.1 Salem Unit 1

None

5.4.2 Salem Unit 2

None

5.4.3 Salem Common

Two non-routine planned discharges of turbine sump water to the Oily Waste Separator (OWS) were made on 12/07/2025 – 12/08/2025 and 12/15/2025 – 12/16/2025. The turbine sumps normally discharge through the Non-Radioactive Waste Basin pathway. However, due to the Non-Radioactive Waste Basin project, that was slower than the normal processing procedure, the rerouting of the turbine sumps was necessary to increase margin in the clarifier level which reduced the risk of having an environmental overflow. No radioactive gamma emitters or tritium was identified. Total volume of water released to the OWS was 8.98E+04 gallons. The releases were allocated 50% to each unit and accounted for in Section5.2 Liquid Batch Releases. (21009784)

5.4.4 Hope Creek Unit 1

1. None

5.5 Land Use Census Changes

The results of the 2025 Land Use Census showed no changes in the nearest residences and milk farms. There were no gardens of greater than 500 ft^2 within five miles of the SGS/HCGS site. As a result, there were no changes to the radiological effluent control program.

5.6 Meteorological Data

The 2025 meteorological monitoring program had a Joint Frequency Distribution (JFD) recovery rate of 97.9%. The JFD recovery rate per Reg. Guide 1.23 [13] includes wind speed, wind direction and stability class. A loss of data from any one of these parameters impacts the overall recovery rate, which is required to be 90% or greater. The percentage recovery rate for each required sensor is detailed in Attachment 4, Meteorological Data. The quarterly JFDs are retained onsite and available upon request.

Attachment 4, Meteorological Data includes the annual JFD for all stability classes, percent by stability class, and Salem's and Hope Creek's 2025 annual average dispersion (X/Q) and deposition (D/Q) data.

A graphical representation of the annual JFD using Lakes, Inc., software WRPLOT VIEW. This software graphically presents the JFD data at only six windspeeds in meters per second. The data in Table 38, 2025 Percentage of Joint Frequency Distribution of Wind Direction and Speed - All Stability Classes, which is in 10 windspeed categories, was converted to the six windspeed categories as required by the Lakes software. This graphical representation is presented in Figure 6, Locations of Dose Calculation Receptors with 2025 Wind Rose Overlay.

5.7 Instrument Monitors Out of Service Greater Than 30 Days

5.7.1 Salem Unit 1

1. 1R19A-D Steam Generator Blowdown (SGBD) Radiation Monitor

   - 1R19A SGBD - INOP 07/31/2025 through 12/15/2025, (20999235, 20999267)
   - 1R19B SGBD - INOP 07/31/2025 through 01/14/2026, (20998890, 20999268)
   - 1R19C SGBD - INOP 07/31/2025 through 12/15/2025, (20998891, 20999269)

   The 1R19A, B and C Steam Generator Blowdown radiation monitors were out of service due to the sample bowl lids being over pressurized. This required new sample bowl lids to be manufactured and installed prior to returning the radiation monitors to service.

   - 1R19D SGBD - INOP 07/29/2025 through 01/15/2026, (20998407)

The 1R19D Steam Generator Blowdown radiation monitor was out of service due to the check source failing low. This required the setpoint to be evaluated for a lower setpoint to ensure that the check source test would pass but still be set high enough to perform its design function. Additionally, the Steam Generator Blowdown radiation monitors were out of service due to requiring new sample bowl lids that had to be manufactured and installed for the 1R19A, 1R19B and 1R19C channels prior to returning the radiation monitors to service.

2. 1R18 Liquid Radwaste Effluent Line Radiation Monitor

- On 07/31/2025 during performance of the 1R18 functional test it was discovered that the test jumpers from the previous functional test were left installed. This resulted in the 1R18 being incapable of terminating a liquid release on a high alarm. The monitor was declared INOP dating back to 02/01/2025 through 07/31/2025. During that time no radiation monitor alarms were noted and all liquid rad waste tanks released met both the required MPC and Dose Limits. (20999130)

3. 1FL1064 Liquid Radwaste Effluent Line Flow Rate Measurement Device

- INOP 04/17/2025 through 05/24/2025. The liquid release flow transmitter was reading erratically due to air in the transmitter lines, which required a fill and vent of the transmitter. (20991467, 20993296)

5.7.2 Salem Unit 2

1. 2R37 Non-Rad Waste Basin Radiation Monitor

- 2R37 went out of service on 10/01/2024 and returned to service on 07/17/2025 due to 1LW426 being removed from the system for maintenance. The 1LW426 valve could not produce a flow greater than 1000 gpm. The tank discharge to the river has a higher fill rate than the available discharge rate. This hindered the ability to process waste and makes the system vulnerable to an overflow. (20976885, 20978918, 20973133)

2. 2R18 Liquid Radwaste Radiation Monitor

- 2R18 went out of service on 02/10/2025 through 07/02/2025 due to implementation of a design change to upgrade the radiation monitor. (20995848)
- 2R18 went out of service on 07/03/2025 through 12/12/2025 due to an issue with one of the firmware configuration settings for the newly installed liquid radwaste radiation monitor. A revised firmware configuration from the vendor was required to be installed prior to returning to service. During these out of service times the required Salem ODCM ACTION 26 compensatory sampling and analyses were performed. (20995848)

5.7.3 Hope Creek Unit 1

1. H1SP-1SPRI-4873 North Plant Vent Radiation Monitor

   - H1SP-1SPRI-4873 went out of service on 04/19/2025 through 06/11/2025 due to observing erratic indications. Technical Specification Action Statement (TSAS) 3.3.7.5 Action 81.a. was entered, and Chemistry and Radiation Protection were notified to establish the pre-planned alternate method of monitoring. Initial troubleshooting of the North Plant Vent Radiation Monitor identified that low range signal cable was causing spiking to occur on multiple channels. Following substitution of the signal cable with a test cable for troubleshooting, spiking continued to occur though at a lower amplitude and with a longer period between spikes. Repair of a damaged section of low range cable required parts to be purchased. Following cable repair PSEG brought the equipment vendor onsite to support troubleshooting and validation that the issue had been solved. The monitor was returned to service after post maintenance testing. During these out of service times the required Hope Creek ODCM ACTION 123 compensatory sampling and analyses were performed. (20993364)

5.8 Offsite Dose Calculation Manual (ODCM) Changes

A summary of the changes are detailed in Attachment 3, Summary of ODCM Changes

5.8.1 Salem

1. Revision 30 of the Salem ODCM REC was approved on 04/09/2025.

5.8.2 Hope Creek

1. Revision 30 of the Hope Creek ODCM REC was approved on 08/14/2025.

5.8.3 Common REMP

1. Revision 01 of the ODCM for the Common Radiological Environmental Monitoring Program (REMP was approved on 08/26/2025.

5.9 Process Control Program (PCP) Changes

None

5.10 Radioactive Waste Treatment System Changes

There were no changes to the Radioactive Waste Treatment Systems for either Salem Unit 1, Salem Unit 2, or Hope Creek Unit 1.

5.11 Independent Spent Fuel Storage Installation (ISFSI) Monitoring Program

There have been no gaseous or liquid releases from the Independent Spent Fuel Storage Installation (ISFSI) since it was placed in service in the summer of 2006. In 2025 six fuel casks were placed on the pad. Currently a total of 95 fuel casks are on the ISFSI.

5.12 Carbon-14

Carbon-14 (C-14) is a naturally occurring radionuclide with a 5,730-year half-life. Nuclear weapons testing in the 1950s and 1960s significantly increased the amount of C-14 in the atmosphere. Nuclear power plants also produce C-14, but the amount is infinitesimal compared to what has been distributed in the environment due to weapons testing and what is produced by natural cosmic ray interactions.

In accordance with Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste," [14] the NRC recommended re-evaluating "principal radionuclides" and reporting C-14 as appropriate. Carbon-14 production and release estimates were calculated using EPRI Report 1021106, "Estimation of Carbon-14 in Nuclear Plant Gaseous Effluents" [15]. The assessment methodology used to estimate the quantity of C-14 discharged in gaseous effluent from SGS/HCGS involved the use of a normalized C-14 source term and scaling factors based on power generation. The following assumptions were incorporated into the method:

Only C-14 in the form of CO_2 was incorporated into vegetation through photosynthesis, which causes dose via the ingestion exposure pathways.

- The concentration of C-14 in vegetation was proportional to the concentration of C-14 in air (per equation C-8 in Regulatory Guide 1.109).
- 95% of C-14 released from a BWR (i.e., HCGS) and 30% of C-14 released from a PWR (i.e., SGS Units 1 and 2) was in the form of CO_2 [15].

The estimated generation for Salem & Hope Creek Generating Stations for 2025 was as follows:

Salem Unit 1	9.85 curies
Salem Unit 2	11.50 curies
Hope Creek Unit 1	15.75 curies

Public dose estimates were performed using methodology from the ODCM which is based on Regulatory Guide 1.109 methodology [10]. Carbon dioxide is assumed to make up 95% and 30% of the Carbon-14 gaseous emissions from Hope Creek and Salem stations, respectively. Based upon available references [15]. Carbon-14 is the highest dose contributor of all radionuclides released in gaseous effluents. The annual dose resulting from Carbon-14 releases in gaseous effluents is estimated to be 100% of the dose to the Child bone.

5.13 Errata/Corrections to Previous Reports

None

5.14 Other Supplemental Information

5.14.1 Program Deviations

1. Salem

   None

2. Hope Creek

   During the week of 08/19/2025 the Circulating Water Dewatering Sump (CWDS) sampling hose to the automatic composite sampler broke. A grab sample was obtained.

5.14.2 Data Trend for Curies Released from the SGS/HCGS Site

Graphical trends of the curies released from the SGS/HCGS site in gaseous and liquid effluents are presented in Attachment 5, Radiological Effluent Trends.

5.14.3 Temporary Outside Tanks

In 2025 the SGS site did not utilize temporary outside tanks to hold radioactive material greater than 10 curies, excluding tritium and dissolved or entrained noble gases per Tech. Specs. 3.11.1.4

In 2025 the HCGS site did not utilize temporary outside tanks to hold radioactive material of more than 10 times the concentration values in 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents per Tech. Specs. 5.5.6.b.

6.0 NEI 07-07 ONSITE RADIOLOGICAL GROUNDWATER MONITORING PROGRAM

Salem & Hope Creek Generating Stations have developed an Integrated Tritium Management Program which includes the Groundwater Protection Initiative (GPI) program in accordance with NEI 07-07, Industry Ground Water Protection Initiative – Final Guidance Document [16] and monitoring well investigation program. The purpose of the GPI is to ensure timely detection and an effective response to situations involving inadvertent radiological releases to groundwater to prevent migration of licensed radioactive material off-site and to quantify impacts on decommissioning. During 2025, SGS/HCGS collected and analyzed groundwater samples in accordance with the requirements of site procedures.

Monitoring wells installed as part of Groundwater Protection Initiative (GPI) (NEI 07-07) program are sampled either monthly, quarterly, or semiannually and analyzed for various radionuclides.

During 2025, the mass flux within the shallow, water bearing unit and deeper groundwater was estimated to be 3.40E-03 curies and 1.35E-02 curies, respectively. Therefore, the total potential estimated mass flux of tritium in groundwater reaching the Delaware River during 2025 was 1.69E-02 curies.

Except for tritium, no plant-related radionuclides were detected in any HCGS or SGS wells sampled in 2025, including both RGPP and non-RGPP well samples.

The detailed report is included in Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report.

6.1 VOLUNTARY NOTIFICATION

During 2025, Salem & Hope Creek Generating Stations did not make any voluntary NEI 07-07 notification to State/Local officials, NRC, or to other stakeholders required by site procedures.

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Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

1.0 GASEOUS EFFLUENTS

1.1 Salem Unit 1

Table 7, Gaseous Effluents Summation of All Releases (SGS Unit 1), 2025 [1]

A. Fission & Activation Gases	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Est. Total Error %
1. Total Release	Ci	5.04E-02	4.79E-02	3.64E-02	3.03E-02	1.65E-01	3.40E+01
2. Average release rate for the period	µCi/sec	6.48E-03	6.09E-03	4.58E-03	3.81E-03	5.23E-03	
B. Iodines and Halogens							
1. Total Release	Ci	N/D	7.49E-06	N/D	N/D	7.49E-06	3.00E+01
2. Average release rate for the period	µCi/sec	N/A	9.53E-07	N/A	N/A	2.38E-07	
C. Particulates							
1. Total Release	Ci	N/D	2.36E-05	6.67E-04	1.58E-03	2.27E-03	3.00E+01
2. Average release rate for the period	µCi/sec	N/A	3.01E-06	8.39E-05	1.99E-04	7.21E-05	
D. Tritium							
1. Total Release	Ci	3.55E+01	1.40E+02	1.69E+02	2.76E+02	6.21E+02	3.10E+01
2. Average release rate for the period	µCi/sec	4.56E+00	1.78E+01	2.13E+01	3.47E+01	1.97E+01	
E. Gross Alpha							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	3.00E+01
2. Average release rate for the period	µCi/sec	N/A	N/A	N/A	N/A	N/A	
F. Carbon-14							
1. Total Release	Ci	2.07E+00	2.36E+00	2.84E+00	2.59E+00	9.85E+00	
2. Average release rate for the period	µCi/sec	2.66E-01	3.00E-01	3.57E-01	3.26E-01	3.12E-01	

[1] Percent of limit is on Table 1, Salem Generating Station Unit 1 Dose Summary, 2025. C-14 is not part of the Appendix I dose limits and therefore, not included in Table 1. However, C-14 is reported in Table 5, Total Annual Offsite-Dose Comparison to 40 CFR 190 Regulatory Limits for SGS/HCGS, 2025.

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 8, Gaseous Effluents – Ground Level Release Continuous Mode (SGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Fission Gases						
Xe-135	Ci	N/D	4.14E-04	N/D	N/D	4.14E-04
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	4.14E-04	N/D	N/D	4.14E-04
Iodines and Halogens						
Br-82	Ci	N/D	7.49E-06	N/D	N/D	7.49E-06
	Ci					
	Ci					
Total for Period	Ci	N/D	7.49E-06	N/D	N/D	7.49E-06
Particulates						
Co-58	Ci	N/D	2.36E-05	6.67E-04	1.58E-03	2.27E-03
Co-60	Ci	N/D	3.35E-08	N/D	N/D	3.35E-08
Nb-95	Ci	N/D	2.06E-08	N/D	N/D	2.06E-08
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	2.36E-05	6.67E-04	1.58E-03	2.27E-03
Tritium						
H-3	Ci	3.52E+01	1.40E+02	1.69E+02	2.76E+02	6.20E+02
Gross Alpha						
Alpha	Ci	N/D	N/D	N/D	N/D	N/D
Carbon-14						
C-14	Ci	2.07E+00	2.36E+00	2.84E+00	2.59E+00	9.85E+00

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 9, Gaseous Effluents – Ground Level Release Batch Mode (SGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Fission Gases						
Ar-41	Ci	5.04E-02	1.64E-02	1.84E-02	1.73E-02	1.02E-01
Kr-85m	Ci	N/D	1.70E-04	N/D	N/D	1.70E-04
Xe-133	Ci	N/D	2.24E-02	1.80E-02	1.30E-02	5.33E-02
Xe-135	Ci	N/D	8.55E-03	N/D	N/D	8.55E-03
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	5.04E-02	4.74E-02	3.64E-02	3.03E-02	1.64E-01
Iodines and Halogens						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Particulates						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Tritium						
H-3	Ci	2.29E-01	7.00E-02	3.92E-01	2.71E-01	9.62E-01
Gross Alpha						
Alpha	Ci	N/D	N/D	N/D	N/D	N/D
Carbon-14						
C-14	Ci	N/A	N/A	N/A	N/A	N/A

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

1.2 Salem Unit 2

Table 10, Gaseous Effluents Summation of All Releases (SGS Unit 2), 2025 [1]

A. Fission & Activation Gases	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Est. Total Error %
1. Total Release	Ci	4.49E-02	3.51E-02	4.63E-02	5.92E-02	1.85E-01	3.40E+01
2. Average release rate for the period	μCi/sec	5.77E-03	4.46E-03	5.82E-03	7.45E-03	5.88E-03	
B. Iodine and Halogens							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	3.00E+01
2. Average release rate for the period	μCi/sec	N/A	N/A	N/A	N/A	N/A	
C. Particulates							
1. Total Release	Ci	2.28E-05	N/D	N/D	N/D	2.28E-05	3.00E+01
2. Average release rate for the period	μCi/sec	2.94E-06	N/A	N/A	N/A	7.24E-07	
D. Tritium							
1. Total Release	Ci	2.90E+01	1.25E+01	6.71E+01	6.27E+01	1.71E+02	3.10E+01
2. Average release rate for the period	μCi/sec	3.73E+00	1.60E+00	8.44E+00	7.89E+00	5.43E+00	
E. Gross Alpha							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	3.00E+01
2. Average release rate for the period	μCi/sec	N/A	N/A	N/A	N/A	N/A	
F. Carbon-14							
1. Total Release	Ci	2.77E+00	2.81E+00	3.19E+00	2.73E+00	1.15E+01	
2. Average release rate for the period	μCi/sec	3.56E-01	3.57E-01	4.01E-01	3.44E-01	3.65E-01	

[1] Percent of Limit is on Table 2, Salem Generating Station Unit 2 Dose Summary, 2025. C-14 is not part of the Appendix I dose limits and therefore, not included in Table 2. However, C-14 is reported in Table 5, Total Annual Offsite-Dose Comparison to 40 CFR 190 Regulatory Limits for SGS/HCGS, 2025.

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 11, Gaseous Effluents – Ground Level Release Continuous Mode (SGS Unit 2), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Fission Gases						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Iodines and Halogens						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Particulates						
As-76	Ci	2.28E-05	N/D	N/D	N/D	2.28E-05
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	2.28E-05	N/D	N/D	N/D	2.28E-05
Tritium						
H-3	Ci	2.89E+01	1.23E+01	6.68E+01	5.97E+01	1.68E+02
Gross Alpha						
Alpha	Ci	N/D	N/D	N/D	N/D	N/D
Carbon-14						
C-14	Ci	2.77E+00	2.81E+00	3.19E+00	2.73E+00	1.15E+01

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 12, Gaseous Effluents – Ground Level Release Batch Mode (SGS Unit 2), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Fission Gases						
Ar-41	Ci	4.34E-02	3.51E-02	4.49E-02	5.84E-02	1.82E-01
Xe-133	Ci	1.51E-03	N/D	1.39E-03	8.77E-04	3.78E-03
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	4.49E-02	3.51E-02	4.63E-02	5.92E-02	1.85E-01
Iodines and Halogens						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Particulates						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Tritium						
H-3	Ci	1.31E-01	2.49E-01	2.90E-01	2.98E+00	3.65E+00
Gross Alpha						
Alpha	Ci	N/D	N/D	N/D	N/D	N/D
Carbon-14						
C-14	Ci	N/A	N/A	N/A	N/A	N/A

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

1.3 Hope Creek Unit 1

Table 13, Gaseous Effluents Summation of All Releases (HCGS Unit 1), 2025 [1]

A. Fission & Activation Gases	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Est. Total Error %
1. Total Release	Ci	N/D	N/D	N/D	1.64E-01	1.64E-01	3.40E+01
2. Average release rate for the period	μCi/sec	N/A	N/A	N/A	2.07E-02	5.21E-03	
B. Iodine and Halogens							
1. Total Release	Ci	7.01E-04	2.63E-04	3.70E-04	N/D	1.33E-03	3.00E+01
2. Average release rate for the period	μCi/sec	9.02E-05	3.34E-05	4.65E-05	N/A	4.23E-05	
C. Particulates							
1. Total Release	Ci	4.47E-06	4.92E-06	7.07E-06	N/D	1.65E-05	3.00E+01
2. Average release rate for the period	μCi/sec	5.75E-07	6.26E-07	8.90E-07	N/A	5.22E-07	
D. Tritium							
1. Total Release	Ci	1.32E+01	2.26E+01	1.95E+01	7.52E+00	6.28E+01	3.10E+01
2. Average release rate for the period	μCi/sec	1.70E+00	2.87E+00	2.45E+00	9.46E-01	1.99E+00	
E. Gross Alpha							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	3.00E+01
2. Average release rate for the period	μCi/sec	N/A	N/A	N/A	N/A	N/A	
F. Carbon-14							
1. Total Release	Ci	4.56E+00	3.74E+00	3.98E+00	3.47E+00	1.58E+01	
2. Average release rate for the period	μCi/sec	5.86E-01	4.76E-01	5.00E-01	4.37E-01	4.99E-01	

[1] Percent of limit is on Table 3, Hope Creek Generating Station Unit 1 Dose Summary, 2025. C-14 is not part of the Appendix I dose limits and therefore, not included in Table 3. However, C-14 is reported in Table 5, Total Annual Offsite-Dose Comparison to 40 CFR 190 Regulatory Limits for SGS/HCGS, 2025.

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 14, Gaseous Effluents – Ground Level Release Continuous Mode (HCGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Fission Gases						
Ar-41	Ci	N/D	N/D	N/D	1.64E-01	1.64E-01
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	1.64E-01	1.64E-01
Iodines						
I-131	Ci	5.69E-05	2.34E-06	3.61E-05	N/D	9.53E-05
I-133	Ci	6.44E-04	2.61E-04	3.33E-04	N/D	1.24E-03
	Ci					
Total for Period	Ci	7.01E-04	2.63E-04	3.70E-04	N/D	1.33E-03
Particulates						
Co-60	Ci	4.47E-06	4.92E-06	7.07E-06	N/D	1.65E-05
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	4.47E-06	4.92E-06	7.07E-06	N/D	1.65E-05
Tritium						
H-3	Ci	1.32E+01	2.26E+01	1.95E+01	7.52E+00	6.28E+01
Gross Alpha						
Alpha	Ci	N/D	N/D	N/D	N/D	N/D
Carbon-14						
C-14	Ci	4.56E+00	3.74E+00	3.98E+00	3.47E+00	1.58E+01

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 15, Gaseous Effluents – Ground Level Release Batch Mode (HCGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Fission Gases						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Iodines and Halogens						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Particulates						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Tritium						
H-3	Ci	N/D	N/D	1.69E-02	7.57E-04	1.76E-02
Gross Alpha						
Alpha	Ci	N/D	N/D	N/D	N/D	N/D
Carbon-14						
C-14	Ci	N/A	N/A	N/A	N/A	N/A

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

2.0 LIQUID EFFLUENTS

2.1 Salem Unit 1

Table 16, Liquid Effluents – Summation of All Releases (SGS Unit 1), 2025[1]

A. Fission & Activation Products	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Est. Total Error %
1. Total Release	Ci	1.88E-03	9.57E-03	3.25E-03	3.30E-03	1.80E-02	2.70E+01
2. Average diluted concentration	μCi/mL	3.71E-11	1.73E-10	6.74E-11	7.57E-11	9.11E-11	
B. Tritium							
1. Total Release	Ci	4.24E+02	8.96E+01	7.63E+01	8.01E+01	6.69E+02	2.70E+01
2. Average diluted concentration	μCi/mL	8.35E-06	1.62E-06	1.58E-06	1.84E-06	3.39E-06	
C. Dissolved & Entrained Gases							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	2.70E+01
2. Average diluted concentration	μCi/mL	N/A	N/A	N/A	N/A	N/A	
D. Gross Alpha Activity							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	2.70E+01
2. Average diluted concentration	μCi/mL	N/A	N/A	N/A	N/A	N/A	
E. Volume of Waste Released (prior to dilution)	Liters	6.20E+07	4.68E+07	6.19E+07	6.27E+07	2.33E+08	
F. Volume of Dilution Water Used During Period	Liters	5.07E+10	5.52E+10	4.82E+10	4.35E+10	1.98E+11	

[1] Percent of limit is on Table 1, Salem Generating Station Unit 1 Dose Summary, 2025

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 17, Continuous Mode Liquid Effluents (SGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Tritium						
H-3	Ci	4.90E-03	1.73E-02	1.71E-01	1.80E-01	3.73E-01
Fission & Activation Products						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Entrained Gases						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Gross Alpha						
Gross Alpha	Ci	N/D	N/D	N/D	N/D	N/D

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 18, Batch Mode Liquid Effluents (SGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Tritium						
H-3	Ci	4.24E+02	8.96E+01	7.61E+01	7.99E+01	6.69E+02
Fission & Activation Products						
Mn-54	Ci	8.33E-06	N/D	N/D	N/D	8.33E-06
Fe-55	Ci	N/D	N/D	N/D	7.21E-04	7.21E-04
Co-58	Ci	1.21E-04	1.21E-03	1.56E-03	1.11E-03	4.00E-03
Co-60	Ci	1.65E-03	8.28E-03	6.29E-04	3.31E-04	1.09E-02
Nb-95	Ci	N/D	1.09E-05	N/D	N/D	1.09E-05
Sb-124	Ci	5.07E-06	N/D	N/D	N/D	5.07E-06
Sb-125	Ci	1.02E-04	4.90E-05	1.06E-03	1.14E-03	2.35E-03
Cs-136	Ci	N/D	N/D	4.14E-06	N/D	4.14E-06
Cs-137	Ci	N/D	2.07E-05	N/D	N/D	2.07E-05
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	1.88E-03	9.57E-03	3.25E-03	3.30E-03	1.80E-02
Entrained Gases						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Gross Alpha						
Gross Alpha	Ci	N/D	N/D	N/D	N/D	N/D

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

2.2 Salem Unit 2

Table 19, Liquid Effluents – Summation of All Releases (SGS Unit 2), 2025 [1]

A. Fission & Activation Products	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Est. Total Error %
1. Total Release	Ci	1.04E-03	2.91E-03	1.67E-03	5.43E-03	1.11E-02	2.70E+01
2. Average diluted concentration	μCi/mL	1.51E-10	6.94E-10	4.06E-10	1.43E-09	5.83E-10	
B. Tritium							
1. Total Release	Ci	5.50E+02	7.66E+01	6.07E+01	1.69E+02	8.56E+02	2.70E+01
2. Average diluted concentration	μCi/mL	8.01E-05	1.82E-05	1.47E-05	4.46E-05	4.51E-05	
C. Dissolved & Entrained Gases							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	2.70E+01
2. Average diluted concentration	μCi/mL	N/A	N/A	N/A	N/A	N/A	
D. Gross Alpha Activity							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	2.70E+01
2. Average diluted concentration	μCi/mL	N/A	N/A	N/A	N/A	N/A	
E. Volume of Waste Released (prior to dilution)	Liters	3.51E+07	3.57E+07	3.43E+07	3.54E+07	1.40E+08	
F. Volume of Dilution Water Used During Period	Liters	6.82E+09	4.16E+09	4.08E+09	3.76E+09	1.88E+10	

[1] Percent of limit is on Table 2, Salem Generating Station Unit 2 Dose Summary, 2025

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 20, Continuous Mode Liquid Effluents (SGS Unit 2), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Tritium						
H-3	Ci	N/D	N/D	2.88E-02	4.00E-02	6.88E-02
Fission & Activation Products						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Entrained Gases						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Gross Alpha						
Gross Alpha	Ci	N/D	N/D	N/D	N/D	N/D

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 21, Batch Mode Liquid Effluents (SGS Unit 2), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Tritium						
H-3	Ci	5.50E+02	7.66E+01	6.06E+01	1.69E+02	8.56E+02
Fission & Activation Products						
Cr-51	Ci	N/D	1.22E-04	N/D	N/D	1.22E-04
Mn-54	Ci	N/D	N/D	N/D	3.89E-05	3.89E-05
Fe-55	Ci	N/D	N/D	N/D	1.02E-03	1.02E-03
Fe-59	Ci	N/D	1.73E-05	N/D	N/D	1.73E-05
Co-58	Ci	1.99E-04	2.21E-03	1.27E-03	1.28E-03	4.95E-03
Co-60	Ci	6.41E-04	4.08E-04	2.51E-04	1.50E-03	2.80E-03
Zr-95	Ci	N/D	9.24E-06	N/D	N/D	9.24E-06
Nb-95	Ci	1.02E-05	3.87E-05	N/D	6.49E-06	5.54E-05
Ag-110m	Ci	N/D	2.21E-05	N/D	N/D	2.21E-05
Sb-124	Ci	8.07E-06	N/D	N/D	N/D	8.07E-06
Sb-125	Ci	1.79E-04	6.55E-05	1.56E-04	1.59E-03	1.99E-03
Cs-137	Ci	N/D	1.75E-05	N/D	N/D	1.75E-05
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	1.04E-03	2.91E-03	1.67E-03	5.43E-03	1.11E-02
Entrained Gases						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Gross Alpha						
Gross Alpha	Ci	N/D	N/D	N/D	N/D	N/D

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

2.3 Hope Creek Unit 1

Table 22, Liquid Effluents – Summation of All Releases (HGS Unit 1), 2025 [1]

A. Fission & Activation Products	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Est. Total Error %
1. Total Release	Ci	2.96E-04	3.79E-04	3.98E-03	2.21E-04	4.87E-03	2.70E+01
2. Average diluted concentration	μCi/mL	5.20E-11	5.93E-11	5.90E-10	3.86E-11	1.98E-10	
B. Tritium							
1. Total Release	Ci	2.03E+00	3.04E+00	6.20E+00	8.61E+00	1.99E+01	2.70E+01
2. Average diluted concentration	μCi/mL	3.57E-07	4.76E-07	9.20E-07	1.50E-06	8.10E-07	
C. Dissolved & Entrained Gases							
1. Total Release	Ci	3.69E-05	N/D	3.98E-05	9.83E-07	7.77E-05	2.70E+01
2. Average diluted concentration	μCi/mL	6.49E-12	N/A	5.91E-12	1.72E-13	3.16E-12	
D. Gross Alpha Activity							
1. Total Release	Ci	N/D	N/D	N/D	N/D	N/D	2.70E+01
2. Average diluted concentration	μCi/mL	N/A	N/A	N/A	N/A	N/A	
E. Volume of Waste Released (prior to dilution)	Liters	1.79E+06	3.52E+06	6.70E+06	4.14E+06	1.61E+07	
F. Volume of Dilution Water Used During Period	Liters	5.68E+09	6.39E+09	6.73E+09	5.73E+09	2.45E+10	

[1] Percent of limit is on Table 3, Hope Creek Generating Station Unit 1 Dose Summary, 2025

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 23, Continuous Mode Liquid Effluents (HGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for year
Tritium						
H-3	Ci	3.75E-03	8.69E-02	1.05E-01	9.12E-01	1.11E+00
Fission & Activation Products						
None Found	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Entrained Gases						
None	Ci	N/D	N/D	N/D	N/D	N/D
	Ci					
	Ci					
Total for Period	Ci	N/D	N/D	N/D	N/D	N/D
Gross Alpha						
Gross Alpha	Ci	N/D	N/D	N/D	N/D	N/D

Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)

Table 24, Batch Mode Liquid Effluents (HGS Unit 1), 2025

Radionuclide Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total for Year
Tritium						
H-3	Ci	2.03E+00	2.96E+00	6.09E+00	7.70E+00	1.88E+01
Fission & Activation Products						
Na-24	Ci	2.60E-05	6.22E-05	5.84E-04	N/D	6.72E-04
Mn-54	Ci	7.43E-05	5.31E-05	9.64E-04	5.33E-06	1.10E-03
Mn-56	Ci	N/D	N/D	8.00E-06	N/D	8.00E-06
Co-58	Ci	3.95E-06	1.73E-05	3.21E-04	2.29E-06	3.44E-04
Co-60	Ci	1.81E-04	2.17E-04	1.59E-03	2.64E-05	2.02E-03
Zn-65	Ci	7.91E-06	2.71E-05	2.47E-04	N/D	2.82E-04
Zn-69m	Ci	N/D	N/D	2.19E-06	N/D	2.19E-06
Sb-122	Ci	N/D	N/D	N/D	1.74E-06	1.74E-06
Sb-124	Ci	N/D	N/D	N/D	1.86E-04	1.86E-04
I-133	Ci	2.44E-06	N/D	N/D	N/D	2.44E-06
I-134	Ci	N/D	N/D	1.08E-05	N/D	1.08E-05
Cs-134	Ci	N/D	N/D	7.07E-06	N/D	7.07E-06
Cs-136	Ci	N/D	N/D	1.16E-06	N/D	1.16E-06
Cs-137	Ci	N/D	2.76E-06	2.40E-04	N/D	2.43E-04
	Ci					
	Ci					
Total for Period	Ci	2.96E-04	3.79E-04	3.98E-03	2.21E-04	4.87E-03
Entrained Gases						
Xe-133	Ci	N/D	N/D	3.48E-05	N/D	3.48E-05
Xe-135	Ci	3.69E-05	N/D	5.03E-06	9.83E-07	4.29E-05
	Ci					
Total for Period	Ci	3.69E-05	N/D	3.98E-05	9.83E-07	7.77E-05
Gross Alpha						
Gross Alpha	Ci	N/D	N/D	N/D	N/D	N/D

Attachment 2, Solid Waste Information

Attachment 2, Solid Waste Information

3.0 SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

During Period From: 01/01/2025 to 12/31/2025

Table 25, Resins, Filters, and Evaporator Bottoms Summary for the Salem Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	1.01E+03	2.85E+01	7.71E+00
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	1.01E+03	2.85E+01	7.71E+00

Major Nuclides for the Above Table:
H-3, C-14, K-40, Cr-51, Mn-54, Fe-55, Co-58, Co-60, Ni-63, Zr-95, Nb-95, Tc-99, Sb-125, I-129, Cs-137, Ce-144

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
H-3	35.48%	2.72E+00
C-14	1.48%	1.14E-01
Fe-55	6.89%	5.29E-01
Co-58	14.07%	1.08E+00
Co-60	14.56%	1.12E+00
Ni-63	15.72%	1.21E+00
Zr-95	1.38%	1.06E-01
Nb-95	1.60%	1.23E-01
Sb-125	2.88%	2.21E-01
Cs-137	1.09%	8.36E-02
Ce-144	2.44%	1.87E-01

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Attachment 2, Solid Waste Information

Table 25, Resins, Filters, and Evaporator Bottoms Summary for the Salem Site (continued)

Total Combined		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
H-3	35.48%	2.72E+00
C-14	1.48%	1.14E-01
Fe-55	6.89%	5.29E-01
Co-58	14.07%	1.08E+00
Co-60	14.56%	1.12E+00
Ni-63	15.72%	1.21E+00
Zr-95	1.38%	1.06E-01
Nb-95	1.60%	1.23E-01
Sb-125	2.88%	2.21E-01
Cs-137	1.09%	8.36E-02
Ce-144	2.44%	1.87E-01

Attachment 2, Solid Waste Information

Table 26, Dry Active Waste (DAW) Summary for the Salem Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	1.01E+04	2.86E+02	7.80E+00
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	1.01E+04	2.86E+02	7.80E+00

Major Nuclides for Above Table:
H-3, C-14, Cr-51, Fe-55, Co-58, Co-60, Ni-63, Zr-95, Nb-95, Tc-99, I-129, Cs-137, Ce-144

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Cr-51	2.75%	2.14E-01
Fe-55	30.05%	2.34E+00
Co-58	27.99%	2.18E+00
Co-60	23.10%	1.80E+00
Ni-63	12.07%	9.42E-01
Nb-95	1.33%	1.04E-01

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Total Combined — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Cr-51	2.75%	2.14E-01
Fe-55	30.05%	2.34E+00
Co-58	27.99%	2.18E+00
Co-60	23.10%	1.80E+00
Ni-63	12.07%	9.42E-01
Nb-95	1.33%	1.04E-01

Attachment 2, Solid Waste Information

Table 27, Irradiated Components Summary for the Salem Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	0.00E+00	0.00E+00	0.00E+00
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	0.00E+00	0.00E+00	0.00E+00

Major Nuclides for Above Table:
None

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Total Combined — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Attachment 2, Solid Waste Information

Table 28, Other Waste Summary for the Salem Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	0.00E+00	0.00E+00	0.00E+00
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	0.00E+00	0.00E+00	0.00E+00

Major Nuclides for Above Table:
None

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Total Combined — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Attachment 2, Solid Waste Information

Table 29, Sum of All Low-Level Waste Shipped from the Salem Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	1.11E+04	3.14E+02	1.55E+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	1.11E+04	3.14E+02	1.55E+01

Major Nuclides for Above Table: H-3, C-14, K-40, Cr-51, Mn-54, Fe-55, Co-58, Co-60, Ni-63, Zr-95, Nb-95, Tc-99, Sb-125, I-129, Cs-137, Ce-144

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
H-3	17.59%	2.72E+00
Cr-51	1.85%	2.86E-01
Fe-55	18.57%	2.87E+00
Co-58	21.09%	3.26E+00
Co-60	18.87%	2.92E+00
Ni-63	13.88%	2.15E+00
Nb-95	1.47%	2.27E-01
Sb-125	1.43%	2.22E-01
Ce-144	1.52%	2.35E-01

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Total Combined — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
H-3	17.59%	2.72E+00
Cr-51	1.85%	2.86E-01
Fe-55	18.57%	2.87E+00
Co-58	21.09%	3.26E+00
Co-60	18.87%	2.92E+00
Ni-63	13.88%	2.15E+00
Nb-95	1.47%	2.27E-01
Sb-125	1.43%	2.22E-01
Ce-144	1.52%	2.35E-01

Attachment 2, Solid Waste Information

Table 30, Resins, Filters, and Evaporator Bottoms Summary for the Hope Creek Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	1.59E+03	4.51E+01	1.27E+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	1.59E+03	4.51E+01	1.27E+01

Major Nuclides for Above Table:
H-3, C-14, Mn-54, Co-58, Co-60, Ni-63, Zn-65, Sr-90, Tc-99, I-129, Cs-137, Pu-238, Cm-243

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Mn-54	26.07%	3.30E+00
Co-58	2.79%	3.53E-01
Co-60	59.02%	7.47E+00
Zn-65	9.23%	1.17E+00
Cs-137	1.93%	2.44E-01

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Total Combined — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Mn-54	26.07%	3.30E+00
Co-58	2.79%	3.53E-01
Co-60	59.02%	7.47E+00
Zn-65	9.23%	1.17E+00
Cs-137	1.93%	2.44E-01

Attachment 2, Solid Waste Information

Table 31, Dry Active Waste (DAW) Summary for the Hope Creek Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	1.95E+02	5.52E+00	1.37E+00
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	1.95E+02	5.52E+00	1.37E+00

Major Nuclides for Above Table:
H-3, C-14, Mn-54, Fe-55, Co-60, Ni-63, Tc-99, I-129, Cs-137

Waste Class A		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
Mn-54	10.27%	1.41E-01
Fe-55	19.08%	2.61E-01
Co-60	65.53%	8.98E-01
Ni-63	4.02%	5.51E-02

Waste Class B		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Total Combined		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
Mn-54	10.27%	1.41E-01
Fe-55	19.08%	2.61E-01
Co-60	65.53%	8.98E-01
Ni-63	4.02%	5.51E-02

Attachment 2, Solid Waste Information

Table 32, Irradiated Components Summary for the Hope Creek Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	0.00E+00	0.00E+00	0.00E+00
B	0.00E+00	0.00E+00	0.00E+00
C	9.86E+00	2.79E-01	1.28E+04
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	9.86E+00	2.79E-01	1.28E+04

Major Nuclides for Above Table:
H-3, C-14, Cr-51, Mn-54, Fe-55, Fe-59, Co-58, Co-60, Ni-59, Ni-63, Zn-65, Sr-90, Nb-94, Tc-99, I-129, Cs-137, Hf-181, Ta-182, U-235, Pu-238, Pu-239, Pu-240, Pu-241, Pu-242, Am-241, Cm-242, Cm-243, Cm-244

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Mn-54	3.78%	4.84E+02
Fe-55	61.71%	7.90E+03
Co-60	21.89%	2.80E+03
Ni-63	4.71%	6.03E+02
Ta-182	6.17%	7.89E+02

Total Combined — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Mn-54	3.78%	4.84E+02
Fe-55	61.71%	7.90E+03
Co-60	21.89%	2.80E+03
Ni-63	4.71%	6.03E+02
Ta-182	6.17%	7.89E+02

Attachment 2, Solid Waste Information

Table 33, Other Waste Summary for the Hope Creek Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	1.06E+03	2.99E+01	2.06E-03
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	1.06E+03	2.99E+01	2.06E-03

Major Nuclides for Above Table: None
H-3, C-14, Mn-54, Fe-55, Co-60, Ni-63, Tc-99, I-129, Cs-137

Waste Class A		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
Mn-54	10.42%	2.15E-04
Fe-55	19.09%	3.94E-04
Co-60	65.38%	1.35E-03
Ni-63	4%	8.26E-05

Waste Class B		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Total Combined		**Percent Abundance > 1.0%**
Nuclide Name	Percent Abundance	Curies
Mn-54	10.42%	2.15E-04
Fe-55	19.09%	3.94E-04
Co-60	65.38%	1.35E-03
Ni-63	4%	8.26E-05

Attachment 2, Solid Waste Information

Table 34, Sum of All Low-Level Waste Shipped from the Hope Creek Site

Waste Class	Volume ft^3	Volume m^3	Curies Shipped
A	2.85E+03	8.06E+01	1.41E+01
B	0.00E+00	0.00E+00	0.00E+00
C	9.86E+00	2.79E-01	1.28E+04
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	2.85E+03	8.08E+01	1.28E+04

Major Nuclides for Above
H-3, C-14, Cr-51, Mn-54, Fe-55, Fe-59, Co-58, Co-60, Ni-59, Ni-63, Zn-65, Sr-90, Nb-94, Tc-99, I-129, Cs-137, Hf-181, Ta-182, U-235, Pu-238, Pu-239, Pu-240, Pu-241, Pu-242, Am-241, Cm-242, Cm-243, Cm-244

Waste Class A — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Mn-54	24.53%	3.44E+00
Fe-55	1.98%	2.78E-01
Co-58	2.51%	3.53E-01
Co-60	59.66%	8.37E+00
Zn-65	8.33%	1.17E+00
Cs-137	1.77%	2.49E-01

Waste Class B — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Class C — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Mn-54	3.78%	4.84E+02
Fe-55	61.71%	7.90E+03
Co-60	21.89%	2.80E+03
Ni-63	4.71%	6.03E+02
Ta-182	6.17%	7.89E+02

Total Combined — **Percent Abundance > 1.0%**

Nuclide Name	Percent Abundance	Curies
Mn-54	3.80%	4.87E+02
Fe-55	61.65%	7.90E+03
Co-60	21.94%	2.81E+03
Ni-63	4.70%	6.03E+02
Ta-182	6.16%	7.89E+02

Attachment 2, Solid Waste Information

4.0 SOLID WASTE DISPOSITION

Table 35, Solid Waste Shipped from the Salem Site

Number of Shipments	Mode of Transportation	Destination
7	Hittman Transport Services Inc	Barnwell Disposal Facility Operated by Chem-Nuclear Systems, Inc.
4	Interstate Ventures	UniTech Processing Facility 2323 Zirconium Road
1	Landstar for Unitech Services	UniTech Processing Facility 2323 Zirconium Road
12	Total	

Table 36, Solid Waste Shipped from the Hope Creek Site

Number of Shipments	Mode of Transportation	Destination
2	Hittman Transport Services, Inc.	Energy Solutions 1790 Dock Street
14	Hittman Transport Services, Inc.	Energy Solutions BDF Barnwell Disposal Facility
1	Hittman Transport Services, Inc.	Energy Solutions, BDF Barnwell Processing Facility
17	Total	

Attachment 3, Summary of ODCM Changes

Attachment 3, Summary of ODCM Changes

1.0 Salem REC ODCM

Item No.	Rev. 29 Page No.	Rev. 30 Page No.	Description of Change	Type of Change
1.	1	1	Removed unnecessary references from the Hope Creek technical specifications and added additional regulatory guides, CFRs, and NUREG references that are applicable to this ODCM. Reason: Clarifies that only the Salem technical specifications apply to the SA ODCM and that the Hope Creek technical specifications do not apply.	Editorial
2.	5	5	Revised definition of Member(s) of the Public to match the definition in 10 CFR 20: "Member of the public means any individual except when that individual is receiving an occupational dose." Reason: This definition is in alignment with the definitions used for the tech specs in support of the Wind Farm Project.	Editorial
3.	6	6	Revised definition of Site Boundary to match the definition in 10 CFR 20: "Site boundary means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee. (10 CFR 20) (See Figure 1.1) Reason: This definition is in alignment with the definitions used for the tech specs in support of the Wind Farm Project.	Editorial
4.	6	6	Revised definition of Unrestricted Area to match the definition in 10 CFR 20: "Unrestricted area means an area, access to which is neither limited nor controlled by the licensee." (10 CFR 20) (See Figure 1.1) Reason: This definition is in alignment with the definitions used for the tech specs in support of the Wind Farm Project.	Editorial
5.	46	8	Moved Figure 5.1-3 to the end of Section 1 Definitions. Renamed Figure to Figure 1.1 Updated the site map showing the new EAB for the Wind Port project. Reason: Section 5.0 Design Features was eliminated from the ODCM as not needed. That section is in Tech Specs and is overriding. The Figure 5.1-3 name changed to Figure 1.1, because the figure was moved from Section 5 (which is deleted) to Section 1 (Definitions). The land was transferred to the State of New Jersey	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 29 Page No.	Rev. 30 Page No.	Description of Change	Type of Change
6.	12	13, 14	Changed Action 27 paragraph a. from "At least once per **8** hours when the specific activity of the secondary coolant is greater than 0.01 microcuries/gram DOSE EQUIVALENT I-131," To "At least once per **12** hours when the specific activity of the secondary coolant is greater than 0.01 microcuries/gram DOSE EQUIVALENT I-131," Added the following footnote to ACTION 27 "* Permitted draining of steam generators during an outage meets the intent of ACTION 27 to sample when the minimum number of channels are not operable. No additional sampling is required during draining. Permitted draining is covered in 3/4.11.1. Reason: This change aligns with the requirements of NUREG 1301 Action 36. The added footnote provides an exception for taking duplicate samples when in an outage from both the steam generator and radiation monitor when the monitor is out of service due to no flow.	Technical-A
7.	12	13	Changed Action 28 paragraph a. and b.1 from: "a. At least once per **8** hours, local monitor readouts for the affected channels are verified to be below their alarm setpoints, or b. With a Service Water System leak (inside containment) on the Containment Fan Coil Unit associated with the inoperable monitor either: 1. At least once per **8** hours, grab samples are to be collected and analyzed for principal gamma emitters, I-131, and dissolved and entrained gases at the lower limits of detection specified in ODCM CONTROL Table 4.11-1.B, and the ODCM Surveillance Requirement 4.11.1.1.2 is performed," To: "a. At least once per **12** hours, local monitor readouts for the affected channels are verified to be below their alarm setpoints, or b. With a Service Water System leak (inside containment) on the Containment Fan Coil Unit associated with the inoperable monitor either: 1. At least once per **12** hours, grab samples are to be collected and analyzed for principal gamma emitters, I-131, and dissolved and entrained gases at the lower limits of detection specified in ODCM CONTROL Table 4.11-1.B, and the ODCM Surveillance Requirement 4.11.1.1.2 is performed," Reason: This change aligns with the requirements of NUREG 1301 Action 37.	Technical-A
8.	17	19	Changed Action 33 from: "With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per **8** hours and these samples are analyzed for gaseous principal gamma	Technical-A

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 29 Page No.	Rev. 30 Page No.	Description of Change	Type of Change
			emitters at the lower limits of detection required in ODCM CONTROL TABLE 4.11-2.A, B, or C within 24 hours. Otherwise, suspend release of radioactive effluents via this pathway." To: "With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per **12** hours and these samples are analyzed for gaseous principal gamma emitters at the lower limits of detection required in ODCM CONTROL TABLE 4.11-2.A, B, or C within 24 hours. Otherwise, suspend release of radioactive effluents via this pathway." Reason: This change aligns with the requirements of NUREG 1301 Action 47.	
9.	22	24	Deleted the Steam Generator Blowdown from the Continuous Releases of Table 4.11-1 Radioactive Liquid Waste Sampling and Analysis Program. Reason: Through a previous engineering change the piping for discharging continuously from Steam Generator Blowdown lines were capped, which prevents a continuous release from this source. The source water is returned to the condenser and condensate polishers and then returned to the Steam Generators. During an outage when the Steam Generators are laid up, the water is discharged after sampling as a batch release.	Editorial
10.	23	25	Corrected typo. The value of 3.77E4 disintegrations per second should be 3.70E4. This value is the result of dividing 2.22E6 disintegrations per minute divided by 60 sec/1 min	Editorial
11.	23, 25, 28-32, 47	23, 27-29, 32-35	Updated reference to Figure 5.1-3 to Figure 1.1 Reason: Figure revised, moved to section 1 and renamed Figure 1.1	Editorial
12.	34 - 36	36	Moved the following Controls to one page. Control 3.12.1 Monitoring Program; Control 3.12.2 Land Use Census; Control 3.12.3 Interlaboratory Comparison Program. Changed the following wording "Salem and Hope Creek Generating Stations Common Radiological Environmental Monitoring Program" to: PSEG Nuclear Common REMP ODCM. Reason: Moving the three controls that each state that they have been moved to the PSEG Nuclear Common REMP ODCM saved space in the document	Editorial
13.	45-46	45	Deleted Section 5.0 Design Features Reason: The figure showing the unrestrictive areas and site boundary was moved to Section 1.0 Definitions.	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 29 Page No.	Rev. 30 Page No.	Description of Change	Type of Change
14.	56	54	Section 1.5 Secondary Side Radioactive Liquid Effluents and Dose Calculations during Primary to Secondary Leakage: Changed the following wording: • Potential releases are controlled/monitored by the Steam Generator Blowdown monitors (R19) and the Chemical Waste Basin monitor (R37). • Any potentially significant releases will be via the Chemical Waste Basin with the major source of activity being the Steam Generator Blowdown. To • Potential releases are monitored by the Steam Generator Blowdown monitors (R19) and the Chemical Waste Basin monitor (R37). • Any potentially significant releases will be via the Chemical Waste Basin with the major source of activity being the Regen Waste Tank. Reason: The monitors only monitor radiological activity and do not have an automatic trip function. The Steam Generator Blowdown lines are capped, and processing is through the condenser, condensate polishers to the regen waste tank.	Editorial
15.	59, 61, 62	57, 59, 61	Revised table number Table 2-1 to Table 2-1.1 to reflect that another table was added. Reason: Editorial change.	Editorial
16.	60	58	Part II Section 2.2.2 - Revised the nuclides used in the calculation of the default setpoints for radiation monitors R41 and 12A for Units 1 and Units 2. Nuclides and Activities used for setpoints were placed in a new Table 2-1.2. Reason: The original analysis used only the nuclides that were equal to higher than 1% of the mix, which included the nuclides of Xe-133 95%), Xe-135 (2%), Xe-133m (1%), Kr-88 (1%), and Kr-85 (1%). However, it is more appropriate to use all nuclides present per the ANSI N237-1976/ANS-18.1 Table 6. Using all nuclides for the setpoint matches the same methodology used in the Hope Creek ODCM.	Editorial
17.	69-70	67-68	Updated Figure 1-1 Liquid Release Flow Path Unit 1 and Figure 1-2 Liquid Release Flow Path Unit 2 to add the Regeneration Waste Tank before release to the Non-Rad discharge. Reason: Editorial update	Editorial
18.	74	72	Updated Table 1-1.3 Batch and Continuous Liquid Release Sources to remove the Steam Generator Blowdown as a continuous release sources.	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 29 Page No.	Rev. 30 Page No.	Description of Change	Type of Change
			Reason: This change supports the change provided in item 8 on page 24 of the ODCM	
19.	75-76	73-74	Added “Adult” to Table 1-2 Site Related Ingestion Dose Commitment Factor, Aio (Fish And Invertebrate Consumption) Reason: Clarifies what age group these dose factors are for.	Editorial
20.	N/A	75-78	Added Tables 1-3 and 1-4 Site Related Teenager And Child Ingestion Dose Commitment Factor, Aio (Fish And Invertebrate Consumption) Reason: This change updates the ODCM to match how the effluent tracking software is calculating dose to all three age groups and picks the age group with the highest dose.	Editorial
21.	77	79	Renumbered Table 1-3 Bioaccumulation Factors to Table 1-5 Reason: This change reflects the addition of two new tables to the ODCM.	Editorial
22.	84	82-83	Renumbered Table 2-1 to 2-1.1 and added a new Table 2-1.2 ANSI N-237 Table 6 Expected Noble Gas Concentration Levels ($\mu ci/cm^3$) Used for Default Setpoint Calculation Reason: Addition of Table 2-1.2 simplifies the calculation of setpoints instead of looking up the values in the ANSI N-237	Editorial
23.	114	117	Updated Table C-1 Effective Dose Factors Noble Gas with all nuclides found in ANSI N-237 which were added to Table 2-1.2	Editorial

Attachment 3, Summary of ODCM Changes

2.0 Hope Creek REC ODCM

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
NA	Numerous throughout	Revised to include Improved Technical Specification (ITS) references, using dual-annotations {CTS:….} and {ITS: ….} to indicate the differences throughout the procedure.	Editorial-ITS
NA	Numerous throughout	Correct misspelling errors.	Editorial
1.	1	Removed unnecessary references from the Salem tech specification and added additional regulatory guides, CFRs, and NUREGs that are applicable to this ODCM. Justification: Clarifies that only the Hope Creek technical specifications apply to the HC ODCM and that the Salem technical specifications do not apply.	Editorial
2.	1, 2, 6, 13, 19, 24, 28, 29, 32, 33, 34, 35, 36, 38	Changed Hope Creek Radiological Effluent Controls (REC) from CTS: 6.8.4.g to ITS 5.5.3. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS modeling NUREG 1433 Revision 5 as described in LR-N24-0029.	Editorial-ITS
3.	1, 2, 6, 32, 50, 67	Changed Hope Creek Radiological Environmental Monitoring Program (REMP) requirements from CTS 6.9.1.7 to ITS 5.6.2. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS
4.	1, 6	Changed Hope Creek Radiological Environmental Monitoring Program (REMP) requirements from CTS 6.8.4.h to ITS REMP definition. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS modeling NUREG 1433 Revision 5 as described in LR-N24-0029.	Editorial-ITS

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
5.	1, 6	Changed Hope Creek Radiological Environmental Monitoring Program (REMP) requirements from CTS 6.9.1.6 to ITS 5.6.1. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS modeling NUREG 1433 Revision 5 as described in LR-N24-0029.	Editorial-ITS
6.	2	Changed Hope Creek ODCM requirements from CTS 6.14 to ITS 5.5.1. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS modeling NUREG 1433 Revision 5 as described in LR-N24-0029.	Editorial-ITS
7.	5	Added definition of Functional/Functionality for Hope Creek. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS using Operable/Operability definition to refer to TS items only as described in LR-N24-0029.	Editorial-ITS
8.	5	Revised definition of Member(s) of the Public to match the definition in 10 CFR 20: “Member of the public means any individual except when that individual is receiving an occupational dose.” Justification: This definition is in alignment with the definitions used for the tech specs in support of the Wind Port Project.	Editorial
9.	5	Added definition of MODES for Hope Creek. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS
10.	6	Change definition of Operable/Operability for Hope Creek. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
11.	6	Deleted definition of Operational Condition for Hope Creek. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS
12.	6	Revised definition of Rated Thermal Power to include abbreviation. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS
13.	6	Revised definition of Site Boundary to match the definition in 10 CFR 20: “Site boundary means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee. (10 CFR 20) (See Figure 1.1) Justification: This definition is in alignment with the definitions used for the tech specs in support of the Wind Port Project.	Editorial
14.	7	Revised definition of Unrestricted Area to match the definition in 10 CFR 20: “Unrestricted area means an area, access to which is neither limited nor controlled by the licensee.” (10 CFR 20) (See Figure 1.1) Justification: This definition is in alignment with the definitions used for the tech specs in support of the Wind Port Project.	Editorial
15.	8	Changed the definition of “R” in Table 1-1 from 18 months (550 days) to 24 months (730 days). Added new surveillance frequency of “18M” in Table 1-1 “At least once per 18 months (550 days) Justification: This supports the move to a 24 month fuel cycle detailed in 80133658R0 P130R0	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
16.	9	Replaced CTS Table 1.2, “OPERATIONAL CONDITIONS,” with ITS Table 1.2, “MODES,” Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS
17.	10 24, 28, 29, 30, 33, 34, 36, 50	Moved Figure 5.1-1 to the end of Section 1 Definitions. Renamed Figure to Figure 1.1. New map showing by color the Site Boundary, NJWP Parcels, and the Exclusion Areas. Updated document to point to Figure 1.1 Justification: Section 5.0 Design Features was eliminated from the ODCM as not needed. That section is in Tech Specs and is overriding. The Figure 5.1-1 name changed to Figure 1.1, because the figure was moved from Section 5 (which is deleted) to Section 1 (Definitions). The map was updated	Editorial
18.	9, 10, 11, 12	Replaced reference to “OPERATIONAL CONDITIONS,” with “MODES,” and specific OPERATIONAL CONDITION with ITS associated MODE. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS
19.	4, 11, 12, 13, 14, 15, 16, 19, 21, 29, 35, 36, 42, 45, 48	Replaced OPERABLE/OPERABILITY/inoperable with FUNCTIONAL/FUNCTIONALITY/nonfunctional. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS using Operable/Operability definition to refer to TS items only as described in LR-N24-0029.	Editorial-ITS

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
20.	20	Added the following wording to the footnote to TABLE 3.3.7.11-1: RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION At all times “when ventilation is in service”. Justification: This clarifies that if ventilation has been secured, then releases from the North and South vents cannot take place; therefore, compensatory sampling would not be necessary to take place.	Editorial
21.	22	Changed the Calibration Frequency for the 2.e Sampler Flow Rate Monitor from “R” to “18M” in Table 4.3.7.11-2 Justification: This supports the move to a 24 month fuel cycle detailed in 80133658R0 P130R0	Editorial
22.	25	Removed the Weekly Grab Sample for the noble gases from the Turbine Building Circulating Water Dewatering Sump Justification: With modern gamma spectroscopy equipment, meeting the required LLD values for noble gas can be routinely met during the routine Principal Gamma Emitters required LLD requirements	Editorial
23.	27	Deleted the following footnote: ** The grab sample from the Turbine Building Circulating Water Dewatering Sump for dissolved and entrained noble gases is required monthly from the composite sampler. Justification: With the removal of the weekly grab sample requirement for the dissolved and entrained noble gases, the footnote no longer applies. The LLDs for noble gases can be met with the routine weekly composite sample collection.	Editorial
24.	28, 29, 33, 34, 35, 36, 38	Deleted reference to CTS 6.9.2, “Special Reports.” Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029, TS 6.9.2 deleted, reports submitted to NRC in accordance with 10 CFR 50.4.	Editorial-ITS

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
25.	32	Deleted the following lined through words from the last paragraph. Release of tritium ~~and noble gas~~ is based upon average reactor concentrations. The detailed methodology is in Appendix G. Justification: Appendix G was revised to only address tritium from the TLOV system per the engineering calculations.	Editorial
26.	40	Moved the following Controls to one page. Control 3.12.1 Monitoring Program. Control 3.12.2 Land Use Census. Control 3.12.3 Interlaboratory Comparison Program. Changed the following wording “Salem and Hope Creek Generating Stations Common Radiological Environmental Monitoring Program” to: PSEG Nuclear Common REMP ODCM. Justification: Moving the three controls that each state that they have been moved to the PSEG Nuclear Common REMP ODCM saved space in the document	Editorial
27.	39, 49	Added requirement 3/4.11.5, “Outside Temporary Storage Tanks.” Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029, Section 5.5 DOC LA05.	Editorial-ITS
28.	47	Deleted Section 5.0 Design Features Justification: The figure showing the unrestrictive areas and site boundary was updated and moved to Section 1.0 Definitions.	Editorial
29.	50	Revised references to TS Chapter 5.0 to reference Chapter 4.0. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029.	Editorial-ITS

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
30.	50,51,52	Renumbered sections on 6.0 Administrative Controls. 6.9.1.7 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT TO 6.1 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT and 6.15 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT TO 6.2 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT Justification: The annual radioactive effluent release report section number 6.9.1.7 reflected the section of the current technical specification; whereas section number 6.15 is not associated with current or ITS technical specifications.	Editorial
31.	56	Added the following sentence to the last paragraph of section 1.3.2.b “However, if the calculated RE4861 setpoint value is less than 25 percent of the default setpoint in Table 1-1, then Management can decide to make no setpoint changes (See Appendix A for more information). Justification: This allows flexibility for management to determine if a setpoint needs to be changed.	Editorial
32.	56	Revised default MPCe value to 9.84E-06 uCi/ml Justification: Revised to a more conservative MPCe value which will lower the setpoint values.	Technical
33.	57	Insert the word “and/” before “or” in the following “increase CTBD or reduce RR”. Added a 4th step that allow management to determine that a setpoint change is not required based on the post-dilution µCi/ml / MPC ratio value < 1. Justification: The methodology allows both actions to ensure that the default setpoint remains conservative.	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
34.	61, 62	Updated reference to Table 2-1.1 for the values for Ki, Li and Mi. Table 2-1 was named to 2-1.1. and added Table 2-1.2 which contains the noble gas data from Table 5 of ANSI N237-1976/ANS 18.1 Source Term Specifications. Justification: The data in these two tables are used with the data in Table 2-2 to calculate default noble gas radiation monitors setpoints.	Editorial
35.	63	Relocated all µCi/sec values to Table 2-2 after they were determined using the updated X/Q value for site boundary. Justification: Moved these calculated values to a Table 2-2 which prevents an error likely situation that they might be missed if the site boundary X/Q is updated in the future.	Editorial
36.	67	Added the word “Annual” before Radioactive Effluent Release Report and an “A” before (RERR). Justification: This error was missed in the revision 29 process.	Editorial
37.	67	Clarified that Section 3.1 Special Dose Analysis will use the current five-year annual average meteorological data instead of the current year’s annual average meteorology. Justification: This data is less variable than the annual meteorological data. In addition, the current year’s annual average meteorological data is not available until late February or early March of the following year, which delays the necessary dose analyses.	Editorial
38.	68	Deleted Section 4.0 : RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM Justification: This Section has been moved to the PSEG Nuclear Common REMP ODCM in revision 29. This section is no longer needed. ¶	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
39.	69	Updated Figure 1-1 to show correct discharge path of the Condensate Storage Tank to either Equipment Drain Sample Tanks or to the Floor Drain Sample Tanks through the RE4861 radiation Monitor. Justification: Correction to figure to properly reflect discharges from the CST.	Editorial
40.	71	Updated Table 1-1 with revised MPCe value and calculated setpoints for radiation monitors RE4861, RE8817 and RE4557 depending on release source. Added a footnote that setpoints were rounded to one significant digit. Justification: The analysis of MPCe in Appendix A indicates that a liquid effluent setpoint change is required to the default setpoint to maintain conservatism.	Technical
41.	72-73	Added ADULT to Table 1-2 SITE RELATED INGESTION DOSE COMMITMENT FACTOR, Aio (FISH AND INVERTEBRATE CONSUMPTION) Justification: Clarifies what age group these dose factors are for.	Editorial
42.	74-77	Added Tables 1-3 and 1-4 SITE RELATED TEENAGER and CHILD INGESTION DOSE COMMITMENT FACTOR, Aio (FISH AND INVERTEBRATE CONSUMPTION) Justification: This change updates the ODCM to match how the effluent tracking software is calculating dose to all three age groups and picks the age group with the highest dose.	Editorial
43.	78	Renumbered Table 1-3 Bioaccumulation Factors to Table 1-5 Justification: This change reflects the addition of two new tables to the ODCM.	Editorial

Attachment 3, Summary of ODCM Changes

<table>
<tr><th>Item No.</th><th>Rev. 30 Page No.</th><th>Description of Change</th><th>Type of Change</th></tr>
<tr><td>44.</td><td>81</td><td>Updated Dose Factors for Noble Gases to include those in the effluent tracking program and renumbered Table 2-1 to Table 2-1.1.

Justification:
This change aligns the ODCM to the effluent tracking program data files and that another table was added to Table 2-1.</td><td>Editorial</td></tr>
<tr><td>45.</td><td>82</td><td>Added a new Table 2-1.2 that contains the expected source term in steam obtained from Table 5 of ANSI N-237 Table 5. This table uses the Ki values from Table 2-1.1 to obtain the Ci time Ki values used to determine the default noble gas radiation monitor setpoints.</td><td>Editorial</td></tr>
<tr><td>46.</td><td>83</td><td>Updated Table 2-2 to add the distance to Site Boundary in the North sector (0.56 miles N),
Added a section to this table that shows the site reduction factor to achieve the 1500 mrem Iodine & Particulate Dose Rate Limit of 1500 mrem/year of Section 2.3.2.
<table>
<tr><td>1500 mrem/yr Instantaneous Limit from Section 2.3.2</td><td>Calculated</td><td>Default</td><td>Units</td><td rowspan="6">Section 2.3.2 discusses the back calculation of what release rate of iodine and particulates would be needed to approach the 1500 mrem/yr instantaneous dose limit.</td></tr>
<tr><td>Reduction Factor</td><td>Coordinated with SGS</td><td>2</td><td>Unitless</td></tr>
<tr><td>Release Rate</td><td>2.16E+01</td><td>N/A</td><td>µCi/sec</td></tr>
<tr><td>Seconds per 7 days</td><td>N/A</td><td>604,800</td><td>seconds</td></tr>
<tr><td>Total µCi</td><td>1.31E+07</td><td>N/A</td><td>µCi</td></tr>
</table>
Justification:
Previous ODCM revisions used 0.5 miles as Site Boundary and the data from UFSAR Table 2.3-31. With the work being performed for the Wind Port, the correct Site Boundary distance had to be updated. Moving the calculated values in Section 2.3.2 to this table will reduce an error likely situation.</td><td>Editorial</td></tr>
<tr><td>47.</td><td>84</td><td>Updated Table 2-3 for the Site Boundary location at 0.56 miles North Sector.

Justification:
Previous ODCM revisions used 0.5 miles as Site Boundary and the data from UFSAR Table 2.3-31. With the work being performed for the Wind Port, the correct Site Boundary distance had to be updated. Moving the calculated values in Section 2.3.2 to this table will reduce an error likely situation.</td><td>Editorial</td></tr>
</table>

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 30 Page No.	Description of Change	Type of Change
48.	100-107	A complete revision to Appendix A Evaluation of Default MPC Values for Liquid Effluents. Justification: A periodic 3-year review of liquid effluents showed a decline in the number of curies released from Hope Creek has occurred since the MPCe value was changed in revision 29. The use of a more conservative MPCe value (lower) reduces the calculated default setpoints for RE4861, RE8817, and RE4557. The Appendix was revised to add clarity to both the MPC calculation and to the setpoint calculation. Revised to set a default value for RE8817.	Technical
49.	129-132	Revised Appendix G Miscellaneous Tritium Releases – Calculational Methodology to remove noble gas from this appendix. Justification: The calculational methodology that is presented in this appendix was specific to tritium only. Noble gas was never intended to be calculated. This change resolves a typographical error that was entered in revision 29	Editorial
50.	20	Provides a note to state that monitoring of the radioactivity rate of noble gases at the recombiner after-condenser discharge is performed by the Offgas Pre-treatment Rad Monitor. Justification: Changed to align with Hope Creek License Amendment converting to the Improved TS as described in LR-N24-0029, Section 3.7.5 DOC LA01.	Editorial-ITS

Attachment 3, Summary of ODCM Changes

1.0 Common REMP ODCM

Item No.	Rev. 0 page No.	Rev. 1 page No.	Description of Change(s)	Type of Change
1.		Numerous throughout	Revised to include Improved Technical Specification (ITS) references, using dual- annotations {CTS: ….} and {ITS: ….} to indicate the differences throughout the document.	Editorial-ITS
2.	4	4	Added the following 5th bullet to Section A "Because Salem Units 1 and 2 were built and operated prior to the Hope Creek Unit 1 construction and operations, the REMP locations, distances, and sectors are oriented to the midpoint of Salem's two units." Reason: Clarifies that the common REMP is oriented to Salem Units 1 and 2.	Editorial
3.		8	Added new definition for FUNCTIONAL/FUNTIONALITY Justification: This is part of the Improved Technical Specification (ITS)	Editorial-ITS
4.	9	9	Revised definition of Member(s) of the Public to match the definition in 10 CFR 20: "Member of the public means any individual except when that individual is receiving an occupational dose." Reason: This definition is in alignment with the definitions used for the tech specs in support of the Wind Port Project.	Editorial
5.	11	10	Expanded on the Definition of REMP Justification: This is part of the Improved Technical Specification (ITS)	Editorial-ITS
6.	12	11	Revised definition of Site Boundary to match the definition in 10 CFR 20: "Site boundary means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee. (10 CFR 20) (See Figure 1.1-1) Reason: This definition is in alignment with the definitions used for the tech specs in support of the Wind Port Project.	Editorial
7.	12	11	Revised definition of Unrestricted Area to match the definition in 10 CFR 20: "Unrestricted area means an area, access to which is	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 0 page No.	Rev. 1 page No.	Description of Change(s)	Type of Change
			neither limited nor controlled by the licensee." (10 CFR 20) (See Figure 1.1-1) Reason: This definition is in alignment with the definitions used for the tech specs in support of the Wind Port Project.	
8.	12	12	Revised Table 1.1 Surveillance Frequency Notation to remove the following notations: S At least once per 12 hours D At least once per 24 hours R At least once per 18 months (550 days) S/U Prior to each reactor startup P Prior to each radioactive release Z During startup, prior to exceeding 30% of RATED THERMAL POWER, if not performed within the previous 7 days Reason: These notations are not applicable to REMP Activity	Editorial
9.	35	13	Moved Figure 5.1-1 to the end of Section 1 Definitions. Renamed Figure to Figure 1.1-1 and updated Area Plot Plan of Site to remove the wording (Property of the U.S. Government) Reason: Section 5.0 Design Features was eliminated from the ODCM as not needed. That section is in Tech Specs and is overriding. The Figure 5.1-1 name changed to Figure 1.1-1, because the figure was moved from Section 5 (which is deleted) to Section 1 (Definitions). Figure was updated because land was transferred to the State of New Jersey.	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 0 page No.	Rev. 1 page No.	Description of Change(s)	Type of Change
10	22	22	Changed the sampling and analysis frequency Food Products c.2 and c.3 from Monthly to Quarterly. Also, added a note to (see REMP sample discussion in Appendix E. Reason: The Food Products category are not required because milk sampling is being performed per the requirements of NUREG 1301/1302. In addition, the annual Land Use Census has not identified any gardens of > 500 square feet.	Editorial
11	24	24	Revised footnote (10) to address the change from monthly to quarterly for sampling and analysis.	Editorial
12	24	24	Revised footnote (11) to add the following information “municipality are collected monthly”	Editorial
13	24	24	Revised footnote (12) to provide additional information on the size of the onsite gardens.	Editorial
14	33-35	33	Section 5.0 Design Features was eliminated from the ODCM as not needed. That section is in Tech Specs and is overriding. Left a Page with [Intentionally Deleted]	Editorial
15	38	35	Removed the requirement to include in the AREOR a report of when the HC specific activity exceeds the limit in TS section 3.4.5. ITS section 3.4.7 directs all actions and completion times when Dose Equivalent I-131 is > 0.2 uCi/gm.	Editorial
16	54	51	Clarified information on Potable water	Editorial
17	55	52	Clarified that the Broad Leaf Vegetation (FPL) samples are part of the management audit program, because milk sampling is ongoing.	Editorial
18	56	53	Control milk farm 03G1 went out of business and was replaced by 02G3.	Editorial
19	57	54	TLD 01X2 was relocated to a lamp post north of the cooling tower. The coordinates have been updated.	Editorial
20	57	54	TLD 02X4 was relocated to the North side of the access road. The coordinates have been updated.	Editorial
21	57	54	TLD 06X2 was moved from near the heliport pad to a security fence nearby. The coordinates have been updated.	Editorial

Attachment 3, Summary of ODCM Changes

Item No.	Rev. 0 page No.	Rev. 1 page No.	Description of Change(s)	Type of Change
22	57	54	TLD 16X3 was moved to a lamp post. The coordinates have been updated.	Editorial
23	57	54	The description for TLD location 10D1 was clarified. No change to the physical location was made.	Editorial
24	59	56	The description for APT/AIO location 06S1 was clarified. No change to the physical location was made. Added co-located APT/AIO location 05S2. Removed location 15S1 from APT/AIO because it is only a TLD location. APT/AIO location 15S2 is located at TLD location 15S1 and not at TLD location 15S2. Changed the coordinates for APT/AIO location 15S2 to those of TLD location 15S1.	Editorial
25	61	57	Milk Location 13E3 distance of 5.0 miles was changed to 4.9 miles to align with the results of the Land Use Census.	Editorial
26	61	57	Control Milk Location 02G3 located at 11.6 miles from the site in the NE sector replaced Milk location 03G1, which went out of business.	Editorial
27	62	59	Rearranged Table E-2 and added Broad Leaf Vegetation to the table.	Editorial
28	64	61	Updated Figure E-1 to show the correct location for APT/AIO 15S2.	Editorial
29	66	63	Updated Figure E-3 with the replacement milk location.	Editorial

Attachment 4, Meteorological Data

Attachment 4, Meteorological Data

1.0 Meteorological Data Summary

1.1 Joint Frequency Distributions

1. Period of Record: 01/01/2025 – 12/31/2025
2. Elevation:
   a. Tower height (91 m)
   b. Wind Level (10 m)
3. Variable
   a. Delta T: (91-10 m)
   b. Total period of calm hours: 0.0%
   c. Percentage of missing data: 2.1%
   d. JFD Recovery: 97.9%

January – December 2025

Sensor	Number of Missing Hours	Data Recovery (%)
33’ Wind	182	97.9
150’ Wind	181	97.9
197’ Wind*	181	97.9
300’ Wind	181	97.9
Backup Wind	2108	75.7
300’ Temp*	183	97.9
33’ Temp	183	97.9
Dew Point*	189	97.8
150’ – 33’ Delta Temp	2180	75.1
197’ – 33’ Delta Temp*	2118	75.8
300’ – 33’ Delta Temp	192	97.8
33’ Relative Humidity*	181	97.9
300’ Relative Humidity*	181	97.9
Precipitation	181	97.9
Barometric Pressure*	181	97.9
Solar Radiation*	181	97.9

Note:
* Parameters are not subject to the NRC 90% data recovery requirement.

** Not subject to the NRC 90% data recovery requirement if Primary Sensors are available.

Attachment 4, Meteorological Data

4. Stability Class

Table 37, Classification of Atmospheric Stability

Stability Condition	Pasquill Categories	Percentage
Extremely Unstable	A	4.09
Moderately Stable	B	3.94
Slightly Unstable	C	3.53
Neutral	D	42.41
Slightly Stable	E	30.26
Moderately Stable	F	9.43
Extremely Stable	G	6.33

Attachment 4, Meteorological Data

Table 38, 2025 Percentage of Joint Frequency Distribution of Wind Direction and Speed - All Stability Classes

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 – 1.0	1.1 – 1.5	1.6 – 2.0	2.1 – 3.0	3.1 – 4.0	4.1 – 5.0	5.1 – 6.0	6.1 – 8.0	8.1 – 10	> 10.0	Total
(Degrees)	Sect.	0.000	0.023	0.140	0.548	1.411	1.224	0.723	0.571	0.606	0.047	0.000	5.29
348.75 – 11.25	N	0.035	0.082	0.280	0.501	1.644	1.294	0.816	0.490	0.431	0.023	0.000	5.60
11.25 – 33.75	NNE	0.000	0.070	0.338	0.536	1.795	1.294	0.839	0.490	0.338	0.000	0.000	5.70
33.75 – 56.25	NE	0.000	0.058	0.233	0.455	1.632	0.979	0.583	0.221	0.140	0.012	0.000	4.31
56.25 – 78.75	ENE	0.035	0.093	0.396	0.525	1.154	0.921	0.256	0.105	0.035	0.000	0.000	3.52
78.75 – 101.25	E	0.023	0.070	0.315	0.443	0.839	0.898	0.443	0.058	0.047	0.000	0.000	3.14
101.25 – 123.75	ESE	0.000	0.047	0.128	0.152	1.073	1.550	1.259	1.212	1.003	0.350	0.058	6.83
123.75 – 146.25	SE	0.000	0.047	0.070	0.233	1.096	1.364	1.795	1.877	2.565	0.863	0.082	9.99
146.25 – 168.75	SSE	0.000	0.012	0.140	0.361	1.259	0.781	0.921	0.769	0.618	0.210	0.023	5.09
168.75 – 191.25	S	0.000	0.023	0.175	0.676	1.516	1.177	0.979	0.443	0.221	0.012	0.000	5.22
191.25 – 213.75	SSW	0.000	0.082	0.315	0.560	1.830	1.539	0.769	0.303	0.163	0.023	0.012	5.60
213.75 – 236.25	SW	0.000	0.047	0.280	0.501	1.527	1.492	1.224	0.653	0.501	0.000	0.012	6.24
236.25 – 258.75	WSW	0.000	0.082	0.152	0.256	1.107	1.341	1.364	1.282	0.968	0.280	0.023	6.85
258.75 – 281.25	W	0.000	0.047	0.256	0.338	0.921	1.446	1.224	1.282	2.087	0.968	0.245	8.81
281.25 – 303.75	WNW	0.000	0.070	0.198	0.560	1.201	1.247	1.609	1.212	2.763	1.422	0.268	10.55
303.75 – 326.25	NW	0.000	0.047	0.163	0.350	1.329	1.224	1.038	1.084	1.655	0.291	0.070	7.25
326.25 – 348.75	NNW	0.000	0.023	0.140	0.548	1.411	1.224	0.723	0.571	0.606	0.047	0.000	5.29
	Total	0.09	0.90	3.58	6.99	21.33	19.77	15.84	12.05	14.14	4.50	0.79	100.00

MISSING HOURS: 182

JOINT DATA RECOVERY: 97.9%

Attachment 4, Meteorological Data

1.2 2025 Annual Average X/Q and D/Q Values for Each Site

1.2.1 Salem Generating Station

Table 39, 2025 Annual Average Salem Ground Level Release Dispersion (X/Q) and Deposition (D/Q) Factors

SPECIFIC POINTS OF INTEREST						
Location	Direction From Site	Distance (mi)	X/Q (Sec/m^3) No Decay Undepleted	X/Q (Sec/m^3) Decay Undepleted	X/Q (Sec/m^3) Decay Depleted	D/Q ($1/m^2$)
SITE BOUNDARY	S	0.17	9.40E-06	9.40E-06	9.00E-06	5.60E-08
SITE BOUNDARY	SSW	0.13	2.00E-05	2.00E-05	2.00E-05	8.70E-08
SITE BOUNDARY	SW	0.11	2.50E-05	2.50E-05	2.40E-05	1.00E-07
SITE BOUNDARY	WSW	0.11	1.70E-05	1.70E-05	1.60E-05	7.80E-08
SITE BOUNDARY	W	0.12	1.60E-05	1.60E-05	1.50E-05	5.80E-08
SITE BOUNDARY	WNW	0.16	1.00E-05	1.00E-05	9.60E-06	3.60E-08
SITE BOUNDARY	NW	0.28	4.10E-06	4.10E-06	3.90E-06	3.30E-08
SITE BOUNDARY	NNW	0.68	1.20E-06	1.20E-06	1.10E-06	1.20E-08
SITE BOUNDARY	N	0.79	6.10E-07	6.10E-07	5.50E-07	4.70E-09
SITE BOUNDARY	NNE	0.89	6.30E-07	6.30E-07	5.60E-07	3.90E-09
SITE BOUNDARY	NE	1.07	5.80E-07	5.80E-07	5.10E-07	3.10E-09
SITE BOUNDARY	ENE	0.88	7.50E-07	7.50E-07	6.60E-07	4.80E-09
SITE BOUNDARY	E	0.89	6.30E-07	6.30E-07	5.50E-07	5.10E-09
SITE BOUNDARY	ESE	0.24	5.90E-06	5.90E-06	5.60E-06	5.30E-08
SITE BOUNDARY	SE	0.15	1.60E-05	1.60E-05	1.60E-05	1.30E-07
SITE BOUNDARY	SSE	0.15	1.30E-05	1.30E-05	1.20E-05	9.00E-08
NEAREST RES	S	5.22	4.90E-08	4.90E-08	3.60E-08	1.80E-10
NEAREST RES	SSW	3.85	1.00E-07	1.00E-07	8.00E-08	3.30E-10
NEAREST RES	SW	4.29	8.70E-08	8.70E-08	6.70E-08	2.80E-10
NEAREST RES	WSW	4.41	5.60E-08	5.60E-08	4.20E-08	2.00E-10
NEAREST RES	W	3.98	6.90E-08	6.90E-08	5.30E-08	1.90E-10
NEAREST RES	WNW	3.42	8.40E-08	8.40E-08	6.50E-08	2.30E-10
NEAREST RES	NW	3.67	9.10E-08	9.10E-08	7.10E-08	4.40E-10
NEAREST RES	NNW	4.23	8.30E-08	8.30E-08	6.40E-08	5.00E-10
NEAREST RES	N	5.65	3.60E-08	3.60E-08	2.70E-08	1.50E-10
NEAREST RES	NNE	4.97	5.40E-08	5.40E-08	4.00E-08	1.90E-10
NEAREST RES	NE	3.85	9.50E-08	9.50E-08	7.30E-08	3.30E-10
NEAREST RES	ENE	3.85	9.10E-08	9.10E-08	7.10E-08	3.70E-10
NEAREST RES	E	5.28	5.00E-08	5.00E-08	3.70E-08	2.30E-10
NEAREST RES	ESE	5.84	5.20E-08	5.20E-08	3.80E-08	2.40E-10
NEAREST RES	SE	9.44	3.10E-08	3.10E-08	2.10E-08	1.30E-10
NEAREST RES	SSE	9.44	2.40E-08	2.40E-08	1.70E-08	9.00E-11

Attachment 4, Meteorological Data

Table 39, 2025 Annual Average Salem Ground Level Release Dispersion (X/Q) and Deposition (D/Q) Factors

SPECIFIC POINTS OF INTEREST						
Location	Direction From Site	Distance (mi)	X/Q (Sec/m^3) No Decay Undepleted	X/Q (Sec/m^3) Decay Undepleted	X/Q (Sec/m^3) Decay Depleted	D/Q ($1/m^2$)
GARDENS	NNW	0.57	1.50E-06	1.50E-06	1.40E-06	1.60E-08
GARDENS	SE	0.18	1.20E-05	1.20E-05	1.10E-05	9.90E-08
GARDENS	N	0.57	1.00E-06	1.00E-06	9.10E-07	8.10E-09
GARDENS	NW	0.58	1.30E-06	1.30E-06	1.20E-06	1.10E-08
GARDENS	SSW	3.90	1.00E-07	1.00E-07	7.80E-08	3.20E-10
GARDENS	NE	4.90	6.80E-08	6.80E-08	5.10E-08	2.10E-10
GARDENS	ENE	5.00	6.40E-08	6.40E-08	4.70E-08	2.30E-10
GARDENS	NE	5.00	6.60E-08	6.60E-08	4.90E-08	2.10E-10
GARDENS	E	6.00	4.20E-08	4.20E-08	3.00E-08	1.80E-10
GARDENS	ENE	6.00	4.90E-08	4.90E-08	3.60E-08	1.60E-10
GARDENS	ESE	6.30	4.70E-08	4.70E-08	3.40E-08	2.10E-10
GARDENS	NW	7.00	3.80E-08	3.80E-08	2.70E-08	1.40E-10
GARDENS	NNE	7.50	3.00E-08	3.00E-08	2.10E-08	9.40E-11
GARDENS	NW	8.30	3.00E-08	3.00E-08	2.10E-08	1.00E-10
GARDENS	NE	9.30	2.80E-08	2.80E-08	1.90E-08	7.10E-11
GARDENS	N	10.90	1.50E-08	1.50E-08	9.70E-09	5.00E-11
01W4 Parcel C	N	0.63	8.60E-07	8.60E-07	7.80E-07	6.90E-09
02W5	NNE	0.60	1.10E-06	1.10E-06	1.00E-06	7.60E-09
03W2	NE	0.38	2.70E-06	2.70E-06	2.50E-06	1.70E-08
16W4 Parcel A	NNW	0.67	1.20E-06	1.20E-06	1.10E-06	1.20E-08
STP	NNW	0.50	1.90E-06	1.90E-06	1.70E-06	2.00E-08
DAIRY & CATTL	W	4.90	5.20E-08	5.20E-08	3.90E-08	1.30E-10
DAIRY & CATTL	WNW	8.50	2.50E-08	2.50E-08	1.70E-08	4.60E-11
DAIRY & CATTL	NE	11.30	2.10E-08	2.10E-08	1.40E-08	5.20E-11
DAIRY & CATTL	N	11.70	1.30E-08	1.30E-08	8.60E-09	4.40E-11
DAIRY & CATTL	NNE	11.80	1.60E-08	1.60E-08	1.00E-08	4.50E-11
DAIRY & CATTL	NE	4.20	8.40E-08	8.40E-08	6.40E-08	2.80E-10
DAIRY & CATTL	NE	5.80	5.40E-08	5.40E-08	3.90E-08	1.60E-10
DAIRY & CATTL	SSW	8.30	3.60E-08	3.60E-08	2.50E-08	8.60E-11
DAIRY & CATTL	N	11.50	1.40E-08	1.40E-08	8.90E-09	4.60E-11
DAIRY & CATTL	NE	17.70	1.20E-08	1.20E-08	7.00E-09	2.40E-11

Attachment 4, Meteorological Data

1.2.2 Hope Creek Generating Station

Table 40, 2025 Annual Average Hope Creek Ground Level Release Dispersion (X/Q) and Deposition (D/Q) Factors

SPECIFIC POINTS OF INTEREST						
Location	Direction From Site	Distance (mi)	X/Q (Sec/M^3) No Decay Undepleted	X/Q (Sec/m^3) No Decay Undepleted	X/Q (Sec/m^3) No Decay Depleted	D/Q ($1/m^2$)
SITE BOUNDARY	S	0.25	4.40E-06	4.40E-06	4.20E-06	3.00E-08
SITE BOUNDARY	SSW	0.19	9.90E-06	9.90E-06	9.40E-06	4.90E-08
SITE BOUNDARY	SW	0.17	1.20E-05	1.20E-05	1.20E-05	5.80E-08
SITE BOUNDARY	WSW	0.17	8.00E-06	8.00E-06	7.70E-06	4.40E-08
SITE BOUNDARY	W	0.18	7.70E-06	7.70E-06	7.30E-06	3.30E-08
SITE BOUNDARY	WNW	0.22	5.60E-06	5.60E-06	5.30E-06	2.30E-08
SITE BOUNDARY	NW	0.31	3.60E-06	3.60E-06	3.30E-06	2.90E-08
SITE BOUNDARY	NNW	0.55	1.60E-06	1.60E-06	1.40E-06	1.70E-08
SITE BOUNDARY	N	0.56	1.00E-06	1.00E-06	9.30E-07	8.30E-09
SITE BOUNDARY	NNE	0.63	1.00E-06	1.00E-06	9.40E-07	7.00E-09
SITE BOUNDARY	NE	0.74	9.80E-07	9.80E-07	8.80E-07	5.70E-09
SITE BOUNDARY	ENE	0.94	6.70E-07	6.70E-07	5.90E-07	4.30E-09
SITE BOUNDARY	E	0.94	5.80E-07	5.80E-07	5.10E-07	4.70E-09
SITE BOUNDARY	ESE	0.75	9.80E-07	9.80E-07	8.80E-07	8.90E-09
SITE BOUNDARY	SE	0.47	2.30E-06	2.30E-06	2.10E-06	2.30E-08
SITE BOUNDARY	SSE	0.42	2.10E-06	2.10E-06	1.90E-06	1.90E-08
NEAREST RES	S	5.22	4.90E-08	4.90E-08	3.60E-08	1.80E-10
NEAREST RES	SSW	3.85	1.00E-07	1.00E-07	7.90E-08	3.30E-10
NEAREST RES	SW	4.29	8.70E-08	8.70E-08	6.60E-08	2.80E-10
NEAREST RES	WSW	4.41	5.60E-08	5.60E-08	4.20E-08	2.00E-10
NEAREST RES	W	3.98	6.90E-08	6.90E-08	5.30E-08	1.90E-10
NEAREST RES	WNW	3.42	8.30E-08	8.30E-08	6.50E-08	2.30E-10
NEAREST RES	NW	3.67	9.10E-08	9.10E-08	7.10E-08	4.40E-10
NEAREST RES	NNW	4.23	8.30E-08	8.30E-08	6.30E-08	5.00E-10
NEAREST RES	N	5.65	3.60E-08	3.60E-08	2.70E-08	1.50E-10
NEAREST RES	NNE	4.97	5.40E-08	5.40E-08	4.00E-08	1.90E-10
NEAREST RES	NE	3.85	9.50E-08	9.50E-08	7.30E-08	3.30E-10
NEAREST RES	ENE	3.85	9.10E-08	9.10E-08	7.00E-08	3.70E-10
NEAREST RES	E	5.28	5.00E-08	5.00E-08	3.70E-08	2.30E-10

Attachment 4, Meteorological Data

Table 40, 2025 Annual Average Hope Creek Ground Level Release Dispersion (X/Q) and Deposition (D/Q) Factors

NEAREST RES	ESE	5.84	5.20E-08	5.20E-08	3.80E-08	2.40E-10
NEAREST RES	SE	9.44	3.10E-08	3.10E-08	2.10E-08	1.30E-10
NEAREST RES	SSE	9.44	2.40E-08	2.40E-08	1.70E-08	9.00E-11
GARDENS	NNW	0.57	1.50E-06	1.50E-06	1.40E-06	1.60E-08
GARDENS	SE	0.18	1.20E-05	1.20E-05	1.10E-05	9.90E-08
GARDENS	N	0.57	1.00E-06	1.00E-06	9.10E-07	8.10E-09
GARDENS	NW	0.58	1.30E-06	1.30E-06	1.20E-06	1.10E-08
GARDENS	SSW	3.9	1.00E-07	1.00E-07	7.80E-08	3.20E-10
GARDENS	NE	4.9	6.80E-08	6.80E-08	5.10E-08	2.10E-10
GARDENS	ENE	5	6.30E-08	6.30E-08	4.70E-08	2.30E-10
GARDENS	NE	5	6.60E-08	6.60E-08	4.90E-08	2.10E-10
GARDENS	E	6	4.20E-08	4.20E-08	3.00E-08	1.80E-10
GARDENS	ENE	6	4.90E-08	4.90E-08	3.60E-08	1.60E-10
GARDENS	ESE	6.3	4.70E-08	4.70E-08	3.40E-08	2.10E-10
GARDENS	NW	7	3.80E-08	3.80E-08	2.70E-08	1.40E-10
GARDENS	NNE	7.5	3.00E-08	3.00E-08	2.10E-08	9.40E-11
GARDENS	NW	8.3	3.00E-08	3.00E-08	2.10E-08	1.00E-10
GARDENS	NE	9.3	2.80E-08	2.80E-08	1.90E-08	7.10E-11
GARDENS	N	10.9	1.50E-08	1.50E-08	9.60E-09	5.00E-11
03W2	E	0.39	2.20E-06	2.20E-06	2.00E-06	2.00E-08
16W4 Parcel A	NW	0.4	2.30E-06	2.30E-06	2.10E-06	1.90E-08
01W4 Parcel C	NNE	0.39	2.20E-06	2.20E-06	2.00E-06	1.50E-08
02W5	NE	0.39	2.60E-06	2.60E-06	2.40E-06	1.60E-08
STP	NNW	0.35	3.30E-06	3.30E-06	3.10E-06	3.50E-08
DAIRY & CATTL	W	4.9	5.20E-08	5.20E-08	3.90E-08	1.30E-10
DAIRY & CATTL	WNW	8.5	2.50E-08	2.50E-08	1.70E-08	4.60E-11
DAIRY & CATTL	NE	11.3	2.10E-08	2.10E-08	1.40E-08	5.20E-11
DAIRY & CATTL	N	11.7	1.30E-08	1.30E-08	8.60E-09	4.40E-11
DAIRY & CATTL	NNE	11.8	1.60E-08	1.60E-08	1.00E-08	4.50E-11
DAIRY & CATTL	NE	4.2	8.40E-08	8.40E-08	6.40E-08	2.80E-10
DAIRY & CATTL	NE	5.8	5.40E-08	5.40E-08	3.90E-08	1.60E-10
DAIRY & CATTL	SSW	8.3	3.60E-08	3.60E-08	2.50E-08	8.60E-11
DAIRY & CATTL	N	11.5	1.40E-08	1.40E-08	8.90E-09	4.60E-11
DAIRY & CATTL	NE	17.7	1.20E-08	1.20E-08	7.00E-09	2.40E-11

Attachment 4, Meteorological Data

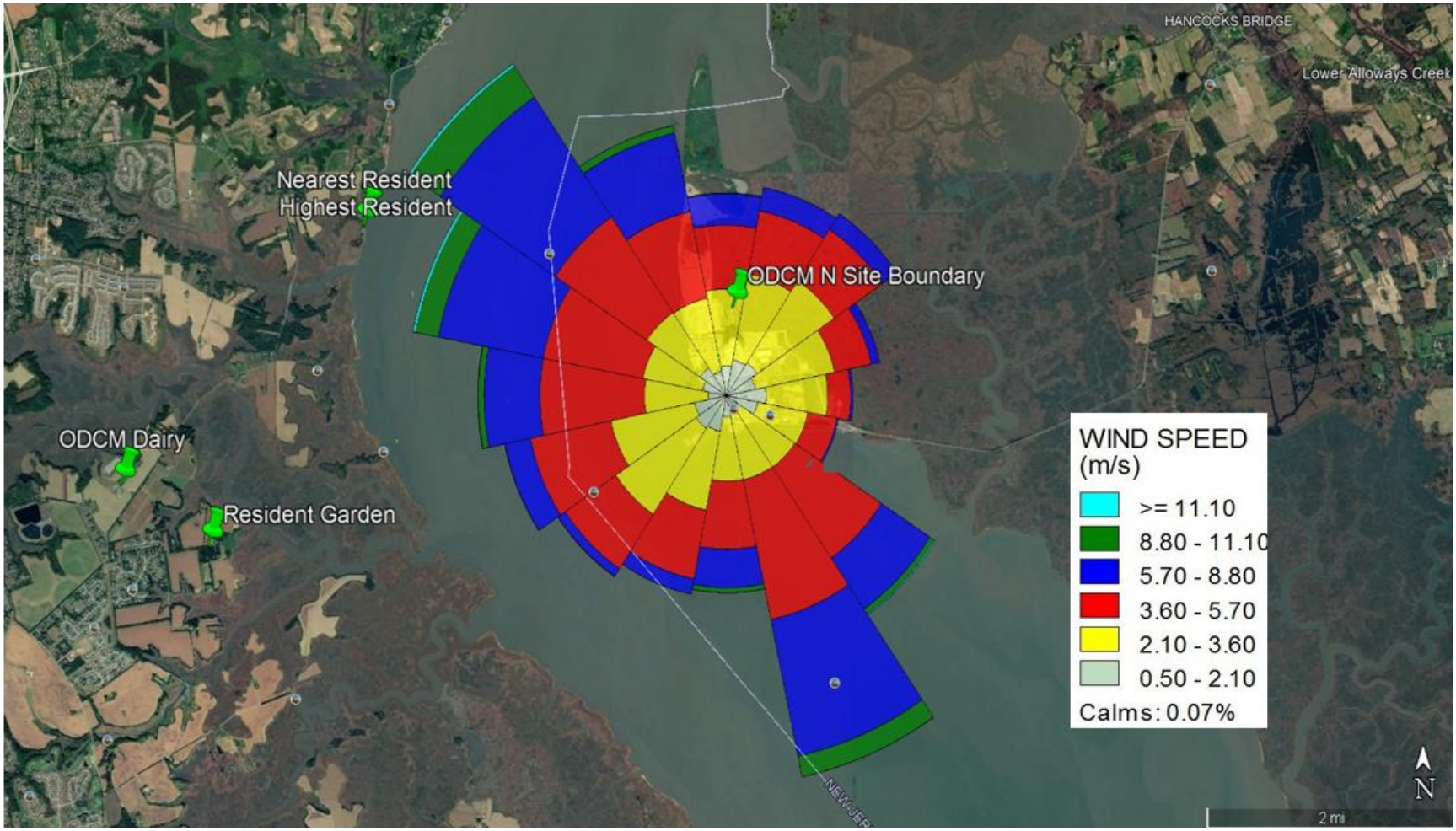

Figure 6, Locations of Dose Calculation Receptors with 2025 Wind Rose Overlay (Winds From)

Attachment 5, Radiological Effluent Trends

Attachment 5, Radiological Effluent Trends

1.0 The following trend graphs display the total curies of liquid and gaseous effluents released for SGS and HCGS from 2013 through 2025.

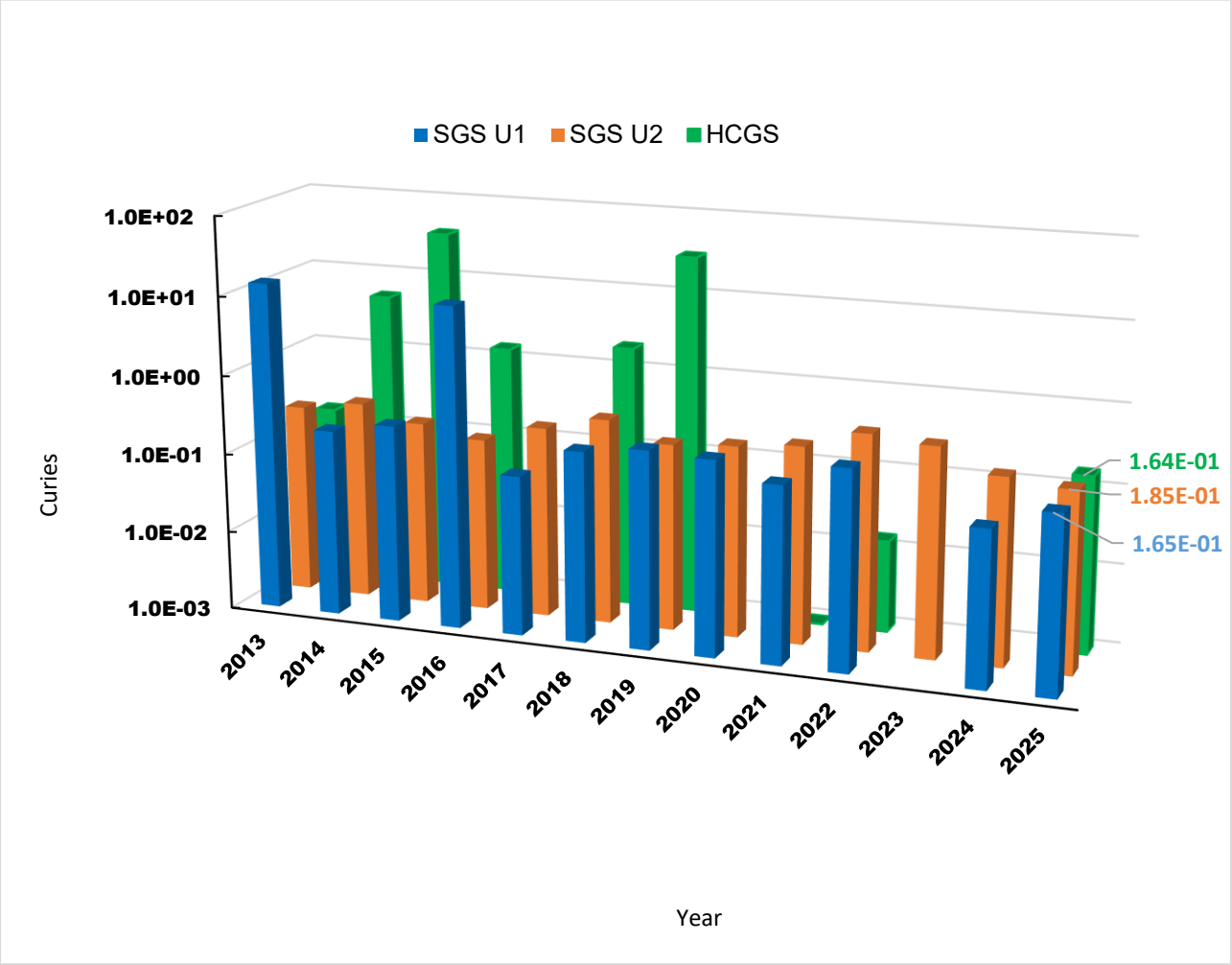

Figure 7, Fission and Activation Gases Released in Gaseous Effluents from Salem Unit 1, Salem Unit 2 and Hope Creek Unit 1, 2013 – 2025

Attachment 5, Radiological Effluent Trends

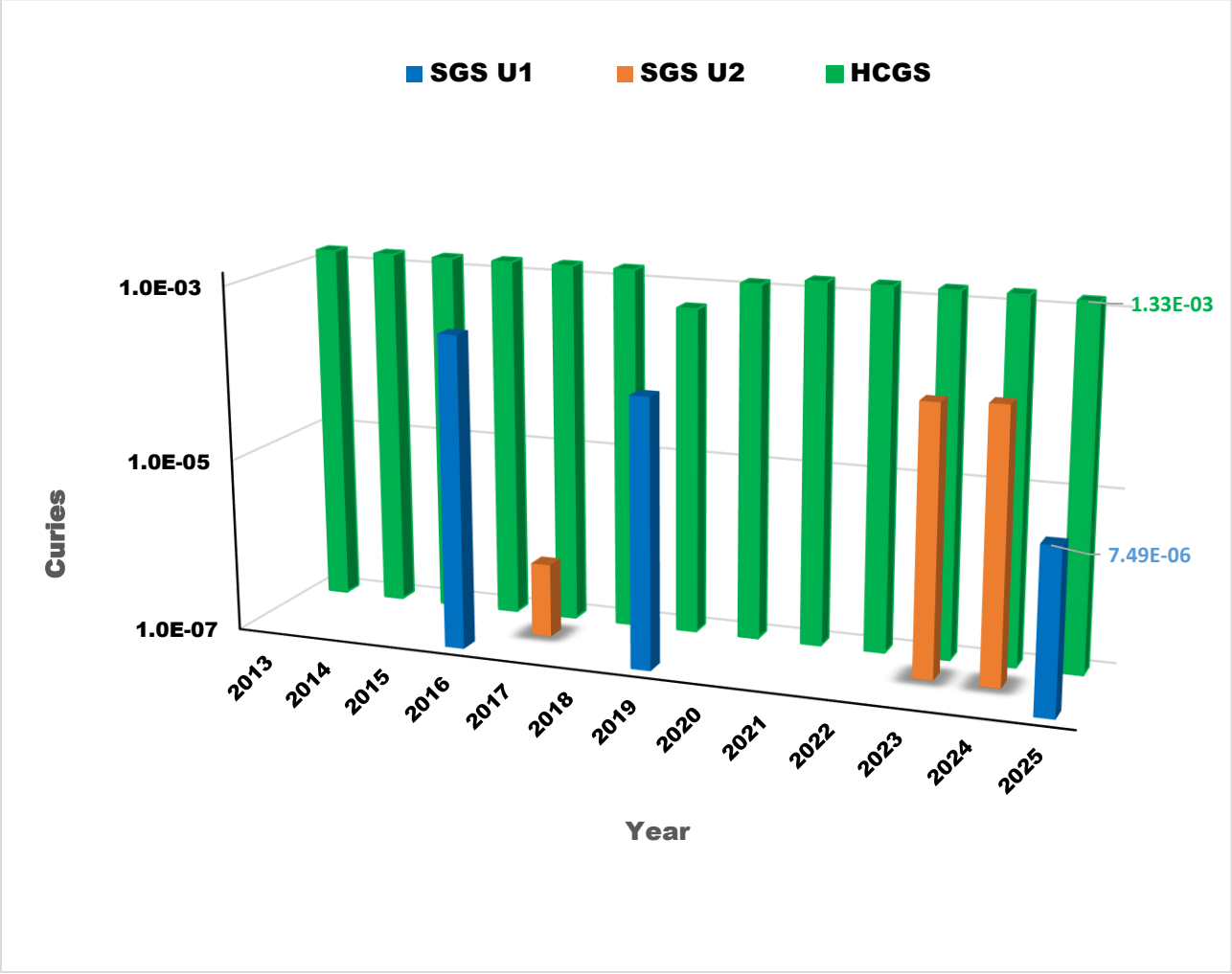

Figure 8, Iodines Released in Gaseous Effluents from Salem Unit 1, Salem Unit 2, and Hope Creek Unit 1, 2013 – 2025

Attachment 5, Radiological Effluent Trends

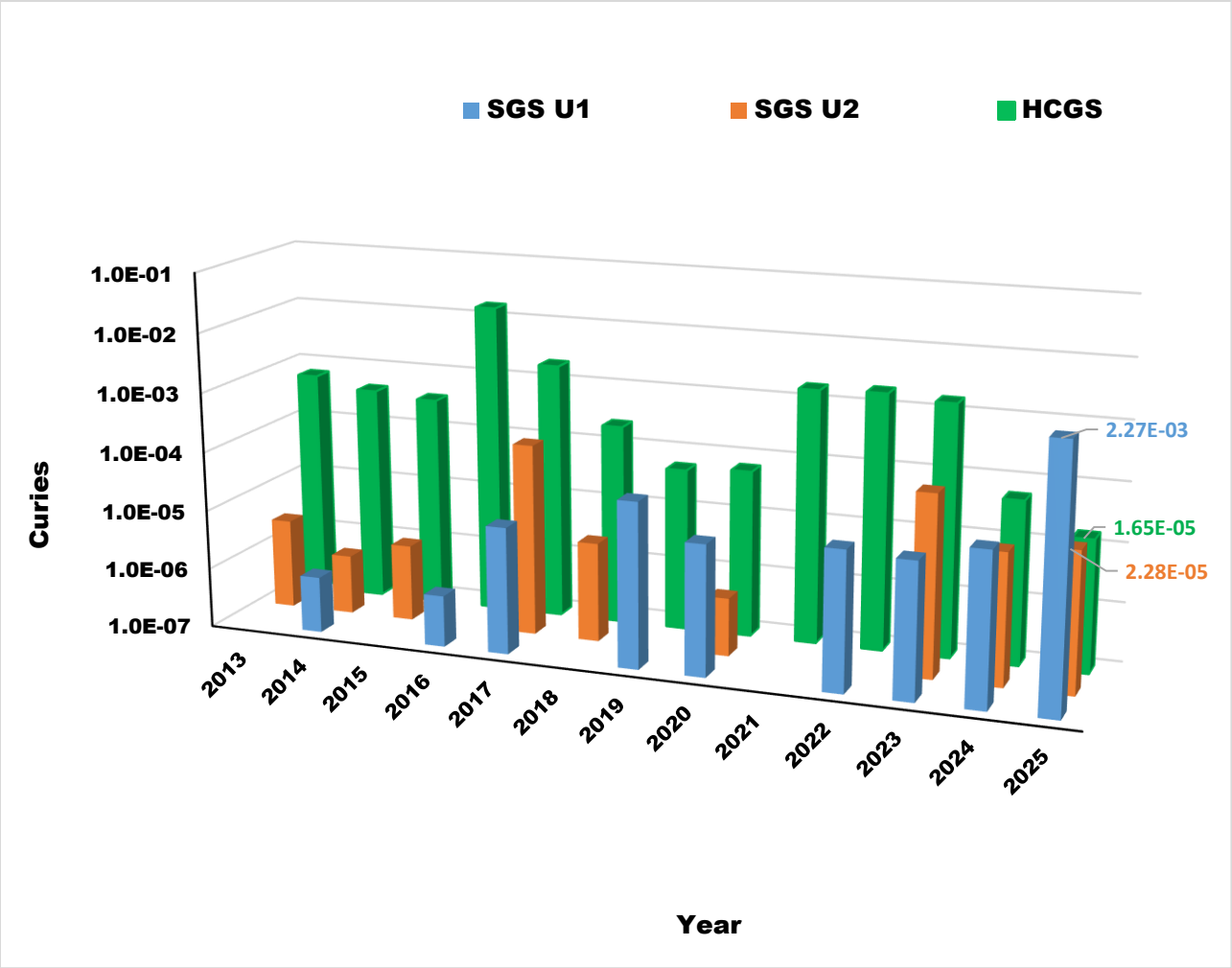

Figure 9, Particulates Released in Gaseous Effluents from Salem Unit 1, Salem Unit 2, and Hope Creek Unit 1, 2013 – 2025

Attachment 5, Radiological Effluent Trends

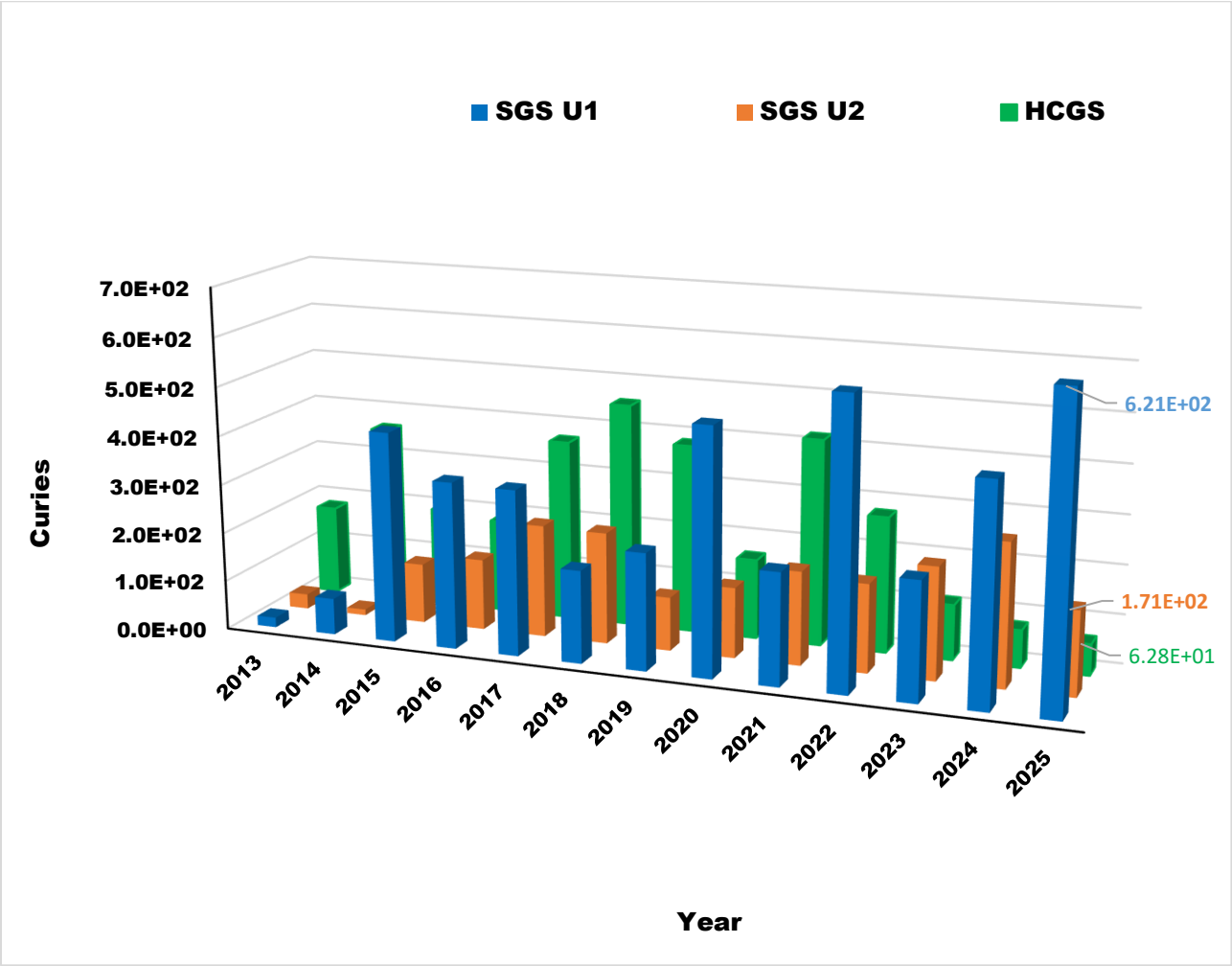

Figure 10, Tritium Released in Gaseous Effluents from Salem Unit 1, Salem Unit 2, and Hope Creek Unit 1, 2013 – 2025

Attachment 5, Radiological Effluent Trends

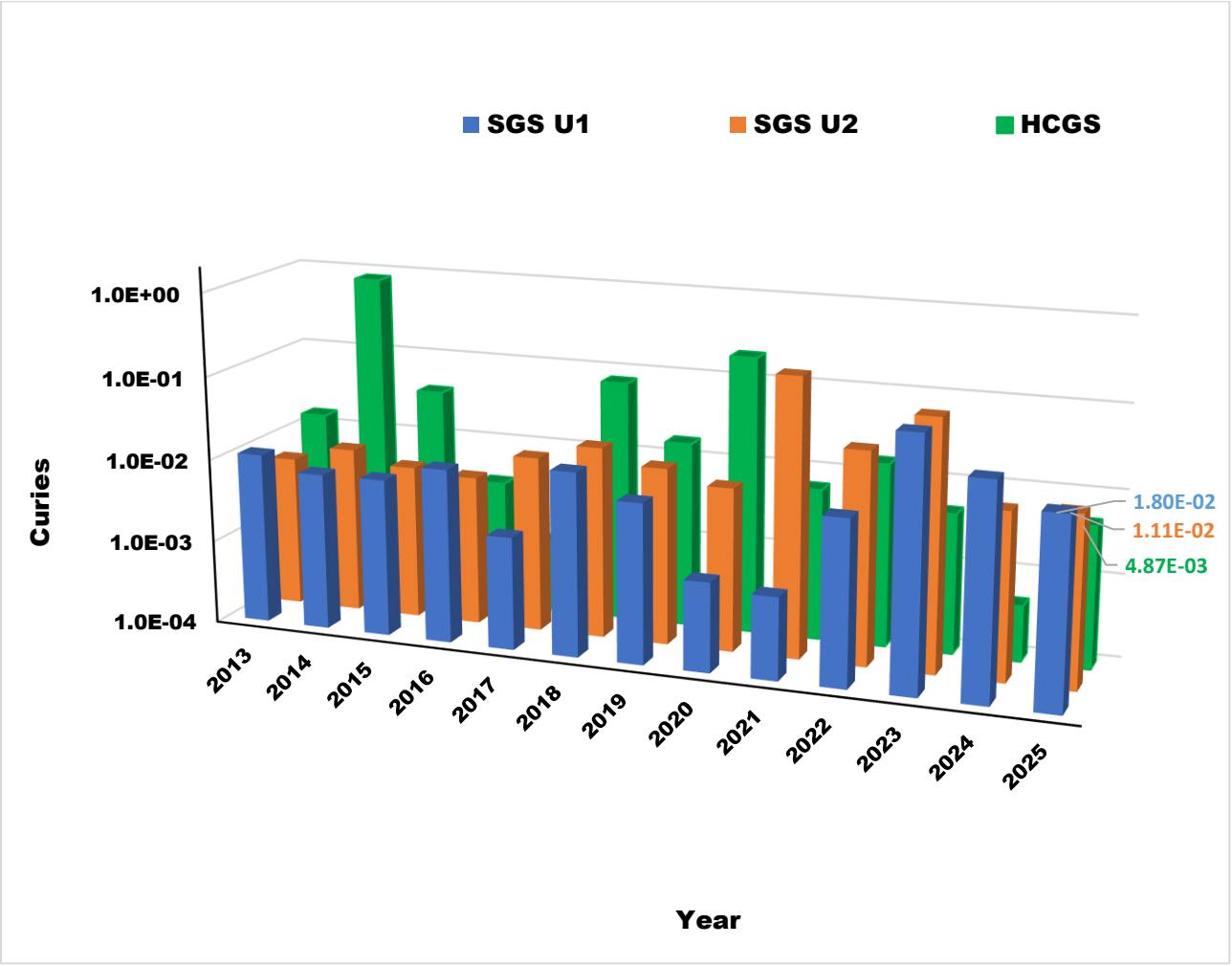

Figure 11, Fission and Activation Products Released in Liquid Effluents, Salem Unit 1, Salem Unit 2, and Hope Creek Unit 1, 2013 – 2025

Attachment 5, Radiological Effluent Trends

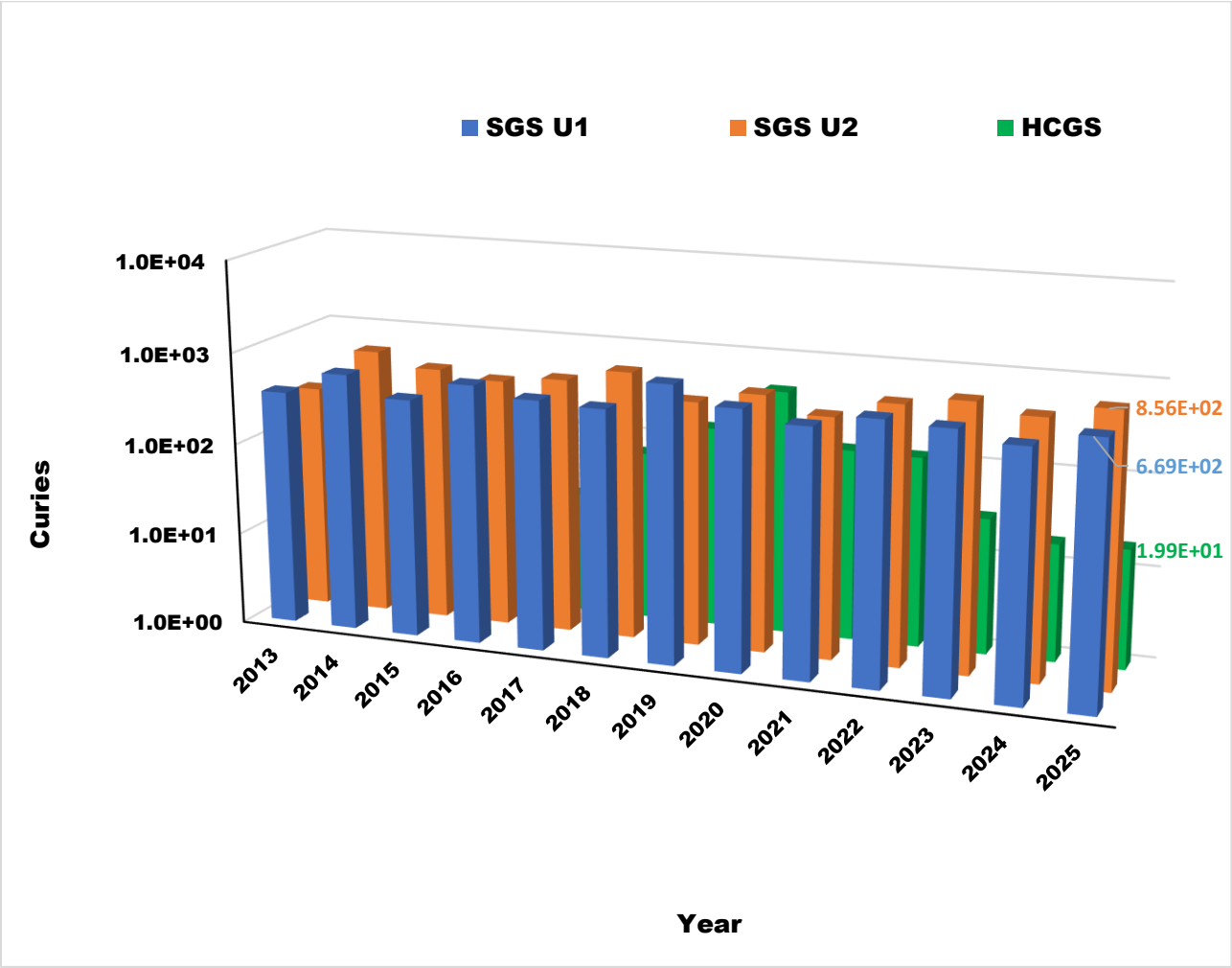

Figure 12, Tritium Released in Liquid Effluents, Salem Unit 1, Salem Unit 2, and Hope Creek Unit 1, 2013 – 2025

Attachment 6, Doses to Onsite Receptors Using NRC Code GASPAR

Attachment 6, Doses to Onsite Receptors Using NRC Code GASPAR

1.0 Doses for the following receptors were compiled from the 2025 gaseous curie releases from Salem Unit 1, Salem Unit 2 and Hope Creek Unit 1 and the 2016 – 2020 five-year meteorological dispersion and deposition data.

Table 41, Highest Potential Onsite Dose Receptors, Distances from Salem, and Hope Creek, and 2016 – 2020 Five Year Annual Average X/Q, and D/Q Values[1]

Location	Plant	Sector	Distance (miles)	Occupancy Factor[2]	X/Q Undecayed / Undepleted (sec/m^3)	X/Q Decayed / Undepleted (sec/m^3)	X/Q Decayed / Depleted (sec/m^3)	Deposition D/Q ($1/m^2$)
Emergency Personnel[3]	HC	E	0.94	0.34	7.80E-07	7.80E-07	6.89E-07	5.59E-09
	SA	E	0.89	0.34	8.45E-07	8.45E-07	7.41E-07	6.24E-09
03W2[4]	HC	E	0.39	0.34	2.86E-06	2.86E-06	2.73E-06	2.47E-08
	SA	NE	0.38	0.34	3.90E-06	3.90E-06	3.51E-06	2.47E-08
16W4 Parcel A[4]	HC	NW	0.40	0.34	4.55E-06	4.55E-06	4.16E-06	3.25E-08
	SA	NNW	0.67	0.34	1.43E-06	1.43E-06	1.30E-06	1.11E-08
01W4 Parcel C[4]	HC	NNE	0.39	0.34	3.12E-06	3.12E-06	2.86E-06	2.21E-08
	SA	N	0.63	0.34	1.43E-06	1.43E-06	1.29E-06	9.75E-09
02W5[4]	HC	NE	0.39	0.34	3.64E-06	3.64E-06	3.38E-06	2.34E-08
	SA	NNE	0.60	0.34	1.69E-06	1.69E-06	1.43E-06	1.08E-08
STP[5]	HC	NNW	0.25	0.34	7.37E-06	7.37E-06	6.98E-06	5.29E-08
	SA	NNW	0.50	0.34	2.34E-06	2.34E-06	2.14E-06	1.79E-08

[1] X/Q and D/Q values have a plus 30% conservative factor added.
[2] Occupancy Factor represents 3000 working hours per year.
[3] Emergency Workers are considered National Guard, Police, and other personnel necessary during an emergency.
[4] Wind Port Locations.
[5] Sewage Treatment Plant Workers.

Attachment 6, Doses to Onsite Receptors Using NRC Code GASPAR

Table 42, Calculated Doses (mrem) to Sewage Treatment Plant (STP) Workers, Emergency Workers (i.e. National Guard, State Police, etc.), Wind Port Workers (03W2, 16W4, 01W4, 02W5) Using a 34 Percent Occupancy Factor from Gaseous Effluents from Salem and Hope Creek and the NRC Dose Code GASPAR, 2025

Receptor – STP Worker – All Units								
ANNUAL BETA AIR DOSE =			6.83E-05	MRAD				
ANNUAL GAMMA AIR DOSE =			1.89E-04	MRAD				
PATHWAY	EFFECTIVE	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	2.02E-04
GROUND	3.86E-04	3.86E-04	3.86E-04	3.86E-04	3.86E-04	3.86E-04	3.86E-04	4.53E-04
INHAL								
ADULT	2.41E-02	2.41E-02	3.26E-02	2.41E-02	2.41E-02	2.44E-02	2.41E-02	1.79E-02
Total	2.46E-02	2.46E-02	3.31E-02	2.46E-02	2.46E-02	2.49E-02	2.46E-02	1.85E-02

Receptor – Emergency Workers – All Units								
ANNUAL BETA AIR DOSE =			1.38E-05	MRAD				
ANNUAL GAMMA AIR DOSE =			3.72E-05	MRAD				
PATHWAY	EFFECTIVE	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	2.47E-05	2.47E-05	2.47E-05	2.47E-05	2.47E-05	2.47E-05	2.47E-05	3.99E-05
GROUND	8.13E-05	8.13E-05	8.13E-05	8.13E-05	8.13E-05	8.13E-05	8.13E-05	9.53E-05
INHAL								
ADULT	6.67E-03	6.68E-03	5.95E-03	6.67E-03	6.67E-03	6.70E-03	6.69E-03	5.56E-03
Total	6.78E-03	6.79E-03	6.06E-03	6.78E-03	6.78E-03	6.81E-03	6.80E-03	5.69E-03

Receptor: 03W2–All Units								
ANNUAL BETA AIR DOSE =			5.92E-05	MRAD				
ANNUAL GAMMA AIR DOSE =			1.60E-04	MRAD				
PATHWAY	EFFECTIVE	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.71E-04
GROUND	3.32E-04	3.32E-04	3.32E-04	3.32E-04	3.32E-04	3.32E-04	3.32E-04	3.89E-04
INHAL								
ADULT	3.01E-02	3.01E-02	2.52E-02	3.01E-02	3.01E-02	3.02E-02	3.02E-02	2.53E-02
Total	3.05E-02	3.05E-02	2.56E-02	3.05E-02	3.05E-02	3.06E-02	3.06E-02	2.59E-02

Attachment 6, Doses to Onsite Receptors Using NRC Code GASPAR

Table 42, Calculated Doses (mrem) to Sewage Treatment Plant (STP) Workers, Emergency Workers (i.e. National Guard, State Police, etc.), Wind Port Workers (03W2, 16W4, 01W4, 02W5) Using a 34 Percent Occupancy Factor from Gaseous Effluents from Salem and Hope Creek and the NRC Dose Code GASPAR, 2025

Receptor: 16W4–All Units								
ANNUAL BETA AIR DOSE =			4.20E-05	MRAD				
ANNUAL GAMMA AIR DOSE =			1.16E-04	MRAD				
PATHWAY	EFFECTIVE	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	7.72E-05	7.72E-05	7.72E-05	7.72E-05	7.72E-05	7.72E-05	7.73E-05	1.24E-04
GROUND	2.38E-04	2.38E-04	2.38E-04	2.38E-04	2.38E-04	2.38E-04	2.38E-04	2.79E-04
INHAL								
ADULT	1.48E-02	1.48E-02	2.01E-02	1.48E-02	1.48E-02	1.49E-02	1.48E-02	1.10E-02
Total	1.51E-02	1.51E-02	2.04E-02	1.51E-02	1.51E-02	1.52E-02	1.51E-02	1.14E-02
Receptor: 01W4–All Units								
ANNUAL BETA AIR DOSE =			3.37E-05	MRAD				
ANNUAL GAMMA AIR DOSE =			9.26E-05	MRAD				
PATHWAY	EFFECTIVE	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.16E-05	9.91E-05
GROUND	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	2.14E-04
INHAL								
ADULT	1.32E-02	1.32E-02	1.56E-02	1.32E-02	1.32E-02	1.33E-02	1.33E-02	1.03E-02
Total	1.35E-02	1.35E-02	1.59E-02	1.35E-02	1.35E-02	1.36E-02	1.35E-02	1.06E-02
Receptor: 02W5–All Units								
ANNUAL BETA AIR DOSE =			3.96E-05	MRAD				
ANNUAL GAMMA AIR DOSE =			1.09E-04	MRAD				
PATHWAY	EFFECTIVE	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	7.22E-05	7.22E-05	7.22E-05	7.22E-05	7.22E-05	7.22E-05	7.22E-05	1.16E-04
GROUND	1.97E-04	1.97E-04	1.97E-04	1.97E-04	1.97E-04	1.97E-04	1.97E-04	2.32E-04
INHAL								
ADULT	1.56E-02	1.56E-02	1.84E-02	1.56E-02	1.56E-02	1.57E-02	1.56E-02	1.22E-02
Total	1.59E-02	1.59E-02	1.86E-02	1.59E-02	1.59E-02	1.60E-02	1.59E-02	1.25E-02

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

1.0 Radiological Groundwater Protection Program (RGPP)

1.1 Introduction

PSEG implemented the Integrated Tritium Management Program (ITMP), which encompasses the Radiological Groundwater Protection Program (RGPP) and the Monitoring Well and Remedial Action Work Plan (RAWP). This report presents results of the 2025 groundwater monitoring activities performed by PSEG Nuclear at both the Hope Creek Generating Station (HCGS) and Salem Generating Station (SGS), collectively referred to as "the Station". Well locations at the Station are shown on Table 43 and Table 44, respectively. The ITMP links the various Station groundwater monitoring programs that integrate the following three broad programs:

- The Radiological Groundwater Protection Program (RGPP) is a program that was developed to ensure the timely detection of an unpermitted release of radioactive material.

- The Remedial Action Work Plan (RAWP) is a program that monitors the remediation of the historical release from the SGS Unit 1 Spent Fuel Pool.

- Investigation wells were installed as part of independent investigations into groundwater quality, that are not included as part of the RGPP or RAWP.

Well construction details for the Station's RGPP wells are presented on Table 43 and Table 44, respectively.

PSEG initiated the RGPP in 2006 to characterize groundwater at, and in the vicinity of, the Station with respect to historical releases of radionuclides and to provide the mechanism to detect such releases if one were to occur. The RGPP is a voluntary program implemented by PSEG in conjunction with the nuclear industry initiatives and associated guidance NEI 07-07 [16]. The other key elements that comprise the RGPP and contribute to public safety are spill/leak prevention, effective remediation of spills and leaks, and effective stakeholder communication.

In 2002, PSEG operations personnel at SGS identified a release of tritiated water from the SGS Unit 1 Spent Fuel Pool to the environment. PSEG developed a RAWP to remediate the tritium in groundwater, which was reviewed by the United States Nuclear Regulatory Commission (USNRC) and approved by the New Jersey Department of Environmental Protection (NJDEP) Bureau of Nuclear Engineering (BNE). A Groundwater Recovery System (GRS) was installed to control the migration of groundwater in the shallow, water-bearing unit and to reduce the remaining mass of tritiated groundwater. The operation and performance of the GRS is documented in the Remedial Action Progress Report (RAPR) provided to the NRC and NJDEP-BNE by PSEG. PSEG generates an effluent release permit for the residual tritium in groundwater discharging to the Delaware River. The permit values are included in the liquid effluent data reported earlier in this document. The Station is in a flat, largely undeveloped region of southern New Jersey, which is bordered to the west and south by the Delaware River and to the east and north by extensive marshlands. The Station obtains cooling water from the Delaware River.

The Station is underlain with over 1,000 feet of inter-layered sand, silt, and clay. PSEG owns seven production/potable wells, which range in depth from 270 feet below ground surface (bgs) to 1135 feet bgs. These wells are installed in deeper formations isolated by confining units beneath the Vincentown Formation.

The results from a computer-based search of wells have identified the nearest off-site permitted potable well located approximately 3.5 miles from the Station. Shallow groundwater and the Vincentown aquifer (the two most shallow water bearing units underlying the Station) flow toward and discharge to the Delaware River, thus reducing the potential that Station operations have or will influence off-site potable wells.

1.2 Radiological Groundwater Protection Program

This section of the annual report is prepared to summarize the status, activities, and groundwater analytical results collected in 2025 at the Site. This report also describes any changes made to the monitoring program during the 2025 reporting year.

To align with industry reporting practices, PSEG transitioned to reporting only RGPP wells beginning with the 2024 ARERR. Following this change, details on non-RGPP wells (including construction details) and tritium results for all non RGPP wells are now provided in PSEG's RAPR, which is submitted annually to both the NRC and NJDEP BNE.

1.2.1 Objectives of the Radiological Groundwater Protection Program

The long-term sampling program objectives are as follows:

- Identify suitable locations to monitor and evaluate potential impacts from Station operations before significant radiological impact to the environment or potential drinking water sources can occur.
- Refine the conceptual understanding of local hydrogeology and maintain current knowledge of potential flow paths on the surface and in groundwater beneath the Station.
- Evaluate systems, structures, components (SSCs) and work practices, which have the potential to release licensed radioactive material to the groundwater and develop strategies to mitigate potential releases to the environment.
- Perform routine groundwater monitoring and evaluate analytical results.
- Report any leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
- Take necessary corrective actions to protect groundwater resources.

1.2.2 Sample Collection

In 2006, the original RGPP monitoring wells (Table 43 and Table 44) were installed at the Station as part of site investigation activities. Details pertaining to these activities are documented in the Site Investigation Reports (Arcadis 2006A and 2006B). Modifications have been made to some RGPP wells since then and are reflected in the tables. Groundwater samples are collected from all RGPP monitoring wells at least semi-annually, with additional monitoring conducted as appropriate. The groundwater sample collection schedule is adaptively managed to ensure that representative data is collected to provide the information necessary to evaluate groundwater quality conditions. Monitoring wells are sampled following the low flow purging and sampling techniques in accordance with the Field Sampling Procedures Manual (NJDEP 2024). This methodology is consistent with protocols established in the RAWP.

1.2.3 Sample Analysis

Groundwater samples collected from RGPP wells are analyzed for plant-related gamma emitting radionuclides (semi-annually), total strontium (annually), nickel-63 and iron-55 (biennially), and tritium (every sample) by an off-site radiochemical analytical laboratory.

The samples are maintained under chain of custody procedures throughout sample handling, screening, shipping, and laboratory analysis process. Samples are submitted to the respective Station's on-site chemistry laboratory for radiological analysis screening prior to shipment to Teledyne Brown Engineering (TBE) located in Knoxville, Tennessee, for radiological analysis. Analytical laboratories are subject to internal quality assurance programs and inter-laboratory cross-check programs. Station personnel review and evaluate analytical data obtained from the laboratory.

1.2.4 Data Evaluation

Analytical results are reviewed for adverse trends or anomalies. Investigations and corrective action program notifications (CAP) are made as required by program procedures. The radiological data collected since the inception of the RGPP program is the basis for the baseline statistical evaluation to which current operational data are compared. Several factors are important in the interpretation and evaluation of the radiological data:

1. Detection limits

   The Offsite Dose Calculation Manual (ODCM) specifies detection capabilities for each isotope that may be produced by the Station. While the detection capability for tritium specified in the ODCM is 3,000 picocuries per liter (pCi/L) in water, RGPP tritium analyses are performed to a lower value of 200 pCi/L at our offsite lab. Lower values for LLDs are used to be consistent with the State of New Jersey where PSEG conducts split samples with the NJDEP-BNE for specific wells. Each well has a statistically derived action level. When an action level is exceeded, PSEG may increase monitoring frequency or evaluate potential sources of the elevated tritium. Relevant groundwater evaluation criteria are listed in Table 45.

2. Laboratory Measurements Uncertainty

Statistically, the value of a measurement is expressed as a range with a stated level of confidence. PSEG is required to report results with a 95% level of confidence.

Analytical uncertainties are reported at the 95% confidence level in this report and are consistent with the methodologies used to report data in the Annual Radiological Environmental Operating Report.

1.2.5 RGPP Data Quality

Groundwater samples consist of up to four aliquots. One of the aliquots is submitted to the respective Site's on-site chemistry laboratory for initial screening, which includes tritium and gamma spectroscopy analysis. The second aliquot is sent to TBE for tritium analysis. In accordance with NJDEP-BNE's request, the third aliquot is collected from specific wells and submitted for split sample analysis to GEL Laboratories located in Charleston, South Carolina. The final aliquot is held as a back-up, "retained" sample until all the analytical results are received and determined to be valid.

All radionuclide results are compared to the following limitations defined as part of the RGPP:

- Internal Administrative Control Limits are defined within the RGPP procedures. They are developed based on an analysis of the historical concentrations of tritium detected in each specific well and are used to identify tritium concentrations that warrant further investigation for that specific well. Exceeding an Administrative Control Limit does not initiate external communication unless the External Reporting Limit is also exceeded.

- The Courtesy Communication Control Limit is a tritium concentration, below regulatory requirements, based on agreements with NJDEP-BNE, USNRC and other stakeholders ensuring the stakeholders are cognizant of potential issues. If a confirmed tritium result, collected from a RGPP well, exceeds the Courtesy Communication Control Limit of 10,000 pCi/L, PSEG provides courtesy communication by telephone or virtual meeting no later than the end of the next business day to NJDEP-BNE. The NRC Site Resident is also informed. This communication is not a regulatory commitment.

  NOTE: It is not expected that a courtesy communication be generated when a subsequent sample(s) is documented to be from the same source/mechanism as a previous event.

- Voluntary Communication Limits are those concentrations of radionuclides that require voluntary communication and reporting to regulators and/or stakeholders based on NEI 07-07, the ODCM, and Site procedures.

2.0 Discussion

The locations of the RGPP monitoring wells located at HCGS and SGS are depicted on Figure 13 and Figure 14, respectively. Additionally, well construction details for the HCGS RGPP wells and SGS RGPP wells are presented on Table 43 and Table 44, respectively. The relevant radiological parameters used to evaluate groundwater analytical results are provided in Table 45. The groundwater tritium analytical results for HCGS and SGS are shown in Table 46 and Table 47, respectively.

Except for tritium, no plant-related radionuclides were detected in any HCGS or SGS wells sampled in 2025, including both RGPP and non-RGPP well samples.

2.1.1 Groundwater Results - RGPP

Groundwater samples were collected from all RGPP monitoring wells during 2025 in accordance with the Station and PSEG's Nuclear Testing Services (NTS; formerly known as LTS) procedures for the RGPP. Sample results are discussed below.

1. HCGS RGPP Wells

Tritium analytical results for groundwater samples collected during 2025 from HCGS RGPP monitoring wells are summarized below and are presented in Table 46.

- Tritium was not detected in groundwater samples collected from 10 of the 13 HCGS RGPP wells (wells BH, BI, BK, BL, BO, BP, BQ, BR-R, BS-R, and BT-R).

- Well BJ: Tritium concentrations detected in well BJ ranged from 977 pCi/L (November) to 1,450 pCi/L (February) and averaged 1,229 pCi/L. Well BJ is located near the HCGS main permitted gaseous effluent vent (i.e., south plant vent).

- Well BM: Well BM was sampled in May and November, with results of 462 pCi/L and 484 pCi/L respectively. Well BM is located northwest of the reactor containment and is a sentinel (source) well for facilities and buried piping.

- Well BN: Tritium concentrations detected in well BN ranged from 243 pCi/L (November) to 664 pCi/L (February) and averaged 407 pCi/L. Well BN is located northeast of the Materials Control Center and is a sentinel (source) well for the Auxiliary Boiler building and buried piping.

Except for tritium, no plant-related radionuclides were detected in any HCGS RGPP well sampled in 2025.

2. SGS RGPP Wells

Tritium analytical results for groundwater samples collected during 2025 from SGS RGPP monitoring wells are summarized below and are presented on Table 47.

- Tritium was not detected in groundwater samples collected from 7 of the 13 SGS RGPP wells (wells BA, BB, BF, BG, BU, T, Y).

- Well AL: Tritium was sampled in May and November with results of 513 pCi/L and 720 pCi/L, respectively. Well AL is located south of the SGS Unit 1 reactor building and is a sentinel (source) well.

- Well BC: Well BC was sampled in May and November, with results of 345 pCi/L and 235 pCi/L, respectively. Well BC is a sentinel (source)/perimeter well located southwest of Facilities, Refueling Water Storage Tank, Auxiliary Feedwater Storage Tank, Primary Water Storage Tank, (RAP) tanks, and piping.

- Well BD: Well BD was sampled in May and November with results of 462 pCi/L and 454 pCi/L. Well BD is located to the west of SGS Unit 2 reactor building and is a sentinel (source) well for Facilities, RAP tanks, and piping.

- Well BE: Well BE was sampled in May and November with results of 368 pCi/L and 222 pCi/L, respectively. Well BE is located to the west of SGS Unit 2 reactor building and is a perimeter well.

- Well U: Well U was sampled in May and November, with results of 413 pCi/L, and 338 pCi/L, respectively. Well U is located north of SGS Unit 2 reactor building and is a sentinel (source) well for the House Heating Boilers that have been abandoned for several years.

- Well Z: Well Z was sampled in May and November, with results of 620 pCi/L and 464 pCi/L, respectively. Well Z is located west of the SGS Unit 1 & 2 reactor buildings and is a perimeter well.

Except for tritium, no plant-related radionuclides were detected in any SGS RGPP well sampled in 2025.

2.1.2 New RGPP Wells

No new wells were added to the RGPP during 2025.

2.1.3 Mass Flux Estimation of Tritium to the Delaware River

PSEG uses transect methods to calculate the mass flux of tritium to the Delaware River in the shallow, water bearing unit and the deeper basal sand unit and Vincentown Formation. To calculate the mass flux, the tritium concentration was conservatively estimated using the average concentration detected in monitoring wells located nearest to the Delaware River during each quarter. During 2025, the mass flux within the shallow, water bearing unit and deeper groundwater was estimated to be 3.40E-03 curies and 1.35E-02 curies, respectively. Therefore, the total potential estimated mass flux of tritium in groundwater reaching the Delaware River during 2025 was 1.69E-02 curies.

The tritium mass flux value of 1.69E-02 Ci (total of four quarterly estimates) was included in the Station’s liquid effluent discharge and reported in the data tables of the Annual Radioactive Effluent Release Report (Attachment 1, ARERR Release Summary Tables (RG-1.21 Tables)).

2.1.4 Investigations

1. Groundwater Monitoring Well Data (Non-RGPP)

As previously discussed, PSEG monitors a series of wells located at the Station. The ITMP is comprised of the RGPP wells, the RAWP wells, and a series of monitoring wells that were installed to investigate groundwater quality but are not included as part of the RGPP or RAWP. Tritium analytical results for those wells that are not specifically part of the RGPP are presented in the RAPRs submitted annually to the NJDEP-BNE and NRC.

2.1.5 Past Spills and Leaks: Impacts to Groundwater

In 2025, there were no known active unmonitored or unevaluated releases into the groundwater at the Station.

3.0 RGPP 2025 Status

The RGPP long-term sampling program will be modified as required to meet the RGPP objectives. Baseline sampling and analysis of groundwater is planned to continue the following schedule:

- Tritium will be analyzed at least semi-annually each calendar year to a detection capability less than or equal to 200 pCi/L,
- Plant-related gamma emitters will be analyzed at least semi-annually to the environmental detection limits specified in the ODCM,
- RGPP monitoring well sample frequency will be adjusted as needed based on analytical results.

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

Table 43, RGPP Well Construction Details, HCGS

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet amsl)	Monitoring Purpose	Source Targets
Well BH	May-2006	Sch-40 PVC	4	37.0	27.0 - 37.0	101.16	11.24	Perimeter	NA
Well BI	May-2006	Sch-40 PVC	4	37.0	27.0 - 37.0	103.07	13.15	Source	Facilities; Piping
Well BJ	May-2006	Sch-40 PVC	4	38.0	28.0 - 38.0	102.97	13.05	Source	Condensate Storage & Transfer; Facilities; Piping
Well BK	May-2006	Sch-40 PVC	4	38.5	28.5 - 38.5	101.42	11.50	Perimeter	NA
Well BL	May-2006	Sch-40 PVC	4	37.0	27.0 - 37.0	102.43	12.51	Perimeter	NA
Well BM	May-2006	Sch-40 PVC	4	37.5	27.5 - 37.5	102.75	12.83	Source	Facilities; Piping
Well BN	May-2006	Sch-40 PVC	4	12.5	7.5 - 12.5	102.64	12.72	Source	Auxiliary Boiler Building; Piping
Well BO	May-2006	Sch-40 PVC	4	35.0	25.0 - 35.0	97.98	8.06	Perimeter/Source	Building Sewage
Well BP	May-2006	Sch-40 PVC	4	38.0	28.0 - 38.0	99.06	9.14	Perimeter/Source	Building Sewage
Well BQ	May-2006	Sch-40 PVC	4	42.0	32.0 - 42.0	105.62	15.70	Source	Auxiliary Boiler Building; Dry Cask Storage Building; Piping
Well BR-R[1]	Jan-2022	Sch-40 PVC	4	40.5	30.5 - 40.5	102.18	12.26	Perimeter/Source	Piping; Dry Cask Storage Building
Well BS-R[1]	Jan-2022	Sch-40 PVC	4	37.6	27.6 – 37.6	102.50	12.58	Upgradient	NA
Well BT-R[2]	Nov-2021	Sch-40 PVC	4	41.0	31.0 – 41.0	103.17	13.25	Upgradient	NA

Notes:
MP, Measuring Point, bgs, Below ground surface, RPD , Relative to plant datum , amsl, Above mean sea level (NAVD 1988),
NA, Not applicable

[1] Wells BR and BS were decommissioned and replaced with wells BR-R and BS-R respectively in January 2022 and first sampled in May 2022.

[2] Well BT was decommissioned and replaced with well BT-R in December 2021 and first sampled in May 2022.

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

Table 44, RGPP Well Construction Details, SGS

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet amsl)	Monitoring Purpose	Source Targets
Well T	Jun-2003	Sch-40 PVC	2	31.2	21.2 - 31.2	104.13	14.21	Source	NA
Well U[1]	May-2003	Sch-40 PVC	2	32.2	27.2 - 32.2	101.46	11.54	Source	NA
Well Y	Sep-2003	Sch-40 PVC	2	37.0	27.0 - 37.0	101.81	11.89	Perimeter	NA
Well Z	Sep-2003	Sch-40 PVC	2	37.5	27.5 - 37.5	101.86	11.94	Perimeter	NA
Well AL	Jan-2004	Sch-40 PVC	2	25.3	15.3 - 25.3	99.13	9.21	Perimeter	NA
Well BA	May-2006	Sch-40 PVC	4	39.5	29.5 - 39.5	101.07	11.15	Perimeter	NA
Well BB[1]	May-2006	Sch-40 PVC	4	47.0	37.0 - 47.0	102.18	12.26	Perimeter	NA
Well BC[2]	May-2006	Sch-40 PVC	4	38.0	28.0 - 38.0	102.29	12.37	Source / Perimeter	Facilities; RAP Tanks; Piping
Well BD	May-2006	Sch-40 PVC	4	40.5	30.5 - 40.5	98.78	8.86	Source	Facilities; RAP Tanks; Piping
Well BE	May-2006	Sch-40 PVC	4	37.0	27.0 - 37.0	98.31	8.39	Perimeter	NA
Well BF[1]	May-2006	Sch-40 PVC	4	42.0	32.0 - 42.0	101.45	11.53	Perimeter	NA
Well BG[1]	May-2006	Sch-40 PVC	4	37.0	27.0 - 37.0	103.34	13.42	Perimeter	NA
Well BU	May-2006	Sch-40 PVC	4	36.0	26.0 - 36.0	100.16	10.24	Upgradient	NA

Notes:

MP Measuring Point, bgs Below ground surface, RPD Relative to plant datum,

amsl Above mean sea level (NAVD 1988), NA Not applicable,

[1] Monitoring wells U, BB, BF, and BG were surveyed in July/August 2013 following retrofitting or repair activities.

[2] Monitoring well BC was converted from flush-grade to above-grade (stick mount) in June 2021.

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

Table 45, Relevant Groundwater Evaluation Criteria, SGS and HCGS

Isotope	RGPP LLD (pCi/L)	PSEG Reporting Level (pCi/L)
Tritium	200	30,000
Total Strontium	2	8
Mn-54	15	1,000
Fe-55	200	1000
Fe-59	30	400
Co-58	15	1,000
Co-60	15	300
Zn-65	30	300
Nb-95	15	400
Zr-95	15	400
Cs-134	15	30
Cs-137	18	50
Ba-140	60	200
La-140	15	200
Ni-63	530	1000

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

Table 46, Tritium Analytical Results, HCGS RGPP Wells

Well ID	Sample Date	Tritium Result (pCi/L)
Well BH	2/4/2025	< 190
Well BH	5/2/2025	< 191
Well BH	8/4/2025	< 187
Well BH	11/6/2025	< 185
Well BI	2/4/2025	< 190
Well BI	5/6/2025	< 198
Well BI	8/4/2025	< 186
Well BI	11/6/2025	< 188
Well BJ	2/4/2025	**1,450**
Well BJ	5/1/2025	**1,400**
Well BJ	8/1/2025	**1,090**
Well BJ	11/4/2025	**977**
Well BK	5/2/2025	< 193
Well BK	11/5/2025	< 194
Well BL	5/6/2025	< 184
Well BL	11/5/2025	< 191
Well BM	5/2/2025	**462**
Well BM	11/5/2025	**484**
Well BN	2/3/2025	**664**
Well BN	5/5/2025	**387**
Well BN	8/4/2025	**333**
Well BN	11/3/2025	**243**
Well BO	5/5/2025	< 193
Well BO	11/4/2025	< 189
Well BP	5/5/2025	< 191
Well BP	11/3/2025	< 191
Well BQ	5/2/2025	< 193
Well BQ	11/5/2025	< 190
Well BR-R	5/5/2025	< 194
Well BR-R	11/3/2025	< 193
Well BS-R	5/5/2025	< 188
Well BS-R	11/4/2025	< 192
Well BT-R	5/6/2025	< 194
Well BT-R	11/4/2025	< 194

Notes:

pCi/L	Picocuries per liter
<	Tritium not detected above indicated concentration
243	Bolded values indicate tritium was detected

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

Table 47, Tritium Analytical Results, SGS RGPP Wells

Well ID	Sample Date	Tritium Result (pCi/L)
Well AL	5/8/2025	**513**
Well AL	11/3/2025	**720**
Well BA	5/7/2025	< 194
Well BA	11/6/2025	< 194
Well BB	5/7/2025	< 193
Well BB	11/6/2025	< 193
Well BC	5/6/2025	**345**
Well BC	11/5/2025	**235**
Well BD	5/7/2025	**462**
Well BD	11/6/2025	**454**
Well BE	5/7/2025	**368**
Well BE	11/6/2025	**222**
Well BF	5/6/2025	< 197
Well BF	11/5/2025	< 187
Well BG	5/7/2025	< 198
Well BG	11/4/2025	< 185
Well BU	5/6/2025	< 193
Well BU	11/4/2025	< 188
Well T	5/1/2025	< 186
Well T	11/4/2025	< 197
Well U	5/1/2025	**413**
Well U	11/4/2025	**338**
Well Y	5/1/2025	< 186
Well Y	11/5/2025	< 193
Well Z	5/1/2025	**620**
Well Z	11/5/2025	**464**

Notes:

pCi/L	Picocuries per liter
<	Tritium not detected above indicated concentration
464	Bolded values indicate tritium was detected

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

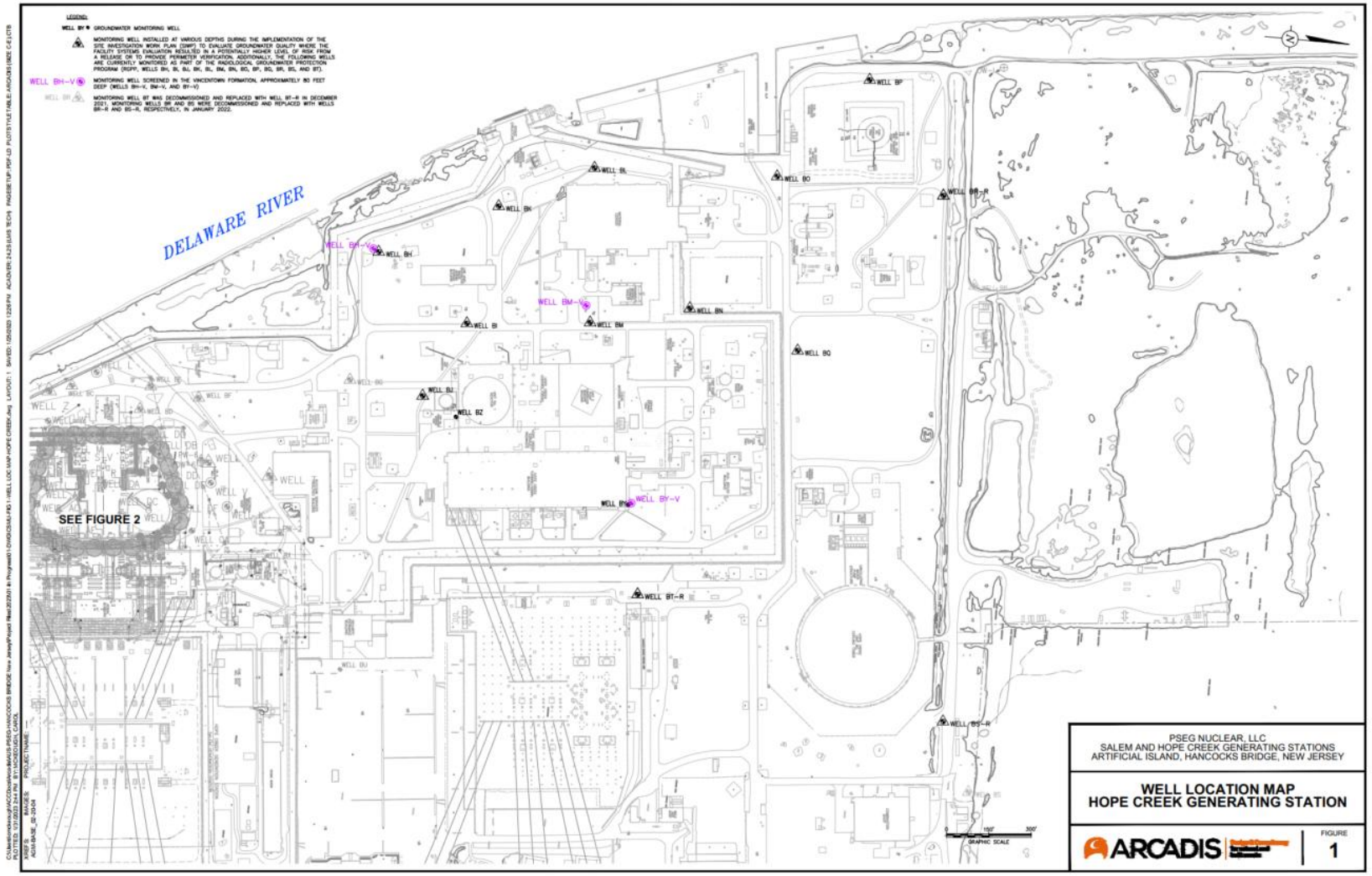

Figure 13, Well Location Map, Hope Creek Generating Station

Attachment 7, 2025 Radiological Groundwater Protection Program (RGPP) Report

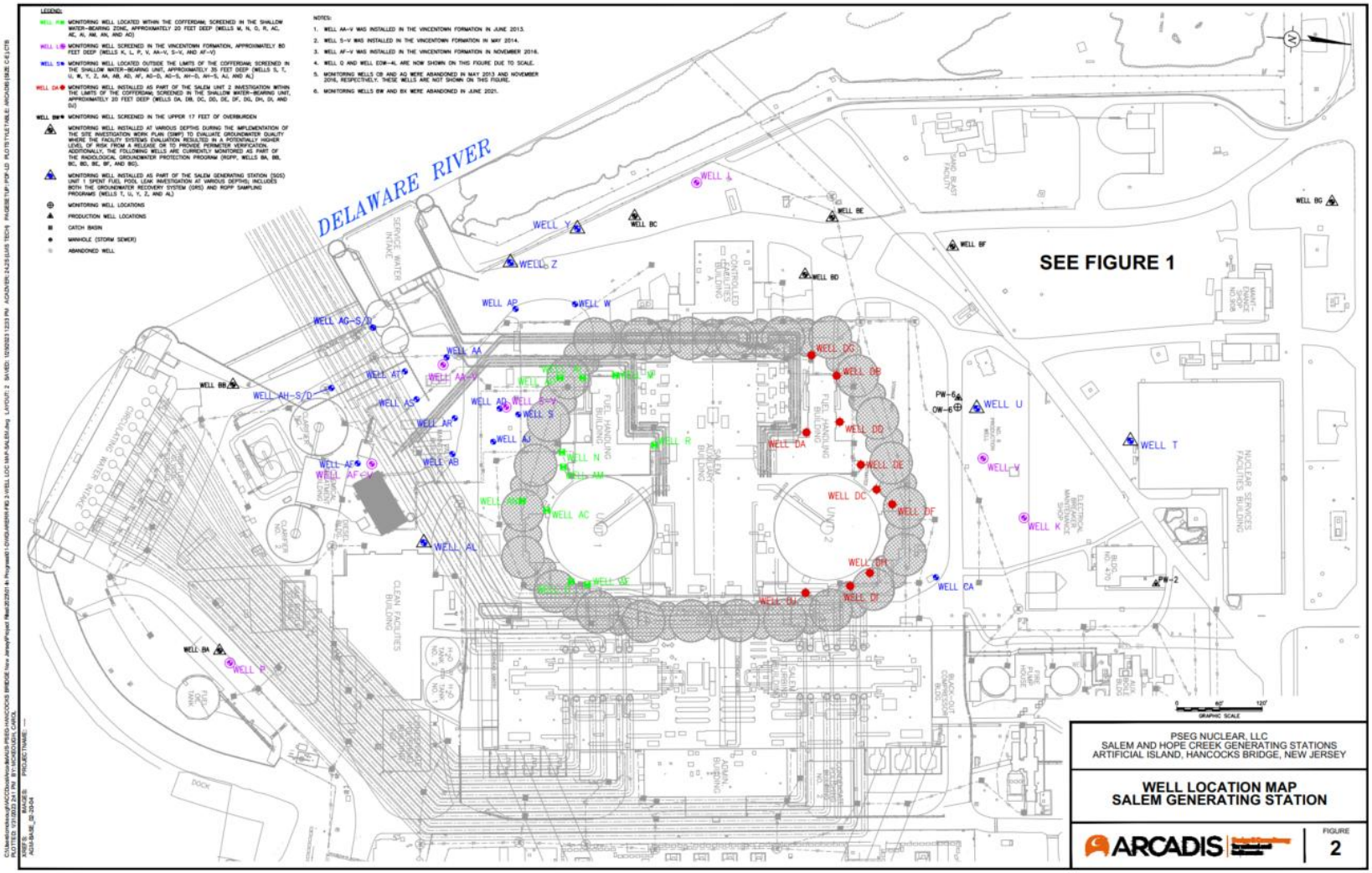

Figure 14, Well Location Map, Salem Generating Station