SOUTHERN NUCLEAR OPERATING COMPANY

VOGTLE ELECTRIC GENERATING PLANT ESP SITE

DOCKET NO. 52-011

EARLY SITE PERMIT AND LIMITED WORK AUTHORIZATION

Early Site Permit No. ESP-004

1. The U.S. Nuclear Regulatory Commission (the NRC or the Commission) has found the following:

   A. The application for an early site permit (ESP), and accompanying limited work authorization (LWA), filed by Southern Nuclear Operating Company (SNC), on behalf of itself and the owners of the Vogtle Electric Generating Plant (VEGP) site (Georgia Power Company, Ogtlethorpe Power Corporation, Municipal Electric Authority of Georgia, and the City of Dalton, GA) meets the applicable standards and requirements of the Atomic Energy Act of 1954, as amended ("Act"), and the Commission's regulations.

   B. All required notifications to other agencies or bodies have been duly made.

   C. There is reasonable assurance that the permit holders will comply with the regulations in 10 CFR Chapter I and the health and safety of the public will not be endangered.

   D. There is reasonable assurance that the site is in conformity with the provisions of the Act and the Commission's regulations.

   E. SNC is technically qualified to engage in the activities authorized.

   F. Issuance of the ESP will not be inimical to the common defense and security or to the health and safety of the public. Issuance of the LWA will provide reasonable assurance of adequate protection to public health and safety and will not be inimical to the common defense and security.

   G. The proposed complete and integrated emergency plans are in accordance with the applicable standards of 10 CFR 50.47, and the requirements of appendix E to 10 CFR Part 50, and provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

H. The proposed inspections, tests, analyses and acceptance criteria, including those on emergency planning, are necessary and sufficient, within the scope of the ESP and LWA, to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Act, and the Commission's regulations.

I. The issuance of this ESP, subject to the Environmental Protection Plan (EPP) and the conditions for the protection of the environment set forth herein, is in accordance with the National Environmental Policy Act of 1969, as amended, and with the applicable sections of 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as referenced by Subpart A, "Early Site Permits," of 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," and all applicable requirements therein have been satisfied.

J. The site redress plan incorporated into this permit will adequately redress the activities performed under the limited work authorization, should limited work activities be terminated by the holder or the limited work authorization be revoked by the NRC, or upon effectiveness of a final agency decision denying a construction permit or combined license application referencing this ESP.

2. Based on the foregoing findings, and pursuant to Sections 103 and 185 of the Atomic Energy Act of 1954, as amended, 10 CFR Part 52, and the Initial Decision of the Atomic Safety and Licensing Board, dated August 17, 2009 (LBP-09-07), the NRC hereby issues Early Site Permit No. ESP-004, including an LWA, to SNC, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and the City of Dalton, GA, for a site located in Burke County, Georgia, approximately 26 miles southeast of Augusta, Georgia, and adjacent to and west of the existing VEGP Units 1 and 2, for two nuclear power units, designed to operate at an individual rated power of no more than 3400 megawatts thermal and a combined rated power of no more than 6800 megawatts thermal, and for limited construction activities at the site, as described in the application and amendments thereto (the application) filed in this matter by the permit holders, and as described in the evidence received at the public hearing on that application.

3. This ESP shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I; is subject to all applicable provisions of the Atomic Energy Act of 1954, as amended, and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the following conditions specified or incorporated below:

A. The characteristics of the VEGP ESP site set forth in Appendix A to this ESP are hereby incorporated into this ESP.

B. The bounding design parameter values including design-basis accident source term set forth in Appendix B to this ESP are hereby incorporated into this ESP.

C. The combined license (COL) action items set forth in Appendix C to this ESP are hereby incorporated into this ESP. These COL action items identify certain matters that an applicant submitting an application that references this ESP shall address in the final safety analysis report (FSAR). These items constitute information requirements but are not the only acceptable set of information in the FSAR. An applicant may depart from or omit these items, provided that it identifies and justifies the departure or omission in the FSAR. In addition, these items do not relieve an applicant from any requirement in 10 CFR Chapter 1 that governs the application. After issuance of a construction permit (CP) or COL, these items are not requirements for the permit holder or licensee unless such items are included in a permit or license condition.

D. The site characteristics, design parameters, and site interface values considered in the environmental review of the application and set forth in Appendix D to this ESP are hereby incorporated into this ESP.

E. The inspections, tests, analyses, and acceptance criteria (ITAAC) set forth in Appendix E to this ESP are hereby incorporated into this ESP.

F. The following conditions apply:

1) The ESP holders shall either remove and replace, or shall improve, the soils directly above the blue bluff marl for soils under or adjacent to Seismic Category 1 structures, to eliminate any liquefaction potential.

2) An applicant for a COL referencing this early site permit shall revise the emergency action levels (EALs) for Unit 3 to reflect the final revision of NEI 07-01.

3) An applicant for a COL referencing this early site permit shall revise the EALs for Unit 4 to reflect the final revision of NEI 07-01.

4) An applicant for a COL referencing this early site permit shall submit a fully developed EAL scheme for Unit 3 that reflects the completed AP1000 design details, subject to allowable ITAAC.

5) An applicant for a COL referencing this early site permit shall submit a fully developed EAL scheme for Unit 4 that reflects the completed AP1000 design details, subject to allowable ITAAC.

6) An applicant for a COL referencing this early site permit shall complete a fully developed set of EALs for Unit 3, which are based on in-plant conditions and instrumentation, including onsite and offsite monitoring, and which have been discussed and agreed on by the applicant or licensee and State and local governmental authorities, and shall include the full set of EALs in the COL application. If the EALs are not fully developed, the

COL application shall contain appropriate ITAAC for the fully developed set of EALs for Unit 3.

7) An applicant for a COL referencing this early site permit shall complete a fully developed set of EALs for Unit 4, which are based on in-plant conditions and instrumentation, including onsite and offsite monitoring, and which have been discussed and agreed on by the applicant or licensee and State and local governmental authorities, and shall include the full set of EALs in the COL application. If the EALs are not fully developed, the COL application shall contain appropriate ITAAC for the fully developed set of EALs for Unit 4.

8) An applicant for a COL referencing this early site permit shall resolve the difference between the VEGP Units 3 and 4 common Technical Support Center (TSC), and the TSC location specified in the AP1000 certified design.

9) If a COL or CP application referencing this ESP also references a certified design, the COL or CP applicant may demonstrate compliance with the radiological consequence evaluation factors in 10 CFR 52.79(a)(1) or 10 CFR 50.34(a)(1), respectively, by demonstrating that the site-specific χ/Q values determined in the ESP fall within those evaluated in the approval of the referenced certified design. However, if a COL or CP referencing this ESP does not reference a certified design, the applicant would still need to demonstrate that its source term is bounded by the source term values included in the ESP.

G. The limited construction activities and site redress plan described in the application and specified below were reviewed and approved. The site redress plan set forth in Appendix F to this ESP is hereby incorporated into this ESP. Pursuant to 10 CFR 52.24 (c) and 10 CFR 50.10(e)(2), SNC may perform the following activities under this LWA: installation of engineered backfill, retaining walls, lean concrete backfill, mudmats, and a waterproof membrane as described in the applicant's site safety analysis report (SSAR).

H. The permit holders shall notify the NRC Regional Administrator for Region II of the permit holders' plans to begin the limited construction activities described in the site redress plan at least 60 days before commencement of such activities and shall certify in that notification to the NRC that they have obtained all other permits, licenses, and certifications required for these activities.

I. The holders of this ESP shall not perform any limited construction activities authorized by 10 CFR 52.24(c) unless such holders obtain the certification required pursuant to Section 401 of the Federal Water Pollution Control Act from the State of Georgia, or obtain a determination by the State of Georgia that no certification is required and submit the

certification or determination to the NRC before commencement of any such activities.

J. Any activities performed pursuant to 10 CFR 52.24(c) are subject to the conditions for the protection of the environment set forth in the EPP attached as Appendix G to this ESP.

K. An applicant for a CP or COL referencing this ESP shall develop an EPP for construction and operation of the proposed reactor and include the EPP in the application. The portion of the EPP directed to operation shall include any environmental conditions derived in accordance with 10 CFR 50.36b, "Environmental Conditions."

4. The holders of this ESP are subject to the requirements of 10 CFR Part 21, "Reporting of Defects and Noncompliance," and, with respect to activities authorized under the accompanying LWA, are subject to the requirements of 10 CFR 50.55(e), as of the date of issuance of this ESP.

5. This ESP is effective as of its date of issuance and shall expire at midnight on August 26, 2029.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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Michael R. Johnson, Director
Office of New Reactors

Attachments:

Appendix A: Characteristics of the Vogtle Electric Generating Plant ESP Site

Appendix B: Bounding Design Parameters including Design-Basis Accident Source Term

Appendix C: Combined License Action Items

Appendix D: Values of Site Characteristics, Design Parameters, and Site Interface Values Considered in the Environmental Review of the Application

Appendix E: Inspections, Tests, Analyses, and Acceptance Criteria

Appendix F: Site Redress Plan

Appendix G: Environmental Protection Plan (Nonradiological)

Attachments:

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Appendix G: Environmental Protection Plan (Nonradiological)

ADAMS No.: ML092290457

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Appendix A: Characteristics of the Vogtle Electric Generating Plant ESP Site

Site Characteristic	Value	Definition
2.1 - Geography and Demography		
Exclusion Area Boundary	The exclusion area boundary (EAB) for the proposed Units 3 and 4 at the VEGP site is the same as the existing EAB for VEGP Units 1 and 2. The EAB is bounded by River Road, Hancock Landing Road, and 1.7 miles of the Savannah River (River miles 150.0 to 151.7). See Figure A3-1.	The area surrounding the reactor(s), in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area.
Low Population Zone	The area falling within a 2-mile radius circle from the midpoint between the Units 1 and 2 containment buildings.	The area immediately surrounding the exclusion area that contains residents.
Population Center Distance	- 2-2/3 miles (minimum allowable distance) - 26 miles (Augusta, GA) (current actual distance)	- The minimum allowable distance from the reactor to the nearest boundary of a densely populated center containing more than about 25,000 residents. - The current distance from the reactor to the nearest boundary of a densely populated center containing more than about 25,000 residents.
2.3 - Meteorology		
Ambient Air Temperature and Humidity		

Site Characteristic		Value	Definition
Maximum Dry-Bulb Temperature	2% annual exceedance	92 ºF / 75 ºF	The ambient dry-bulb temperature (and mean coincident wet-bulb temperature) that will be exceeded 2% of the time annually
	0.4% annual exceedance	97 ºF / 76 ºF	The ambient dry-bulb temperature (and mean coincident wet-bulb temperature) that will be exceeded 0.4% of the time annually
	100-year return period	115 °F	The ambient dry-bulb temperature that has a 1% annual probability of being exceeded (100-year mean recurrence interval).
Minimum Dry-Bulb Temperature	99% annual exceedance	25 °F	The ambient dry-bulb temperature below which dry-bulb temperatures will fall 1% of the time annually.
	99.6% annual exceedance	21 °F	The ambient dry-bulb temperature below which dry-bulb temperatures will fall 0.4% of the time annually.
	100-year return period	-8 °F	The ambient dry-bulb temperature for which a 1% annual probability of a lower dry-bulb temperature exists (100-year mean recurrence interval).
Maximum Wet-Bulb Temperature	0.4% annual exceedance	79 °F	The ambient wet-bulb temperature that will be exceeded 0.4% of the time annually.
	100-year return period	88 °F	The ambient wet-bulb temperature that has a 1% annual probability of being exceeded (100-year mean recurrence interval).
Site Temperature Basis for AP1000			
Maximum Safety Dry-Bulb and Coincident Wet-Bulb		115 ºF / 77.7 ºF	These AP1000 specific site characteristics values represent a maximum dry-bulb temperature that exists for

Site Characteristic	Value	Definition
		2 hours or more, combined with the maximum wet-bulb temperature that exists in that population of dry-bulb temperatures.
Maximum Safety Wet-Bulb (Non-Coincident)	83.9 ºF	This AP1000 specific site characteristic value represents a maximum wet-bulb temperature that exists within a set of hourly data for a duration of 2 hours or more.
Maximum Normal Dry-Bulb and Coincident Wet-Bulb	94 ºF / 78 ºF	The dry-bulb temperature component of this AP1000 specific site characteristics pair is represented by a maximum dry-bulb temperature that exists for 2 hours or more, excluding the highest 1 percent of the values in an hourly data set. The wet-bulb temperature component is similarly represented by the highest wet-bulb temperature excluding the highest 1 percent of the data, although there is no minimum 2-hour persistence criterion associated with this wet-bulb temperature.
Maximum Normal Wet-Bulb (Non-Coincident)	78 ºF	This AP1000 specific site characteristic value represents a maximum wet-bulb temperature, excluding the highest 1 percent of the values in an hourly data set (i.e., a 1 percent exceedance), that exists for 2 hours or more.
Basic Wind Speed		
3-Second Gust	104 mi/h	The 3-second gust wind speed to be used in determining wind loads, defined as the 3-second gust wind speed at 33 feet above the ground that has a 1% annual probability of being exceeded (100-year mean recurrence interval)
Tornado		
Maximum Wind Speed	300 mi/h	Maximum wind speed resulting from passage of a tornado having a probability of occurrence of 10^{-7} per year

Site Characteristic	Value	Definition
Maximum Translational Speed	60 mi/h	Translation component of the maximum tornado wind speed
Rotational Speed	240 mi/h	Rotation component of the maximum tornado wind speed
Radius of Maximum Rotational Speed	150 feet	Distance from the center of the tornado at which the maximum rotational wind speed occurs
Pressure Drop	2.0 lbf/in.^{2}	Decrease in ambient pressure from normal atmospheric pressure resulting from passage of the tornado
Rate of Pressure Drop	1.2 lbf/in.^{2}/s	Rate of pressure drop resulting from the passage of the tornado
Winter Precipitation		
100-Year Snowpack	10 lb/ft^2	Weight of the 100-year return period snowpack (to be used in determining normal precipitation loads for roofs)
48-Hour Probable Maximum Winter Precipitation	28.3 inches of water	PMP during the winter months (to be used in conjunction with the 100-year snowpack in determining extreme winter precipitation loads for roofs)
Short-Term (Accident Release) Atmospheric Dispersion		
0–2 hr χ/Q Value @ EAB	3.49×10^{-4} s/m^3	The 0–2 hour atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the EAB.
0–8 hr χ/Q Value @ LPZ outer boundary	7.04×10^{-5} s/m^3	The 0–8 hour atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ.
8–24 hr χ/Q Value @ LPZ outer boundary	5.25×10^{-5} s/m^3	The 8–24 hour atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ.

Site Characteristic	Value	Definition
1–4 day χ/Q Value @ LPZ outer boundary	2.77×10^{-5} s/m^3	The 1–4 day atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ.
4–30 day χ/Q value @ LPZ outer boundary	1.11×10^{-5} s/m^3	The 4–30 day atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ.
Long-Term (Routine Release) Atmospheric Dispersion		
Annual Average Undepleted/No Decay χ/Q Value @ EAB, northeast, 0.5 mile	5.5×10^{-6} s/m^3	The maximum annual average EAB undepleted/no decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Undepleted/2.26-Day Decay χ/Q Value @ EAB, northeast, 0.5 mile	5.5×10^{-6} s/m^3	The maximum annual average EAB undepleted/2.26 day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Depleted/8.00-Day Decay χ/Q Value @ EAB, northeast, 0.5 mile	5.0×10^{-6} s/m^3	The maximum annual average EAB depleted/8.00 day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average D/Q Value @ EAB, northeast and east-northeast, 0.5 mile	1.7×10^{-8} 1/m^2	The maximum annual average EAB relative deposition factor (D/Q) value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Undepleted/No Decay χ/Q Value @ Nearest Resident, northeast, 0.67 mile	3.4×10^{-6} s/m^3	The maximum annual average resident undepleted/no decay atmospheric dispersion factor (χ/Q) value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Undepleted/2.26-Day Decay χ/Q Value @ Nearest Resident, northeast, 0.67 mile	3.4×10^{-6} s/m^3	The maximum annual average resident undepleted/2.26-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Depleted/8.00-Day	3.0×10^{-6} s/m^3	The maximum annual average resident depleted/8.00-

Site Characteristic	Value	Definition
Decay χ/Q Value @ Nearest Resident, northeast, 0.67 mile		day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average D/Q Value @ Nearest Resident, northeast, east-northeast, and east, 0.67 mile	1.0×10^{-8} $1/m^2$	The maximum annual average resident relative deposition factor (D/Q) value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Undepleted/No Decay χ/Q Value @ Nearest Meat Animal, northeast, 0.67 mile	3.4×10^{-6} s/m^3	The maximum annual average meat animal undepleted/no decay atmospheric dispersion factor (χ/Q) value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Undepleted/2.26-Day Decay χ/Q Value @ Nearest Meat Animal, northeast, 0.67 mile	3.4×10^{-6} s/m^3	The maximum annual average meat animal undepleted/2.26-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Depleted/8.00-Day Decay χ/Q Value @ Nearest Meat Animal, northeast, 0.67 mile	3.0×10^{-6} s/m^3	The maximum annual average meat animal depleted/8.00-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average D/Q Value @ Nearest Meat Animal, northeast, east-northeast, and east, 0.67 mile	1.0×10^{-8} $1/m^2$	The maximum annual average meat animal relative deposition factor (D/Q) value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Undepleted/No Decay χ/Q Value @ Nearest Vegetable Garden, northeast, 0.67 mile	3.4×10^{-6} s/m^3	The maximum annual average vegetable garden undepleted/no decay atmospheric dispersion factor (χ/Q) value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average Undepleted/2.26-Day Decay χ/Q Value @ Nearest Vegetable Garden, northeast, 0.67	3.4×10^{-6} s/m^3	The maximum annual average vegetable garden undepleted/2.26-day decay χ/Q value for use in determining gaseous pathway doses to the maximally

Site Characteristic	Value	Definition
mile		exposed individual.
Annual Average Depleted/8.00-Day Decay χ/Q Value @ Nearest Vegetable Garden, northeast, 0.67 mile	3.0×10^{-6} s/m^3	The maximum annual average vegetable garden depleted/8.00-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual.
Annual Average D/Q Value @ Nearest Vegetable Garden, northeast, east-northeast, and east, 0.67 mile	1.0×10^{-8} 1/m^2	The maximum annual average vegetable garden relative deposition factor (D/Q) value for use in determining gaseous pathway doses to the maximally exposed individual.
2.4 - Hydrology		
Hydrology		
Proposed Facility Boundaries	Appendix A Figure 1 (Figure 2.4.14-1)	The site boundary within which all safety-related SSC will be located.
Highest Ground Water Elevation	165 feet MSL at the Water Table Aquifer	The highest elevation of the water table within the site boundaries.
Maximum Flood Elevation (maximum hydrostatic water surface elevation due to a postulated upstream dam breach scenario)	166.79 feet MSL	The stillwater elevation, without accounting for wind-induced waves that the water surface reaches during a flood event.
Wind run-up (to add to the maximum flood elevation)	11.31 feet	The water surface elevation reached by wind-induced waves running up on the shore.
Combined Effects Maximum Flood Elevation	178.10 feet MSL	The water surface elevation obtained by adding wind run-up to the highest flood level.
Local Intense Precipitation	19.2 inches during 1 hour	The depth of PMP for duration of one hour on a one square-mile drainage area. The surface water drainage

Site Characteristic	Value	Definition
	6.2 inches during 5 minutes	system should be designed for a flood produced by the local intense precipitation. The local intense precipitation is specified by SSAR Table 2.4.2-3 (SER Table 2.4.2-1).
Frazil Ice	The ESP site does not have the potential for the formation of frazil and anchor ice	Ice crystals that form in turbulent, open waters in presence of supercooling. Frazil ice is very sticky and may lead to blockages of intake screens and trash racks.
2.5 – Geology, Seismology, and Geotechnical Engineering		
Basic Geologic and Seismic Information		
Capable Tectonic Structures	none	No fault displacement potential within the investigative area.
Vibratory Ground Motion		
Ground Motion Response Spectra (Site Safe Shutdown Earthquake)	Appendix A Figure 2	Site specific response spectra.
Stability of Subsurface Materials and Foundations		
Liquefaction	None at the site-specific SSE	Liquefaction potential for the subsurface material at the site.
Minimum bearing capacity (static and dynamic)	1627 kPa (34 ksf) – static 2010 kPa (42 ksf) - dynamic	Load-bearing capacity of bearing soil layer for plant structures.
Minimum shear wave velocity of the load bearing soil layers	Appendix A Tables 1 and 2	Soil property.

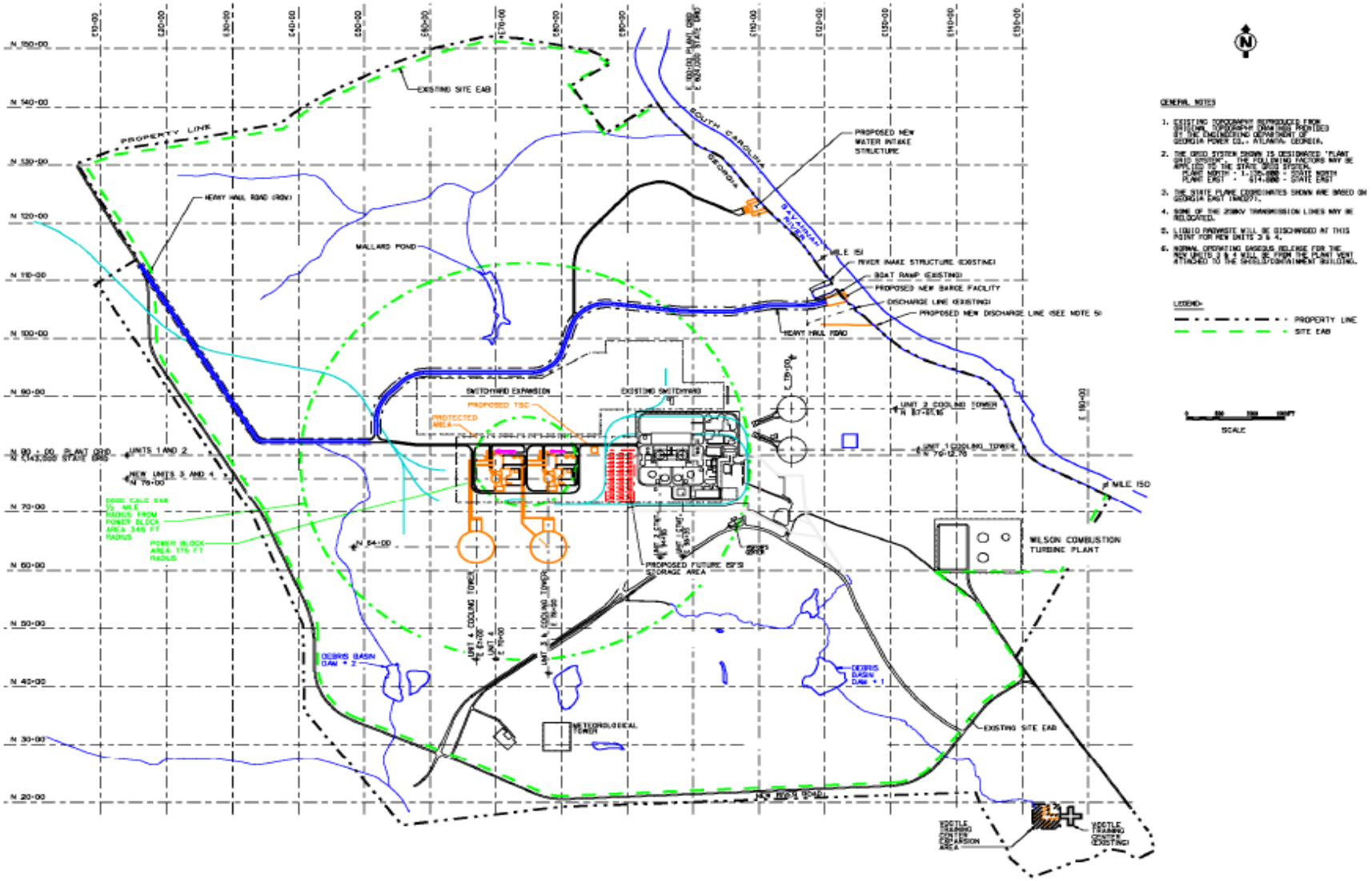

Figure 1 (Figure 2.4.14-1) – The proposed facility boundary for the VEGP site (Taken from SSAR Figure 1-4)

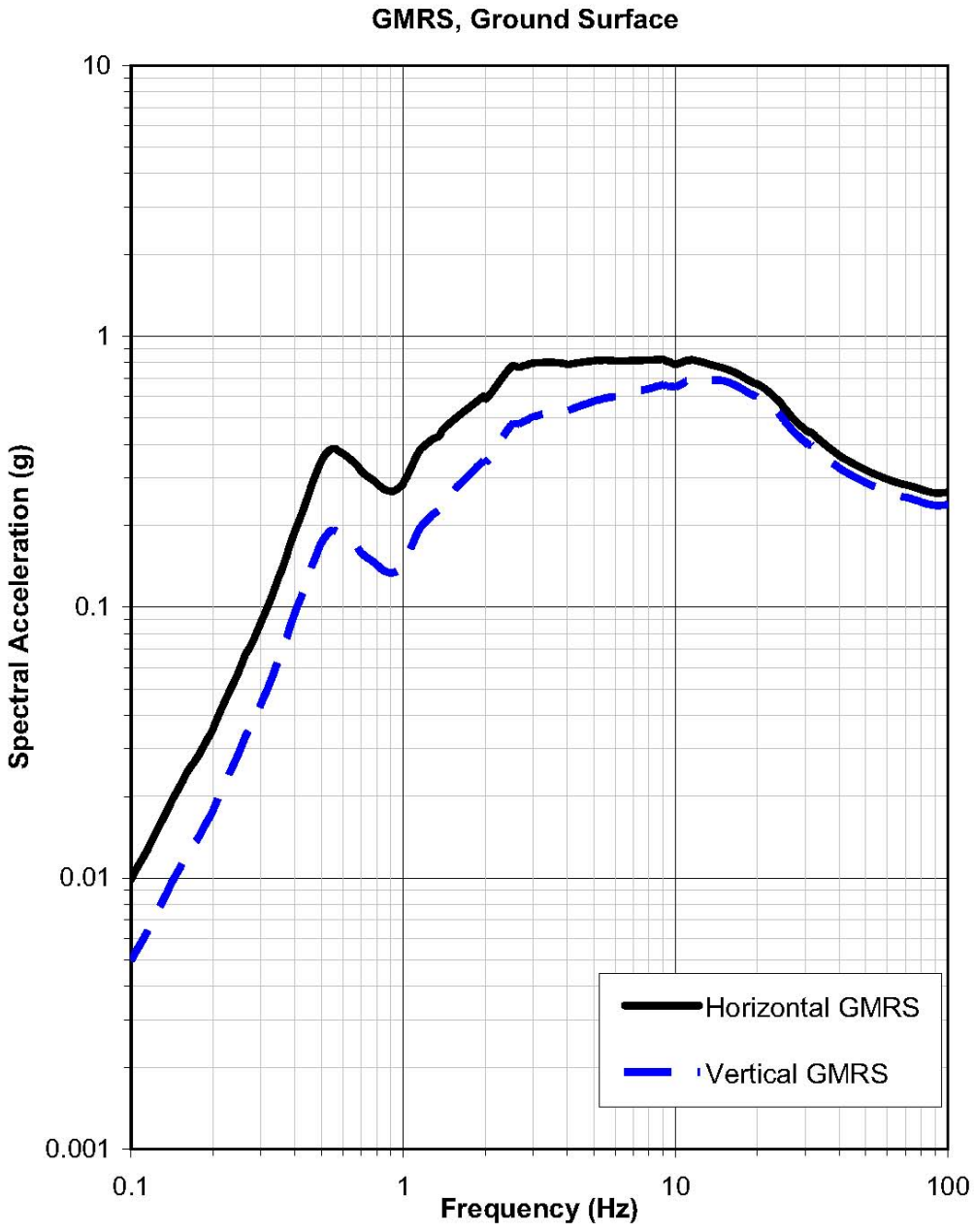

Figure 2 (SER Figure 2.5.2-25) - Plots of the horizontal and vertical GMRS (reproduced from SSAR Figure 2.5.2-44b).

Part A: Soil Shear-Wave Velocities (ESP)

Geologic Formation	Depth (feet)	V_s (fps)
Compacted Backfill	0 to 6	573
	6 to 10	732
	10 to 14	811
	14 to 18	871
	18 to 23	927
	23 to 29	983
	29 to 36	1,040
	36 to 43	1,092
	43 to 50	1,137
	50 to 56	1,175
	56 to 63	1,209
	63 to 71	1,232
	71 to 79	1,253
	79 to 86	1,273
Blue Bluff Marl (Lisbon Formation)	86 to 92	1,400
	92 to 97	1,700
	97 to 102	2,100
	102 to 105	1,700
	105 to 111	2,200
	111 to 123	2,350
	123 to 149	2,650
Lower Sand Stratum (Still Branch)	149 to 156	2,000
	156 to 216	1,650
(Congaree)	216 to 331	1,950
(Snapp)	331 to 438	2,050
(Black Mingo)	438 to 477	2,350
(Steel Creek)	477 to 587	2,650
(Gaillard/Black Creek)	587 to 798	2,850
(Pio Nono)	798 to 858	2,870
(Cape Fear)	858 to 1,049	2,710
Dunbarton Triassic Basin & Paleozoic Crystalline Rock	> 1,049	see Table 2.5.4-11, Part B

Table 1 - Shear Wave Velocity Values for Site Amplification Analysis (Taken from SSAR Table 2.5.4-11)

Part B: Rock Shear-Wave Velocities - Six Alternate Profiles

	Vs (ft/s)	
Depth (ft)	Gradient #1	Gradient #2
1,049 to 1,100	4,400	4,400
1,100 to 1,150	5,650	5,650
1,150 to 1,225	6,650	6,650
1,225 to 1,337.5	7,600	7,600
1,337.5 to 1,402.5	8,000	8,700
1,402.5 to 1,405	8,005	8,703
1,405 to 1,525	8,059	8,739
> 1,525	9,200	9,200

Rock Vs profile corresponding to the location midway between B-1002 and B-1003.

	Vs (ft/s)	
Depth (ft)	Gradient #1	Gradient #2
1,049 to 1,100	4,400	4,400
1,100 to 1,150	5,650	5,650
1,150 to 1,225	6,650	6,650
1,225 to 1,337.5	7,600	7,600
1,337.5 to 1,450	8,000	8,700
1,450 to 1,550	8,090	8,760
1,550 to 1,650	8,180	8,820
1,650 to 1,750	8,270	8,880
1,750 to 1,830	8,360	8,940
1,830 1,900	8,414	8,976
> 1,900	9,200	9,200

Rock Vs profile corresponding to the location of B-1003.

	Vs (ft/s)	
Depth (ft)	Gradient #1	Gradient #2
1,049 to 1,100	4,400	4,400
1,100 to 1,150	5,650	5,650
1,150 to 1,225	6,650	6,650
1,225 to 1,337.5	7,600	7,600
1,337.5 to 1,450	8,000	8,700
1,450 to 1,550	8,090	8,760
1,550 to 1,650	8,180	8,820
1,650 to 1,750	8,270	8,880
1,750 to 1,850	8,360	8,940
1,850 to 1,950	8,450	9,000
1,950 to 2,050	8,540	9,060
2,050 to 2,127.5	8,630	9,120
2,127.5 to 2,155	8,679.5	9,153
2,155 to 2,275	8,733.5	9,189
> 2,275	9,200	9,200

Table 1 (cont.) - Shear Wave Velocity Values for Site Amplification Analysis (Taken from SSAR Table 2.5.4-11)

Part A: Soil Shear-Wave Velocities (COL Soil Column)

Geologic Formation	Depth (feet) (ft)	V_s (fps) (fps)
Compacted Backfill	0	550
	5	724
	10	832
	20	975
	30	1064
	40	1130
	50	1183
	60	1228
	70	1267
	80	1302
	85	1318
	86.5	1327
	88	1327
Blue Bluff Marl (Lisbon Formation)	88 to 96	1,341
	96 to 102	1,747
	102 to 110	1,988
	110 to 122	2,300
	122 to 156	2,541
Lower Sand Stratum (Still Branch)	156 to 164	1,820
	164 to 220	1,560
(Congaree)	220 to 236	1,757
	236 to 280	2,000
	280 to 328	1,926
	328 to 340	1,727
(Snapp)	340 to 447	2,050
(Black Mingo)	447 to 486	2,350
(Steel Creek)	486 to 596	2,650
(Gaillard/Black Creek)	596 to 807	2,850
(Pio Nono)	807 to 867	2,870
(Cape Fear)	867 to 1,059	2,710

Table 2 - Shear Wave Velocity Values for Site Amplification Analysis (Taken from SSAR Table 2.5.4-11a)

Appendix B: Bounding Design Parameters including Design-Basis Accident Source Term

Bounding Parameters	Value	Definition
2.4 – Hydrology		
Plant Grade	220 feet MSL	Finished plant grade at the ESP site.
15.0 – Accident Analysis		
Accident Source Term	See tables 1 through tables 9	The activity, by isotope, contained in post-accident airborne effluents.

Activity Releases for Steam System Piping Failure with Pre-Existing Iodine Spike

	Activity Release (Ci)				
Isotope	0-2 hr	2-8 hr	8-24 hr	24-72 hr	Total
Kr-85m	6.86E-02	1.14E-01	6.80E-02	6.18E-03	2.57E-01
Kr-85	2.82E-01	8.46E-01	2.25E+00	6.69E+00	1.01E+01
Kr-87	2.76E-02	1.34E-02	5.29E-04	8.60E-08	4.15E-02
Kr-88	1.12E-01	1.37E-01	4.04E-02	8.27E-04	2.91E-01
Xe-131m	1.28E-01	3.79E-01	9.81E-01	2.70E+00	4.19E+00
Xe-133m	1.59E-01	4.51E-01	1.04E+00	2.05E+00	3.70E+00
Xe-133	1.18E+01	3.45E+01	8.64E+01	2.16E+02	3.49E+02
Xe-135m	3.04E-03	1.33E-05	0.00E+00	0.00E+00	3.06E-03
Xe-135	3.10E-01	6.90E-01	8.35E-01	3.38E-01	2.17E+00
Xe-138	3.99E-03	1.14E-05	0.00E+00	0.00E+00	4.00E-03
I-130	3.59E-01	1.42E-01	2.09E-01	1.33E-01	8.44E-01
I-131	2.40E+01	1.21E+01	3.10E+01	8.22E+01	1.49E+02
I-132	3.05E+01	4.14E+00	8.06E-01	6.55E-03	3.55E+01
I-133	4.34E+01	1.90E+01	3.53E+01	3.98E+01	1.37E+02
I-134	6.74E+00	1.63E-01	1.43E-03	4.54E-09	6.91E+00
I-135	2.60E+01	8.16E+00	7.54E+00	1.71E+00	4.34E+01
Cs-134	1.90E+01	1.95E-01	5.19E-01	1.54E+00	2.12E+01
Cs-136	2.82E+01	2.86E-01	7.43E-01	2.06E+00	3.13E+01
Cs-137	1.37E+01	1.41E-01	3.74E-01	1.11E+00	1.53E+01
Cs-138	1.01E+01	1.02E-03	4.42E-07	0.00E+00	1.01E+01
Total	2.15E+02	8.15E+01	1.68E+02	3.56E+02	8.21E+02

Table 1 (SSAR Table 15-2)

Activity Releases for Steam System Piping Failure with Accident-Initiated Iodine Spike

	Activity Release (Ci)				
Isotope	0-2 hr	2-8 hr	8-24 hr	24-72 hr	Total
Kr-85m	6.86E-02	1.14E-01	6.80E-02	6.18E-03	2.57E-01
Kr-85	2.82E-01	8.46E-01	2.25E+00	6.69E+00	1.01E+01
Kr-87	2.76E-02	1.34E-02	5.29E-04	8.60E-08	4.15E-02
Kr-88	1.12E-01	1.37E-01	4.04E-02	8.27E-04	2.91E-01
Xe-131m	1.28E-01	3.79E-01	9.81E-01	2.70E+00	4.19E+00
Xe-133m	1.59E-01	4.51E-01	1.04E+00	2.05E+00	3.70E+00
Xe-133	1.18E+01	3.45E+01	8.64E+01	2.16E+02	3.49E+02
Xe-135m	3.04E-03	1.33E-05	0.00E+00	0.00E+00	3.06E-03
Xe-135	3.10E-01	6.90E-01	8.35E-01	3.38E-01	2.17E+00
Xe-138	3.99E-03	1.14E-05	0.00E+00	0.00E+00	4.00E-03
I-130	4.20E-01	9.95E-01	1.58E+00	1.01E+00	4.01E+00
I-131	2.60E+01	5.73E+01	1.56E+02	4.13E+02	6.53E+02
I-132	4.62E+01	9.74E+01	2.24E+01	1.82E-01	1.66E+02
I-133	4.91E+01	1.14E+02	2.27E+02	2.55E+02	6.45E+02
I-134	1.34E+01	1.86E+01	2.65E-01	8.42E-07	3.23E+01
I-135	3.24E+01	7.74E+01	7.83E+01	1.77E+01	2.06E+02
Cs-134	1.90E+01	1.95E-01	5.19E-01	1.54E+00	2.12E+01
Cs-136	2.82E+01	2.86E-01	7.43E-01	2.06E+00	3.13E+01
Cs-137	1.37E+01	1.41E-01	3.74E-01	1.11E+00	1.53E+01
Cs-138	1.01E+01	1.02E-03	4.42E-07	0.00E+00	1.01E+01
Total	2.51E+02	4.03E+02	5.78E+02	9.20E+02	2.15E+03

Table 2 (SSAR Table 15-3)

Activity Releases for Reactor Coolant Pump Shaft Seizure

	Activity Release (Ci)				
	No Feedwater	Feedwater Available			
Isotope	0-1.5 hr	0-2 hr	2-8 hr	6-8 hr	Total
Kr-85m	8.16E+01	1.05E+02	1.74E+02	4.13E+01	2.79E+02
Kr-85	7.58E+00	1.01E+01	3.03E+01	1.01E+01	4.04E+01
Kr-87	1.20E+02	1.43E+02	6.97E+01	5.43E+00	2.13E+02
Kr-88	2.08E+02	2.62E+02	3.20E+02	6.05E+01	5.82E+02
Xe-131m	3.77E+00	5.03E+00	1.49E+01	4.95E+00	1.99E+01
Xe-133m	2.02E+01	2.69E+01	7.64E+01	2.48E+01	1.03E+02
Xe-133	6.66E+02	8.87E+02	2.60E+03	8.57E+02	3.49E+03
Xe-135m	3.24E+01	3.28E+01	1.43E-01	2.68E-06	3.30E+01
Xe-135	1.59E+02	2.08E+02	4.64E+02	1.32E+02	6.72E+02
Xe-138	1.29E+02	1.30E+02	3.72E-01	3.01E-06	1.30E+02
I-130	8.45E-01	1.17E-01	1.33E+00	5.65E-01	1.45E+00
I-131	3.77E+01	5.39E+00	7.51E+01	3.46E+01	8.05E+01
I-132	2.79E+01	3.45E+00	1.48E+01	3.95E+00	1.83E+01
I-133	4.86E+01	6.86E+00	8.29E+01	3.64E+01	8.98E+01
I-134	2.88E+01	2.76E+00	2.98E+00	2.09E-01	5.74E+00
I-135	4.19E+01	5.68E+00	5.22E+01	2.05E+01	5.79E+01
Cs-134	1.29E+00	1.82E-01	2.40E+00	1.11E+00	2.59E+00
Cs-136	5.63E-01	8.45E-02	7.79E-01	3.47E-01	8.63E-01
Cs-137	7.74E-01	1.10E-01	1.41E+00	6.51E-01	1.52E+00
Cs-138	6.08E+00	7.29E-01	3.35E+00	1.13E+00	4.08E+00
Rb-86	1.33E-02	1.83E-03	2.73E-02	1.27E-02	2.91E-02
Total	1.62E+03	1.84E+03	3.99E+03	1.23E+03	5.82E+03

Note: The release period of 6-8 hr yields the maximum 2-hr EAB dose with feedwater available.

Table 3 (SSAR Table 15-4)

Activity Releases for Spectrum of Rod Cluster Control Assem Ejection Accidents

	Activity Release (Ci)					
Isotope	0-2 hr	2-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Kr-85m	1.12E+02	6.48E+01	3.87E+01	1.77E+00	2.51E-05	2.18E+02
Kr-85	5.01E+00	5.60E+00	1.49E+01	3.35E+01	2.88E+02	3.47E+02
Kr-87	1.82E+02	2.60E+01	1.03E+00	8.37E-05	0.00E+00	2.09E+02
Kr-88	2.91E+02	1.18E+02	3.49E+01	3.59E-01	8.41E-09	4.45E+02
Xe-131m	4.94E+00	5.46E+00	1.42E+01	2.86E+01	1.16E+02	1.69E+02
Xe-133m	2.67E+01	2.81E+01	6.49E+01	8.45E+01	5.31E+01	2.57E+02
Xe-133	8.79E+02	9.58E+02	2.40E+03	4.27E+03	8.45E+03	1.70E+04
Xe-135m	7.34E+01	5.30E-02	4.33E-09	0.00E+00	0.00E+00	7.35E+01
Xe-135	2.15E+02	1.72E+02	2.09E+02	4.35E+01	1.79E-01	6.39E+02
Xe-138	2.99E+02	1.38E-01	3.19E-09	0.00E+00	0.00E+00	2.99E+02
I-130	4.90E+00	7.28E+00	4.32E+00	2.03E-01	2.95E-04	1.67E+01
I-131	1.36E+02	2.45E+02	2.31E+02	3.10E+01	1.68E+01	6.60E+02
I-132	1.53E+02	9.94E+01	9.85E+00	8.24E-03	0.00E+00	2.62E+02
I-133	2.72E+02	4.40E+02	3.18E+02	2.28E+01	2.41E-01	1.05E+03
I-134	1.66E+02	2.85E+01	1.37E-01	4.48E-08	0.00E+00	1.95E+02
I-135	2.39E+02	2.97E+02	1.19E+02	2.39E+00	7.32E-05	6.57E+02
Cs-134	3.08E+01	6.22E+01	6.03E+01	7.76E+00	5.16E+00	1.66E+02
Cs-136	8.79E+00	1.75E+01	1.67E+01	2.05E+00	6.58E-01	4.57E+01
Cs-137	1.79E+01	3.62E+01	3.51E+01	4.52E+00	3.05E+00	9.68E+01
Cs-138	1.09E+02	7.05E+00	1.68E-03	0.00E+00	0.00E+00	1.16E+02
Rb-86	3.62E-01	7.27E-01	6.96E-01	8.67E-02	3.42E-02	1.91E+00
Total	3.23E+03	2.62E+03	3.58E+03	4.53E+03	8.93E+03	2.29E+04

Table 4 (SSAR Table 15-5)

Activity Releases for Failure of Small Lines Carrying Primary Coolant Outside Containment

	Activity Release (Ci)
Isotope	0-2 hr
Kr-85m	1.24E+01
Kr-85	4.40E+01
Kr-87	7.05E+00
Kr-88	2.21E+01
Xe-131m	1.99E+01
Xe-133m	2.50E+01
Xe-133	1.84E+03
Xe-135m	2.59E+00
Xe-135	5.20E+01
Xe-138	3.65E+00
I-130	1.89E+00
I-131	9.26E+01
I-132	3.49E+02
I-133	2.01E+02
I-134	1.58E+02
I-135	1.68E+02
Cs-134	4.16E+00
Cs-136	6.16E+00
Cs-137	3.00E+00
Cs-138	2.21E+00
Total	3.02E+03

Table 5 (SSAR Table 15-6)

Activity Releases for Steam Generator Tube Rupture with Pre-Existing Iodine Spike

	Activity Release (Ci)			
Isotope	0-2 hr	2-8 hr	8-24 hr	Total
Kr-85m	5.53E+01	1.93E+01	7.53E-03	7.46E+01
Kr-85	2.20E+02	1.09E+02	1.34E-01	3.29E+02
Kr-87	2.39E+01	3.61E+00	9.12E-05	2.75E+01
Kr-88	9.22E+01	2.65E+01	5.43E-03	1.19E+02
Xe-131m	9.96E+01	4.88E+01	5.91E-02	1.48E+02
Xe-133m	1.24E+02	5.91E+01	6.61E-02	1.83E+02
Xe-133	9.19E+03	4.47E+03	5.29E+00	1.37E+04
Xe-135m	3.44E+00	5.86E-03	0.00E+00	3.45E+00
Xe-135	2.46E+02	1.02E+02	7.10E-02	3.47E+02
Xe-138	4.56E+00	5.07E-03	0.00E+00	4.57E+00
I-130	1.79E+00	5.39E-02	2.68E-01	2.12E+00
I-131	1.21E+02	5.27E+00	3.06E+01	1.56E+02
I-132	1.42E+02	7.43E-01	1.92E+00	1.44E+02
I-133	2.16E+02	7.63E+00	4.06E+01	2.64E+02
I-134	2.74E+01	4.40E-03	4.23E-03	2.74E+01
I-135	1.27E+02	2.70E+00	1.17E+01	1.42E+02
Cs-134	1.63E+00	6.05E-02	2.16E-01	1.90E+00
Cs-136	2.42E+00	8.86E-02	3.14E-01	2.82E+00
Cs-137	1.17E+00	4.37E-02	1.56E-01	1.37E+00
Cs-138	5.64E-01	2.91E-06	5.73E-07	5.64E-01
Total	1.07E+04	4.85E+03	9.14E+01	1.56E+04

Table 6 (SSAR Table 15-7)

Activity Releases for Steam Generator Tube Rupture with Accident-Initiated Iodine Spike

	Activity Release (Ci)			
Isotope	0-2 hr	2-8 hr	8-24 hr	Total
Kr-85m	5.53E+01	1.93E+01	7.53E-03	7.46E+01
Kr-85	2.20E+02	1.09E+02	1.34E-01	3.29E+02
Kr-87	2.39E+01	3.61E+00	9.12E-05	2.75E+01
Kr-88	9.22E+01	2.65E+01	5.43E-03	1.19E+02
Xe-131m	9.96E+01	4.88E+01	5.91E-02	1.48E+02
Xe-133m	1.24E+02	5.91E+01	6.61E-02	1.83E+02
Xe-133	9.19E+03	4.47E+03	5.29E+00	1.37E+04
Xe-135m	3.44E+00	5.86E-03	0.00E+00	3.45E+00
Xe-135	2.46E+02	1.02E+02	7.10E-02	3.47E+02
Xe-138	4.56E+00	5.07E-03	0.00E+00	4.57E+00
I-130	8.87E-01	1.62E-01	8.24E-01	1.87E+00
I-131	4.36E+01	1.14E+01	6.76E+01	1.23E+02
I-132	1.47E+02	4.86E+00	1.29E+01	1.65E+02
I-133	9.33E+01	2.00E+01	1.08E+02	2.22E+02
I-134	5.59E+01	6.04E-02	5.94E-02	5.60E+01
I-135	7.61E+01	9.88E+00	4.38E+01	1.30E+02
Cs-134	1.63E+00	6.05E-02	2.16E-01	1.90E+00
Cs-136	2.42E+00	8.86E-02	3.14E-01	2.82E+00
Cs-137	1.17E+00	4.37E-02	1.56E-01	1.37E+00
Cs-138	5.64E-01	2.91E-06	5.73E-07	5.64E-01
Total	1.05E+04	4.88E+03	2.40E+02	1.56E+04

Table 7 (SSAR Table 15-8)

Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

	Activity Release (Ci)					
Isotope	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
I-130	5.64E+01	1.12E+02	5.37E+00	7.10E-01	1.27E-02	1.18E+02
I-131	1.68E+03	3.49E+03	2.66E+02	2.39E+02	7.19E+02	4.71E+03
I-132	1.23E+03	2.14E+03	1.64E+01	1.46E-02	0.00E+00	2.15E+03
I-133	3.23E+03	6.54E+03	3.83E+02	1.04E+02	1.04E+01	7.04E+03
I-134	6.60E+02	1.14E+03	2.96E-01	6.79E-08	0.00E+00	1.14E+03
I-135	2.56E+03	4.89E+03	1.58E+02	6.09E+00	3.16E-03	5.06E+03
Kr-85m	1.42E+03	3.77E+03	1.87E+03	8.56E+01	1.22E-03	5.73E+03
Kr-85	8.31E+01	2.97E+02	7.06E+02	1.59E+03	1.36E+04	1.62E+04
Kr-87	1.10E+03	1.95E+03	4.97E+01	4.05E-03	0.00E+00	1.99E+03
Kr-88	3.11E+03	7.26E+03	1.70E+03	1.75E+01	4.09E-07	8.97E+03
Xe-131m	8.26E+01	2.94E+02	6.79E+02	1.37E+03	5.57E+03	7.91E+03
Xe-133m	4.43E+02	1.54E+03	3.15E+03	4.11E+03	2.58E+03	1.14E+04
Xe-133	1.47E+04	5.19E+04	1.16E+05	2.06E+05	4.07E+05	7.80E+05
Xe-135m	1.06E+01	3.59E+01	2.14E-07	0.00E+00	0.00E+00	3.59E+01
Xe-135	3.15E+03	9.64E+03	1.01E+04	2.11E+03	8.68E+00	2.19E+04
Xe-138	3.11E+01	1.20E+02	1.58E-07	0.00E+00	0.00E+00	1.20E+02
Rb-86	3.04E+00	6.32E+00	2.99E-01	9.83E-02	5.13E-01	7.23E+00
Cs-134	2.58E+02	5.38E+02	2.57E+01	9.11E+00	7.74E+01	6.50E+02
Cs-136	7.33E+01	1.52E+02	7.16E+00	2.28E+00	9.88E+00	1.72E+02
Cs-137	1.51E+02	3.13E+02	1.50E+01	5.32E+00	4.57E+01	3.79E+02
Cs-138	1.50E+02	3.30E+02	2.18E-03	0.00E+00	0.00E+00	3.30E+02
Sb-127	2.42E+01	4.80E+01	2.29E+00	5.67E-01	7.82E-01	5.16E+01
Sb-129	5.10E+01	8.94E+01	1.51E+00	4.95E-03	4.90E-08	9.09E+01
Te-127m	3.15E+00	6.30E+00	3.16E-01	1.11E-01	8.71E-01	7.60E+00
Te-127	2.05E+01	3.83E+01	1.15E+00	2.75E-02	1.33E-04	3.94E+01
Te-129m	1.07E+01	2.15E+01	1.07E+00	3.65E-01	2.36E+00	2.52E+01

Table 8 (SSAR Table 15-9)

(cont.) Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

	Activity Release (Ci)					
Isotope	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Te-129	1.88E+01	2.83E+01	2.69E-02	3.54E-08	0.00E+00	2.84E+01
Te-131m	3.17E+01	6.20E+01	2.64E+00	3.35E-01	7.81E-02	6.50E+01
Te-132	3.23E+02	6.40E+02	3.02E+01	7.04E+00	7.83E+00	6.85E+02
Sr-89	9.23E+01	1.85E+02	9.24E+00	3.19E+00	2.26E+01	2.20E+02
Sr-90	7.95E+00	1.59E+01	7.99E-01	2.84E-01	2.44E+00	1.94E+01
Sr-91	9.68E+01	1.81E+02	5.46E+00	1.35E-01	7.06E-04	1.87E+02
Sr-92	6.83E+01	1.13E+02	1.01E+00	5.15E-04	0.00E+00	1.14E+02
Ba-139	5.44E+01	8.30E+01	1.49E-01	9.91E-07	0.00E+00	8.32E+01
Ba-140	1.63E+02	3.25E+02	1.61E+01	5.11E+00	2.17E+01	3.68E+02
Mo-99	2.15E+01	4.25E+01	1.98E+00	4.29E-01	3.78E-01	4.53E+01
Tc-99m	1.47E+01	2.66E+01	6.05E-01	5.27E-03	1.33E-06	2.72E+01
Ru-103	1.73E+01	3.46E+01	1.73E+00	5.93E-01	3.99E+00	4.09E+01
Ru-105	8.18E+00	1.44E+01	2.48E-01	8.86E-04	1.17E-08	1.46E+01
Ru-106	5.70E+00	1.14E+01	5.73E-01	2.03E-01	1.70E+00	1.39E+01
Rh-105	1.03E+01	2.02E+01	8.81E-01	1.29E-01	4.14E-02	2.12E+01
Ce-141	3.89E+00	7.78E+00	3.88E-01	1.32E-01	8.45E-01	9.15E+00
Ce-143	3.46E+00	6.78E+00	2.93E-01	4.05E-02	1.14E-02	7.13E+00
Ce-144	2.94E+00	5.89E+00	2.96E-01	1.05E-01	8.68E-01	7.15E+00
Pu-238	9.16E-03	1.83E-02	9.21E-04	3.27E-04	2.82E-03	2.24E-02
Pu-239	8.06E-04	1.61E-03	8.10E-05	2.88E-05	2.48E-04	1.97E-03
Pu-240	1.18E-03	2.37E-03	1.19E-04	4.22E-05	3.63E-04	2.89E-03
Pu-241	2.66E-01	5.31E-01	2.67E-02	9.48E-03	8.14E-02	6.49E-01
Np-239	4.48E+01	8.87E+01	4.08E+00	8.15E-01	5.70E-01	9.41E+01
Y-90	8.08E-02	1.60E-01	7.44E-03	1.59E-03	1.35E-03	1.70E-01
Y-91	1.19E+00	2.37E+00	1.19E-01	4.12E-02	3.00E-01	2.83E+00
Y-92	7.89E-01	1.35E+00	1.80E-02	2.86E-05	0.00E+00	1.37E+00

Table 8 Cont. (SSAR Table 15-9 cont)

(cont.) Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

	Activity Release (Ci)					
Isotope	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Y-93	1.21E+00	2.28E+00	7.08E-02	1.98E-03	1.42E-05	2.35E+00
Nb-95	1.60E+00	3.19E+00	1.59E-01	5.44E-02	3.55E-01	3.76E+00
Zr-95	1.59E+00	3.18E+00	1.59E-01	5.52E-02	4.08E-01	3.80E+00
Zr-97	1.43E+00	2.74E+00	1.03E-01	6.73E-03	3.71E-04	2.85E+00
La-140	1.67E+00	3.29E+00	1.46E-01	2.36E-02	9.62E-03	3.47E+00
La-141	1.03E+00	1.79E+00	2.71E-02	6.41E-05	2.01E-10	1.81E+00
La-142	5.38E-01	8.31E-01	2.09E-03	3.39E-08	0.00E+00	8.33E-01
Nd-147	6.16E-01	1.23E+00	6.06E-02	1.90E-02	7.29E-02	1.38E+00
Pr-143	1.39E+00	2.78E+00	1.37E-01	4.40E-02	1.94E-01	3.15E+00
Am-241	1.20E-04	2.39E-04	1.20E-05	4.27E-06	3.68E-05	2.92E-04
Cm-242	2.82E-02	5.65E-02	2.83E-03	9.98E-04	8.08E-03	6.84E-02
Cm-244	3.46E-03	6.93E-03	3.48E-04	1.24E-04	1.06E-03	8.47E-03
Total	3.53E+04	9.85E+04	1.35E+05	2.15E+05	4.30E+05	8.79E+05

Table 8 Cont. (SSAR Table 15-9 cont)

Activity Releases for Fuel Handling Accident

Isotope	Activity Release (Ci) 0-2 hr
Kr-85m	3.42E+02
Kr-85	1.11E+03
Kr-87	6.00E-02
Kr-88	1.07E+02
Xe-131m	5.54E+02
Xe-133m	2.80E+03
Xe-133	9.66E+04
Xe-135m	1.26E+03
Xe-135	2.49E+04
I-130	2.51E+00
I-131	3.76E+02
I-132	3.01E+02
I-133	2.40E+02
I-135	3.94E+01
Total	1.29E+05

Table 9 (SSAR Table 15-10)

Appendix C: Combined License Action Items

Action Item No.	SER Section	Subject To Be Addressed	Reason For Deferral
2.2 – Nearby Industrial, Transportation, and Military Facilities			
2.2-1	2.2.3.3	A COL or CP applicant should address the potential accidental release of hydrazine from onsite storage tanks that may have an impact on control room habitability for the new units.	Since the design of the control room at the proposed ESP site is not available, it is expected to be evaluated at the CP or COL stage.
2.2-2	2.2.3.3	A COL or CP applicant should identify the quantities of the chemicals that will be used for the proposed Units 3 and 4 at VEGP and address their potential impact on control room habitability.	Since the quantities of the chemicals used are not available, and the design of the control room is not available, it is expected to be evaluated at the CP or COL stage.
2.3 – Meteorology			
2.3-1	2.3.1.3	If, at the COL or CP stage, the applicant chooses an alternative plant design that requires the use of a UHS cooling tower, the applicant will need to identify the appropriate meteorological site characteristics (i.e., maximum evaporation and drift loss and minimum water cooling conditions) used to evaluate the design of the chosen UHS cooling tower.	The applicant has chosen a reactor design that does not use a cooling tower to release heat to the atmosphere following a loss of coolant accident.
2.4 – Hydrology			
2.4-1	2.4.13	A COL or CP applicant will need to confirm that no chelating agents will be comingled with radioactive waste liquids and that such agents will not be used to mitigate an accidental release. Alternatively, the applicant should repeat the distribution coefficient experiments with chelating agents included, and incorporate these newly determined distribution coefficients into	The detailed design of the radwaste treatment system was not available at the ESP stage, and the applicant, in response to an RAI, stated that comingling of chelating agents and radionuclides was highly unlikely.

Action Item No.	SER Section	Subject To Be Addressed	Reason For Deferral
		the analysis to demonstrate that 10 CFR Part 20, Appendix B, Table 2 is satisfied.	Subsequent analysis of radionuclide transport by staff indicate that either comingling must not occur, or additional data and further analysis is necessary. Therefore, the prospect for comingling chelating agents and radionuclides must be revisited at the CP or COL stage.
13.6 – Industrial Security			
13.6-1	13.6	The COL or CP applicant will need to provide the specific access control measures to address the existing rail spur.	Such measures are not required at the ESP stage.

Appendix D: Values of Site Characteristics, Design Parameters, and Site Interface Values Considered in the Environmental Review of the Application

The AP1000 Design Parameters and Site Interface Values are from the Southern Nuclear Operating Company, Inc. (SNC) Early Site Permit Application, Revision 5, Environmental Report (ER) Table 3.0-1 unless otherwise specified. These characteristics and parameters were used by the Nuclear Regulatory Commission (NRC) staff in its independent evaluation of the environmental impacts of the proposed new units. In some cases, the staff substituted values based on its own analysis.

Part I Site Characteristic			
Item	**Value**		**Description and Reference**
Airborne Effluent Release Point			
Minimum Distance to EAB	½ mi (~800 m)		The lateral distance from the release point (power block area) to the modeled EAB for dose analysis. Refer to Section 2.7.6, Table 2.7-14
Atmospheric Dispersion (χ/Q) (Accident)	*The atmospheric dispersion coefficients used to estimate dose consequences of accident airborne releases.* *Values used in analyses presented in Section 7.1*		
	Time (hour)	Site χ/Q	Atmospheric dispersion coefficients used to estimate dose consequences of accident airborne releases.
EAB (χ/Q)	0 - 2	6.62E-5 sec/m^3	
LPZ (χ/Q)	0 - 8	1.25E-5 sec/m^3	
	8 - 24	1.10E-5 sec/m^3	
	24 - 96	8.40E-6 sec/m^3	
	96 - 720	5.75E-6 sec/m^3	Refer to Section 2.7.5, Tables 2.7-12 and 2.7-13, Section 7.1 and Table 7.1-2
Gaseous Effluents Dispersion, Deposition (Annual Average)			
Atmospheric Dispersion (χ/Q)	χ/Q values in Table 2.7-15		The atmospheric dispersion coefficients used to estimate dose consequences of normal airborne releases. Refer to Section 2.7.6, Table 2.7-15
Population Density			
Population density over the lifetime of the new units until 2090	Population density meets the guidance of RS-002, Attachment 3		Refer to Section 2.5.1, Figures 2.5.1-1 and 2.5.1-2, Table 2.5.1-1
Exclusion Area Boundary (EAB)	The EAB is as defined on Drawing No. AR01-0000-X2-2002 Refer to Figure 3.1-3		The exclusion area boundary generally follows the plant property line and is defined on Drawing No. AR01-0000-X2-2002. Refer to Section 2.7.5
Low Population Zone (LPZ)	A 2-mile-radius circle from the midpoint between the containment buildings of Units 1 and 2		The LPZ is a 2-mile-radius circle from the midpoint between Unit 1 and Unit 2 containment buildings. Refer to Section 2.7.5

Part II Design Parameters		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Facility Characteristics		
Height	234 ft 0 in	The height from finished grade to the top of the tallest power block structure, excluding cooling towers Section 5.3.3.2.5 discusses potential for avian collisions, and Section 5.8.1.3 discusses visual impacts.
Foundation Embedment	39 ft 6 in *to bottom* of basemat from plant grade	The depth from finished grade to the bottom of the basemat for the most deeply embedded power block structure. Sections 4.2.2 and 5.2.2 discuss impacts to groundwater from installing the foundation
Max Inlet Temp Condenser / Heat Exchanger	91°F	The maximum acceptable design circulating water temperature at the inlet to the condenser or cooling water system heat exchangers. Refer to Section 3.4.2.3
Condenser / Heat Exchanger Duty	7.54E9 BTU/hr [1.51E10 BTU/hr]	Design value for the waste heat rejected to the circulating water system across the condensers. Selected value includes part of the service water system heat duty (from turbine equipment heat exchanger). Refer to Sections 3.4.1 and 3.4.2, and Table 3.4-2
Cooling Tower Temperature Range	25.2°F	The temperature difference between the hot water entering the tower and the cold water leaving the tower. Refer to Table 3.4-2
Cooling Tower Cooling Water Flow Rate	600,000 gpm [1,200,000 gpm]	The total nominal cooling water flow rate through the condenser/heat exchangers. Refer to Sections 3.3.1 and 3.4.1, and Table 3.4-2

Part II Design Parameters		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Auxiliary Heat Sink		
CCW Heat Exchanger Duty	8.3E7 BTU/hr normal 2.96E8 BTU/hr shutdown [1.66E8 BTU/hr normal 5.92E8 BTU/hr shutdown]	The heat transferred from the CCW heat exchangers to the service water system for rejection to the environment. Refer to Section 3.3.1 and Table 3.4-1
SWS Cooling Tower Cooling Water Flow Rate	9,000 gpm normal 18,000 gpm shutdown [18,000 gpm normal 36,000 gpm shutdown]	The total nominal cooling water flow rate through the SWS. Refer to Section 3.3.1 and Table 3.4-1
Plant Characteristics		
Rated Thermal Power (RTP)	3,400 MWt	The thermal power generated by the core. Refer to Section 3.2
Rated NSSS Thermal Output	3,415 MWt [6,830 MWt]	The thermal power generated by the core plus heat from the reactor coolant pumps. Refer to Section 3.2
Average Fuel Enrichment	2.35 wt % to 4.45 wt % 4.51 wt %	Concentration of U-235 in fuel - Initial load. Refer to Section 3.2. Average concentration, in weight percent, of U-235 in reloads; see Section 5.11.1; used in analysis presented in Section 5.11.2
Fuel Burn-up	60,000 MWd/MTU (design max) 48,700 MWd/MTU (expected)	Value derived by multiplying the reactor thermal power by time of irradiation divided by fuel mass (expressed in megawatt - days per metric ton of uranium fuel). Refer to Section 3.2 and 5.11.1; average discharge burnup used in analysis presented in Section 5.11.2
Normal Releases		
Liquid Source Term	See Table 3.5-1 0.26 curies total nuclides except tritium [0.52 curies]	The annual activity, by isotope, contained in routine liquid effluent streams. Used in analyses presented in Section 5.4

Part II Design Parameters		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Tritium (liquid)	1,010 curies [2,020 curies]	The annual activity of tritium contained in routine liquid effluent streams. Section 5.4 analyses account for tritium releases
Gaseous Source Term	See Table 3.5-2 11,000 curies total nuclides except tritium [22,000] [Double values in Table 3.5-2]	The annual activity, by isotope, contained in routine plant airborne effluent streams. Used in analysis presented in Section 5.4
Tritium (gaseous)	See Table 3.5-2 350 curies [700 curies]	The annual activity of tritium contained in routine plant airborne effluent streams. Section 5.4 analyses account for tritium releases
Solid Waste Activity	See Tables 3.5-4 and 3.5-5 1,764 curies [3,528 curies]	The annual activity contained in solid radioactive wastes generated during routine plant operations. Refer to Sections 3.5.3 and 5.5.4
Dry Active ("Solid") Waste Volume	4,994 ft^3 [9,988 ft^3]	The expected volume of solid radioactive wastes generated during routine plant operations. Refer to Section 3.5.3
Accident Releases		
Elevation (Post Accident)	Ground level	The elevation above finished grade of the release point for accident sequence releases. Used to calculate impacts of accidents in Sections 2.7.5, 7.1 and 7.2
Gaseous Source Term (Post-Accident)	See Tables 7.1-4 to 7.1-12	The activity, by isotope, contained in post-accident airborne effluents. Refer to Section 7.1 and Tables 7.1-4 to 7.1-12.

Part III Site Interface Values		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Normal Plant Heat Sink (condenser and turbine auxiliary cooling)		
CWS Cooling Tower Acreage	38 acres [69.3 acres]	The land required for CWS natural draft cooling towers, including support facilities such as equipment sheds, basins, or canals, Refer to Sections 3.1.2 and 3.4.2
CWS Cooling Tower Approach Temperature	11°F	The difference between the cold water temperature leaving the tower and the ambient wet bulb temperature. Refer to Section 3.4.2
CWS Cooling Tower Blowdown Temperature	91°F	The design maximum expected blowdown temperature at the point of discharge to the receiving water body. Refer to Section 5.3
CWS Cooling Tower Evaporation Rate	13,950 gpm (14,440 gpm) [27,900 gpm (28,880 gpm)]	The expected (and maximum) rate at which water is lost by evaporation from the cooling water systems. Refer to Section 3.3.1 and Table 3.3-1; used as basis for analyses in Section 5.3.3.1
CWS Cooling Tower Drift Rate	12 gpm [24 gpm]	The maximum rate at which water is lost by drift from the cooling water systems. Refer to Section 3.3.1, and Table 3.3-1; used as basis for analyses in Section 5.3.3.1
CWS Cooling Tower Height	600 ft	The vertical height above finished grade of the natural draft cooling tower. Refer to Table 3.4-2; used as basis for analysis in Section 5.3.3.1
CWS Cooling Tower Make-up Flow Rate	18,612 gpm (28,892 gpm) [37,224 gpm (57,784 gpm)]	The expected (and maximum) design rate of removal of water from the Savannah River to replace water losses from circulating water systems. The make-up flow rate is a calculated value based on the sum of the evaporation rate plus the blowdown flow rate plus drift. Refer to Sections 3.3.1, 3.4.1 and 3.4.2 and Table 3.3-1 Used as basis for analysis in Section 5.3.1 and 5.3.2

Part III Site Interface Values		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
CWS Cooling Tower Offsite Noise Levels	<30 to ≤40 dBa	The maximum expected sound level at the site boundary. Refer to Table 2.7-26.
CWS Cooling Tower Heat Rejection Rate (Blowdown)	4,650 gpm (expected), 14,440 gpm (max) @91°F [9,300 gpm (expected) 28,880 gpm (max)] @ 91°F	The expected heat rejection rate to a receiving water body, expressed as flow rate in gallons per minute at a temperature in degrees Fahrenheit. Refer to Sections 2.3.2, 3.3.2; used as basis for analyses in Sections 5.3.1 and 5.3.2
CWS Cooling Tower Maximum Consumption of Raw Water	14,452 gpm [28,904 gpm]	The expected maximum short-term consumptive use of water by the circulating water systems (evaporation and drift losses). Refer to Sections 3.3.1 and 3.4.1, and Table 3.3-1
CWS Cooling Tower Expected Consumption of Raw Water	13,962 gpm [27,924 gpm]	The expected normal operating consumption of water by the circulating water system (evaporation and drift losses). Refer to Sections 3.3 and 3.4, and Table 3.3-1
Auxiliary Heat Sink (nuclear island cooling)		
SWS Cooling Tower Acreage	0.5 acre [1 acre]	The land required for SWS mechanical draft cooling towers, including support facilities such as equipment sheds and basins. Refer to Section 3.1.2
SWS Cooling Tower Makeup Rate	269 gpm (1,177 gpm) [537 gpm (2,353 gpm)]	The expected (maximum) rate of removal of water from wells to replace water losses from auxiliary heat sink. Refer to Sections 3.3 and 3.4.1
Airborne Effluent Release Point		
Normal Dose Consequences to the Maximally Exposed Individual	Total body: 0.05 mrem [0.1 mrem]	The estimated annual design radiological dose consequences due to gaseous releases from normal operation of the plant. Refer to Section 5.4
Post-Accident Dose Consequences	See Tables 7.1-13 to 7.1-22	The estimated design radiological dose consequences due to gaseous releases from postulated accidents. Refer to Section 7.1

Part III Site Interface Values		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Liquid Radwaste System		
Normal Dose Consequences	10 CFR 50, App I, 10 CFR 20 40 CFR 190	The estimated design radiological dose consequences due to liquid effluent releases from normal operation of the plant. Refer to Section 5.4.2.1
Plant Characteristics		
Total Acreage	310 acres for 2 units	The land area required to provide space for all plant facilities, including power block, switchyard, spent fuel storage, and administrative facilities. Refer to Section 4.1.1.1
Groundwater Consumptive Use	376 gpm (1,570 gpm) [762 gpm (3,140 gpm)]	The Rate of withdrawal of groundwater to serve the new units. Used in analysis in 5.2.2
Plant Population		
Operation	345 [660]	The number of people required to operate and maintain the plant. Refer to Section 3.10.3; used in analyses in Section 5.8
Refueling / Major Maintenance	1,000	The additional number of temporary staff required to conduct refueling and major maintenance activities. Refer to Section 5.8
Construction	1,576 people monthly average [3,152 people monthly average]	The monthly average estimated construction workforce staffing for two AP1000 units being constructed simultaneously. This assumes a site preparation schedule of 18 months, 48 months from first concrete to fuel load, with 6 months from fuel load to commercial operation and 12 months between commercial operation of each unit. This assumes 20.5 job hours per net kilowatt installed, giving credit for offsite modular construction. The peak number of construction workforce personnel could reach the 4,400 range. Refer to Section 3.10.1; used in analyses in Section 4.7

Appendix E: Inspections, Tests, Analyses, and Acceptance Criteria

ITAAC for the LWA

Waterproof Membrane ITAAC

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
The friction coefficient to resist sliding is 0.7 or higher	Testing will be performed to confirm that the mudmat-waterproofing-mudmat interface beneath the Nuclear Island basemat has a minimum coefficient of friction to resist sliding of 0.7	A report exists and documents that the as-built waterproof system (mudmat-waterproofing-mudmat interface) has a minimum coefficient of friction of 0.7 as demonstrated through material qualification testing.

Backfill ITAAC

Design Requirement	Inspections, Tests, Analyses	Acceptance Criteria
Backfill material under Seismic Category 1 structures is installed to meet a minimum of 95 percent modified Proctor compaction.	Required testing will be performed during placement of the backfill materials.	A report exists that documents that the backfill material under Seismic Category 1 structures meets the minimum 95 percent modified Proctor compaction.
Backfill shear wave velocity is greater than or equal to 1,000 fps at the depth of the NI foundation and below.	Field shear wave velocity measurements will be performed when backfill placement is at the elevation of the bottom of the Nuclear Island foundation and at finish grade.	A report exists and documents that the as-built backfill shear wave velocity at the NI foundation depth and below is greater than or equal to 1,000 fps.

VEGP Unit 3 Emergency Planning ITAAC

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 An emergency classification and emergency action level (EAL) scheme must be established by the licensee. The specific instruments, parameters, or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures. The plan shall identify the parameter values and equipment status for each emergency class. [D.1]	1.1.1 An inspection of the control room, technical support center (TSC), and emergency operations facility (EOF) will be performed to verify that the displays for retrieving system and effluent parameters specified in Table Annex V2 D.2-1, *Hot Initiating Condition Matrix, Modes 1, 2, 3, and 4*; Table V2 D.2-2, *Cold Initiating Condition Matrix, Modes 5, 6, and De-fueled* are installed and perform their intended functions; and that emergency implementing procedures (EIPs) have been completed. 1.1.2 An analysis of the EAL technical bases will be performed to verify as-built, site-specific implementation of the EAL scheme.	1.1.1 The parameters specified in Table Annex V2 H-1, *Post Accident Monitoring Variables*, are retrievable in the control room, TSC, and EOF. The ranges of values of these parameters that can be displayed encompass the values specified in the emergency classification and EAL scheme. 1.1.2 The EAL scheme is consistent with Regulatory Guide 1.101, *Emergency Planning and Preparedness for Nuclear Power Reactors*.
3.0 Emergency Communications			
10 CFR 50.47(b)(6) – Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	3.1 The means exists for communications between the control room, OSC, TSC, EOF, principal State and local emergency operations centers (EOCs), and radiological field monitoring teams. [F.1.d]	3.1 A test will be performed of the communications capabilities between the control room, OSC, TSC and EOF, and to the State and local EOCs, and radiological field monitoring teams.	3.1 Communications are established between the control room, OSC, TSC, and EOF. Communications are established between the control room, TSC, and Georgia Emergency Management Agency (GEMA) Operation Center; Burke County Emergency Operation Center (EOC); SRS Operations Center; South Carolina Warning Point; and Aiken, Allendale, and Barnwell County Dispatchers. Communications are established

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			between the TSC and radiological monitoring teams.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
	3.2 The means exists for communications from the control room, TSC, and EOF to the NRC headquarters and regional office EOC (including establishment of the Emergency Response Data System (ERDS) between the onsite computer system and the NRC Operations Center. [F.1.f]	3.2 A test will be performed of the communications capabilities from the control room, TSC and EOF to the NRC, including ERDS.	3.2 Communications are established from the control room, TSC, and EOF to the NRC headquarters and regional office EOCs and an access port for the Emergency Response Data System (ERDS) is provided.
5.0 Emergency Facilities and Equipment			
10 CFR 50.47(b)(8) – Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	5.1 The licensee has established a technical support center (TSC) and an onsite operations support center (OSC). [H.1]	5.1 An inspection of the as-built TSC and OSC will be performed, including a test of the capabilities.	5.1.1 The TSC has at least 2,175 square feet of floor space. 5.1.2 Communication equipment is installed in the TSC and OSC, and voice transmission and reception are accomplished. 5.1.3 The plant parameters listed in Table Annex V2 H-1, *Post Accident Monitoring Values*, can be retrieved and displayed in the TSC. 5.1.4 The TSC is located within the protected area, and no major security barriers exist between the TSC and the control room. 5.1.5 The OSC is located adjacent to the passage from the annex building to the control room. 5.1.6 The TSC ventilation system includes a high-efficiency particulate air (HEPA) and charcoal filter, and radiation monitors are installed.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			5.1.7 A reliable and backup electrical power supply is available for the TSC.
	5.2 The licensee has established an emergency operations facility (EOF). [H.2]	5.2 An inspection of the EOF will be performed, including a test of the capabilities.	5.2.1 Voice transmission and reception are accomplished between the EOF and the control room. 5.2.2 The plant parameters listed in Table Annex V2 H-1, *Post Accident Monitoring Values*, can be retrieved and displayed in the EOF.
6.0 Accident Assessment			
10 CFR 50.47(b)(9) – Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.	6.1 The means exists to provide initial and continuing radiological assessment throughout the course of an accident. [I.2]	6.1 A test of the emergency plan will be conducted by performing a drill to verify the capability to perform accident assessment.	6.1 Using selected monitoring parameters listed in Table Annex V2 H-1 of the VEGP emergency plan, simulated degraded plant conditions are assessed and protective actions are initiated in accordance with the following criteria: A. Accident Assessment and Classification 1. Demonstrate the ability to identify initiating conditions, determine emergency action level (EAL) parameters, and correctly classify the emergency throughout the drill. B. Radiological Assessment and Control

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			1. Demonstrate the ability to obtain onsite radiological surveys and samples. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. 3. Demonstrate the ability to assemble and deploy field monitoring teams within 60 minutes from the decision to do so. 4. Demonstrate the ability to satisfactorily collect and disseminate field team data. 5. Demonstrate the ability to develop dose projections. 6. Demonstrate the ability to make the decision whether to issue radio-protective drugs (KI) to emergency workers. 7. Demonstrate the ability to develop appropriate protective action recommendations (PARs) and notify appropriate authorities within 15 minutes of development.
	6.2 The means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3]	6.2 An analysis of the emergency implementing procedures (EIPs) and the Offsite Dose Calculation Manual (ODCM) will be completed to verify ability to determine the source term and magnitude of releases.	6.2 The EIPs and ODCM correctly calculate source terms and magnitudes of postulated releases.
	6.3 The means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the	6.3 An analysis of the emergency implementing procedures (EIPs) and the Offsite Dose Calculation Manual (ODCM) will be completed to verify the	6.3 The EIPs and ODCM calculate the relationship between effluent monitor readings, and onsite and offsite exposures and contamination.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
	relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]	relationship between effluent monitor readings, and onsite and offsite exposures and contamination.	
	6.4 The means exists to acquire and evaluate meteorological information. [I.5]	6.4 A test will be performed to verify the ability to access meteorological information in the TSC and control room.	6.4 The following parameters are displayed in the TSC and control room: • Wind speed (at 10 and 60 meters) • Wind direction (at 10 and 60 meters) • Standard deviation of horizontal wind direction (at 10 meters) • Vertical temperature difference (between 10 and 60 meters) • Ambient temperature (at 10 meters) • Dew-point temperature (at 10 meters) • Precipitation (at the tower base)
	6.5 The means exists to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8]	6.5 A test will be performed of the capabilities to make rapid assessment of actual or potential radiological hazards through liquid or gaseous release pathways.	6.5 Demonstrate the capability to make rapid assessment of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways.
	6.6 The means exists to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]	6.6 An analysis of the methodology contained in the emergency implementing procedures (EIPs) for estimating dose and preparing protective action recommendations (PARs), and in the Offsite Dose Calculation Manual (ODCM) will be performed to verify the ability to estimate an integrated dose from projected and actual dose rates.	6.6 The EIPs and ODCM estimate an integrated dose.
7.0 Protective Response			
10 CFR 50.47(b)(10) – A range of protective actions has been	7.1 The means exists to warn and advise onsite individuals of an	7.1 A test of the onsite warning and communication capability emergency	7.1.1 Demonstrate the capability to direct and control emergency operations.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.	emergency, including those in areas controlled by the operator, including: • Employees not having emergency assignments • Visitors • Contractor and construction personnel • Other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area [J.1]	implementing procedures (EIPs) including protective action guidelines, assembly and accountability, and site dismissal will be performed during a drill.	7.1.2 Demonstrate the ability to transfer emergency direction from the control room (simulator) to the technical support center (TSC) within 30 minutes from activation. 7.1.3 Demonstrate the ability to prepare for around-the-clock staffing requirements. 7.1.4 Demonstrate the ability to perform assembly and accountability for all onsite individuals within 30 minutes of an emergency requiring protected area assembly and accountability. 7.1.5 Demonstrate the ability to perform site dismissal.
8.0 Exercises and Drills			
10 CFR 50.47(b)(14) – Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	8.1 The licensee conducts a full participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure EPZ, and each State within the ingestion pathway EPZ. [N.1]	8.1 A full participation exercise (test) will be conducted within the specified time periods of 10 CFR Part 50, Appendix E.	8.1.1 The exercise is completed within the specified time periods of Appendix E to 10 CFR Part 50, onsite exercise objectives listed below have been met and there are no uncorrected onsite exercise deficiencies. A. *Accident Assessment and Classification* 1. Demonstrate the ability to identify initiating conditions, determine emergency action level (EAL) parameters, and correctly classify the emergency throughout the exercise Standard Criteria: a. Determine the correct highest emergency classification level based on

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			events which were in progress, considering past events and their impact on the current conditions, within 15 minutes from the time the initiating condition(s) or EAL is identified. B. *Notifications* 1. Demonstrate the ability to alert, notify, and mobilize site emergency response personnel. Standard Criteria: a. Complete the designated checklist and perform the announcement within 5 minutes of the initial event classification for an Alert or higher. b. Activate the emergency recall system within 5 minutes of the initial event classification for an Alert or higher. 2. Demonstrate the ability to notify responsible State and local government agencies within 15 minutes and the NRC within 60 minutes after declaring an emergency. Standard Criteria: a. Transmit information using the designated checklist, in accordance with approved emergency implementing procedures (EIPs), within 15 minutes of event classification. b. Transmit information using the designated checklist, in accordance with approved EIPs, within 60 minutes of last

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			transmittal for a follow-up notification to State and local authorities. c. Transmit information using the designated checklist within 60 minutes of event classification for an initial notification of the NRC. 3. Demonstrate the ability to warn or advise onsite individuals of emergency conditions. Standard Criteria: a. Initiate notification of onsite individuals (via plant page or telephone), using the designated checklist within 15 minutes of notification. 4. Demonstrate the capability of the Prompt Notification System (PNS), for the public, to operate properly when required. Standard Criteria: a. 90% of the sirens operate properly, as indicated by the Whelen feedback system. b. A NOAA tone alert radio is activated. C. *Emergency Response* 1. Demonstrate the capability to direct and control emergency operations. Standard Criteria: a. Command and control is

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			demonstrated by the control room in the early phase of the emergency and the technical support center (TSC) within 60 minutes from TSC activation. 2. Demonstrate the ability to transfer emergency direction from the control room (simulator) to the TSC within 30 minutes from activation. Standard Criteria: a. Briefings were conducted prior to turnover responsibility. Personnel document transfer of duties. 3. Demonstrate the ability to prepare for around-the-clock staffing requirements. Standard Criteria: a. Complete 24-hour staff assignments. 4. Demonstrate the ability to perform assembly and accountability for all onsite individuals within 30 minutes of an emergency requiring protected area assembly and accountability. Standard Criteria: a. Protected area personnel assembly and accountability completed within 30 minutes of the Alert or higher emergency declaration via public address announcement. D. *Emergency Response Facilities* 1. Demonstrate activation of the

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			operational support center (OSC), and full functional operation of the TSC and EOF within 60 minutes of activation. Standard Criteria: a. The TSC, OSC, and EOF are activated within about 60 minutes of the initial notification. 2. Demonstrate the adequacy of equipment, security provisions, and habitability precautions for the TSC, OSC, EOF, and emergency news center (ENC), as appropriate. Standard Criteria: a. Demonstrate the adequacy of the emergency equipment in the emergency response facilities, including availability and general consistency with emergency implementing procedures (EIPs). b. The Security Shift Captain implements and follows applicable EIPs. c. The Health Physics Supervisor (TSC) implements the designated checklist if an onsite or offsite release has occurred. 3. Demonstrate the adequacy of communications for all emergency support resources. Standard Criteria: a. Emergency response communications listed in emergency implementing procedures (EIPs) are available and

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			operational. b. Communications systems are tested in accordance with TSC, OSC, and EOF activation checklists. c. Emergency response facility personnel are able to operate all specified communication systems. d. Clear primary and backup communications links are established and maintained for the duration of the exercise. E. *Radiological Assessment and Control* 1. Demonstrate the ability to obtain onsite radiological surveys and samples. Standard Criteria: a. HP Technicians demonstrate the ability to obtain appropriate instruments (range and type) and take surveys. b. Airborne samples are taken when the conditions indicate the need for the information. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. Standard Criteria: a. Emergency workers are issued self-reading dosimeters when radiation levels require, and exposures are controlled to

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			10 CFR Part 20 limits (unless the Emergency Director authorizes emergency limits). b. Exposure records are available, either from the ALARA computer or a hard copy dose report. c. Emergency workers include Security and personnel within all emergency facilities. 3. Demonstrate the ability to assemble and deploy field monitoring teams within 60 minutes from the decision to do so. Standard Criteria: a. One field monitoring team is ready to be deployed within 60 minutes of being requested from the OSC, and no later than 90 minutes from the declaration of an Alert or higher emergency. 4. Demonstrate the ability to satisfactorily collect and disseminate field team data. Standard Criteria: a. Field team data to be collected is dose rate or counts per minute (cpm) from the plume, both open and closed window, and air sample (gross/net cpm) for particulate and iodine, if applicable. b. Satisfactory data dissemination is from the field team to the Dose Assessment Supervisor, via the field team communicator and field team

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			coordinator. 5. Demonstrate the ability to develop dose projections. Standard Criteria: a. The on-shift HP/Chemistry Shared Foreman or Dose Assessment Supervisor performs timely and accurate dose projections, in accordance with emergency implementing procedures (EIPs). 6. Demonstrate the ability to make the decision whether to issue radioprotective drugs (KI) to emergency workers. Standard Criteria: a. KI is taken (simulated) if the estimated dose to the thyroid will exceed 25 rem committed dose equivalent (CDE). 7. Demonstrate the ability to develop appropriate protective action recommendations (PARs) and notify appropriate authorities within 15 minutes of development. Standard Criteria: a. Total effective dose equivalent (TEDE) and CDE dose projections from the dose assessment computer code are compared to emergency implementing procedures (EIPs). b. PARs are developed within 15 minutes of data availability.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			c. PARs are transmitted to responsible State and local government agencies via voice or fax within 15 minutes of PAR development. F. *Public Information* 1. Demonstrate the capability to develop and disseminate clear, accurate, and timely information to the news media, in accordance with EIPs. Standard Criteria: a. Media information (e.g., press releases, press briefings, electronic media) is made available within 60 minutes of notification of the on-call media representative. b. Follow-up information is provided, at a minimum, within 60 minutes of an emergency classification or PAR change. 2. Demonstrate the capability to establish and effectively operate rumor control in a coordinated fashion. Standard Criteria: a. Calls are answered in a timely manner with the correct information, in accordance with EIPs. b. Calls are returned or forwarded, as appropriate, to demonstrate responsiveness.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			c. Rumors are identified and addressed. G. *Evaluation* 1. Demonstrate the ability to conduct a post-exercise critique, to determine areas requiring improvement and corrective action. Standard Criteria: a. An exercise time line is developed, followed by an evaluation of the objectives. b. Significant problems in achieving the objectives are discussed to ensure understanding of why objectives were not fully achieved. c. Recommendations for improvement in non-objective areas are discussed. 8.1.2 Onsite emergency response personnel are mobilized in sufficient number to fill the emergency positions identified in emergency plan Section B, *VEGP Emergency Organization*, and they successfully perform their assigned responsibilities as outlined in Acceptance Criterion 8.1.1.D, *Emergency Response Facilities*. 8.1.3 The exercise is completed within the specified time periods of Appendix E to 10 CFR Part 50, offsite exercise objectives have been met, and there are either no uncorrected offsite deficiencies, or a license condition requires offsite deficiencies to be

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			corrected prior to operation above 5% of rated power.
9.0 Implementing Procedures			
10 CFR Part 50, Appendix E.V – No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Commission.	9.1 The licensee has submitted detailed implementing procedures for its emergency plan no less than 180 days prior to fuel load.	9.1 An inspection of the submittal letter will be performed.	9.1 The licensee has submitted detailed emergency implementing procedures (EIPs) for the onsite emergency plan no less than 180 days prior to fuel load.

VEGP Unit 4 Emergency Planning ITAAC

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 An emergency classification and emergency action level (EAL) scheme must be established by the licensee. The specific instruments, parameters, or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures. The plan shall identify the parameter values and equipment status for each emergency class. [D.1]	1.1.1 An inspection of the control room will be performed to verify that the displays for retrieving system and effluent parameters specified in Table Annex V2 D.2-1, *Hot Initiating Condition Matrix, Modes 1, 2, 3, and 4*; Table V2 D.2-2, *Cold Initiating Condition Matrix, Modes 5, 6, and De-fueled*; are installed and perform their intended functions; and that emergency implementing procedures (EIPs) have been completed. 1.1.2 An analysis of the EAL technical bases will be performed to verify as-	1.1.1 The parameters specified in Table Annex V2 H-1, *Post Accident Monitoring Variables*, are retrievable in the control room. The ranges of values of these parameters that can be displayed encompass the values specified in the emergency classification and EAL scheme. 1.1.2 The EAL scheme is consistent with Regulatory Guide 1.101,

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
		built, site-specific implementation of the EAL scheme.	*Emergency Planning and Preparedness for Nuclear Power Reactors*.
3.0 Emergency Communications			
10 CFR 50.47(b)(6) – Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	3.1 The means exists for communications between the control room, OSC, TSC, and EOF. [F.1.d]	3.1 A test will be performed of the communications capabilities between the control room, OSC, TSC and EOF, and to the State and local EOCs.	3.1 Communications are established between the control room, OSC, TSC, and EOF. Communications are established between the control room, Georgia Emergency Management Agency (GEMA) Operation Center; Burke County Emergency Operations Center (EOC); SRS Operations Center; South Carolina Warning Point; and Aiken, Allendale, and Barnwell County Dispatchers.
	3.2 The means exists for communications from the control room to the NRC headquarters and regional office EOC. [F.1.f]	3.2 A test will be performed of the communications capabilities from the control room, TSC and EOF to the NRC, including ERDS.	3.2 Communications are established from the control room, TSC, and EOF, to the NRC headquarters and regional office EOCs and an access port for the Emergency Response Data System (ERDS) is provided.
5.0 Emergency Facilities and Equipment			
10 CFR 50.47(b)(8) – Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	5.1 The licensee has established an onsite operations support center (OSC). [H.1]	5.1 An inspection of the as-built OSC will be performed, including a test of the capabilities.	5.1.1 Communication equipment is installed in the OSC, and voice transmission and reception are accomplished. 5.1.2 The plant parameters listed in Table Annex V2 H-1, *Post Accident Monitoring Values*, can be retrieved and displayed in the TSC. 5.1.3 The OSC is located adjacent to the passage from the annex building to the control room.
	5.2 The licensee has established an emergency operations facility (EOF). [H.2]	5.2 An inspection of the EOF will be performed, including a test of the capabilities.	5.2.1 Voice transmission and reception are accomplished between the EOF and the control room.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			5.2.2 The plant parameters listed in Table Annex V2 H-1, *Post Accident Monitoring Values*, can be retrieved and displayed in the EOF.
6.0 Accident Assessment			
10 CFR 50.47(b)(9) – Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.	6.1 The means exists to provide initial and continuing radiological assessment throughout the course of an accident. [I.2]	6.1 A test of the emergency plan will be conducted by performing a drill to verify the capability to perform accident assessment.	6.1 Using selected monitoring parameters listed in Table Annex V2 H-1 of the VEGP emergency plan, simulated degraded plant conditions are assessed and protective actions are initiated in accordance with the following criteria: A. Accident Assessment and Classification 1. Demonstrate the ability to identify initiating conditions, determine emergency action level (EAL) parameters, and correctly classify the emergency throughout the drill. B. Radiological Assessment and Control 1. Demonstrate the ability to obtain onsite radiological surveys and samples. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. 3. Demonstrate the ability to assemble and deploy field monitoring teams within 60 minutes from the decision to do so. 4. Demonstrate the ability to

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			satisfactorily collect and disseminate field team data. 5. Demonstrate the ability to develop dose projections. 6. Demonstrate the ability to make the decision whether to issue radio-protective drugs (KI) to emergency workers. 7. Demonstrate the ability to develop appropriate protective action recommendations (PARs) and notify appropriate authorities within 15 minutes of development.
	6.2 The means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3]	6.2 An analysis of the emergency implementing procedures (EIPs) and the Offsite Dose Calculation Manual (ODCM) will be completed to verify ability to determine the source term and magnitude of releases.	6.2 The EIPs and ODCM correctly calculate source terms and magnitudes of postulated releases.
	6.3 The means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]	6.3 An analysis of the emergency implementing procedures (EIPs) and the Offsite Dose Calculation Manual (ODCM) will be completed to verify the relationship between effluent monitor readings, and onsite and offsite exposures and contamination.	6.3 The EIPs and ODCM calculate the relationship between effluent monitor readings, and onsite and offsite exposures and contamination.
	6.4 The means exists to acquire and evaluate meteorological information. [I.5]	6.4 A test will be performed to verify the ability to access meteorological information in the TSC and control room.	6.4 The following parameters are displayed in the TSC and control room: • Wind speed (at 10 and 60 meters) • Wind direction (at 10 and 60 meters) • Standard deviation of horizontal wind direction (at 10 meters) • Vertical temperature difference (between 10 and 60 meters)

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			• Ambient temperature (at 10 meters) • Dew-point temperature (at 10 meters) • Precipitation (at the tower base)
	6.5 The means exists to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8]	6.5 A test will be performed of the capabilities to make rapid assessments of actual or potential radiological hazards through liquid or gaseous release pathways.	6.5 Demonstrate the capability to make rapid assessment of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways.
	6.6 The means exists to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]	6.6 An analysis of the methodology contained in the emergency implementing procedures (EIPs) for estimating dose and preparing protective action recommendations (PARs), and in the Offsite Dose Calculation Manual (ODCM) will be performed to verify the ability to estimate an integrated dose from projected and actual dose rates.	6.6 The EIPs and ODCM estimate an integrated dose.
7.0 Protective Response			
10 CFR 50.47(b)(10) – A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective	7.1 The means exists to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including: • Employees not having emergency assignments • Visitors • Contractor and construction personnel • Other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area [J.1]	7.1 A test of the onsite warning and communication capability emergency implementing procedures (EIPs) including protective action guidelines, assembly and accountability, and site dismissal will be performed during a drill.	7.1.1 Demonstrate the capability to direct and control emergency operations. 7.1.2 Demonstrate the ability to transfer emergency direction from the control room (simulator) to the technical support center (TSC) within 30 minutes of activation. 7.1.3 Demonstrate the ability to prepare for around-the-clock staffing requirements. 7.1.4 Demonstrate the ability to perform assembly and accountability for all

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.			onsite individuals within 30 minutes of an emergency requiring protected area assembly and accountability. 7.1.5 Demonstrate the ability to perform site dismissal.
8.0 Exercises and Drills			
10 CFR 50.47(b)(14) – Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	8.1 The licensee conducts a limited participation exercise to evaluate portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure EPZ that have not been tested in a previous exercise. [N.1]	8.1 A limited participation exercise (test) will be conducted within the specified time periods of 10 CFR Part 50, Appendix E.	8.1.1 The exercise is completed within the specified time periods of Appendix E to 10 CFR Part 50, onsite exercise objectives listed below have been met and there are no uncorrected onsite exercise deficiencies. A. *Accident Assessment and Classification* 1. Demonstrate the ability to identify initiating conditions, determine emergency action level (EAL) parameters, and correctly classify the emergency throughout the exercise Standard Criteria: a. Determine the correct highest emergency classification level based on events which were in progress, considering past events and their impact on the current conditions, within 15 minutes from the time the initiating condition(s) or EAL is identified. B. *Notifications* 1. Demonstrate the ability to alert, notify, and mobilize site emergency response personnel. Standard Criteria:

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			a. Complete the designated checklist and perform the announcement within 5 minutes of the initial event classification for an Alert or higher. b. Activate the emergency recall system within 5 minutes of the initial event classification for an Alert or higher. 2. Demonstrate the ability to notify responsible State and local government agencies within 15 minutes and the NRC within 60 minutes after declaring an emergency. Standard Criteria: a. Transmit information using the designated checklist, in accordance with approved emergency implementing procedures (EIPs), within 15 minutes of event classification. b. Transmit information using the designated checklist, in accordance with approved EIPs, within 60 minutes of last transmittal for a follow-up notification to State and local authorities. c. Transmit information using the designated checklist within 60 minutes of event classification for an initial notification of the NRC. 3. Demonstrate the ability to warn or advise onsite individuals of emergency conditions.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			Standard Criteria: a. Initiate notification of onsite individuals (via plant page or telephone) using the designated checklist, within 15 minutes of notification. C. *Emergency Response* 1. Demonstrate the capability to direct and control emergency operations. Standard Criteria: a. Command and control is demonstrated by the control room in the early phase of the emergency and by the TSC within 60 minutes from activation. 2. Demonstrate the ability to transfer emergency direction from the control room (simulator) to the TSC within 30 minutes from activation. Standard Criteria: a. Briefings were conducted prior to turnover responsibility. Personnel document transfer of duties. 3. Demonstrate the ability to prepare for around-the-clock staffing requirements. Standard Criteria: a. Complete 24-hour staff assignments. 4. Demonstrate the ability to perform assembly and accountability for all

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			onsite individuals within 30 minutes of an emergency requiring protected area assembly and accountability. Standard Criteria: a. Protected area personnel assembly and accountability completed within 30 minutes of the Alert or higher emergency declaration via public address announcement. D. *Emergency Response Facilities* 1. Demonstrate timely activation of the OSC. Standard Criteria: a. The OSC is activated within about 60 minutes of the initial notification. 2. Demonstrate the adequacy of equipment, security provisions, and habitability precautions for the OSC, as appropriate. Standard Criteria: a. Demonstrate the adequacy of the emergency equipment in the emergency response facilities, including availability and general consistency with emergency implementing procedures (EIPs). b. The Security Shift Captain implements and follows applicable EIPs.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			c. The Health Physics Supervisor (TSC) implements the designated checklist if an onsite or offsite release has occurred. 3. Demonstrate the adequacy of communications for all emergency support resources. Standard Criteria: a. Emergency response communications listed in emergency implementing procedures (EIPs) are available and operational. b. Communications systems are tested in accordance with OSC activation checklist. c. Emergency response facility personnel are able to operate all specified communication systems. d. Clear primary and backup communications links are established and maintained for the duration of the exercise. E. *Radiological Assessment and Control* 1. Demonstrate the ability to obtain onsite radiological surveys and samples. Standard Criteria: a. HP Technicians demonstrate the ability to obtain appropriate instruments

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			(range and type) and take surveys. b. Airborne samples are taken when the conditions indicate the need for the information. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. Standard Criteria: a. Emergency workers are issued self-reading dosimeters when radiation levels require, and exposures are controlled to 10 CFR Part 20 limits (unless the Emergency Director authorizes emergency limits). b. Exposure records are available, either from the ALARA computer or a hard copy dose report. c. Emergency workers include Security and personnel within all emergency facilities. 3. Demonstrate the ability to assemble and deploy field monitoring teams within 60 minutes from the decision to do so. Standard Criteria: a. One field monitoring team is ready to be deployed within 60 minutes of being requested from the OSC, and no later than 90 minutes from the declaration of an Alert or higher emergency.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			4. Demonstrate the ability to satisfactorily collect and disseminate field team data. Standard Criteria: a. Field team data to be collected is dose rate or counts per minute (cpm) from the plume, both open and closed window, and air sample (gross/net cpm) for particulate and iodine, if applicable. b. Satisfactory data dissemination is from the field team to the Dose Assessment Supervisor, via the field team communicator and field team coordinator. 5. Demonstrate the ability to develop dose projections. Standard Criteria: a. The on-shift HP/Chemistry Shared Foreman or Dose Assessment Supervisor performs timely and accurate dose projections, in accordance with emergency implementing procedures (EIPs). 6. Demonstrate the ability to develop appropriate protective action recommendations (PARs) and notify appropriate authorities within 15 minutes of development. Standard Criteria: a. Total effective dose equivalent (TEDE) and CDE dose projections from

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			the dose assessment computer code are compared to emergency implementing procedures (EIPs). b. PARs are developed within 15 minutes of data availability. c. PARs are transmitted to responsible State and local government agencies via voice or fax within 15 minutes of PAR development. 8.1.2 Onsite emergency response personnel are mobilized in sufficient number to fill the emergency positions identified in emergency plan Section B, *VEGP Emergency Organization,* and they successfully perform their assigned responsibilities as outlined in Acceptance Criterion 8.1.1.D, *Emergency Response Facilities*. 8.1.3 The exercise is completed within the specified time periods of Appendix E to 10 CFR Part 50, offsite exercise objectives have been met, and there are either no uncorrected offsite deficiencies, or a license condition requires offsite deficiencies to be corrected prior to operation above 5% of rated power.
9.0 Implementing Procedures			
10 CFR Part 50, Appendix E.V – No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, the applicant's detailed implementing procedures for its emergency	9.1 The licensee has submitted detailed implementing procedures for its emergency plan no less than 180 days prior to fuel load.	9.1 An inspection of the submittal letter will be performed.	9.1 The licensee has submitted detailed emergency implementing procedures (EIPs) for the onsite emergency plan no less than 180 days prior to fuel load.

Planning Standard	EP Program Elements (From NUREG-0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
plans shall be submitted to the Commission.			

Appendix F: Site Redress Plan

1.1 Introduction

An Early Site Permit (ESP) allows the holder to perform certain activities defined in 10 CFR 50.10 (e)(1) prior to receiving a combined operating license (COL) (i.e., permission to initiate construction). However, in order to perform these activities, the ESP application must include a plan for site redress that provides for restoration if the project is cancelled, or the ESP expires before it is referenced in a COL application.

Part 4 of the Southern Nuclear Operating Company (SNC) ESP application describes safety- related activities that may occur after the U.S. Nuclear Regulatory Commission (NRC) issues an ESP to SNC for the Vogtle Electric Generating Plant (VEGP) site, but before NRC issues a COL. These LWA activities are subject to regulation 10 CFR 50.10(d) (effective November 8, 2007). In accordance with this regulation and 10 CFR 52.17(c), Part 4 also describes the SNC plan for redress of LWA activities should SNC terminate construction of VEGP Units 3 and 4. This site Redress Plan has been developed to provide reasonable assurance that redress carried out under the plan would achieve an environmentally stable and aesthetically acceptable site.

1.2 Site Description

The site selected for two new nuclear units, designated VEGP Units 3 and 4, is the existing 3,169-acre VEGP site in Burke County, in east-central Georgia, on the Savannah River. The site is approximately 100 miles northwest of Savannah, Georgia, and 26 miles southeast of Augusta, Georgia, directly across the river from the U.S. Department of Energy's Savannah River Site (Barnwell County, South Carolina). SNC proposes to construct VEGP Units 3 and 4 adjacent to, and west of, existing VEGP Units 1 and 2.

1.3 Plant Ownership

Currently the land selected for new VEGP Units 3 and 4 is jointly owned (i.e., co-owned) by Georgia Power Company (Georgia Power or GPC), Oglethorpe Power Corporation, Municipal Electric Authority of Georgia and the City of Dalton, an incorporated municipality in the State of Georgia acting by and through its Board of Water, Light and Sinking Fund Commissioners. SNC is the exclusive operating licensee of the existing VEGP nuclear units, and has been authorized by GPC, acting as agent for the co-owners, to apply for an ESP for the VEGP site. SNC has no ownership interest in the existing or proposed units at VEGP.

GPC and SNC are subsidiaries of Southern Company, Inc., and SNC is the licensed operator for all Southern Company nuclear generating facilities. SNC's business purpose is management and operation of nuclear generating facilities owned or co-owned by Southern Company subsidiaries. ESP Application, Part 1, Chapter 3 provides additional information about Southern Company, GPC, VEGP co-owners and SNC.

Prior to any site preparation activities, the co-owners would grant sufficient rights to SNC for SNC to perform the activities described in this plan.

1.4 Limited Work Authorization Activities

LWA activities that SNC might undertake would be those allowed by 10 CFR 50.10(d)(1) and include the following, any of which may be for a structure, system, or component for which a construction permit or combined license is otherwise required:

- Driving of piles
- Subsurface preparation
- Placement of backfill, concrete, or permanent retaining walls within an excavation
- Installation of a foundation, including placement of concrete

The SNC LWA request is for the full extent of activities allowed by regulation and the site redress plan encompasses all such activities. Examples of VEGP LWA activities that SNC has identified include the following:

- Engineered backfill
- Retaining walls (mechanically stabilized earth walls)
- Lean concrete backfill
- Mudmats
- Waterproof membrane
- Formwork for the nuclear island base slab

Prior to initiating LWA activities, SNC would excavate for facility structures as part of planned preconstruction activities. LWA activities would take place within the area of excavation and would result in construction of structures located approximately 90 feet below grade. The structures would be composed primarily of materials that are inert (e.g., soil, rock, gravel, concrete) or relatively inert (e.g., waterproof membrane). Degradable materials intended for temporary use, such as some concrete formwork, would be removed prior to backfill.

1.5 Site Redress Plan

1.5.1 Site Redress Plan Objectives and Considerations

The purpose of site redress is to reverse, mitigate, or stabilize environmental impacts incurred during LWA activities. The objective of this site redress plan is to ensure that, in the event the VEGP Units 3 and 4 site is not fully developed to provide new nuclear power generation, it would be returned to an unattended, environmentally stable and aesthetically acceptable condition.

Site redress activities will be implemented commensurate with the degree of site modification resulting from LWA activities. Redress activities will reflect applicable land use and/or zoning requirements of local, state and federal agencies, and possible future use scenarios. In scoping the redress activities, SNC will consider certain variables including, but not limited to:

- future ownership of the site
- potential environmental contamination that either pre-dates, or is a result of, site preparation activities

- potential liabilities associated with any facility or structure remaining following completion of the redress activities

In planning for site redress, two general categories of options would be considered:

- Topographic approaches that accomplish the objective and preserve the potential of the site for future industrial use
- Completion or addition of site development features that enhance the value of the site for potential future industrial use.

Decisions by SNC, the co-owners, and state or local land use authorities and industrial development authorities on potential future uses would inform specific redress activities. Redress activities, if necessary, would begin when the ESP expired or when new reactor plant construction plans are formally abandoned, whichever occurs first. Redress activities would include actions to terminate or transfer local and state permits, and designate structures or improvements that would remain and those that must be removed. A detailed scope and schedule will be prepared prior to initiating redress activities. Redress activities will comply with applicable environmental requirements and necessary permits will be obtained prior to beginning redress activities. If, prior to the commencement of redress activities, acceptable uses consistent with the current state of the site's development were identified, SNC would tailor the site redress plan as much as possible to support the alternative uses. In the event that ownership of structures developed for VEGP Units 3 and 4 were transferred to the existing VEGP Units 1 and 2, the new structures would be included in the existing units decommissioning plan.

Between expiration of the ESP or the decision to abandon plant construction, and commencement of site redress activities, water quality, air quality, stormwater runoff, solid waste, and the protection of any critical ecological elements will be maintained in compliance with approved permits and regulatory requirements.

1.5.2 Description of Site Redress

SNC LWA activities would take place within the area of preconstruction excavation, approximately 90 feet below grade. SNC's preferred method of redress for these LWA structures would be burial in place. Georgia regulation 391-3-4-.2 provides for permits for solid waste disposal. Regulation 391-3-4-.06 provides for a permit by rule for disposal of inert waste, defined to include earth and earth-like products, concrete, cured asphalt, rock and bricks. SNC believes that it would make better economic, environmental, and safety sense to bury the structures in place rather than demolishing them and removing debris for disposal elsewhere. Removal would simply use up available landfill space elsewhere.

Prior to initiating site redress activities, SNC would discuss with the Georgia Department of Natural Resources (GDNR) the acceptability of burial of the LWA structures in place as a landfill under Georgia solid waste management rules. SNC might need to obtain a variance to cover material that does not fit the State definition of "inert," such as steel and waterproof membrane. However, SNC believes that a variance would be reasonable given that the material would not be likely to produce leachate of environmental concern.

Site redress would ensure that no significant amounts of degradable materials, such as temporary construction formwork, would remain below grade but would be removed and disposed of properly at a permitted landfill. If backfilling had already occurred, buried structures (e.g., foundations and utilities) would be evaluated and exhumed if required. Structures approaching grade level would be demolished as necessary to allow a minimum of two feet of final cover.

If the GDNR did not approve in-place disposal, SNC would demolish and remove LWA structures in accordance with Georgia requirements. Any area that became contaminated as a result of LWA activities or LWA redress activities would be remediated in compliance with Georgia law and regulations. Backfill placement would be in accordance with good engineering practices using material from the original excavation to the extent still available.

Final site redress would include regrading the area to conform to the surrounding land surface and to mitigate erosion from stormwater runoff. The disturbed area would be revegetated to ensure stabilization and an aesthetically-pleasing landscape. SNC would provide all required notifications to the GDNR. If GDNR had approved closure as a landfill, SNC would ensure that appropriate deed notices were filed.

1.5.3 Controls to Mitigate Impacts During Redress Activities

Methods used to ensure environmental protection and regulatory compliance during site redress would include best management practices for noise control, traffic control, sediment and erosion control, air quality control, control of potential pollutant sources, stockpile management, and spill prevention, control and response.

1.5.3.1 Noise Control

During redress activities, ambient noise levels would be similar to those during site preparation activities. Noise would be controlled to maintain compliance with all federal regulations. Neither Georgia nor Burke County has noise ordinances. Procedures and a hearing conservation program would be developed for redress activities.

The heavy equipment needed for demolition, clearing, excavating, grading, trash disposal, and land filling operations would be the major source of noise pollution. Standard noise dampening devices on equipment, together with the location of the primary work site below grade, are expected to be sufficient to keep off-site noise levels at acceptable levels or lower. In addition, major redress activities would be constrained to weekdays and other activities would be limited on weekends.

1.5.3.2 Traffic Control

The highway access to VEGP would experience increased traffic during redress activities, similar to traffic increases during site preparation activities. SNC has assumed that redress activities would involve 250 workers or less. Based on the analysis of construction impacts, River Road has the capacity for an additional 1,200 cars per hour. Workers would access the site via the construction access road.

Traffic control on and off site would adhere to the applicable local, state, and federal requirements.

1.5.3.3 Erosion and Sediment Controls

SNC anticipates that most of the area of LWA activities would be cleared, paved, or graveled during site preparation activities. The runoff from the footprint would be controlled by a stormwater management system. During redress activities, disturbances to the existing ground surface could potentially increase the runoff sediment load. However, the location of LWA activities within the excavation area will minimize the risk of runoff offsite. Measures would be taken consistent with the Georgia Erosion and Sediment Control Act and implementing regulations to avoid concentrated flows with a high potential to transport sediment. Visual regulations to avoid concentrated flows with a high potential to transport sediment. Visual inspections of erosion controls would monitor the effectiveness of the controls and aid in determining if other mitigation measures are necessary. Where necessary, special erosion control measures would be implemented to further minimize impacts to the Savannah River, onsite streams or ponds, and existing units' operations. Site redress activities would include the use of appropriate stabilization methods to mitigate the long-term erosion of sediment into the river and would be in compliance with an approved Erosion and Sedimentation Control Plan, which is required by the Georgia Department of Natural Resources and the federal Clean Water Act.

Sediment and erosion control would conform to the following best management practices:

- If periodic inspections or other information indicate that a control measure is ineffective, the control measure would be modified or replaced as necessary.
- In the event that sediment escapes the site during redress activities, off-site accumulations of sediment would be removed to minimize off-site impacts, to the extent practical.
- Sediment would be removed from sediment traps or sedimentation ponds as needed.
- Good housekeeping practices would be implemented to prevent litter, demolition debris, and chemicals from becoming pollutant sources for stormwater discharges.
- Erosion and sediment runoff would be controlled through the use of accepted structural and stabilization practices.
- Where practical, disturbed soil areas would be reseeded with maintenance seed (if activities are temporary) or permanent seed mix (for permanent or final cover) as soon as possible after redress activities are completed.
- Where practical, excelsior blankets would be mulched or installed, and slopes greater than 3H:1V would be reseeded. Mulch would be applied as soon as possible after seeding to reduce runoff and promote vegetation.
- Sidehill slopes would be furrow-contoured as practical. Otherwise, the final grading would be performed in a manner that would result in tracks and depressions contoured across the slope instead of down.
- The time that bare soil is exposed before being stabilized would be minimized.
- The disturbance to existing vegetation would be minimized.
- No solid materials, including demolition materials, would be discharged to waters of the United States, unless authorized under an approved permit.

1.5.3.4 Air Quality Controls

Dust, smoke, and engine exhaust are sources of air pollution. During redress activities, controls would be imposed to mitigate air emissions from such sources. The most traveled roads would be paved or sprinkled periodically if not paved, to reduce dust. Bare areas would be seeded to provide ground cover. Air pollution control regulations related to open burning or the operation of fuel-burning equipment would be followed. Permits and operating certificates would be secured where required. Fuel-burning equipment would be maintained in good mechanical order to reduce excessive emissions. Water sprinkling of laydown, storage, and parking areas, unpaved roads, and other areas of the site would suppress dust.

1.5.3.5 Potential Pollutant Sources (Effluents, Wastes, Spills, and Material Handling)

During redress activities, there would be many possible pollutant sources. Best management practices would be followed to ensure protection of soils, groundwater and surface water from accidental spills or releases of pollutants.

1.5.4 Potential Contamination

Any spills during site preparation or redress activities would be remediated in compliance with the requirements of this plan. The area would be returned to its baseline state post-redress.

1.5.5 Potential Liabilities

If ownership of the site is transferred, neither SNC nor the co-owners would have further liability with regard to site redress.

1.6 Financial Responsibility

It is the financial responsibility of the co-owners to provide the funding to redress the new plant footprint on the VEGP site in the event that site preparation activities are performed and new plant construction plans are abandoned, or if the site permit expires before it is referenced in an application for a construction permit or a COL.

1.7 NRC Notification Upon Completion

SNC would notify the NRC upon completion of activities addressed by this Site Redress Plan. The site would be made available for inspection and any documentation that the NRC may require would be provided to confirm the satisfactory completion of the redress activities.

Appendix G: Environmental Protection Plan (Nonradiological)

1.0 Objective of the Environmental Protection Plan

The Environmental Protection Plan (EPP) objective is to ensure compliance with Biological Opinions issued pursuant to the Endangered Species Act of 1973, as amended (ESA), and to ensure that the Commission is kept informed of other environmental matters. The EPP is intended to be consistent with Federal, state, and local requirements for environmental protection.

2.0 Environmental Protection Issues

In the Final Environmental Impact Statement (FEIS) dated August 2008, the staff considered the environmental impacts associated with the issuance of an early site permit (ESP) and limited work authorization (LWA), including consideration of the impacts of construction and operation of two new reactors (Vogtle Units 3 and 4) at the VEGP ESP site. This EPP applies to the permit holder's actions affecting the environmental resources evaluated in the FEIS and the permit holder's actions that may affect any newly discovered environmental resources.

2.1 Aquatic Resources Issues

Federal agencies other than the U.S. Nuclear Regulatory Commission (NRC), such as the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (ACE), have jurisdiction to regulate aquatic resources under the Federal Water Pollution Control Act (Clean Water Act or CWA) and the Rivers and Harbors Appropriation Act of 1899 (RHA). Water quality environmental concerns identified in the FEIS including effluent limitations, monitoring requirements, and mitigation measures will be regulated under the permit holder's CWA permits, such as National Pollutant Discharge Elimination System (NPDES) and Section 404 permits, and RHA Section 10 permit. Nothing within this EPP shall be construed to place additional requirements on the regulation of aquatic resources except the imposition of the requirements in a Biological Opinion under the ESA (see section 2.3). Pursuant to 10 CFR 50.72(b)(2)(xi), the permit holder is required to inform the NRC of any event or situation related to protection of the aquatic environment for which a news release is planned or notification to other government agencies has been or will be made.

2.2 Terrestrial Resources Issues

Several statutes govern the regulation of terrestrial resources. For example, the U.S. Fish and Wildlife Service (FWS) regulate matters involving migratory birds and their nests in accordance with the Migratory Bird Treaty Act. Activities affecting migratory birds or their nests may require permits under the Migratory Bird Treaty Act. The FWS also regulates matters involving the protection and taking of bald and golden eagles in accordance with the Bald and Golden Eagle Protection Acts. Pursuant to 10 CFR 50.72(b)(2)(xi), the permit holder is required to inform the NRC of any event or situation related to protection of the terrestrial environment for which a news release is planned or notification to other government agencies has been or will be made.

2.3 Endangered Species Act of 1973

The NRC may be required to protect some aquatic resources and terrestrial resources in accordance with the ESA. If a Biological Opinion has been issued to the NRC in

accordance with ESA Section 7 prior to the issuance of a construction permit or combined license referencing the ESP, the permit holder shall comply with the Terms and Conditions set forth in the Incidental Take Statement of such a Biological Opinion. If any Federally listed species or critical habitat occurs in an area affected by construction that was not previously identified as occurring in such areas, including species and critical habitat that were not previously Federally listed, the permit holder shall inform the NRC within four hours of discovery. Similarly, the permit holder shall inform the NRC within four hours of discovery of any take, as defined in the ESA, of a Federally listed species or destruction or adverse modification of critical habitat. These notifications shall be made to the NRC Operations Center via the Emergency Notification System. The permit holder shall provide any necessary information to the NRC if the NRC initiates consultation under the ESA.

Unusual ESA-Related Event - The permit holder shall inform the NRC of any onsite mortality, injury, or unusual occurrence of any species protected by the ESA within four hours of discovery, followed by a written report in accordance with Section 4.1. Such incidents shall be reported regardless of causal relation to construction.

3.0 Consistency Requirements

The permit holder shall notify the NRC of proposed changes to permits or certifications concerning aquatic or terrestrial resources by providing the NRC with a copy of the proposed change at the same time it is submitted to the permitting agency. The permit holder shall provide the NRC with a copy of the application for renewal of permits or certifications at the same time the application is submitted to the permitting agency.

Changes to or renewals of these permits or certifications shall be reported to the NRC within 30 days following the later of the date the change or renewal is approved or the date the change becomes effective. If a permit or certification, in part or in its entirety, is appealed and stayed, the NRC shall be notified within 30 days following the date the stay is granted.

4.0 Administrative Procedures

4.1 Plant Reporting Requirements: Non-routine Reports

A written report shall be submitted to the NRC within 30 days of occurrence of any unusual ESA-related event described in Section 2.3 of this EPP. The report shall (a) describe, analyze, and evaluate the event, including extent and magnitude of the impact and plant operating characteristics at the time of the event, (b) describe the probable cause of the event, (c) indicate the action taken to correct the reported event, (d) indicate the corrective action taken to preclude repetition of the event and to prevent similar occurrences involving similar components or systems, and (e) indicate the agencies notified and their preliminary responses.

4.2 Review and Audit

The permit holder shall provide for review and audit of compliance with Section 2.3 of the EPP. The audits shall be conducted independently of the individual or groups responsible for performing the specific activity. A description of the organizational

structure utilized to achieve the independent review and audit function and results of the audit activities shall be maintained and made available for inspection.

4.3 Records Retention

Records required by this EPP shall be made and retained in a manner convenient for review and inspection. These records shall be made available to the NRC on request. The records, data, and logs relating to this EPP shall be retained for five years or, where applicable, in accordance with the requirements of other agencies.

4.4 Changes in Environmental Protection Plan

A request for a change in the EPP shall include an assessment of the environmental impact of the proposed change and a supporting justification. Implementation of such changes in the EPP shall not commence prior to NRC approval of the proposed changes in the form of a license amendment incorporating the appropriate revision to the EPP.

The permit holder shall request a license amendment to incorporate the requirements of any Terms and Conditions set forth in the Incidental Take Statement of Biological Opinions issued subsequent to the effective date of this EPP.