UNITED STATES NUCLEAR REGULATORY COMMISSION

SOUTHERN NUCLEAR OPERATING COMPANY

DOCKET NO. 52-011

VOGTLE ELECTRIC GENERATING PLANT ESP SITE

EARLY SITE PERMIT AND LIMITED WORK AUTHORIZATION

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

By letter dated April 20, 2010, Southern Nuclear Operating Company, Inc. (SNC or applicant), on behalf of itself and the co-owners of the Vogtle Electric Generating Plant (VEGP), submitted a license amendment request (LAR) (SNC 2010a) to amend the Early Site Permit (ESP) and Limited Work Authorization (LWA) that was issued to SNC and the same co-applicants on August 26, 2009, for the VEGP site. The LAR was supplemented by letters dated April 23, 2010; April 28, 2010; May 5, 2010; May 13, 2010; and May 24, 2010 (SNC 2010b,c,d,e,f, respectively). In particular, pursuant to Title 10 of the Code of Federal Regulation (10 CFR) Section 52.39(e), the request seeks to amend the ESP Site Safety Analysis Report (SSAR) (SNC 2009) to allow the use of Category 1 and 2 backfill material obtained from additional onsite borrow areas that were not previously approved for use in the limited construction activities authorized under the ESP LWA. Accordingly, the U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment that would authorize SNC to obtain additional sources of Category 1 and Category 2 backfill material at locations on the VEGP site other than the three borrow areas specified in the SSAR. By letter dated May 13, 2010 (SNC 2010e), the applicant requested that the NRC consider issuing a limited scope approval (LSA) of a subset of onsite locations pending the NRC determination on the remainder of the borrow sources identified in the LAR. The borrow sources encompassed by this limited scope approval are in areas for which impacts were previously analyzed in the environmental

review documented in NUREG 1872, Vol. 1, *Final Environmental Impact Statement for an Early Site Permit (ESP) at the Vogtle Electric Generating Plant Site* (ESP FEIS) (NRC 2008). Under 10 CFR 51.21, "Criteria for and Identification of Licensing and Regulatory Actions Requiring Environmental Assessments," the NRC prepared an environmental assessment (EA) that evaluated the impacts associated with the LSA and, based on that EA, reached a Finding of No Significant Impact ("Amendment 1 EA"). The LSA portion of the LAR was approved as Amendment No. 1 to ESP number ESP-004 on May 21, 2010 (NRC 2010a).

By letter dated May 24, 2010 (SNC 2010f), the applicant clarified the scope of the remainder of its April 20 LAR by limiting the request to three other specific portions of the VEGP site (i.e., other than those already approved by Amendment 1) that would be used as additional onsite sources of Category 1 and Category 2 backfill. The environmental impacts from disturbance of these borrow locations were not previously evaluated in the ESP FEIS or in the LSA EA; accordingly, pursuant to 10 CFR 51.45, the May 24, 2010 letter also included an environmental report (ER) assessing the impacts associated with the remaining portion of the revised LAR.

In response to this request, the NRC staff will prepare its safety evaluation of the LAR. To inform the NRC staff determination on the LAR, this EA evaluates the direct, indirect, and cumulative environmental impacts of the requested activities. The NRC staff's review of the safety aspects of the LAR will be documented in a separate safety evaluation report (SER).

ENVIRONMENTAL ASSESSMENT

Background

In August 2009, the NRC issued ESP-004, which included an LWA, to SNC and several co-applicants for the VEGP site in Burke County, Georgia. An ESP is an NRC approval of a site suitable for construction and operation of one or more new commercial nuclear reactors. An LWA, which may be requested as part of an ESP application, authorizes the commencement of limited safety-related construction activities with prior approval of the Commission. The NRC's detailed review of the environmental impacts of constructing and operating two new units (Units 3 and 4) at the VEGP ESP site is documented in the ESP FEIS (NRC 2008). SNC submitted an application in April 2008 for combined licenses (COLs) for proposed Units 3 and 4; as permitted by NRC regulations, the COL application references the VEGP ESP. The COL application has been docketed and is still under NRC review.

The ESP LWA issued for the VEGP site authorized SNC to undertake the following safety-related construction activities:

- Installation of engineered backfill
- Installation of retaining walls (mechanical stabilized earth walls)
- Installation of lean concrete backfill
- Installation of mud mats
- Installation of waterproof membrane.

SNC started performing limited safety-related construction activities at the VEGP site in March 2010 as authorized by the LWA. Based on the excavations performed since the start of the LWA activities, SNC has determined that the onsite borrow sources described in the ESP SSAR will not provide sufficient quantities of Category 1 and 2 backfill to complete the permitted

activities. Pursuant to 10 CFR 52.39(e), the holder of an ESP may not make changes to the ESP, including the SSAR, without prior Commission approval. In accordance with 10 CFR 52.39(e) and 10 CFR 50.90, SNC submitted an LAR to obtain borrow material from areas not previously identified in the ESP SSAR.

The Proposed Action

The proposed action, as described in the SNC request for the amendment in accordance with 10 CFR 50.90, would allow SNC to use backfill material for its LWA activities that would be obtained from additional borrow sources not previously described in the ESP SSAR or approved by NRC. SNC has identified localized deposits of suitable material within the Barnwell Group of the Upper Sand stratum located within the VEGP site.

On May 21, 2010, NRC issued Amendment 1 to ESP-004 for the VEGP ESP site (NRC 2010a); the amendment included changes to the SSAR to allow for the use of Category 1 and Category 2 backfill material from a limited set of onsite borrow locations. The onsite areas authorized as backfill sources in Amendment 1 were not identified in the ESP SSAR or evaluated in the NRC staff's ESP safety review as potential sources of backfill. However, as explained in the Amendment 1 EA, those onsite areas were previously identified and evaluated in the ESP FEIS as areas that would be affected by activities associated with building Units 3 and 4. These areas include the future locations of the cooling towers, temporary parking areas, temporary warehouse, office, laydown areas, and spoils areas.

On May 24, 2010, SNC clarified the scope of the remainder of its April 20 LAR by limiting the request to three other specific portions of the VEGP site that would be used as additional onsite sources of Category 1 and Category 2 backfill (SNC 2010f). In its ER, SNC specified three onsite locations that were being considered for borrow site development (i.e., other than those

already approved by Amendment 1). Most of these additional areas were not identified and evaluated as areas that would be affected by activities associated with building Units 3 and 4 in the ESP FEIS. These additional areas include a portion of the North Stockpile Area [Notice of Intent (NOI) 3] located north of the power block area, Borrow Area 1C (NOI 25) located south-southeast of the power block area, and the Railroad Borrow Area (NOI 28) located northwest of the power block area. These areas are described below and are shown in Figure 1.

- Approximately 42 acres (ac) of NOI 3 were evaluated in the ESP FEIS for use as a strip pile. In the LAR, this site has expanded to include 19 additional ac to the west of the original area (i.e., NOI 3 west) that were not considered in the ESP FEIS.
- NOI 25 consists of approximately 154 ac located south of the access road for Units 1 and 2 and north of River Road. Part of NOI 25 was used as a borrow site during the construction of Vogtle Units 1 and 2, and has been reclaimed and replanted with longleaf pines (*Pinus palustris*) and loblolly pines (*Pinus taeda*).
- NOI 28 consists of approximately 94 ac located northwest of the power block site. It includes the railroad spur into the site, and areas that were disturbed during the construction of Units 1 and 2. Previously disturbed areas have been replanted with longleaf and loblolly pines.

Development of these areas as borrow sites for Category 1 and Category 2 backfill will include removal of the existing vegetation, removal of the soil overburden, excavation of backfill materials, and the separation and stockpiling of usable material from material that does not meet the engineering parameters for Category 1 or Category 2 fill.

Need for the Proposed Action

As stated in SNC's LAR, the proposed amendment, which was submitted in accordance with 10 CFR 50.90, is needed because additional borrow sources are necessary to complete the previously authorized LWA activities. This need is based on current estimates of suitable backfill material recovered from the three borrow areas identified in the ESP SSAR and the onsite borrow areas identified in ESP-004 Amendment 1 (NRC 2010).

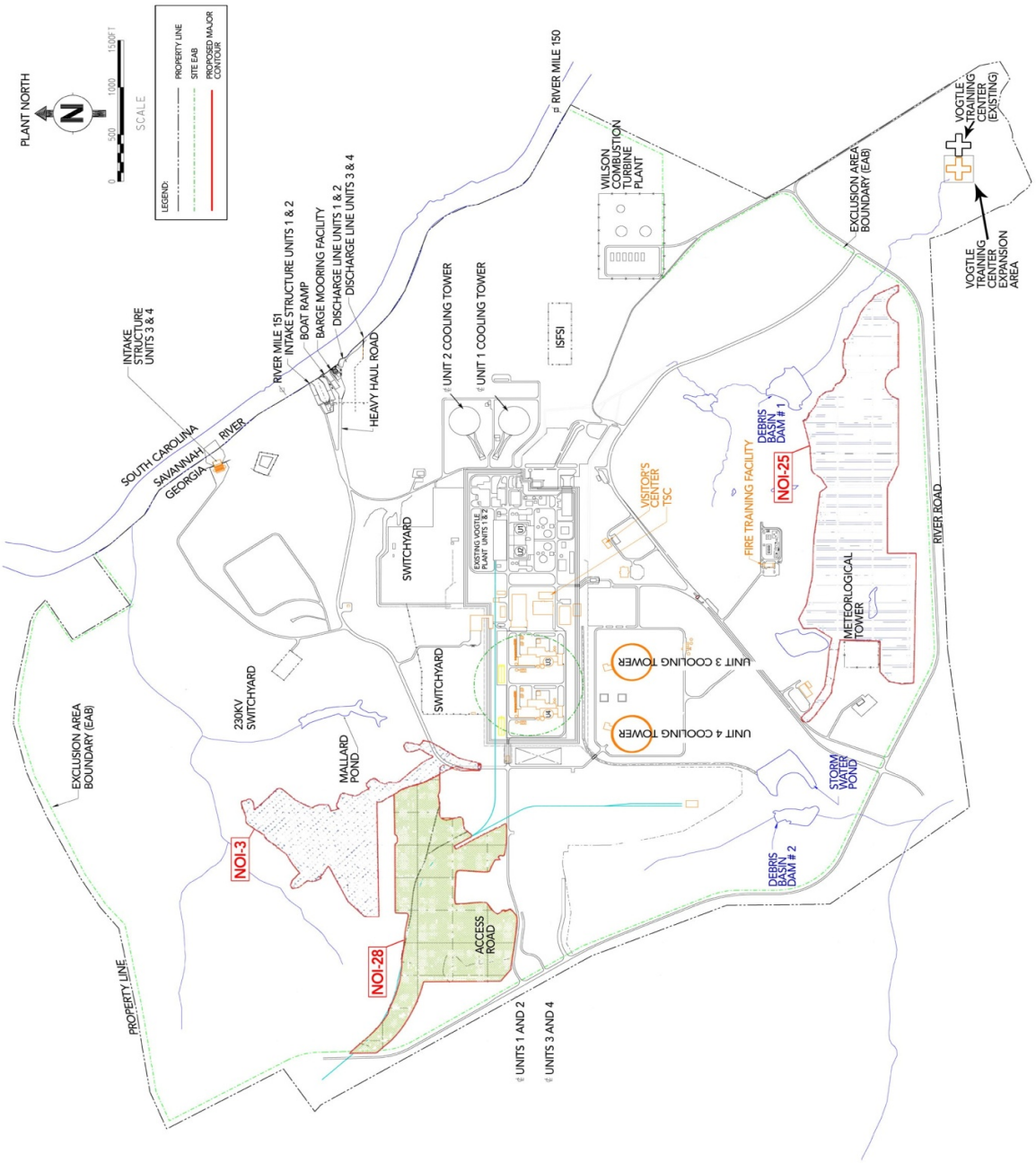

Figure 1. VEGP Site Map Showing Locations of the Three Proposed New Borrow Areas NOI 3, NOI 25, and NOI 28

Environmental Impacts of the Proposed Action

In August 2008, as part of its review of the ESP and LWA application, the NRC issued a detailed review of the direct, indirect, and cumulative environmental impacts of constructing and operating proposed Units 3 and 4 at VEGP. The environmental impacts associated with building VEGP Units 3 and 4 are documented in the ESP FEIS, particularly in Chapters 4 and 7. Subsequently, in its EA supporting the technical review of Amendment 1 in May 2010, the NRC staff determined that obtaining onsite backfill from the sources specified in that amendment would be a small subset of the site preparation and construction activities associated with building the proposed Units 3 and 4, and that the applicable impacts were already determined by the ESP review to be undetectable or so minor that they would neither destabilize nor noticeably alter any important attribute of the relevant resources. Accordingly, the NRC staff determined that there would be no significant environmental impacts associated with approving Amendment 1. However, the three proposed new borrow areas comprising the remainder of the LAR under consideration — NOI 3, NOI 25, and NOI 28 — were not among the potentially disturbed areas analyzed in the ESP FEIS. Therefore, to assess the direct, indirect, and cumulative impacts associated with the remainder of the LAR, the following sections include descriptions of the VEGP site, the three proposed new borrow sites, evaluations of the activities associated with obtaining additional backfill from those onsite borrow sources, and summaries of the radiological and nonradiological environmental impacts that may result from granting the license amendment request.

Description of the Vogtle Site

The VEGP site is located in rural Burke County, Georgia, approximately 26 mi southeast of Augusta, Georgia. As evaluated in the ESP review, Units 3 and 4 would be located adjacent to the existing VEGP Units 1 and 2 within the VEGP site. The center line of the proposed VEGP Units 3 and 4 would be located approximately 2100 feet (ft) west and 400 ft south of the center of Unit 2 containment building. Unit 4 would be located approximately 800 ft west of Unit 3. The VEGP site is generally bounded by River Road, Hancock Landing Road, and the Savannah River. The site occupies approximately 3169 ac of land, and is located directly across the Savannah River from the U.S. Department of Energy's Savannah River Site (NRC 2008).

Description of the Proposed New Borrow Areas

The additional 19 ac at NOI 3 is a managed timber stand consisting of longleaf pine planted in 1999 (SNC 2010h). The center of NOI 3 is located approximately 4000 ft northwest of the center of the power block area for Units 3 and 4.

NOI 25 consists of approximately 154 ac north of River Road on the southern portion of the VEGP site. The area generally extends from approximately 4900 ft south to approximately 6500 ft southwest of the center of the power block area for Units 3 and 4. The western portion of NOI 25 was used as a borrow source during construction of Units 1 and 2. That portion was replanted with longleaf and loblolly pine in 1996. To the east of the original borrow area is an approximate 43 ac longleaf pine stand that has been maintained since 1956. The eastern end of the site consists of approximately 18 ac of planted longleaf pine that was established in 2000 (SNC 2010f, 2010h).

NOI 28 consists of approximately 94 ac extending from approximately 2300 ft northwest to approximately 4600 ft west-northwest of the center of the power block area for Units 3 and 4. Most of this borrow site was disturbed during construction of Units 1 and 2, and was replanted

with longleaf pine in 1995 and 1997 (SNC 2010h). The longleaf pine stands in small portions of the site, especially in the southwest corner, appear to be older.

Nonradiological Impacts

Land-Use Impacts

In the ESP FEIS (NRC 2008), the NRC staff analyzed land-use impacts associated with site preparation and construction activities for the proposed VEGP Units 3 and 4, including ground-disturbing activities at the VEGP site. In the FEIS, the NRC staff determined that the land-use impacts associated with building the two new units would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.

As discussed above under "Identification of the Proposed Action," SNC is proposing three additional onsite sources of Category 1 and 2 backfill material. NRC staff reviewed SNC's environmental evaluation for these three additional onsite borrow areas, which was submitted in support of the LAR on May 24, 2010 (SNC 2010f). All three additional sources of backfill are located on the VEGP site, and portions of all three areas were disturbed during construction of VEGP Units 1 and 2.

The NRC staff also considered the potential for cumulative land-use impacts associated with the proposed use of these three additional borrow areas in combination with the land-use impacts identified in the ESP FEIS associated with building Units 3 and 4, as well as the use of the onsite borrow sources approved under Amendment 1, as evaluated in the Amendment 1 EA..

The NRC staff determined that there would be no significant direct, indirect, or cumulative land-use impacts associated with the acquisition of Category 1 and 2 backfill material from

the three proposed borrow sources on the VEGP site. The reasons for this determination are (1) the additional affected acreage is on the VEGP site, (2) the entire VEGP site is designated an Energy Production District in the Burke County Comprehensive Plan (MACTEC 2007), and (3) the use of the three borrow areas would be temporary and the affected areas would be replanted.

Surface and Groundwater Impacts

In the ESP FEIS (NRC 2008), the NRC staff analyzed the effects on surface water and groundwater resulting from site preparation and construction activities for VEGP Units 3 and 4. As noted in the ESP FEIS, during construction of VEGP Units 3 and 4, SNC would implement environmental controls pursuant to its Clean Water Act authorizations and would employ best management practices (BMPs) during site preparation and construction activities. The impacts of hydrological alterations resulting from construction activities would be localized and temporary, and the National Pollutant Discharge Elimination System (NPDES) storm-water permits, Section 401 Certification, and U.S. Army Corps of Engineers permit would minimize impacts (NRC 2008). Accordingly, the NRC staff determined that the surface-water and groundwater impacts associated with building Units 3 and 4 would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.

SNC stated in its May 24, 2010, submittal (SNC 2010f) to NRC that the borrow areas proposed for excavation to acquire additional material are currently covered under SNC's NPDES permit for construction storm water. All excavations would be redressed according to the site-specific Erosion Sedimentation and Control Plan of the NPDES permit. SNC also stated that excavations for backfill materials would not intersect the water table, and the excavations would not require de-watering (SNC 2010f); therefore, impacts to groundwater

resources would be negligible. The activities contemplated by the LAR are consistent with those evaluated in the ESP FEIS and the Amendment 1 EA, would be localized and temporary, and would not result in additional impacts to water resources. Therefore, the conclusions reached in the ESP FEIS with respect to surface water and groundwater remain bounding and valid for the LAR activities.

Based on the information provided by SNC and the control measures that would be employed during site preparation and construction activities on the VEGP site, the NRC staff concludes that obtaining the additional backfill material onsite would not result in significant direct, indirect, or cumulative impacts to surface and groundwater quality.

Terrestrial Resources Impacts

In the ESP FEIS (NRC 2008), the NRC staff analyzed impacts to terrestrial resources, including wildlife habitat, wetlands, and important species, from building the proposed Units 3 and 4. The NRC staff determined that the impacts to terrestrial resources associated with building Units 3 and 4 would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.

The NRC staff reviewed the environmental evaluation for additional onsite backfill borrow areas submitted by SNC on May 24, 2010 (SNC 2010f). In addition, the NRC staff visited the proposed additional onsite backfill borrow areas in early May 2010, reviewed information submitted by SNC on May 10, 2010 (SNC 2010g), and contacted the Georgia Department of Natural Resources (GDNR) and the U.S. Fish and Wildlife Service (FWS) (NRC 2010b; NRC 2010c).

Approximately 267 ac in three locations, disturbance of which was not previously considered in the ESP FEIS, will be cleared to obtain the additional borrow identified as part of the

proposed action. With respect to each of the additional backfill borrow areas, SNC has filed a Notice of Intent (NOI) for coverage under the NPDES construction storm water General Permit with the Georgia Environmental Protection Division (EPD). SNC has committed to using best management practices (BMPs), such as silt fences, to minimize erosion (SNC 2010f).

The areas will be stabilized with permanent vegetation once land-disturbing activities have been completed. The re-vegetation plan includes specifications on final grading and shaping, the application of lime and fertilizers, plant selection, seed preparation, and planting methods. Once these areas have undergone permanent stabilization and had a Notice of Termination submitted to EPD, they will be turned over to SNC's land resources supervisor for incorporation into the Plant Vogtle Land Management Plan. The primary goal of the Plant Vogtle Land Management Plan is to manage the site with an emphasis on wildlife management within an economically viable forest while maintaining a commitment to environmental stewardship. The most recently planted pine stands at the VEGP site have been planted in longleaf pine (*Pinus palustris*) and all future plantings will be longleaf pine, unless site characteristics dictate the planting of other species. (SNC 2010g). Longleaf pine is one of the fundamental components of sandhills habitat. Since the mid-twentieth century, sandhills across the south have been converted to pine plantation, agriculture and residential developments (The New Georgia Encyclopedia 2004). Sandhills support many species that are adapted to the habitat's dry, sandy conditions. The reintroduction of longleaf pine contributes to rehabilitation of this important habitat in Georgia, Alabama, Florida, and South Carolina, and conservation groups in each state have teamed to increase the quality, quantity and connectivity of sandhills habitat. In Georgia, the focus of this Multistate Sandhills Ecological Restoration project is on rebuilding habitat, including prescribed fire and planting longleaf pine (GeorgiaFrontPage 2009). In addition, GDNR has been conducting a sandhills inventory in Georgia. This inventory

includes six locations on the VEGP site. The sandhills identified on the northern section of the VEGP site have been characterized as the best sandhills habitat onsite; however, as discussed further below, the proposed use of the three LAR borrow areas would not disturb that section of the site (GDNR 2009).

The three borrow areas encompassed by the LAR (NOI 3 west, NOI 25, and NOI 28) were included in the original 2005 threatened and endangered species screening conducted by Third Rock Consultants, LLC (TRC 2006) in support of the ESP application. As part of the screening, TRC gathered information on the distribution, habitat requirements, and seasonal preferences of species that might occur at the site. This information was then used to generate a species list by season, and surveys were conducted in those habitats that most likely contained the target threatened and endangered species (ESP EIS). The Southeastern Pocket Gopher (*Geomys pinetis*) and the sandhills milkvetch (*Astragalus michauxii*) were not included in the 2005 threatened and endangered species screening and survey effort (TRC 2006). In the ESP FEIS, which was completed in the summer of 2008, the NRC staff noted that while mounds indicative of the Southeastern Pocket Gopher had been identified just north of the VEGP site boundary, and similar habitat occurred nearby on the VEGP site, the footprint of construction disturbance for the ESP EIS was not expected to encompass such habitat. The FEIS also indicated that while the sandhills milkvetch was known to occur within 10 miles of the VEGP site, it had not been identified as occurring within two miles of the VEGP site. The sandhills milkvetch has since been observed on the northern section of the VEGP site (NRC 2010b). As discussed further below, both species were found in NOI 28 in the spring of 2010 during the environmental review performed in support of the LAR.

In October 2006, the GDNR updated its list of protected species to include the addition of the state-threatened Southeastern Pocket Gopher. It is also protected in Alabama (ADCNR

2010). The Pocket Gopher's range includes the entire coastal plain of Georgia, most of the coastal plain in Alabama, and approximately the northern two-thirds of Florida (GDNR 2010a). It is generally associated with longleaf pine-turkey oak (*Quercus laevis*) – wiregrass (*Aristida* spp.) dominated ecosystems on well-drained, sandy soils, but has also been observed on agricultural lands, pastures, and residential areas (Southern Wildlife Consults 2008). The Southeastern Pocket Gopher is declining across its range mainly because of habitat alteration and loss (GDNR 2010a). Southeastern Pocket Gophers are highly territorial and sedentary animals with a low ability to disperse. Populations are easily isolated through habitat fragmentation, making them vulnerable to inbreeding and local extinction, and hindering re-colonization. Most known populations are small and live on private land. These populations are unprotected on private lands under Georgia state law (GDNR 2010b).

A roadside survey of 272 historical Southern Pocket Gopher sites in 41 counties was conducted in Georgia in 2006. Pocket Gopher presence was documented at 106 unique locations in 20 counties. Unique locations are defined as locations at least 0.5 km from other observed locations. Five small areas of relatively high population density (>0.05 independent locations/km^2) were identified in Baker, Early, Taylor, Camden, and Burke Counties. Thirteen unique locations were observed in Burke County, with the highest density of Southeastern Pocket Gophers in the county occurring in the area surrounding the VEGP site (Southern Wildlife Consultants 2008). These 13 locations do not include occurrences of Pocket Gopher on the northern part of the VEGP site or the populations that were discovered in NOI 28.

GDNR recommends that conservation of this species include beneficial management of known existing populations where possible and reintroduction to areas of suitable, secure habitat. GDNR indicated that Pocket Gophers are difficult to trap and that prior trapping efforts have had only limited success (NRC 2010b). Southern Pocket Gophers are a keystone species

in that their burrows are used by many commensal species, mostly invertebrates, and some of these invertebrates actually require these burrows to survive. Additionally, the burrows and mounds help to cycle nutrients to the surface and provide bare soil necessary for the germination of some seeds (GDNR 2010a).

sandhills milkvetch is found in Georgia, Alabama, Florida, South Carolina, and North Carolina. It is associated with longleaf pine-wiregrass sandhills and turkey oak scrub habitats (Chafin et al. 2007). Loss of habitat resulting from fire-suppression actions and land conversion to pine plantations have likely resulted in the overall decline of this species throughout its range (NatureServe 2009). It is listed as a threatened species in Georgia and North Carolina and is a state species of concern in South Carolina (GDNR 2010b; SCDNR 2006; NCDACS 2010). sandhills milkvetch is thought to be a good indicator of intact sandhills habitat, since the species cannot withstand disturbance and does not disperse well (NRC 2010b). Plants occur in small clusters (one to two plants) in appropriate habitat (NatureServe 2009). A total of 22 historical populations have been observed in Georgia, but most have not been seen in more than 30 years. Currently, there are eight known populations in Georgia, not including populations on the VEGP site, and only four of these are protected on conservation lands (Chafin et al. 2007). Prior to the discovery of the sandhills milkvetch in the NOI 28 area during the environmental review for the LAR, the only known population in Burke County was located on the northern section of the VEGP site (NRC 2010b).

- Wildlife habitat and state threatened and endangered species information for each area are described below. There are no wetlands present in any of the three areas (SNC 2010f).

- NOI 3 west consists of 19 ac of recently planted longleaf and slash pine (*Pinus elliottii)* (SNC 2010g; NRC 2010c). In the 2005 TRC screening, this area was not found to contain habitat suitable for protected species (SNC 2010f).
- NOI 3 west was included in the scope of the screening, but it was not included in the surveys conducted by TRC (NRC 2008).
- NOI 25 consists of approximately 43 ac of a natural longleaf pine stand maintained since 1956, 15 acres of longleaf pine planted in 1963, 18 acres of longleaf pine planted in 2000, and 78 ac of planted loblolly pine (*Pinus taeda*) (NRC 2010c; SNC 2010g). It is located south of the Unit 1 and 2 access road and north of River Road. A portion of NOI 25 was used as a borrow site during the construction of VEGP Units 1 and 2. The western section of NOI 25 and a portion of the eastern edge of NOI 25 were surveyed during the 2005 TRC threatened and endangered species surveys (NRC 2008). No state threatened and endangered species were observed during these surveys. The other portion of this site was screened by TRC, was found not to contain habitat suitable for protected species (SNC 2010f) and was not included in the threatened and endangered species survey (NRC 2008). No Federal or State-listed threatened or endangered species were observed during site reconnaissance visits to NOI 25 conducted by SNC in January, April, and May 2010. In addition, no Southeastern Pocket Gopher mounds were observed at this location during these visits.
- NOI 28 consists of approximately 94 ac planted in longleaf pine during the 1990s (SNC 2010g). It is located northwest of the power block site and includes the railroad spur into the site, and areas that were disturbed during construction of Units 1 and 2 (SNC 2010f).

Mounds indicative of the State-threatened Southeastern Pocket Gopher were observed during site reconnaissance visits of NOI 28 conducted by SNC in February, April and May, 2010

(SNC 2010f). Georgia law states that the rules and regulations related to protection of State-protected species shall not affect the rights of property owners, leaving these species unprotected on private land (GDNR 2006). In early March 2010, SNC voluntarily contacted GDNR to discuss relocation of Southeastern Pocket Gophers prior to land clearing at this site. SNC collaborated with GDNR to create a relocation plan for the Southeastern Pocket Gophers. GDNR and SNC met at the VEGP site in early March 2010 to trap and relocate the Pocket Gophers. SNC trapped and relocated three female Pocket Gophers during the trapping effort. These three gopher individuals were moved to an onsite location on the northern part of the property, within the Red-Cockaded Woodpecker (RCW) Safe-Harbor Agreement area. SNC continued to monitor the specific location where Pocket Gophers were trapped in NOI 28 to ensure there was not additional gopher activity. In addition, SNC monitored mounding activity at each relocation area weekly for four weeks and reported the findings to GDNR (NRC 2010c; SNC 2010g). According to GDNR, Pocket Gophers are difficult to trap and the success SNC had with trapping efforts on Plant Vogtle is notable (NRC 2010b).

On May 4, 2010, staff from NRC, GDNR, and SNC visited NOI 28. During the walkdown of NOI 28, several specimens of sandhills milkvetch, which is a State-threatened species in Georgia, were observed (SNC 2010f; NRC 2010c). In addition, an active Chuck-will's-widow (*Caprimulgus carolinensis*) nest containing two eggs was discovered on the walkdown. This is a migratory bird protected under the Migratory Bird Treaty Act. SNC staff committed to establishing an exclusion zone around the nest and postponing land disturbing activities within the area until the eggs have hatched and the chicks have fledged and left the nesting area. In Addition, SNC will revise the Critical Environmental Areas Procedure to aid in the identification of migratory birds and their nests (SNC 2010g).

The state threatened sandhills milkvetch is not protected on private land under Georgia law. SNC coordinated a voluntary effort to relocate the sandhills milkvetch that would be destroyed by land clearing disturbance at this location. SNC collaborated with Georgia Plant Conservation Alliance, GDNR, and Georgia Power Biological Services to create and implement a relocation plan for this species (NRC 2010b). If seeds are observed on the relocated plants, SNC intends to collect the seeds for future use. As of June 2, 2010, a total of 58 plants were relocated by SNC personnel to an area with a similar habitat signature, the longleaf pine forest ecosystem within the existing RCW Safe-Harbor Agreement area. Following transplanting, SNC implemented a watering regime for two weeks or until daily wilting subsided (NRC 2010b).

Given that the relocation effort is not being conducted during plant dormancy, and considering the biology of the sandhills milkvetch, which a member of the legume family, there is a possibility that all of the plants will die when they are moved. Normally legumes on deep sandhills soil form a taproot that goes very deep over time and this can make them difficult to move (NRC 2010b). Due to the difficulties associated with transplanting sandhills milkvetch, it will be very notable if the relocation effort is successful (NRC 2010b).

The 267 ac that will be disturbed during land clearing for additional backfill material are composed of planted longleaf, loblolly, and slash pine. SNC has committed to replanting all the areas in longleaf pine, if possible. NRC staff discussed the loss of habitat with GDNR. GDNR indicated that there is a general concern for the loss of habitat for sandhills milkvetch. However, habitat quality in the three areas being affected by this action is considered to be marginal compared to the quality of sandhills milkvetch habitat located on the northern section of the VEGP site, which would not be disturbed (NRC 2010b; GDNR 2009). SNC has voluntarily collaborated with GDNR and the Georgia Plant Conservation Alliance to mitigate impacts to both the Southeastern Pocket Gopher and the sandhills milkvetch found in NOI 28.

As explained above, the populations of southeastern Pocket Gopher and sandhills milkvetch discovered during the environmental review for LAR activities were previously unknown. SNC has no responsibility under Georgia state law to conserve these species on private land. However, SNC stated that it "recognized the ecological value of the species in the ecoregion where our project (LAR activities) resides" (SNC 2010g). Therefore, SNC worked with GDNR on an approach to relocate these species to suitable habitat onsite that will not be disturbed during these activities. These efforts can be used to provide data to further the understanding of the distribution, ecology, and future management strategies for both of these species.

Populations of both species are declining throughout their range, and thus the potential loss of these individuals would contribute to this trend. However, the known areas of high quality sandhills habitat on the VEGP site will not be impacted by the proposed action, and SNC has minimized impacts to state threatened species by relocating individuals to suitable habitat onsite prior to undertaking the site-clearing activities. Furthermore, while the success of these relocation efforts is not known at this time, SNC is monitoring the results and will provide this data to GDNR (NCR 2010b; SNC 2010g). The data collected on the relocation efforts will help create better management strategies to strengthen conservation efforts and to preserve populations of these species in the long term. In addition, these potential losses are isolated and will not jeopardize the stability or viability of any of the remaining populations in Georgia. These populations occur in different locations throughout the state and each population is not dependent on the success of others.

In addition to the impacts to terrestrial resources just described from the proposed action, the NRC staff evaluated whether interactions with other past, present, and future actions could contribute to adverse cumulative impacts to terrestrial resources.

A total of approximately 353 ha (873 ac) will be disturbed at the VEGP site for activities related to building Units 3 and 4 as well as the LAR activities covered under this EA. The NRC staff estimated in the ESP EIS that approximately 556 ac would be disturbed in support of building Units 3 and 4. Subsequent information submitted in support of SNC's COL application indicated that an additional 50 ac of disturbance are expected, not including the 267 ac considered in this EA. An estimated 606 ac considered in the ESP EIS and subsequent COL submittals (556 ac plus 50 ac) will be disturbed by construction of the proposed Units 3 and 4. This figure includes approximately 379 ac that could be permanently disturbed and an additional 227 ac that could be temporarily disturbed (SNC 2009a). The majority of habitat that will be permanently or temporarily disturbed by construction of Units 3 and 4 consists of planted pines, previously disturbed areas, and open fields. These habitats are common in the region, and are not considered to be critical for the survival of any species. In addition, the combined onsite upland hardwood forest and bottomland wetlands lost to permanent structures and facilities represent a small percentage of the combined total of these available onsite and in the vicinity of the VEGP site. Neither the Southeastern Pocket Gopher nor the sandhills milkvetch are known to occur in the 556 ac disturbance area considered in the ESP EIS or the 50 additional acres discussed in subsequent submittals (SNC 2009a; NRC 2008). However, as discussed above, the Southeastern Pocket Gopher and the sandhills milkvetch, both indicators of quality sandhills habitat, have been observed on NOI 28 (94 acres), and this sandhills habitat will be disturbed during LAR activities. Sandhills habitat has declined throughout Georgia as these habitats are developed for other uses, such as timber and agriculture (The New Georgia Encyclopedia 2004).

The combined loss of sandhills habitat, hardwood forest and bottomland wetlands, planted pine habitat and open field habitat during the construction of Units 3 and 4 and the

clearing of NOI 25, 28 and NOI 3 west for backfill will reduce available habitat for wildlife, including the state threatened sandhills milkvetch and Southeastern Pocket Gopher. However, Georgia is currently working to restore sandhills habitat across the state, which includes planting longleaf pine. SNC has committed to replant the disturbed onsite borrow areas in longleaf pine, if possible. In addition, the areas that are being disturbed are of marginal quality compared to the remaining higher quality habitat available onsite. Planted pine, open field, and bottomland hardwood wetland habitats are available in other locations onsite and in the region. Therefore, and for the reasons previously discussed, the construction activities described above are not expected to destabilize terrestrial resources, including the state threatened Southeastern Pocket Gopher and the sandhills milkvetch.

Terrestrial Resource Summary

The NRC staff reviewed the potential impacts of site preparation and construction activities at these three locations on terrestrial resources and also evaluated whether interactions with other past, present, and future actions could contribute to adverse direct, indirect, or cumulative impacts to terrestrial resources. SNC is required to comply with conditions of the NPDES construction storm water General Permit issued by EPD and SNC has committed to using BMPs to minimize impacts from erosion. SNC has committed to establishing an exclusion zone Chuck-will's-widow nest, protected under the MBTA, and postponing land disturbing activities within the area until the eggs have hatched and the chicks have fledged and left the nesting area. As described above, SNC has voluntarily mitigated impacts to the Southeastern Pocket Gopher and the sandhills milkvetch, both of which are State-threatened species. SNC also has committed to replant longleaf pine in areas that will be disturbed, if possible. Longleaf pine is a

fundamental component of sandhills habitat and a species ideally suited to the soil type and regional topography.

Based on the total acres of habitat that will be disturbed for the proposed project, in addition to the other acreage that will be altered during construction of VEGP Units 3 and 4, and the mitigated impacts to state threatened species in connection with the proposed project, the NRC staff concludes that site preparation and construction activities related to obtaining backfill from these locations could noticeably alter local terrestrial resources through the loss of habitat and the displacement of localized populations of the Southeastern Pocket Gopher and the sandhills milkvetch, but would not have a destabilizing effect either on these habitats or on the populations of these species in Georgia.

Aquatic Resources Impacts

In the Vogtle ESP FEIS, the NRC staff analyzed impacts to aquatic resources from building the proposed Units 3 and 4. The NRC staff considered impacts to onsite aquatic resources from erosion and sedimentation associated with site storm-water management, but noted that SNC has storm-water drainage management plans and uses BMPs to minimize erosion impacts. The NRC staff determined that the impacts to onsite aquatic resources (ponds and streams) associated with building Units 3 and 4 would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource. In the Amendment 1 EA, the NRC staff determined that the aquatic impacts of the activities requested under the LSA were consistent with the impacts previously examined and thus would not result in significant additional impacts.

Based on the information provided by SNC and the NRC analysis in the ESP FEIS, the staff concludes that site preparation and construction activities at the proposed borrow locations are

similar to those that have been previously analyzed and documented in the ESP FEIS, and that the aquatic resource impacts of activities that would be conducted pursuant to the LAR are consistent with the impacts previously examined and found not to be significant. Therefore, there would be no significant, indirect or cumulative impacts to aquatic resources in onsite ponds and streams that would be associated with obtaining backfill from the three locations on the VEGP site identified in the LAR.

Threatened and Endangered Species Impacts

In the ESP FEIS (NRC 2008), the NRC staff evaluated the potential for construction-related impacts to State and Federally listed threatened or endangered species from building the proposed Vogtle Units 3 and 4. No State or Federally listed threatened or endangered aquatic species were identified in the onsite ponds and streams that could potentially be affected by site preparation and construction activities. Although the Federally endangered shortnose sturgeon (*Acipenser brevirostrum*) and the State listed robust redhorse (*Moxostoma robustum*), Savannah lilliput (*Toxolasma pullus*) are found in the Savannah River, and the State-listed Atlantic pigtoe mussel (*Fusconaia masoni*) may be found in the Savannah River, the onsite construction-related activities, other than those activities that occurred within and adjacent to the Savannah River (construction of the intake, discharge and barge facility modifications) were not considered as potentially impacting the aquatic biota in the Savannah River. Especially in light of SNC's storm-water drainage management plans and use of BMPs to minimize erosion impacts, the staff concludes that the site preparation and construction activities at the proposed borrow locations would also not have an impact on the threatened and endangered Federal and State-listed species inhabiting the Savannah River.

With respect to Federally listed threatened or endangered terrestrial species, the staff determined in the FEIS that none are known to occur at the VEGP site, with the exception of the American alligator (*Alligator mississippiensis*). The alligator, which is protected because of its similarity to the endangered American crocodile, occurs in the Savannah River and in freshwater ponds in the area, including Mallard Pond on the VEGP site. However, the staff determined that alligators appear to be relatively common in the Savannah River near and on the VEGP site and that construction impacts on alligators would be considered to be negligible because any displacement would be temporary and there is ample wetlands habitat in the region. Accordingly, the NRC staff concluded in the FEIS that the overall impact of construction-related activities on terrestrial and aquatic ecological resources on and in the vicinity of the VEGP site, including impacts on terrestrial and aquatic State and Federally listed threatened and endangered species, would not be detectable or would be so minor that it would neither destabilize nor noticeably alter any important attribute of the resource.

As explained above, the proposed action would involve disturbance of additional acreage that was not evaluated in the ESP FEIS. Potential impacts to two Georgia State-listed threatened species, the Southeastern Pocket gopher and the sandhills milkvetch, are discussed above in the section on terrestrial ecology. The discussion presented in the ESP FEIS indicates that the only other State listed plant or animal species occurring in the vicinity of the VEGP site is the bay star-vine (Schisandra glabra). This plant species occurs in floodplain forests and is not expected to be found in the three proposed backfill borrow areas. Accordingly, no other State-listed threatened or endangered species are likely to be affected by the proposed action.

With respect to the American alligator (*Alligator mississippiensis*), the proposed action would not adversely affect onsite ponds or wetlands, or the Savannah River, and SNC is required by its storm-water permit to implement BMPs to minimize surface runoff and thus

protect water quality. Therefore, there is no potential for adverse effects to the American alligator from the proposed action.

SNC has enrolled approximately 940 ac of the VEGP site in the Georgia Department of Natural Resources (GDNR) Safe-Harbor Program for red-cockaded woodpeckers (*Picoides borealis*) as of June 2007 (SNC 2010f, g). Safe-Harbor Agreements are arrangements that encourage voluntary management for red-cockaded woodpeckers while protecting the participating landowners and their rights for development in the event these woodpeckers become established on the private property. Landowners entering into safe-harbor agreements must establish a baseline number of individuals that would be maintained in the event that they are observed. Surveys at the VEGP site conducted in February 2006 found no occurrence of red-cockaded woodpeckers onsite (NRC 2008). The land currently enrolled in the red-cockaded woodpecker safe-harbor agreement will continue to be enrolled under the agreement, and because the species is not currently present on the VEGP site, it will not be affected by the proposed action.

Appropriately 52 ac or about 5.7 percent of the acreage currently enrolled in the safe-harbor program at the VEGP site will be disturbed during clearing of NOI 3 west (19 ac) and NOI 25 (33 ac) (NRC 2010c, SNC 2010g). Currently, SNC has no baseline responsibilities under the RCW Safe-Harbor Agreement because there are no active clusters or nest trees onsite, and there are no RCW clusters on neighboring lands within foraging distance (SNC 2010g, SNC 2010f; NRC 2010c). SNC intends to retain the acres in the RCW Safe-Harbor Agreement and to replant these areas in longleaf pine, if possible, once the areas have been stabilized and the NOIs are closed out (NRC 2010c, SNC 2010f, g).

In 2007, as part of the NRC's responsibilities under Section 7 of the Endangered Species Act, the NRC staff prepared a Biological Assessment (BA) (NRC 2007) for submission to the

FWS evaluating potential impacts on threatened and endangered species. The NRC staff determined in the BA that limited site-preparation activities for the proposed Units 3 and 4 are not likely to adversely affect any Federally listed species. The FWS concurred with this determination on September 19, 2008 (FWS 2008). There are no known threatened and endangered terrestrial or aquatic species in the areas identified for additional backfill, and there are no adequate foraging locations in the areas that will be disturbed as part of this action. In addition, no critical habitat for threatened and endangered species is present in the areas that would be impacted as a result of the site preparation and construction activities associated with the excavation of the additional backfill identified in the LAR. The new information on the additional backfill areas did not reveal impacts that may affect listed species or critical habitat in a manner not previously considered, and no additional species or critical habitat were identified that may be affected by the proposed action. Accordingly, the NRC staff concludes there would be no significant cumulative impacts associated with the proposed action.

Based on the NRC staff's review, including previous consultation with the FWS and the analysis done in the ESP FEIS, obtaining backfill from the locations specified in the LAR is not expected to affect threatened and endangered terrestrial or aquatic species in a manner different from that previously analyzed in the ESP FEIS and Amendment 1 EA and found to be not significant. Therefore, the NRC staff concludes that there would be no significant direct, indirect, or cumulative impacts to Federally threatened or endangered species associated with obtaining backfill from the locations on the VEGP site identified in the LAR.

Socioeconomic Impacts and Environmental Justice

In the Vogtle ESP FEIS (NRC 2008), the NRC staff evaluated the potential socioeconomic impacts associated with the construction of Units 3 and 4 at the VEGP site. As described in the

ESP FEIS, SNC estimated a workforce of 3500 workers during peak construction. The NRC staff determined that, for most aspects of its socioeconomic analysis, the impacts associated with building Units 3 and 4 would not be detectable or would be so minor that they would neither destabilize nor noticeably alter the local economy, except for the positive impacts of increased tax revenues. The NRC staff found that there would be a noticeable but not destabilizing effect on traffic along River Road near the VEGP site as a result of activities supporting the building of the new units.

SNC has stated that the LAR activities are consistent with those evaluated in the ESP FEIS and will have no additional impact to socioeconomics (SNC 2010f). The activities described in the LAR would not require any additional workforce beyond that estimated in the ESP FEIS and would occur concurrently with other site preparation activities previously evaluated. Accordingly, the staff concludes that the socioeconomic impacts of activities that would be conducted pursuant to the LAR are consistent with the impacts previously examined in the ESP FEIS and found not to be significant. With respect to the traffic impacts along River Road evaluated in the ESP FEIS and Amendment 1 EA, the staff concludes that the impacts attributable to the LAR represent a relatively small proportion of the noticeable but not destabilizing traffic impacts previously analyzed and would not have any additional cumulative significance. Based on the above information, the NRC staff concludes that there would be no significant direct, indirect, or cumulative socioeconomic impacts associated with obtaining backfill from the locations on the VEGP site identified in the LAR.

In the Vogtle ESP FEIS, the NRC staff conducted an environmental justice impacts analysis to evaluate the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from the construction and operation of two new units at the VEGP site. Based on that review, the staff

found no significant environmental justice impacts. As discussed in this EA, the impacts of activities described in the LAR are consistent with the impacts of the activities already analyzed in the ESP FEIS and Amendment 1 EA and do not increase the potential for adverse or disproportionate impacts on minority and low-income populations. Accordingly, the NRC staff concludes that there would be no disproportionately high and adverse impacts to minority and low-income populations associated with obtaining backfill from the locations on the VEGP site identified in the LAR.

Cultural and Historic Resources Impacts

All of the proposed new borrow areas are within the site boundary of the Vogtle plant and are within the area of potential effect (APE) for the cultural resource analysis included in the ESP FEIS (NRC 2008). In its ER in support of this LAR, the applicant stated "… the entire Vogtle site was evaluated for the potential for cultural resources as part of a site-wide screening process to prepare the ESP ER and the results are included in NUREG 1872. No cultural resources eligible for inclusion on the National Register of Historic Places were identified within any of the areas" described in this LAR (Southern 2010f).

As described in the ESP FEIS, previous cultural resource identification efforts indicated the presence of 17 archaeological sites. Only two of the sites (9BK416 and 9BK423) are eligible for listing in the National Register of Historic Places (NRHP) and two sites are potentially eligible (9BK419 and 9BK420) for listing in the NRHP. The two eligible sites are located adjacent to the proposed reactor/support facilities. Based on the results of the cultural resource surveys (including testing) and consultation with the Georgia State Historic Preservation Office (SHPO), the Georgia SHPO determined that construction of Units 3 and 4 at the VEGP site will affect, but not adversely affect, site 9BK416. The applicant and the Georgia SHPO entered into a

Memorandum of Understanding to preserve the balance of the site 9BK416 disturbance and conduct further investigation as directed by the Georgia SHPO. As concluded in the ESP EIS, the construction of Units 3 and 4 at the VEGP site would affect, but not adversely affect site 9BK416 and protective actions were taken for site 9BK423. The ESP EIS also concluded that there would be no effect on sites 9BK419 or 9BK420. For the purposes of this environmental assessment, no proposed LAR-associated activities will occur at sites 9BK416, 9BK423, 9BK419 or 9BK420; therefore, there will be no effect on these resources.

Forty-two acres of the NOI-3 area was included in the ESP analysis. The NOI-3 area will be increased by an additional 19 ac that will be disturbed. This area is within the APE for cultural resources and was included in previous cultural resource studies (NSA 2006a, b). There are no known cultural resources in the NOI-3 area, and this area is not considered to be a sensitive area with regard to cultural resources.

The NOI-25 area is within the APE for cultural resources and was included in previous cultural resource studies (NSA 2006a). There are no known cultural resources in the NOI-25 area, and this area is not considered to be a sensitive area with regard to cultural resources.

The NOI-28 area consists of the area north and south of the rail spurs. This area is within the APE for cultural resources and was included in previous cultural resource studies (N SA 2006a, b). Known cultural resources occur within this area and include 9BK415, 9BK22, 9BK414, and 9BK21. Brief summaries of these resources follow (NSA 2006a):

- 9BK415 is an early to late 20th-century house site located on the side slope of a ridge. The test pits revealed debris approximately 200 by 200 ft in size. Artifacts include roofing tin, clothing, light fixtures, concrete, brick, enameled tin-ware, car parts, and white-ware. The site lacks features, is eroded, and is less than 50 years old. The area has been clear-cut and is unlikely to be able to address any significant research

questions. Therefore, site 9BK415 is recommended as not eligible for inclusion in the National Register of Historic Places. The SHPO concurred with this finding by letter (GDNR 2007).

- At 9BK22, test pits revealed one artifact that consisted of a late Paleo-Indian/Early Archaic Hardaway/Dalton point.
- 9BK414 is a late 19th- to early 20th-century house site located on a ridge knoll. This may be the W.M. Buxton house, which shows up in this vicinity on a 1909 map of Burke County. It was identified in regular interval shovel testing. Surface trash piles consisted of roofing tin, bed springs, and a few fragments of bottle glass and ceramics. Kitchen-related artifacts consisted of two pieces of refined earthenware with a blue exterior and white interior, two plain-white graniteware pieces, one red, green, and purple transfer printed ware, two pieces of amethyst glass, and several other types and colors of glass. A machine cut glass bottle was found and dated for the 1925 to 1938 time period. The amethyst glass is dated for the time period between the 1880s and 1917. Three wire nails that generally date to around the 1880s were discovered. Disturbance to the site appears to be great, and it is likely that any structure located on the site was raised and removed; the surrounding area has been clear cut and replanted in pines. Because the site lacks intact above-ground architectural features and no subsurface midden deposits were found, it is an unlikely resource for addressing any significant research questions. Therefore, site 9BK414 is recommended as not eligible for inclusion in the National Register of Historic Places. The SHPO concurred with this finding by letter (GDNR 2007).
- At 9BK21, test pits revealed a Middle Mississippian Madison type point and a chert flake.

SNC has procedures in place to ensure the protection of undiscovered historic or archaeological resources if discovered during construction. The proposed LAR activity for obtaining additional onsite backfill from the NOI-3, NOI-25, and NOI-28 areas will not result in additional impacts to historic or cultural resources on the VEGP site. The LAR locations for onsite backfill are not in culturally sensitive areas and were included in the cultural resource investigations, analysis in the ESP FEIS for the construction of Units 3 and 4 at the VEGP site, and consultation with the SHPO regarding construction of Units 3 and 4. The known cultural resources located within NOI-28 were recommended as not eligible for inclusion in the NRHP. The Georgia SHPO concurred with this finding by letter (GDNR 2007).

Based on the information stated above, the NRC staff concludes the proposed LAR action would have no effect on historic properties listed on or eligible for listing on the National Register of Historic Places. In accordance with the NRC's responsibilities under Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the NRC has confirmed this finding with the Georgia SHPO. There is always a potential for inadvertent discoveries of cultural resources during ground disturbing activities. Consistent with the inadvertent discovery procedures that SNC developed in connection with its ESP application and indicated it would implement during construction, it is the NRC staff's understanding that the applicant would stop work upon discovery of cultural resources and consult with the SHPO and Tribes to determine the best path forward. Based on the information stated above, the NRC staff concludes the proposed LAR action would have no direct, indirect, or cumulative impacts to historic and cultural resources.

Air Quality Impacts

In the Vogtle ESP FEIS, the NRC staff evaluated the potential impacts to air quality associated with the construction of Units 3 and 4 at the VEGP site. Site preparation and construction activities at the VEGP site, including excavation of onsite backfill materials, would result in temporary impacts on local air quality from vehicle and construction equipment emissions from fugitive dust. The Air Protection Branch of the Georgia Department of Natural Resources (GDNR) Environmental Protection Division, which regulates air-quality control for the State of Georgia, does not require a permit for dust generated by construction activities. As stated in the ESP FEIS (NRC 2008), SNC would develop a dust-control plan prior to construction that would include specific dust mitigation measures. Emissions from site preparation and construction activities would be based on the level and duration of a specific activity, but the impact is expected to be temporary and limited in magnitude (NRC 2008). Accordingly, the NRC staff determined in the ESP FEIS that the impacts to air quality associated with building the two new units would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.

Based on the information provided by SNC and the NRC analysis in the ESP FEIS and Amendment 1 EA, the staff concludes that activities at the proposed borrow locations are similar to those previously analyzed and documented in the ESP FEIS, and that the air quality impacts of activities that would be conducted pursuant to the LAR request are consistent with the impacts previously examined and found not to be significant. Therefore, there would be no significant direct, indirect, or cumulative impacts to air quality associated with obtaining backfill from the locations on the VEGP site identified in the LAR request.

Nonradiological Health Impacts

In the Vogtle ESP FEIS, the NRC staff evaluated the potential nonradiological health impacts associated with the construction of Units 3 and 4 at the VEGP site. Nonradiological health impacts to the public and workers from the proposed action would include exposure to fugitive dust, vehicle and construction equipment exhaust, occupational injuries, noise, and the transport of materials and personnel to and from the VEGP site. In the ESP FEIS, the staff determined that the nonradiological health impacts associated with building Units 3 and 4 would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.

The nonradiological impacts of transporting backfill material in support of this proposed LAR were calculated using the same general approach and data that were used in the ESP FEIS (NRC 2008). To calculate nonradiological impacts, shipping distances are multiplied by unit rates (i.e., accidents, injuries, and fatalities per unit distance). The bases and assumptions for these calculations are as follows:

- The NRC staff assumed that a total of 1,200,000 yd^3 of backfill would be transported by truck from a nearby borrow source to the power block area of VEGP Units 3 and 4 in support of this LAR (SNC 2010h).
- The applicant assumed that shipment capacities for backfill material are approximately 20 yd^3 per truck load (SNC 2010h).
- The NRC staff assumed that the average shipping distance for backfill materials to be about 3 mi round trip based on the borrow pit being located approximately 4000 ft north of the power block area (SNC 2010a). This distance was doubled to account for a circuitous route and then doubled again to account for the empty return shipment.

- Accident, injury, and fatality rates for transporting building materials were taken from Table 4 in ANL/ESD/TM-150, *State-level Accident Rates for Surface Freight Transportation: A Reexamination* (Saricks and Tompkins 1999). Rates for the State of Georgia were used for backfill material shipments. The data provided in Saricks and Tompkins (1999) are representative of heavy-truck accident rates.
- The U.S. Department of Transportation Federal Motor Carrier Safety Administration evaluated the data underlying the Saricks and Tompkins (1999) rates, which were taken from the Motor Carrier Management Information System, and determined that the rates were under-reported. Therefore, the accident, injury, and fatality rates from Saricks and Tompkins (1999) were adjusted using factors derived from data provided by the University of Michigan Transportation Research Institute (UMTRI 2003). The University of Michigan Transportation Research Institute data indicate that accident rates for 1994 to 1996, the same data used by Saricks and Tompkins (1999), were under-reported by about 39 percent. Injury and fatality rates were under-reported by 16 percent and 36 percent, respectively. As a result, the accident, injury, and fatality rates were increased by factors of 1.64, 1.20, and 1.57, respectively, to account for the apparent under-reporting. These adjustments were applied to the construction materials, which are transported by heavy truck shipments similar to those evaluated by Saricks and Tompkins (1999) but not to commuter traffic accidents.

The estimated impacts of transporting backfill materials to the power block area of the VEGP site in support of this Amendment are approximately 0.3 accidents, 0.15 injuries, and 0.009 fatalities. The estimated total annual nonradiological fatalities related to transporting backfill material represents about a 0.1 percent increase above the average 9.8 traffic fatalities per year

that occurred in Burke County, Georgia, from 2004 to 2008 (DOT 2010). Even when considered in combination with the minor increase in traffic fatality risk analyzed in the ESP FEIS, this increase remains small relative to the current traffic fatality risks in the area surrounding the proposed VEGP site.

Based on the information provided by SNC and the NRC analysis in the ESP FEIS, the staff concludes that site preparation and construction activities contemplated by the LAR are similar in scope and duration to those that have been previously analyzed and documented in the ESP FEIS, and that the other nonradiological health impacts of activities that would be conducted pursuant to the LAR are consistent with the impacts previously examined and found not to be significant. Therefore, the NRC staff concludes that direct, indirect, or cumulative nonradiological health impacts as a result of the LAR request would be negligible.

Summary of Nonradiological Impacts

The staff has reviewed the potential direct, indirect, and cumulative nonradiological impacts of the activities proposed in the LAR request and finds that, with the exception of some terrestrial ecological impacts, environmental resources would not be noticeably impacted by the use of additional onsite borrow areas on the VEGP ESP site. SNC is required to comply with conditions of the NPDES construction storm water General Permit issued by EPD and SNC has committed to using BMPs to minimize impacts from erosion. With respect to terrestrial ecological resources, obtaining backfill from the additional borrow areas would reduce available habitat for wildlife, including the state threatened sandhills milkvetch and Southeastern Pocket Gopher. As described above, SNC has voluntarily mitigated impacts to both of these species; although it is unclear to what extent the onsite sandhills milkvetch relocation efforts will be successful. SNC also has committed to replant longleaf pine in areas that will be disturbed, if

possible. Moreover, suitable habitats for these species are available in other locations onsite and in the region. The land currently enrolled in the red-cockaded woodpecker safe-harbor agreement will continue to be enrolled under the agreement and because the red-cockaded woodpecker is not currently present on the VEGP site, it will not be affected by the proposed action. Accordingly, the staff concludes that site preparation and construction activities related to obtaining backfill from these locations could noticeably alter local terrestrial resources through the loss of habitat and the displacement of localized populations of the Southeastern Pocket Gopher and the sandhills milkvetch, but would not have a destabilizing effect either on these habitats or on the populations of these species in Georgia.

Therefore, the NRC staff concludes that approving the LAR would not result in significant impacts to land use, surface and groundwater resources, terrestrial or aquatic resources, federal threatened and endangered species, socioeconomic factors and environmental justice, cultural and historical resources, air quality, and nonradiological human health.

Radiological Impacts

Radiological Health Impacts

In the Vogtle ESP FEIS, the NRC staff evaluated the potential radiological health impacts associated with the construction of Units 3 and 4 at the VEGP site. The source of radiation exposure for construction workers include direct radiation exposure from liquid radioactive waste discharges, and exposure from gaseous radioactive effluents from the existing VEGP Units 1 and 2 during site preparation and construction of Units 3 and 4. In Chapters 4 and 7 of the ESP FEIS (NRC 2008), the NRC staff reviewed SNC estimates of dose to workers during site preparation and construction activities, and found the doses to be well within the NRC annual exposure limits (i.e., 1 mSv [100mrem]) designed to protect the public health, even if workers exceed an occupancy rate of 2080 hr/yr. The activities described in the LAR request

would not occur physically closer to potential sources of exposure from VEGP Units 1 and 2 than those site preparation and construction activities already evaluated for the ESP FEIS, and they would be a minor fraction of the overall construction activities for the proposed Units 3 and 4; therefore, worker doses would accordingly be expected to remain well within the applicable exposure limits. The NRC staff concludes that direct, indirect, or cumulative radiological impacts to construction workers as a result of the LAR would be negligible.

Radioactive Waste Impacts

The proposed LAR activities will not produce radioactive wastes; therefore, there would be no direct, indirect, or cumulative radiological impacts associated with such waste.

Summary of Radiological Impacts

The activities associated with obtaining backfill from the locations specified in the LAR would result in a negligible increase in occupational radiation exposure due to additional time spent by workers at these distant locations compared to the exposures that were previously evaluated in the ESP FEIS and found to be undetectable or so minor that they would neither destabilize nor noticeably alter any important attribute of the relevant resources. The staff reviewed the potential direct, indirect, or cumulative radiological health impacts that would occur as a result of the LAR activities and found that the analyses of radiological health impacts prepared in the ESP FEIS for the full range of site preparation and construction activities would bound any occupational exposures associated with obtaining borrow from the requested three borrow areas. No radioactive waste would be produced by the proposed actions. Therefore, the NRC staff concludes that granting the proposed amendment would not result in changes to the radiological impacts described within the ESP FEIS and found not to be significant.

ALTERNATIVES TO THE PROPOSED ACTION

As an alternative to the proposed action, the NRC staff considered denial of the proposed LAR (i.e., the "no-action" alternative"). Denial of the LAR request would avoid some, but not all, of the environmental impacts described in this EA. As discussed above in the evaluation of terrestrial resource impacts, trapping and relocation of the Pocket Gopher and sandhills milkvetch in NOI 28 has already occurred. Consequently, denial of the LAR request would not avoid the disturbance to terrestrial species associated with those activities. However, if NRC were to deny the LAR request, SNC would still need to obtain the quantities of material necessary to complete backfill of the Units 3 and 4 power-block excavations from some other location.

By letter dated May 24, 2010, Southern has submitted a separate LAR requesting a change in the backfill geometry that, if approved, would reduce the amount of Category 1 and Category 2 backfill that would be needed (Southern 2010i). That LAR would authorize SNC to use different-quality backfill for certain portions of the proposed foundation that are presently required to be Category 1 and Category 2 backfill, but the request would have no net impact on the overall quantity of backfill required for the project. The staff is currently evaluating that LAR request. However, approval of that request would not represent an alternative to the proposed action, because the amount of backfill evaluated in this EA would still be needed if the backfill geometry-related LAR is approved.

If backfill material is not obtained from the onsite sources specified in its letter dated May 24, 2010 (SNC 2010f), SNC would need to obtain backfill material either from other onsite sources or from offsite borrow sources. However, because the remaining quantity of necessary backfill remains unchanged regardless of whether it is obtained from an on-site or off-site

source, the land area needed to obtain the material from another source would be comparable to that of the requested onsite sources. Other available portions of the VEGP site that contain suitable borrow materials would likely have similar or greater environmental constraints and impacts as the three borrow site locations proposed in the applicant's ER dated May 24, 2010 (SNC 2010f). Much of the VEGP site has already been utilized to support construction of Units 3 and 4, is already dedicated to the operations of Units 1 and 2, or lies at elevations below the geological horizon that provides material identified by SNC to be suitable as Category 1 and Category 2 backfill (SNC 2010c). Other than the three areas evaluated in this EA, the largest undeveloped area that could produce the required backfill material is in the northern portion of the site where the overall habitat quality is greater than in the currently proposed borrow locations. Both the Southeastern Pocket Gopher and the sandhills milkvetch are known to occur in the northern portion of the VEGP site. The NRC staff concludes that it is unlikely that the use of other onsite borrow sources would be environmentally preferable to the sources defined in the applicants LAR and ER.

With respect to the offsite borrow source alternative, SNC would need to demonstrate that backfill obtained offsite would have the same properties that were the basis for approving the onsite sources specified in the ESP SSAR. Furthermore, if suitable material is obtained from an offsite source, there would be environmental impacts at the source location, and the material would have to be transported to the construction site for Units 3 and 4. Even if any additional impacts at the borrow site or associated with transporting material to the VEGP site were assumed to be minimal, the staff concludes that use of offsite borrow sources is unlikely to be an environmentally preferable alternative to use of the sources defined in the LAR ER.

AGENCIES AND PERSONS CONSULTED

The NRC staff consulted with a number of Federal, State, regional, Tribal, and local organizations regarding the environmental impacts of granting the ESP and LWA. For reasons explained in this EA, the impacts analyzed in connection with the ESP and LWA either bound the impacts of the activities contemplated by the LAR or are similar in location and type to those associated with obtaining backfill from the onsite locations proposed under the LAR. A complete list of organizations contacted can be found in the ESP FEIS (NRC 2008). Furthermore, in support of its review of the LAR, the NRC staff contacted representatives of the Georgia SHPO, GDNR, and the FWS to discuss the impacts of the proposed LAR action. The staff consulted with these organizations previously in connection with the ESP FEIS.

FINDING OF NO SIGNIFICANT IMPACT

The NRC staff has prepared this EA in support of its review of the proposed action of using three additional onsite borrow sources to obtain Category 1 and Category 2 backfill material. The staff evaluated potential direct, indirect, and cumulative impacts to land use, surface and groundwater use and quality, air quality, ecological resources, cultural and historic resources, socio-economics and environmental justice, and both radiological and nonradiological health. On the basis of this EA, the NRC finds that there are no significant environmental impacts from the proposed action that would not be adequately mitigated. The staff found that there would be noticeable impacts to two species listed as Threatened by the State of Georgia, the Southeastern Pocket Gopher (*Geomys pinetis*) and the sandhills milkvetch (*Astragalus michauxii*), as well as impacts to some habitat areas that are currently enrolled in a red-cockaded woodpecker (*Picoides borealis*) safe-harbor agreement. However, the applicant has implemented relocation programs to help mitigate the impacts to the Southeastern Pocket Gopher and the sandhills milkvetch. Lands within the affected borrow sites will be replanted

with longleaf pine when borrow activities are completed, if possible, and suitable habitats for these species are available in other locations onsite and in the region. Accordingly, the impacts from the proposed LAR would not destabilize the populations of these species in Georgia. The land currently enrolled in the red-cockaded woodpecker safe-harbor agreement will be replanted and will continue to be enrolled under the agreement. The red-cockaded woodpecker is not currently present on the VEGP site; therefore, it will not be affected by the proposed action. Based on these actions and considerations, the NRC staff has determined that the terrestrial ecological impacts of the proposed action will be mitigated such that the net impacts, while noticeable, are not destabilizing to the resources and are thus not significant. No other resource area would be noticeably affected by the action proposed in the LAR. Therefore, the NRC staff has determined that there would be no significant environmental impacts associated with granting the LAR.

FURTHER INFORMATION

SNC's LAR is available electronically at the NRC's Electronic Reading Room at *http://www.nrc.gov/reading-rm/adams.html.* From this site, you can access the NRC's Agency-wide Documents Access and Management System (ADAMS). The ADAMS accession number for the April 20, 2010, LAR is ML101120089, this request was supplemented on April 23, 2010 (ML101160531), April 28, 2010 (ML101230337), May 5, 2010 (ML101270283), and May 10, 2010 (ML101320256). The ADAMS accession number for the May 13, 2010, supplement requesting the LSA is ML101340649. The ADAMS accession number for the May 24, 2010 supplement is ML101470212. The ADAMS accession number for the LSA EA is ML101380114, and the accession number of Amendment 1 to the VEGP ESP/LWA is ML101400509. The

ADAMS accession numbers for the ESP FEIS are ML082240145 and ML082240165, ML082260203, and ML082550040.

If you do not have access to ADAMS or have problems accessing the documents located in ADAMS, contact the NRC Public Document Room Reference staff at 1-800-397-4209, or 301-415-4737, or via e-mail to *pdr.resource@nrc.gov*.

Dated at Rockville, Maryland, this 18th day of June 2010.

For the U.S. Nuclear Regulatory Commission.

Scott Flanders, Division Director***/RA Nilesh Chokshi for/***
Division of Site and Environmental Reviews
Office of New Reactors

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