

Vogle ESP Application Supplement 2-S1

Part 3, Section 1.3

(Pages 1.3-1 through 1.3-16)

1.3 Status of Reviews, Approvals and Consultations

SNC has divided its discussion of the status of Federal, state, and local environmental protection licenses, permits, reviews, approvals, and consultations, collectively called authorizations, by activity. Tables 1.3-1 through 1.3-5 identify, for each activity, the following information:

- Jurisdictional agency
- Authority, law, or regulation that dictates the requirement
- Name of the required authorization
- License or permit number as applicable
- Expiration date of any existing licenses or permits
- Description of the requirements to be fulfilled by SNC prior to issuance of the authorization

The tables are structured on the assumption that authorizations for previously-initiated and ongoing activities were captured in the table representing the initiation of the work and, therefore, not repeated in subsequent tables. Except for ESP issuance, discussed below, SNC has not completed work to secure any other necessary authorizations and, therefore, the columns for permit numbers and expiration dates have been left blank. SNC will apply for and receive any required authorizations prior to initiating the activity. The following sections describe the activities to be authorized.

1.3.1 ESP Issuance

Table 1.3-1 lists ESP authorizations required prior to NRC issuance of an ESP. As shown, four authorizations are consultations that NRC must undertake in accordance with following statutes:

Endangered Species Act - The Endangered Species Act requires Federal agencies to ensure that agency action is not likely to jeopardize any species that is listed or proposed for listing as endangered or threatened. Depending on the action involved, the Act requires consultation with the U.S. Fish and Wildlife Service (USFWS) regarding effects on non-marine species, the National Marine Fisheries Service (NMFS) for marine species, or both. Due to the presence of diadromous fish categorized as marine species in the Savannah River near the Vogtle site, the NRC must consult with both USFWS and NMFS. In addition, as a matter of policy, the NRC consults with states regarding state-protected species.

National Historic Preservation Act - The National Historic Preservation Act requires federal agencies having the authority to license any major federal action, prior to issuing the license, to take into account the effect of the undertaking on historic properties and to afford the Advisory Committee on Historic Preservation an opportunity to comment on the undertaking. Committee regulations provide for establishing an agreement with any State Historic Preservation Officer

(SHPO) to substitute state review for Committee review (35 CFR 800.7). The NRC will consult with both the Georgia SHPO and the South Carolina SHPO due to the site's location.

Federal Clean Water Act Section 401 requires for any activity that may result in a discharge into navigable waters, a certification from the state that the discharge will comply with applicable Clean Water Act requirements, including state Water Quality Standards. Certain construction-related activities conducted under the authority of the ESP will likely require a Construction Stormwater Permit issued by the Georgia Department of Natural Resources – Environmental Protection Division. This is a general permit and coverage is obtained by submitting a Notice of Intent (NOI) requesting coverage under the general permit. The State of Georgia provides a generic 401 certification for the general permit.

The Federal Coastal Zone Management Act imposes requirements on applicants for a federal license to conduct an activity that could affect a state's coastal zone. The Act requires the applicant to certify to the licensing agency that the proposed activity will be consistent with the state's federally approved coastal zone management program. The VEGP site is approximately 100 air miles and 150 river miles from the ocean. An existing VEGP transmission line traverses Georgia coastal counties. Construction of new reactors at the VEGP site will not result in any changes to this line. Due to the site's distance from the coast, small environmental effects, and lack of transmission line changes, SNC has concluded that the proposed action will not affect Georgia's coastal resources and that consistency certification requirements are not applicable.

1.3.2 Pre-Construction Activities

Pre-construction activities are those that NRC can authorize for undertaking prior to NRC issuance of a construction permit. A subset of these activities is limited to site preparation and construction of structures, systems, and components that are not nuclear-safety related. These activities are described in 10 CFR 50.10 (e)(1) (LWA-1). Pursuant to 10 CFR 52.17 (c) an ESP applicant can request that the ESP includes authorization to conduct such activities and include in its application a site redress plan. ESP issuance constitutes NRC authorization to conduct the activities. Table 1.3-2 lists authorization required for pre-construction activities.

The other subset of pre-construction activities is nuclear-safety-related and is commonly referred to as Limited Work Authorization 2, or LWA-2. These activities are described in 10 CFR 50.10 (e)(3). The NRC would grant such authorization only after, in addition to making the same determinations as for LWA-1, making a determination that there are no unresolved safety issues relating to the LWA-2 activities. SNC is seeking an LWA-2 as part of the ESP Safety Analysis Report (Part 2) but has identified no required non-NRC authorizations not already included for LWA-1 or actual construction.

1.3.3 Site Redress Activities

Table 1.3-3 lists authorizations required prior to conducting site redress activities. “Redress activities” are activities that the licensee must perform to return the site to an environmentally stable and aesthetically acceptable state if LWA activities were undertaken but construction abandoned.

1.3.4 Construction Activities

Table 1.3-4 lists authorizations required prior to start of construction activities.

1.3.5 Operation

Table 1.3-5 lists authorizations required prior to start of operation.

Table 1.3-1 Authorizations Required for Early Site Permit

Agency	Authority	Requirement	License/ Permit No. (1)	Expiration Date (1)	Activity Covered
USFWS	Endangered Species Act	Consultation regarding potential to adversely impact protected species (non-marine species)	NA	NA	Concurrence with no adverse impact or consultation on appropriate mitigation measures.
NMFS	Endangered Species Act	Consultation regarding potential to adversely impact protected species (marine species)	NA	NA	Concurrence with no adverse impact or consultation on appropriate mitigation measures.
GDNR	National Historic Preservation Act, (36 CFR 800)	Consultation regarding potential to adversely affect historic resources	NA	NA	Confirm site construction or operation would not affect protected historic resources.
South Carolina Department of Archives and History	National Historic Preservation Act, (36 CFR 800)	Consultation regarding potential to adversely affect historic resources	NA	NA	Confirm site construction or operation would not affect protected historic resources.
GDNR	Federal Clean Water Act (FCWA) (33 U.S.C. 1251 et seq.)	Section 401 Certification			Compliance with water quality standards.

USFWS - U.S. Fish and Wildlife Service

NMFS - National Marine Fisheries Service

GDNR - Georgia Department of Natural Resources

¹ No permits have been issued.

Table 1.3-2 Authorizations Required for Pre-Construction Activities

Agency	Authority	Requirement	License/ Permit No. (1)	Expiration Date (1)	Activity Covered
NRC	10 CFR 52.25 or 10 CFR 50.10(e)(1)	Early Site Permit with Site Redress Plan or Limited Work Authorization			Non-nuclear construction, including site preparation.
USACE	Clean Water Act (CWA)	Section 404 Permit			Disturbance or crossing wetland areas or navigable waters. For site and rail corridor upgrade.
USACE	33 CFR 323	Dredge and Fill Discharge Permit			Construction/ modification of intake/ discharge to Savannah River. For site and rail corridor upgrade ² .
USACE	Rivers and Harbors Act	Section 10 Permit			Barge slip modification impacts to navigable waters of the U.S.
USDOT	49 CFR 107, Subpart G	Certificate of Registration			Transportation of hazardous materials.
USFWS	Migratory Bird Treaty Act, 50 CFR 21	Federal Depredation Permit			Adverse impacts on protected species and/or their nests. For site and rail corridor upgrade.
FAA	49 USC 1501 14 CFR 77	Construction Notice			Notice of erection of structures (>200 feet high) potentially impacting air navigation.
GPSC	GA Public Utilities Act (O.C.G.A. Section 46-3-1 et seq.), GA Rules and Regulations 515-3-4-.07	Certificate of Public Convenience and Necessity			Present and future public convenience and necessity require the operation of such equipment or facility.

Table 1.3-2 (cont.) Authorizations Required for Pre-Construction Activities

Agency	Authority	Requirement	License/ Permit No. (1)	Expiration Date (1)	Activity Covered
GDNR	GA Endangered Wildlife Act (O.C.G.A. Section 27-3-130 et seq.), GA Rules and Regulations 391-4-10	Depredation Permit			Adverse impacts on state designated protected species and/or their habitat. For site and rail corridor.
GDNR	Federal Clean Air Act (FCAA), GA Air Quality Act (O.C.G.A. Section 12-9-1 et seq.), GA Rules and Regulations 391-3-1	Part 70 Air Quality Construction Permit			Construction air emission sources.
GDNR	FCWA, GA Water Quality Control Act	Revision of existing National Pollutant Discharge Elimination System Permit			Regulates limits of pollutants in liquid discharge to surface water.
GDNR	FCWA, GA Water Quality Control Act (O.C.G.A. 12-5-20), GA Rules and Regulations 391-3-6	General Permit Registration for Storm Water Discharges Associated with Construction Activity for Common Developments	GAR100003	July 31, 2008	Discharge storm water from site during construction.
GDNR	FCWA, GA Water Quality Control Act (O.C.G.A. 12-5-20), GA Rules and Regulations 391-3-6	General Permit Registration for Storm Water Discharges Associated with Construction Activity for Infrastructure Construction Projects	GAR100002	July 31, 2008	Discharge storm water from linear construction sites (e.g., roadways and rail corridor).
GDNR	GA Safe Drinking Water Act (O.C.G.A. 12-5-170 et seq.), GA Rules and Regulations 391-3-5	Revision of existing permit to operate a public water system			Operate a public, non-transient, non-community water system.
GDNR	GA Safe Drinking Water Act (O.C.G.A. 12-5-170 et seq.), GA	Revision of existing permit to operate a			Operate a public, transient, non-community water system.

Table 1.3-2 (cont.) Authorizations Required for Pre-Construction Activities

Agency	Authority	Requirement	License/ Permit No. (1)	Expiration Date (1)	Activity Covered
	Rules and Regulations 391-3-5	public water system			
GDNR	GA Groundwater Use Act (O.C.G.A. 12-5-90 et seq.), GA Rules and Regulations 391-3-2-.03	Modification of Existing Permit to Use Groundwater			Consumptive use of 100,000 gallons per day or more of groundwater.
GDNR	GA Groundwater Use Act (O.C.G.A. 12-5-90 et seq.), GA Rules and Regulations 391-3-2-.09	Permit to Withdraw Groundwater			Dewater for foundation if needed for more than 60 days.
GDNR	GA Groundwater Use Act (O.C.G.A. 12-5-90 et seq.), GA Rules and Regulations 391-3-2-.14	Certification of Abandoned Wells			Abandoned wells have been filled, plugged and sealed.
GDNR	GA Erosion and Sedimentation Act (O.C.G.A. Section 12-7-1 et seq.), GA Rules and Regulations 391-3-7	Land Disturbing Activity Permit			Permission to conduct land disturbing activities of one acre or larger, or within 200 feet of the bank of any state waters. For site and rail corridor upgrade.
GDNR	GA Comprehensive Solid Waste Management Act (O.C.G.A. 12-8-20 et seq.), GA Rules and Regulations 391-3-4-.06	Permit by Rule - Inert Landfill Permit			On-site disposal of solid waste consisting of earth and earth-like products, concrete, cured asphalt, rock, bricks, and land clearing debris.
GDNR	GA Comprehensive Solid Waste Management Act (O.C.G.A. 12-8-20 et seq.), GA Rules and Regulations 391-3-4	Private Industry Landfill Permit			On-site disposal of solid waste consisting of construction and demolition debris.
GDNR	GA Comprehensive Solid Waste Management Act (O.C.G.A. 12-8-20 et seq.), GA Rules and Regulations 391-3-4	Solid Waste Handling Permit			Disposal of industrial solid wastes. Transportation of putrescible waste for disposal in a permitted landfill.

Table 1.3-2 (cont.) Authorizations Required for Pre-Construction Activities

Agency	Authority	Requirement	License/ Permit No. (1)	Expiration Date (1)	Activity Covered
GDNR	Federal Clean Air Act (FCAA), GA Air Quality Act (O.C.G.A. Section 12-9-1 et seq.), GA Rules and Regulations 391-3-1	Revision of existing Title V Operating Permit			Operation of air emission sources.
Burke County Building Office	Burke County Code of Ordinances, Article VII, Sec. 26-331	Land Disturbing Activity Permit			All land disturbing activities within the boundaries of Burke County.
Burke County Building Office	Burke County Code of Ordinances, Article VII, Sec. 26-336	Building Permit			Construction, alteration, repair, or demolition of any building or structure within the boundaries of Burke County.

NRC - U.S. Nuclear Regulatory Commission
USACE - U.S. Army Corps of Engineers
USDOT - U.S. Department of Transportation
FAA - Federal Aviation Administration
GPSC - Georgia Public Service Commission

¹ No permits have been issued.

² The VEGP rail spur was recently upgraded, and SNC will verify that additional upgrades are not needed. For completeness, this table assumes upgrades to the rail corridor will be made.

Table 1.3-3 Authorizations Required for Redress Activities

Agency	Authority	Requirement	License/Permit No. (1)	Expiration Date (1)	Activity Covered
USACE	Clean Water Act (CWA)	Section 404 Permit			Disturbance or crossing wetland areas or navigable waters.
USACE	33 CFR 323	Dredge and Fill Discharge Permit			Construction / modification of intake / discharge to Savannah River.
USACE	Rivers and Harbors Act	Section 10 Permit			Impacts to navigable waters of the U.S. Barge Slip Modification.
USDOT	49 FR 107, Subpart G	Certificate of Registration			Transportation of hazardous materials.
GDNR	Federal Clean Water Act (FCWA) (33 U.S.C. 1251 et seq.)	Section 401 Certification			Compliance with water quality standards.
GDNR	FCWA, GA Water Quality Control Act (O.C.G.A. 12-5-20), GA Rules and Regulations 391-3-6	General Permit Registration for Storm Water Discharges Associated with Construction Activity for Common Developments	GAR100003	July 31, 2008	Discharge storm water from site during construction (might be covered by existing registration).
GDNR	FCWA, GA Water Quality Control Act (O.C.G.A. 12-5-20), GA Rules and Regulations 391-3-6	General Permit Registration for Storm Water Discharges Associated with Construction Activity for Infrastructure Construction Projects	GAR100002	July 31, 2008	Discharge storm water linear construction sites (e.g., roadways, transmission lines) during construction)(might be covered by existing registration).

Table 1.3-3 (cont.) Authorizations Required for Redress Activities

Agency	Authority	Requirement	License/Permit No. (1)	Expiration Date (1)	Activity Covered
GDNR	GA Erosion and Sedimentation Act (O.C.G.A. Section 12-7-1 et seq.), GA Rules and Regulations 391-3-7	Land Disturbing Activity Permit			Permission to conduct land disturbing activities of one acre or larger, or within 200 feet of the bank of any state waters. For site and rail corridor.
GDNR	Federal Clean Air Act (FCAA), GA Air Quality Act (O.C.G.A. Section 12-9-1 et seq.), GA Rules and Regulations 391-3-1	Part 70 Air Quality Construction Permit			Construction air emission sources.
GDNR	GA Safe Drinking Water Act (O.C.G.A. 12-5-170 et seq.), GA Rules and Regulations 391-3-5	Notice of Termination (NOT) -Permit to operate a Public Water System			Operate a public, non-transient, non-community water system.
GDNR	GA Safe Drinking Water Act (O.C.G.A. 12-5-170 et seq.), GA Rules and Regulations 391-3-5	NOT - Permit to operate a Public Water System			Operate a public, transient, non-community water system.
GDNR	GA Groundwater Use Act (O.C.G.A. 12-5-90 et seq.), GA Rules and Regulations 391-3-2-.03	NOT - Permit to Use Groundwater			Consumptive use of 100,000 gallons per day or more of groundwater.
GDNR	GA Groundwater Use Act (O.C.G.A. 12-5-90 et seq.), GA Rules and Regulations 391-3-2-.09	Permit to Withdraw Groundwater			Dewater for foundation if needed for more than 60 days.
GDNR	GA Groundwater Use Act (O.C.G.A. 12-5-90 et seq.), GA Rules and Regulations 391-3-2-.14	Certification of Abandoned Wells			Abandoned wells have been filled, plugged and sealed.

Table 1.3-3 (cont.) Authorizations Required for Redress Activities

Agency	Authority	Requirement	License/Permit No. (1)	Expiration Date (1)	Activity Covered
GDNR	GA Comprehensive Solid Waste Management Act (O.C.G.A. 12-8-20 et seq.), GA Rules and Regulations 391-3-4-.06	Permit by Rule - Inert Landfill Permit			On-site disposal of solid waste consisting of earth and earth-like products, concrete, cured asphalt, rock, bricks, and land clearing debris.
GDNR	GA Comprehensive Solid Waste Management Act (O.C.G.A. 12-8-20 et seq.), GA Rules and Regulations 391-3-4	Private Industry Landfill Permit			On-site disposal of solid waste consisting of construction and demolition debris.
GDNR	GA Comprehensive Solid Waste Management Act (O.C.G.A. 12-8-20 et seq.), GA Rules and Regulations 391-3-4	Solid Waste Handling Permit			Disposal of industrial solid wastes. Transportation of putrescible waste for disposal in a permitted landfill.
Burke County Building Office	Burke County Code of Ordinances, Article VII, Sec. 26-331	Land Disturbing Activity Permit			All land disturbing activities within the boundaries of Burke County.
Burke County Building Office	Burke County Code of Ordinances, Article VII, Sec. 26-336	Building Permit			Construction, alteration, repair, or demolition of any building or structure within the boundaries of Burke County.

¹ No permits have been issued.

Table 1.3-4 Authorizations Required for Construction Activities¹

Agency	Authority	Requirement	License/ Permit No. (2)	Expiration Date (2)	Activity Covered
NRC	10 CFR 52, Subpart C or 10 CFR 50.10(e)(3)	Combined Operating License or Limited Work Authorization 2			Safety-related construction for a nuclear power facility.
FAA	49 USC 1501 14 CFR 77	Construction Notice			Notice of erection or structures (>200 feet high) potentially impacting air navigation.
USACE	Clean Water Act (CWA)	Section 404 Permit			Disturbance or crossing wetland areas or navigable waters. For transmission line corridor.
USACE	33 CFR 323	Dredge and Fill Discharge Permit			Construction/ modification of intake/ discharge to Savannah River. For transmission line corridor.
USFWS	Migratory Bird Treaty Act, 50 CFR 21	Federal Depredation Permit			Adverse impacts on protected species and/or their nests. For site transmission line corridor.
GDNR	GA Endangered Wildlife Act (O.C.G.A. Section 27-3-130 et seq.), GA Rules and Regulations 391-4-10	Depredation permit			Adverse impacts on state designated protected species and/or their habitat. For transmission line corridor.
GDNR	Federal Clean Air Act (FCAA), GA Air Quality Act (O.C.G.A. Section 12-9-1 et seq.), GA Rules and Regulations 391-3-1	Part 70 Air Quality Construction Permit			Construction air emission sources.

Table 1.3-4 (cont.) Authorizations Required for Construction Activities¹

Agency	Authority	Requirement	License/ Permit No. (2)	Expiration Date (2)	Activity Covered
GDNR	FCWA, GA Water Quality Control Act (O.C.G.A. 12-5-20), GA Rules and Regulations 391-3-6	General Permit Registration for Storm Water Discharges Associated with Construction Activity for Infrastructure Construction Projects	GAR100002	July 31, 2008	Discharge storm water linear construction sites (e.g., roadways, transmission lines) during construction.
GDNR	GA Comprehensive Solid Waste Management Act (O.C.G.A. 12-8-20 et seq.), GA Rules and Regulations 391-3-4	Solid Waste Handling Permit			Disposal of industrial solid wastes. Transportation of putrescible waste for disposal in a permitted landfill.
GDNR	GA Erosion and Sedimentation Act (O.C.G.A. Section 12-7-1 et seq.), GA Rules and Regulations 391-3-7	Land Disturbing Activity Permit			Permission to conduct land disturbing activities of one acre or larger, or within 200 feet of the bank of any state waters. For transmission line corridor.
GDNR	FCWA, GA Water Quality Control Act (O.C.G.A. 12-5-20), GA Rules and Regulations 391-3-6	General Permit Registration for Storm Water Discharges Associated with Construction Activity for Infrastructure Construction Projects	GAR100002	July 31, 2008	Discharge storm water linear construction sites. For transmission line corridor.

Table 1.3-4 (cont.) Authorizations Required for Construction Activities¹

Agency	Authority	Requirement	License/ Permit No. (2)	Expiration Date (2)	Activity Covered
GDOT	23 CFR 1.23	Permit			Utility right-of-way easement.
Burke County Building Office	Burke County Code of Ordinances, Article VII, Sec. 26-331	Land Disturbing Activity Permit			All land disturbing activities within the boundaries of Burke County.
Various county offices responsible for land disturbing activities	Jefferson, Warren, and McDuffie County Ordinances	Land Disturbing Activity Permit.			Land disturbing activities within county boundaries. For transmission line corridor.

GDOT – Georgia Department of Transportation

¹ Assumes that SNC obtained the authorizations that Table 1.3-2 identifies.

² No permits have been issued.

Table 1.3-5 Authorizations Required for Operation¹

Agency	Authority	Requirement	License/ Permit No.	Expiration Date	Activity Covered
GDNR	FCWA, GA Water Quality Control Act	Revision of existing National Pollutant Discharge Elimination System Permit			Regulates limits of pollutants in liquid discharge to surface water.
GDNR	Federal Clean Air Act (FCAA), GA Air Quality Act (O.C.G.A. Section 12-9-1 et seq.), GA Rules and Regulations 391-3-1	Revision of existing Title V Operating Permit			Operation of air emission sources.
GDNR	GA Groundwater Use Act (O.C.G.A. 12-5-90 et seq.), GA Rules and Regulations 391-3-2-.03	Revision of existing Permit to Use Groundwater			Consumptive use of 100,000 gallons per day or more of groundwater.
GDNR	GA Water Quality Control Act (O.C.G.A. 12-5-31 et seq.), GA Rules and Regulations 391-3-6	Revision of existing Surface Water Withdrawal Permit to Withdraw, Divert or Impound Surface Water			Withdraw water from the Savannah River for cooling makeup and in-plant use.
South Carolina Department of Health and Environmental Control – Division of Waste Management	South Carolina Radioactive Waste Transportation and Disposal Act (Act No. 429)	Revision of existing South Carolina Radioactive Waste Transport Permit			Transportation of radioactive waste into the State of South Carolina.

Table 1.3-5 (cont.) Authorizations Required for Operation¹

Agency	Authority	Requirement	License/ Permit No.	Expiration Date	Activity Covered
State of Tennessee Department of Environment and Conservation Division of Radiological Health	Tennessee Department of Environment and Conservation Rule 1200-2-10.32	Revision of existing Tennessee Radioactive Waste License-for-Delivery			Transportation of radioactive waste into the State of Tennessee.
State of Utah Department of Environmental Quality Division of Radiation Control	R313-26 of the Utah Radiation Control Rules	Revision of existing General Site Access Permit			Transportation of radioactive materials into the State of Utah.
GPSC	GA Radiation Control Act (O.C.G.A. 31-13-1 et seq.), GA Rules and Regulations 391-3-17-.06	Revision of existing General Permit – Transportation of Radioactive Materials			Transportation of radioactive materials in the State of Georgia.

¹ Assumes that SNC obtained the authorizations that Tables 1.3-2 and 1.3-4 identify.

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Part 3, Section 3.9

(Pages 3.9-1 through 3.9-12)

3.9 Pre-Construction and Construction Activities

Section 3.9 describes activities that form the basis for SNC analyses in Chapter 4, Environmental Impacts of Construction. Section 3.9 provides separate discussions of pre-construction activities and construction activities because these activities take place at different times, are authorized under separate NRC regulatory provisions, and can have environmental impacts that differ in magnitude and duration. Basically, pre-construction activities are not nuclear safety related whereas construction activities are. Section 1.3 discusses the relationship between these activities and the various NRC and other regulatory agency reviews, approvals, and consultations.

An ESP does not constitute a decision or approval to construct a new unit and SNC has not committed to any start date for construction. Pre-construction activities could start as early as ESP issuance and as late as 20 years from ESP issuance. With SNC ESP application submittal in 2006 and a 3-year NRC approval schedule, this would give a pre-construction start schedule ranging from 2009 to 2029. SNC estimates that it could start these same pre-construction activities 6 months before ESP issuance if it applied for, and NRC issued, an optional Limited Work Authorization (LWA) 1 (see Section 1.3). In order to ensure analysis that envelopes the full range of schedule possibilities, and to preserve its option of applying for an LWA-1, SNC has prepared its environmental report assuming an LWA-1 and 18-month pre-construction activity that could start as early as 2009 and as late as 2029.

Construction activities, which are nuclear safety related, are very unit-specific and SNC intends to have separate Unit 3 and Unit 4 construction schedules. Pre-construction activities tend to be less unit specific and more project- and site-wide in nature. For this reason, SNC is using a common pre-construction schedule for the two units.

As discussed in Section 1.3, SNC intends to pursue obtaining a COL and has the option of submitting a COL application prior to NRC issuance of the ESP. Construction could start as early as COL issuance. Assuming COL submittal in 2008 and a 3-year NRC approval schedule, this would give a construction start schedule of 2011. SNC estimates that it could start some nuclear safety related construction 6 months before COL issuance if SNC secured an optional LWA-2 (see Section 1.3). SNC is also preserving its option by preparing its environmental report assuming an LWA-2 and a start of construction as early as 2010 and as late as 2032. Earliest start of commercial operation would be 2015 for Unit 3 and 2016 for Unit 4; latest would be 2037 and 2036, respectively.

SNC has analyzed the range of ESP and COL dates to ensure that the environmental report reasonably bounds potential impacts.

3.9.1 Preparatory Work

SNC requests that a Limited Work Authorization (LWA) 1 and 2 be granted with the Early Site Permit (ESP) to allow performance of the pre-construction and construction activities defined in Section 3.9.2. A Site Redress Plan, prepared in accordance with the requirements of 10 CFR 52.17(c), is provided as Part 4 of the ESP application. In addition, certain activities associated with Unit 1 and Unit 2 structures, systems, and components (SSCs) may be necessary prior to construction. These activities will be managed under the requirements of the Unit 1 and Unit 2 licenses.

3.9.2 Pre-Construction and Construction Activities

See Section 1.3 for discussion of permits and other regulatory approvals that SNC will secure prior to initiating related pre-construction or construction activity.

Pre-construction includes the following general types of activities:

- Preparation of the site for facility construction (including clearing, grading, construction of temporary access roads and borrow areas);
- Installation of temporary construction support facilities (including such items as warehouse and shop facilities, utilities, concrete mixing plants, docking and unloading facilities, and construction support buildings);
- Excavation for facility structures;
- Construction of service facilities (including such facilities as roadways, paving, railroad spurs, fencing, exterior utility and lighting systems, transmission lines, and sanitary sewage treatment facilities);
- Construction of structures, systems and components that do not prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. This could include such items as cooling tower structures, circulating water lines, fire protection lines, switchyard and on-site interconnections.

The following paragraphs describe in more detail VEGP-specific pre-construction activities. SNC has estimated activity duration to facilitate evaluation of the duration of associated environmental impact. It should be noted, however, that the durations are not sequential; multiple activities will take place concurrently.

3.9.2.1 Installation and Establishment of Environmental Controls

Duration: 4 months

Activities will include the installation or establishment of:

- Groundwater monitoring wells
- Debris basins
- Dams
- Stormwater management system
- Solid waste storage areas
- Spill containment controls
- Silt screens
- Settling basins
- Site drainage
- Dust suppression controls
- Backfill borrow, spoils, and topsoil storage areas

As much as possible, SNC will utilize the existing site drainage systems installed during construction of VEGP Units 1 and 2, which are still in use. All design and installation of new systems will be in compliance with Federal, state and local environmental regulations and requirements.

3.9.2.2 Road and Rail Construction

Duration: 3 months

A heavy haul route approximately 1.6 miles in length will be built to support transport of heavy modules and components from the barge slip on the Savannah River to the construction site. A construction access route approximately 1 mile in length will be built from River Road to the new power block so that construction traffic will not disrupt traffic patterns for the existing units. An access road approximately 2 miles in length from the new power block area to the new intake structure will be built to support delivery of material to the intake construction site. The underground circulating water make-up lines will be routed adjacent to this road. The rail line that runs from its connection with the Norfolk and Southern line near Waynesboro (Greens Cut/Shell Bluff) to its termination at VEGP with spurs into the unloading areas, a distance of approximately 16 miles, may require some upgrade.

Temporary parking lots will be cleared, grubbed, graded and graveled or paved.

3.9.2.3 Security Construction

Duration: 3 months

Site security features will be installed during the early part of pre-construction activities. Security structures will include access control points, fencing, lighting, physical barriers and guard houses.

3.9.2.4 Temporary Utilities

Duration: 6 months

Temporary utilities include both above-ground and underground infrastructure for power, potable water, wastewater and waste treatment facilities, fire protection, and for construction gas and air systems. The temporary utilities will support the entire construction site and associated activities, including construction offices, warehouses, storage and lay-down areas, fabrication and maintenance shops, the power block, the barge facility, and intake/discharge areas.

3.9.2.5 Temporary Construction Facilities

Duration: 9 months

Temporary construction facilities including offices, warehouses, toilets, change rooms, training and personnel access facilities will be constructed. The site of the concrete batch plant will be prepared for aggregate unloading and storage, and the cement storage silos and the batch plant will be erected.

3.9.2.6 Lay-down, Fabrication, Shop Area Preparation

Duration: 5 months

Activities:

- Grade, stabilize and gravel lay-down areas
- Install construction fencing
- Install shop and fabrication areas including the concrete slabs for formwork lay-down, equipment parking and maintenance, fuel and lubricant storage
- Install concrete pads for cranes and crane assembly

3.9.2.7 Clearing, Grubbing, and Grading

Duration: 3 months

Spoils and topsoil storage areas will be established in the southern and eastern parts of the VEGP site. Backfill borrow will be taken from the northern portion of the VEGP site. Clearing and grubbing of the site will begin with the removal of trees and vegetation. Top soil will be removed to a storage area in preparation for excavation. The switchyard and cooling tower areas will be brought to grade in preparation for foundation installation.

3.9.2.8 Underground Pipe Installation

Duration: 4 months

Concurrent with the power block earthworks, non-safety related underground piping will be installed and backfilled.

3.9.2.9 Docking and Unloading Facilities Installation

Duration: 9 months

The existing barge slip must be enlarged to support unloading the AP1000 components and modules. The downstream sheet pile wall must be removed and the slip must be excavated to the correct dimensions. The downstream sheet pile wall will be reconstructed and the shore line stabilized prior to use. The barge facility will be needed to support the early receipt of materials and equipment that will be transported to the site by barge. Concurrently any crane foundations will be placed, and a heavy lift crane will be erected.

3.9.2.10 Intake/Discharge Cofferdams and Piling Installation

Duration: 3 months

A sheet pile coffer dam and dewatering system will be installed on the west side of the Savannah River upstream of the VEGP intake to facilitate the construction of the Unit 3 and 4 intake structure and canal. Piling will also be driven to facilitate construction of the new discharge system downstream of the existing VEGP discharge line. Excavation, intake structure erection and piping installations will follow the piling operations and continue through pre-construction into plant construction.

3.9.2.11 Power Block Earthwork (Excavation)

Duration: 6 months

The excavation of the power block area will occur as part of pre-construction activities. The power block area will be excavated to approximately 90 feet below grade, removing sand, silt, and clay down to the marl layer. The excavation will be concurrent with the installation of a dewatering system, slope protection and retaining wall systems. Excavated material will be transferred to the spoils and backfill borrow storage areas. Acceptable material from the excavation will be stored and reused as structural backfill.

3.9.2.12 Module Assembly

Duration: 15 months

The AP1000 design calls for a high degree of modularization. It is planned that the steel module components in the nuclear island will be fabricated offsite and shipped to site via barge and/ or rail and assembled into complete modules prior to setting in the power block. Large module component shipments will arrive by barge, be offloaded at the barge facility, and transported over the heavy haul road to the fabrication assembly area. The size of the larger module components will be constrained to the minimum river bridge clearances of 90-foot span width and 38-foot low water height. Smaller rail module component shipments will arrive in sections with dimensions up to 12(H) x 12(W) x 80(L) feet weighing up to 80 tons and be offloaded in fabrication assembly areas. The assembly of the components into complete

modules on site will begin during the pre-construction phase; pre-construction activities will include preparation of assembly work areas. The completion of early module assembly is planned to coincide with the completion of VEGP Unit 3 containment base mat foundation. The setting of completed modules will not occur until after receipt of the COL.

3.9.2.13 Nuclear Island Basemat Foundations

Duration: 5 months

Once the subsurface preparations are completed, the next sequential work operation is the installation of foundations. The deepest foundation in the power block is the nuclear island (NI) base slab and is the first to be installed. The detailed steps include installation of the grounding grid, mud-mat concrete work surface, waterproof membranes, reinforcing steel and civil, electrical, mechanical/piping embedded items, and forming for COL concrete placement. The activities associated with the NI foundation are safety related. SNC will perform these activities as part of the pre-construction phase LWA-2; otherwise, SNC will perform these activities as part of the construction phase.

3.9.2.14 Power Block Earthwork (Backfill)

Duration: 8 months

Backfill material will come from onsite borrow pits. The backfill will be installed up to the buildings' foundation grades. The installation of nonsafety-related backfill to support non-safety-related structures or systems will occur as part of the pre-construction activities. The installation of Category 1 and 2 backfill material placed under or adjacent to safety-related structures will be performed as part of the preconstruction phase LWA-2 activities or as a construction activity.

3.9.3 Construction

Major power plant construction of safety-related structures, systems and components (SSCs) will begin after the NRC issues a COL to SNC. Each AP1000 unit is a series of buildings and structures and is erected from the bottom up with the top remaining open until the major mechanical and electrical equipment and piping are placed on each elevation. Much of the commodity installation consists of the setting of prefabricated civil/structural, electrical, mechanical and piping modules with field connections.

The approximate construction duration for the two units is 66 months.

On-site construction involves the installation of civil, mechanical/HVAC, electrical, piping and instrumentation commodities.

Civil installations include:

- Concrete pipe
- Backfill

- Concrete formwork and structural modules
- Concrete
- Reinforcing and embedded steel
- Structural steel
- Painting

Mechanical/HVAC installations include:

- Vessels
- Pumps
- Compressors
- Tanks
- Heat exchangers
- Turbine generators
- Condensers
- Cooling Towers
- HVAC ductwork
- Process equipment

Electrical installations include:

- Transformers
- Electrical panels and instruments
- Switchgear
- Cable trays
- Conduit, cable, wire and electrical terminations

Pipe and Instrumentation installations include:

- Large- and small-bore piping
- Valves and hangers
- Instrument trays and tubing
- Control instruments

The sequence of activities from commodity installation to commercial operation will be:

1. Civil completion of structure with mechanical and electrical equipment installed
2. Bulk piping and electrical commodities installed
3. Completion of the mechanical, piping and electrical systems in each structure

4. Component testing, system testing, flush & hydro, and functional testing
5. Fuel load and power ascension testing
6. Commercial operation

3.9.3.1 Power Block Construction

With the pre-construction activities completed and switch yard area construction continuing, the construction focus will concentrate on the power block. As indicated above, each AP1000 Unit consists of a series of buildings or structures with systems within the structures.

Containment Building

Duration: 48 months

The containment building has the longest construction duration. The major activities associated with the containment building following the base-mat foundation placement including: (1) erecting the containment vessel, with the bottom head set and grout; (2) setting and welding out three rings; (3) installing the reactor vessel, steam generators, reactor coolant pumps and pipe; (4) setting the polar crane; and setting the upper head. The shield walls are installed, followed by the roof and Passive Containment Cooling System (PCS) tank. The piping, HVAC, and electrical begins in the lower elevations and continues to the upper elevations.

Auxiliary Building

Duration: 44 months

The auxiliary building modules will be preassembled and delivered to the site. After assembly onsite, its mechanical equipment will be installed, and the HVAC, piping, and electric work completed.

Other facilities

Duration: As noted below

Other facilities including the turbine building, radwaste building, diesel generator building, and administrative building will be constructed on site. Other ancillary structures such as the cooling towers and switchyard will also be constructed. The turbine building will be constructed over a 46 month time period. The radwaste building will require 11 months to construct, and the diesel generator building will require 9 months to construct. The annex building will require 17 months, and the administration and simulator buildings will require 12 months to construct. The make-up water intake and pump house, cooling tower, yard tanks, and discharge each will require about 12 months to construct. Construction of the switchyard and installation of the main transformers should require approximately 9 months.

3.9.3.2 Testing

Duration: As noted below

Testing of all building components and equipment will require approximately 39 months for each unit including functional and integrated leak testing. The first fuel load and power ascension testing will require 6 months.

3.9.4 Noise

Noise is generated by earthmoving equipment, portable generators, pile-drivers, pneumatic equipment, and hand tools. Although short-term noise levels from construction activities could be as high as approximately 110 dBa, (e.g., impulse noise during pile driving activities, see Table 3.9-1), these noise levels will not extend far beyond the boundaries of the project site. Table 3.9-1 illustrates the rapid attenuation of construction noise over relatively short distances. At 400 feet from the construction site, construction noise will range from approximately 60 to 80 dBa. Neither Georgia nor Burke County has noise regulations or ordinances.

Table 3.9-1 Peak and Attenuated Noise (in dBa) Levels Expected from Operations of Construction Equipment¹

Source	Noise Level (peak)	Distance from Source			
		50 feet	100 feet	200 feet	400 feet
Heavy trucks	95a	84-89	78-83	72-77	66-71
Dump trucks	108	88	82	76	70
Concrete mixer	105	85	79	73	67
Jackhammer	108	88	82	76	70
Scraper	93	80-89	74-82	68-77	60-71
Dozer	107	87-102	81-96	75-90	69-84
Generator	96	76	70	64	58
Crane	104	75-88	69-82	63-76	55-70
Loader	104	73-86	67-80	61-74	55-68
Grader	108	88-91	82-85	76-79	70-73
Dragline	105	85	79	73	67
Pile driver	105	95	89	83	77
Fork lift	100	95	89	83	77

¹ Source: **Golden et al. (1980).**

Sections 3.9 References

(Golden et al. 1980) Golden, J., R. P. Ouellette, S. Saari, and P. N. Cheremisinoff, *Environmental Impact Data Book*, "Chapter 8: Noise," Second Printing, Ann Arbor Science Publishers, Inc., Ann Arbor, Michigan. 1980.

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