UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 9, 2011

Mr. Ashok Bhatnagar
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SUBJECT: BELLEFONTE NUCLEAR PLANT, UNIT 1 – ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO THE REQUEST TO EXTEND CONSTRUCTION PERMIT NO. CPPR-122 (TAC NO. ME4914)

Dear Mr. Bhatnagar:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to the Tennessee Valley Authority request, in letter dated October 8, 2010, to extend Construction Permit No. CPPR-122 for Bellefonte Nuclear Plant, Unit 1 from October 1, 2011, to October 1, 2020.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Stephen J. Campbell, Chief
Special Project Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-438

Enclosure: As stated

cc w/encl: See next page

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BELLEFONTE NUCLEAR PLANT
UNIT 1

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UNITED STATES NUCLEAR REGULATORY COMMISSION

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-438

BELLEFONTE NUCLEAR POWER PLANT, UNIT 1

ENVIRONMENTAL ASSESSMENT AND

FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) has prepared this Environmental Assessment (EA) associated with a request by the Tennessee Valley Authority (TVA) to extend the construction permit (CP) CPPR-122 for the Bellefonte Nuclear Plant (BLN), Unit 1 pursuant to 10 CFR 50.55(b). Based on information provided in TVA's letter, dated October 8, 2010 (Agencywide Document Access and Management System Accession No. ML102870233), and the NRC staff's independent review of references, the NRC staff did not identify any significant impact associated with the extension of the BLN Unit 1 CP. The NRC staff is documenting its environmental review in this EA.

ENVIRONMENTAL ASSESSMENT

Plant Site and Environs:

BLN Unit 1 is a pressurized-water reactor site that has been partially completed. The unit is located on a peninsula between Town Creek and the Tennessee River at River Mile 392 on the west shore of Guntersville Reservoir near Hollywood, Alabama. Most of the 1,600 acres of the site have been previously impacted by construction for both BLN Units 1 and 2.

Identification of the Proposed Action:

TVA has requested extension of the CP for BLN Unit 1 from October 1, 2011, to October 1, 2020. The Atomic Energy Commission (now the NRC) issued the Final Environmental Statement (FES) in June 1974 for BLN Units 1 and 2 (1974 FES). On December 24, 1974, CPs were issued by the NRC. Much of the construction work for BLN Units 1 and 2 was subsequently completed.

The Need for the Proposed Action:

The extension of the CP for BLN Unit 1 would enable TVA to complete construction of BLN Unit 1.

Environmental Impacts of the Proposed Action:

This EA summarizes the radiological and nonradiological impacts to the environment that may result from the proposed extension of the CP for BLN Unit 1. Operational impacts are addressed in the TVA's May 2010 Final Supplemental Environmental Impact Statement, "Single Nuclear Unit at the Bellefonte Plant Site" (2010 FSEIS), attached to its letter of October 8, 2010. Therefore, operational impacts are not further discussed in this EA for the purposes of evaluating TVA's CP extension request.

NON-RADIOLOGICAL IMPACTS

Land Use and Aesthetic Impacts:

Land use and aesthetic impacts from the proposed extension of the CP include impacts from completing the construction of BLN Unit 1. TVA states in its 2010 FSEIS that BLN Unit 1 is estimated to be 55-percent complete with most of the plant physical infrastructure work completed.

Remaining construction- and refurbishment-related activities at BLN Unit 1 include the need to: rebuild the power stores warehouse building; replace the auxiliary boiler building; replace auxiliary boiler; replace two steam generators; replace the existing analog and solid

state instrumentation and controls systems with digital technology; replace the turbine rotating assemblies; replace major pumps, motors, heat exchangers, tanks, and piping; refurbish major equipment, such as reactor coolant pumps, diesel generators, and plant electrical breakers; upgrade plant barge unloading dock; remove silt from the intake structure; replace electric transmission system equipment utilized for plant operation; upgrade a cooling tower; update the plant control room; build a new simulator; install an intrusion barrier for the intake pumping station and intake channel; construct security upgrades; construct nonplant-related administrative building; construct maintenance building; build construction building; construct fabrication building; construct training building; and to potentially realign the southern entrance road to a point 1,200 feet east of its existing location. Additionally, clay borrow pits may be dug in wooded areas immediately east of the main buildings. The above construction and refurbishment activities would not involve significant new land disturbing work. The work would largely be done within existing buildings and land areas previously disturbed during initial construction for the BLN units. The construction activities would use best management practices to limit the impacts from excavation including air pollutant emissions from earthwork (i.e., fugitive dust), construction equipment, and workers' vehicles.

Based on the available information, the NRC concludes that there would be no significant impact on land use and aesthetic resources in the vicinity of BLN Unit 1. Land use would not change and additional work to complete BLN Unit 1 would either be confined to, or occur adjacent to, areas previously disturbed by construction activities. The majority of these impacts were assessed and documented in the 1974 FES.

Impacts on Air Quality:

Main sources of potential air quality impacts from extension of the CP for BLN Unit 1 would be fugitive dust from construction activities, including exhaust emissions from motorized equipment and workers' vehicles commuting to and from the BLN site. The 1990 Clean Air Act

amendments include a provision that no Federal agency shall support any activity that does not conform to a state implementation plan (SIP) designed to achieve the National Ambient Air Quality Standards for criteria pollutants (sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter). On November 30, 1993, the U.S. Environmental Protection Agency (EPA) first issued a final rule (58 FR [*Federal Register*] 63214) implementing the new statutory requirements, effective January 31, 1994. The final rule required that Federal agencies prepare a written conformity analysis and determination for each pollutant where the total of direct and indirect emissions caused by proposed federal action[1] would exceed established threshold emission levels in a nonattainment[2] or maintenance area.[3] In 2010, EPA issued revised General Conformity Regulations in a final rule, and effective July 6, 2010 (75 FR 17254). The latest rule, in part, adds and revises definitions relating to assessing the conformity of federal actions with SIPs, amends 40 CFR part 51, subpart W, and specifically identifies tribal agencies as stakeholders in the conformity process. The latest final rule still requires that Federal agencies prepare a written conformity determination for proposed actions in NAAQS nonattainment or maintenance areas for which the total of the action's direct and indirect emissions of criteria pollutants would exceed the threshold (*de minimis*) levels in 40 CFR 93.153(b) and which are not otherwise exempt, "presumed to conform," or included in the existing emissions budget of the SIP or Tribal Implementation Plan.

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[1] Federal action means any activity engaged in by a department, agency, or instrumentality of the Federal Government, or any activity that a department, agency or instrumentality of the Federal Government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 *et seq.*). Where the Federal action is a permit, license, or other approval for some aspect of a non-Federal undertaking, the relevant activity is the part, portion, or phase of the non-Federal undertaking that requires the Federal permit, license, or approval (40 CFR 93.152).

[2] An area is designated "nonattainment" for a criteria pollutant if it does not meet National Ambient Air Quality Standards (NAAQS) for the pollutant.

[3] A maintenance area has been redesignated by a State from nonattainment to attainment; the State must submit to EPA a plan for maintaining NAAQS as a revision to its State Implementation Plan.

Construction activities cause localized temporary increases in atmospheric concentrations of nitrogen oxides, carbon monoxide, sulfur dioxide, volatile organic compounds, ammonia and particulate matter PM_{10} and $PM_{2.5}$ as a result of exhaust emissions of workers' vehicles, diesel generators, and construction equipment. In accordance with the Clean Air Act, Federal agencies are prohibited from issuing a license for any activity that does not conform to an applicable implementation plan. Since the plant is located in proximity to a $PM_{2.5}$ nonattainment area that encompasses part of Jackson County, Alabama, TVA must show conformity with applicable Alabama SIPs by evaluating vehicle and equipment emissions that would occur during completion of BLN Unit 1.

During potential construction of BLN Unit 1, earthwork including some ground-clearing, grading, excavation, and movement of materials and machinery are expected to occur. These activities will raise dust. Applicable permits would need to be obtained from the Air Division of the Alabama Department of Environmental Management (ADEM). Normally, construction activities take place for a limited duration, and any impacts on air quality would not be significant.

Because the NRC staff expects that construction activities at BLN Unit 1 would conform to the Alabama SIPs, the NRC staff concludes that the impacts of construction activities on air quality would not be significant. For such activities, the NRC staff notes a variety of mitigation measures, such as wetting of unpaved roads and construction areas during dry periods and seeding or mulching cleared areas, inspection and maintenance of the gasoline or diesel fuel fired construction equipment to prevent excessive exhaust emissions, and managing shift changes for the site workforce to reduce the number of vehicles on the road at any given time, that could mitigate potential air quality impacts resulting from the potential extension and construction completion at BLN Unit 1.

Impacts on Water Resources:

Discharges to surface waters are governed by the site's current National Pollutant Discharge Elimination System (NPDES) permit, and waste streams are controlled by the current Resource Conservation and Recovery Act (RCRA) permit; these permits remain active. TVA would continue to purchase drinking water from the City of Hollywood, Alabama, which is a community public water system that is regulated by the State of Alabama. TVA would continue to route wastewater from the BLN Unit 1 to the Hollywood Sewer System.

BLN Unit 1 construction activities would incorporate existing facilities and structures and use previously disturbed ground where possible. After refurbishment, BLN Unit 1 would use the existing intake channel and refurbished pumping station, cooling towers, blowdown discharge diffuser, barge unloading dock, switchyard, and transmission system.

To complete construction for BLN Unit 1, dredging would occur in the intake channel from the intake pumping station to the shoreline (a distance of approximately 1,200 feet) and would result in removal of approximately 10,000 cubic yards of dredged material. Additionally, from the shoreline boom to the main river channel (a distance of approximately 760 feet), approximately 1,100 cubic yards of dredged material would be removed for completion of construction of BLN Unit 1. No dredging in the area of the barge unloading dock would be required. Dredged material would be disposed of in an on-site spoils area above the 500-year flood elevation by TVA. During the dredging operation, temporary increases in turbidity are expected in the immediate vicinity. TVA would obtain all appropriate permits prior to dredging. The NRC staff does not expect significant or long-term water quality impacts due to the dredging. The BLN Unit 1 steam generator replacement process could entail hydrodemolition using a high-pressure water jet to remove concrete. According to TVA, the process would use approximately 450,000 gallons of water, likely from the local municipal source, and would produce a water and concrete slurry. TVA states that this one-time generation of wastewater would be captured, sampled, treated, and released through an approved NPDES discharge

point. In addition, because TVA obtains water from the local municipality, no significant impacts are expected to groundwater hydrology or local groundwater users. All safety-related structures are located above the probable maximum flood and probable maximum precipitation drainage levels or are flood-proofed to the resulting levels. Also, because disturbance of wetland areas during BLN completion would be avoided or minimized and wastewater would be released in accordance with the limits specified in the NPDES permit, no significant impacts to wetlands are projected to occur.

Based on the information provided, the NRC staff expects that the impact to water resources would not be significant.

Impacts on Aquatic Resources:

As indicated in the 2010 FSEIS, there would be temporary and small impacts to surface water from construction. For completion of BLN Unit 1, new construction is not expected to occur near the banks of the reservoir because intake and discharge structures are already in place. According to TVA, accidental discharge and storm water runoff are managed under the construction storm water pollution prevention plan and a site-specific spill prevention, control, and countermeasure plan, which are implemented prior to construction. Proposed refurbishment of the barge unloading dock would be performed in compliance with ADEM and applicable Alabama Department of Conservation and Natural Resources (ADCNR) and US Army Corps of Engineers permits. As previously noted, dredging of the intake channel between the intake structure and the main river channel would be performed. The intake channel was surveyed for native mussels and snails by TVA in 2009, as noted in the 2010 FSEIS. Only common species were encountered within the intake channel. TVA concluded that dredging would be expected to result in minor direct and indirect effects on aquatic communities; such communities would be expected to return to their pre-existing conditions as benthic communities recolonize the area and suspended solids settle out of the water column.

Based on the information provided, the NRC staff concludes that impacts to aquatic resources would not be significant.

Threatened and Endangered Aquatic Species:

The pink mucket pearlymussel (*Lampsilis abrupta* - federally listed as endangered and hereafter referred to as pink mucket) and sheepnose mussel (*Plethobasus cyphyus* - federal candidate) were identified in the TVA Biological Assessment (BA) as occurring in areas potentially affected by construction activities at the BLN Unit 1 site, by barge deliveries during completion, or by subsequent operation of the facility. As specifically noted in the 2010 FSEIS, mussel and snail surveys in Guntersville Reservoir immediately adjacent to the site in 1995, 2007, and 2009 discovered one live pink mucket and one empty pink mucket valve. No other federally listed mussel or snail species were encountered. Habitat that could support the federal candidate sheepnose mussel was identified during this survey. On this basis, it is assumed that the sheepnose mussel, as well as pink mucket, is present within areas affected by BLN site development. Specifically, dredging the intake channel could impact the pink mucket and other mussel species in areas of better habitat downstream of the dredge area, or be affected by silting from barge towing activities. The 2010 FSEIS notes that few individuals would likely be directly harmed, but would be indirectly affected by turbulence and the suspension and deposition of fine sediments. Thus, TVA conducted formal consultation with the US Fish and Wildlife Service (USFWS) to determine reasonable and prudent measures designed to avoid or minimize take of the two mussel species that would occur in completing construction of BLN Unit 1. TVA transmitted a BA to USFWS on November 14, 2009. USFWS (Daphne, Alabama, field office) acknowledged receipt of the BA in a December 7, 2009, letter. A followup letter from the USFWS (Daphne, Alabama, field office) dated January 21, 2010, stated that only the pink mucket could be affected by the project and that there would be no effect on the federal candidate species sheepnose mussel.

USFWS issued a biological opinion (BO) for this project by letter dated April 15, 2010. The BO contains a "take" permit that allows for impacts to the federally listed pink mucket from completion of construction of BLN Unit 1. Due to the poor habitat quality and low densities of mussels present in the project area, and the minimal effects on pink mucket identified in the BA, TVA has committed to providing a total of $30,000 to be used for research and recovery of pink mucket, as described in the 2010 FSEIS.

Impacts on Terrestrial Resources:

Although significant site construction and disturbance has been completed, limited additional impacts could occur to terrestrial vegetation and biota related to the potential realignment of 1,200 feet of the southern entrance road to the plant, and by the excavation of backfill borrow pits in a wooded area east of the existing main plant buildings. Overall, the NRC staff concludes that any additional impacts to terrestrial resources would not be significant.

Extending the CP and completing construction of the BLN Unit 1 would remain within the scope of the 1974 FES, assuming that TVA implements the preconstruction and construction monitoring program for both aquatic and terrestrial resources as described in the 1974 FES. This would also cover potential impacts to terrestrial resources from transmission line right-of-way maintenance and upgrades. The 1974 FES considered all potential impacts associated with the transmission line and noted that TVA's transmission line maintenance and construction methods, particularly overspray during herbicide applications, had resulted in damage to trees located outside of the transmission line corridor. The use of best management practices (BMPs) would mitigate potential environmental impacts from pesticide or herbicide applications.

Assuming that these practices for transmission line right-of-way would be in place if the CP for BLN Unit 1 is extended, the NRC staff concludes there would not be a significant impact on terrestrial resources, including wetland areas from transmission line maintenance and

upgrade activities. By letter dated December 8, 2010, TVA confirmed that impacts to terrestrial resources would remain bounded by the assessment in the 1974 FES.

Endangered Terrestrial Species:

Populations of two federally-listed endangered species, the gray bat (*Myotis grisescens*) and the Indiana bat (*Myotis sodalis*), are reported from the region but have not been documented on or within 3 miles of the BLN project area as noted and described in the 2010 FSEIS. Gray bats roost in several caves in the county and routinely forage over Guntersville Reservoir near the BLN site. No suitable roosting habitat for this species (caves) exists on the BLN property.

Small colonies of Indiana bats hibernate in caves in Jackson County. No caves occur within the project boundary; however, suitable summer roosting habitat exists in forested portions of the property within the BLN project area. Suitable habitat in the project area was examined in 2008 to assess the quality of this potential habitat for Indiana bats. Although a few moderate-quality roost trees were present, the overall habitat quality for Indiana bats was low because the subcanopy is relatively dense, and the site lacks multiple trees suitable for Indiana bat roosts. Indiana bat habitats typically roost in multiple trees having varying exposure to sunlight.

Additionally, bald eagles (*Haliaeetus leucocephalus*), which are federally protected under the *Bald and Golden Eagle Protection Act*, occur near BLN. Prior to 2009, the species was reported nesting approximately 1.4 miles east of the BLN project area.

Several Alabama state-listed species are reported from Jackson County. Of these, ospreys (*Pandion haliaetus*) are the only state-listed terrestrial animal species known from the BLN project area. Osprey nests are present on transmission line structures within the proposed project area.

Eastern big-eared bats (*Corynorhinus rafinesquii*) are reported from Jackson County. The species has rarely been observed in recent years despite numerous cave and bat surveys performed by TVA and the ADCNR. Forested habitat within the BLN project area was examined in 2008. No potential roost trees suitable for big-eared bats (large hollow trees) were found on the site. Because big-eared bats often roost in man-made structures, an old water storage and pump facility on the property was examined for signs of bat use; no evidence of bats was identified. The closest suitable habitat for this species exists at wetlands on Bellefonte Island (mature hollow trees) in the Tennessee River and along the extensive sandstone escarpment of Sand Mountain located south and across the river from BLN.

Construction activities proposed for BLN Unit 1 are not expected to negatively affect federally- or state-listed wildlife. No suitable roosting habitat for gray bats exists on the BLN property. The proposed actions would not result in adverse impacts to roosting or foraging gray bats. Habitat potentially suitable for roosting Indiana bats would not be affected by completion of BLN Unit 1. Given the overall lack of suitable roost trees, caves, or sandstone outcrops and no evidence of bat use at the water pump facility, eastern big-eared bats are unlikely to be present, and no impacts to that species are expected.

The distance between the project area and the single known bald eagle nest is greater than the recommended nesting buffer zone (660 feet) established by National Bald Eagle Management Guidelines to protect bald eagles. Therefore, construction activities at BLN Unit 1 are not expected to have a significant impact to bald eagles. Noise is not expected to carry to nearby forested tracts that contain potential foraging habitat for some species. Infrequent activities occurring near these forested areas may cause species to leave the area temporarily, but no long-term effects on individuals or nearby populations are anticipated.

The use of habitats at BLN by federally listed and state-listed terrestrial animals is limited. Activities proposed to complete BLN Unit 1 are not expected to result in adverse direct, indirect, or cumulative impacts to federally- or state-listed terrestrial species or their habitats.

Based on this information, the NRC staff concludes that resumption of construction activities at the BLN Unit 1 site would not have a significant impact on any listed species or other species mentioned above.

Historic and Archaeological Resources:

The National Historic Preservation Act (NHPA) requires Federal agencies to consider the effects of their undertakings on historic properties. Historic properties are defined as resources that are eligible for listing on the National Register of Historic Places (NRHP). The criteria for eligibility are listed in the *Code of Federal Regulations* (CFR), under Title 36, "Parks, Forests, and Public Property," Part 60, Section 4, "Criteria for Evaluation" (36 CFR 60.4). The historic preservation review process (Section 106 of the NHPA) is outlined in regulations issued by the Advisory Council on Historic Preservation in Title 36, "Parks, Forests, and Public Property," Part 800, "Protection of Historic Properties" (36 CFR Part 800). Extension of the BLN Unit 1 CP and completion of construction at BLN Unit 1 is a Federal action that could possibly affect either known or undiscovered historic properties located on or near the plant site and its associated transmission lines. In accordance with the provisions of the NHPA, the NRC makes a reasonable effort to identify historic properties in the area of potential effect. The area of potential effect for this action is the plant site and the immediate environs.

To assess the environmental impacts to historic and archaeological resources, the NRC staff reviewed information provided by TVA in its 1974 FES, along with supplemental information provided by letter to the NRC dated October 8, 2010. Additional site details were also obtained from reviewing the Environmental Report in TVA's October 30, 2007, application for a Combined License (2007 COL ER) for Bellefonte Units 3 and 4.

In 1936, archaeological salvage excavations were conducted at the Bellefonte site associated with the construction of Guntersville Reservoir. In 1972, TVA funded an archaeological reconnaissance investigation at the Bellefonte site to locate any historic and archaeological sites that would be adversely impacted by the construction of BLN Units 1 and 2. The 1972 survey identified three new prehistoric sites (1JA300 – 302), and located two sites (1JA978 and 1JA112) that were previously recorded during the pre-inundation survey of Guntersville Lake according to the 1974 FES. Site 1JA978 was noted in the riverbank and contained both Archaic and Woodland artifacts. Site 1JA112 was primarily inundated; therefore, cultural affiliation could not be determined for this site. A 2006 survey conducted by TVA determined that sites 1JA978 and 1JA112 are located outside the BLN property boundary. Analysis of artifacts recovered at 1JA300 reveal that the site was occupied during the Archaic, Woodland, and Mississippian cultural periods. Since 1JA300 was going to be adversely impacted by the construction of the plant intake structure and access road, data recovery excavations were conducted on site 1JA300 in 1973 and 1974 by the University of Alabama. Information provided by TVA in its 2007 COL ER indicated that a total of 22 features and 9 burials were excavated from the site. One of these features consisted of a small structure footprint, which is indicative of village-level habitation. The human remains are located at the University of Alabama. By letter dated November 24, 2008, TVA stated that additional archaeological surveys have been conducted. In 2006, TVA conducted a survey to document and evaluate all archaeological resources at BLN. During this survey, it was determined that site 1JA300 was destroyed during construction of the intake structure and, therefore, is no longer eligible for the NRHP.

Site 1JA301 was recorded during the 1972 reconnaissance survey as surficial remains (lithic debris) dating to the Archaic period. Analysis of the lithic debris from this site suggests that it was an intermittent campsite. It was recommended that any further excavation of this site

would be unproductive. The 1972 report notes that site 1JA301 was heavily disturbed and reduced to plow zone scatter of prehistoric materials. Additional testing determined that site 1JA301 was destroyed during construction of BLN Units 1 and 2 and is not eligible for inclusion in the NRHP according to the 2007 COL ER.

Site 1JA302 was purported in the 1974 FES to be remotely located relative to the construction area. Artifacts recovered from 1JA302 dated the site to the Woodland period. Limited excavation was proposed; however, further excavations were not conducted. Site 1JA302 lies outside the BLN property boundary. Site 1JA302 was determined to be eligible for inclusion on the NRHP.

Site 1JA111 is an undefined prehistoric occupation site. Additional testing was conducted at the site during the 2006 TVA survey. A total of 93 artifacts were recovered; however, no diagnostic lithic artifacts were recovered to date from the site according to the 2007 COL ER. A small number of ceramics dating to the Mississippian period were recovered. Based upon the stratigraphic profiles and patterns of artifact recovery, TVA indicated that site 1JA111 appears to contain buried, intact archaeological deposits and has the potential to contribute significant scientific and archaeological information regarding the prehistory of the Guntersville Basin. Site 1JA111 remains potentially eligible for inclusion in the NRHP. TVA has indicated that the site will be fenced off, and marked on BLN site drawings as an area to be avoided by any future ground disturbing activities according to TVA's 2010 FSEIS.

Site 1JA113 is another undefined prehistoric occupation site. Additional testing was conducted at the site in 2006 and yielded a single prehistoric lithic flake; however, site 1JA113 does not meet the criteria of eligibility for the NRHP according to the TVA letters dated August 26, September 25, and November 24, 2008.

One historic site was identified during the 2006 survey. Site 1JA1103 consists of a collapsed structure and associated outbuilding according to the 2007 COL ER. The 2006

survey revealed that this site was used as a temporary storage and weather shelter during the construction of BLN Units 1 and 2 according to the TVA letters dated August 26, September 25, and November 24, 2008. Site 1JA1103 has had its archaeological integrity altered by the construction of BLN Units 1 and 2; therefore, the site is not eligible for inclusion in the NRHP. Regardless of the site's eligibility, TVA has indicated that the site will be avoided.

Adjacent to the BLN site was the Town of Bellefonte, the former Jackson County seat. The Town of Bellefonte is listed in the Alabama Statewide Plan of Historic Preservation and was determined eligible for inclusion on the NRHP. Among the former town buildings was a tavern that dated to 1845 according to the 1974 FES. This building and other structures associated with the Bellefonte town site were moved in 1974. The town site is not on TVA property, and the buildings were removed by the owners according to the TVA letter dated August 26, 2002.

The BLN site was heavily disturbed by the construction of BLN Units 1 and 2, which began in the 1970s. Extension of the CP and completing construction of BLN Unit 1 could involve some excavation and construction in previously undisturbed areas of the site. NRC staff expects that for areas not previously surveyed, an archaeological investigation would be conducted by a qualified archaeologist prior to performing any ground-disturbing activities. Additionally, since TVA is a Federal agency, NHPA Section 106 review and consultation with the Alabama Historical Commission would be initiated for such activities.

Based on the information provided in the 1974 FES, 2010 FSEIS, and TVA's subsequent responses to the NRC's requests for additional information (RAIs) in letters dated August 26,2002, and November 24, 2008, the NRC staff finds that the potential impacts of extending the CP and completing construction of BLN Unit 1 would not have a significant impact on historic and archaeological resources.

Socioeconomic Impacts:

Socioeconomic impacts from the proposed extension of the CP and completing the construction of BLN Unit 1 include an increase in the size of the workforce at BLN and associated increased demand for public services and housing in the region.

In the 2010 FSEIS , TVA estimated that the workforce needed to complete the construction of BLN Unit 1 could peak at about 3,000 workers; comprised of approximately 1,900 construction workers, and the remaining 1,100 workers including engineering operations, testing, and security workforce. Most construction workers would relocate temporarily to Jackson County resulting in a small, short-term increase in population along with increased demands for public services and housing.

Because construction work would be short-term (approximately 56 months), most construction workers would likely stay in rental homes, apartments, mobile homes, and camper-trailers. According to U.S. Census Bureau (USCB) American Community Survey 3-year estimate (2007–2009) data, there were 3,539 vacant housing units in Jackson County, up from 2,553 based on the 2000 Census. Based on a review of the information provided by TVA and relevant census data, the NRC staff concludes that extending the CP and completing the construction of BLN Unit 1 would not result in a significant adverse socioeconomic impact.

Environmental Justice:

The environmental justice impact analysis evaluates the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from extending the CP and completing the construction of BLN Unit 1. Adverse health effects are measured in terms of the risk and rate of fatal or nonfatal adverse impacts on human health.

Disproportionately high and adverse human health effects occur when the risk or rate of exposure to an environmental hazard for a minority or low-income population is significant and

exceeds the risk or exposure rate for the general population or for another appropriate comparison group. A disproportionately high environmental impact that is significant refers to an impact or risk of an impact on the natural or physical environment in a low-income or minority community that appreciably exceeds the environmental impact on the larger community. Such effects may include ecological, cultural, human health, economic, or social impacts. Some of these potential effects have been identified in resource areas discussed in this EA. For example, increased demand for rental housing during construction could disproportionately affect low-income populations. Minority and low-income populations are subsets of the general public residing around BLN, and all are exposed to the same health and environmental effects generated from construction activities at BLN.

Minority populations in the vicinity of BLN — According to 2000 census data, 18.9 percent of the population (approximately 1,083,000 individuals) residing within a 50-mile radius of BLN identified themselves as minority individuals. The largest minority group was Black or African American (157,000 persons or 14.5 percent), followed by Hispanic or Latino of any race (24,000 or about 2.2 percent). In 2000, about 8.8 percent of the Jackson County population identified themselves as minorities, with Black or African American the largest minority group (3.7 percent) followed by American Indian and Alaskan Native (1.7 percent) and Hispanic or Latino (1.9 percent) based on 2010 USCB data. According to USCB American Community Survey 3-year estimate (2007–2009) data, the minority population of Jackson County, as a percent of total population, had increased to 9.8 percent.

Low-income populations in the vicinity of BLN — Using 2000 census data, approximately 32,000 families and 143,000 individuals (approximately 10.5 and 13.2 percent, respectively) residing within a 50-mile radius of BLN were identified as living below the Federal poverty threshold in 1999. The 1999 Federal poverty threshold was $17,029 for a family of four.

Based on USCB 3-year estimate data, the median household income for Alabama spanning 2007–2009 was $41,458, while 16.7 percent of the state population and 12.7 percent of families were determined to be living below the Federal poverty threshold. Jackson County had a lower median household income ($34,310) and a slightly lower percentage (16.2 percent) of individuals but a higher percentage of families (13.4 percent) living below the poverty level.

Impact Analysis — Potential impacts to minority and low-income populations due to the extension of the CP and completing the construction of BLN Unit 1 would mostly consist of environmental and socioeconomic effects (e.g., noise, dust, traffic, employment changes, and housing impacts).

Since much of the construction work at BLN has been completed, noise and dust impacts would be short-term and limited to onsite activities. Minority and low-income populations residing along site access roads could experience increased commuter vehicle and truck traffic during shift changes. As employment increases at BLN during completion of BLN Unit 1, employment opportunities for minority and low-income populations may also increase. Increased demand for rental housing during peak construction could disproportionately affect low-income populations. However, according to the latest available USCB information (2007–2009 estimates), there were some 3,500 vacant housing units in Jackson County.

Based on this information and the analysis of human health and environmental impacts presented in this EA, there would be no disproportionately high and adverse impacts to minority and low-income populations from the extension of the CP and completing construction of BLN Unit 1.

Nonradiological Impacts Summary:

Extension of the CP for BLN Unit 1 would not result in a significant change in nonradiological impacts in the areas of land use, water use, waste discharges, terrestrial and aquatic biota, transmission facility operation, social and economic factors, and environmental

justice related to resumption of construction operations at the BLN site. No other nonradiological impacts were identified or would be expected. Table 1 summarizes the nonradiological environmental impacts of the proposed extension of the CP and construction completion for BLN Unit 1.

Table 1: Summary of Nonradiological Environmental Impacts

Land Use	No changes in land use conditions or significant impacts on aesthetic resources in the vicinity of BLN.
Air Quality	No significant impacts from vehicular and equipment emissions, and impacts are expected to be controlled within applicable regulatory requirements.
Water Resources	No significant impacts from construction due to dredging and water use.
Aquatic Resources	No significant impact from site runoff to benthic communities or from intake channel dredging.
Terrestrial Resources	Vegetation clearing and ground disturbance in previously undisturbed areas would not have a significant impact.
Threatened and Endangered Species	No significant direct, indirect, and cumulative impacts to the pink mucket mussel from dredging and towing barges.
Transmission Line Maintenance	No significant impact to terrestrial and aquatic resources based on the use of BMPs.
Historic and Archaeological Resources	No significant impact to historic and archaeological resources in the vicinity of BLN. Historic site 1JA111 would be marked and avoided.
Socioeconomics	No significant impacts from construction.
Environmental Justice	There would be no disproportionately high and adverse impact on minority and low-income populations in the vicinity of BLN.

RADIOLOGICAL IMPACTS

Radioactive Effluent and Solid Waste Impacts:

Nuclear power plants use waste treatment systems designed to collect, process, and dispose of gaseous, liquid, and solid wastes that might contain radioactive material in a safe and controlled manner such that discharges are in accordance with the requirements of 10 CFR Part 20, "Standards for Protection Against Radiation," and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix I.

Since construction activities will not involve the generation of radioactive effluent and solid waste, the staff determined that extension of the CP and construction of BLN Unit 1 would not result in any radiological effluent and solid waste since BLN Unit 1 would not be operating. As previously discussed, disposal of hazardous chemicals used at nuclear power plants are regulated by RCRA or NPDES permits.

Occupational Radiation Doses:

Plant workers conducting activities involving radioactively contaminated systems or working in radiation areas can be exposed to radiation. However, extension of the CP and construction activities for BLN Unit 1 will not involve any radioactive material; the NRC staff determined that occupational doses would be maintained within the limits of 10 CFR Part 20 for the extension of the CPs and construction of BLN Unit 1.

Public Radiation Doses:

Since construction activities will not involve any radioactive material, the staff determined that public radiation doses would be maintained within the limits of 10 CFR Part 20 for the extension of the CP and construction of BLN Unit 1.

Postulated Accident Doses:

Since construction activities will not involve any radioactive material or operation of BLN Unit 1, the staff concludes that there would be no postulated accident doses for the extension of the CP and construction of BLN Unit 1.

Uranium Fuel Cycle and Transportation Impacts:

Since construction activities will not involve radioactive material or operation of BLN Unit 1, the NRC staff concluded that there would be no environmental impact of the fuel cycle and transportation of fuels and wastes for the extension of the CP and construction of BLN Unit 1.

Radiological Impacts Summary:

The proposed extension of the CP and construction of BLN Unit 1 would not result in a significant impact associated with radiological effluents and solid waste, occupational and public radiation exposure, or the uranium fuel cycle and transportation.

Accordingly, the NRC staff concludes that there are no significant impacts associated with the proposed extension of the CP and construction of BLN Unit 1. Table 2 summarizes the radiological environmental impacts of the proposed extension of the CP and construction of BLN Unit 1.

Table 2: Summary of Radiological Environmental Impacts

Occupational Radiation Doses	No significant impacts.
Public Radiation Doses	No significant impacts.
Postulated Accident Doses	No significant impacts.
Uranium Fuel Cycle and Transportation Impacts	No significant impacts.

Cumulative Impacts:

A cumulative impact is defined in Council on Environmental Quality regulations (40 CFR 1508.7) as "an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." The NRC staff has considered past, present, and reasonably foreseeable future actions in this review for cumulative impacts on the environment. Should TVA receive approval by the NRC and decide to construct one or more new nuclear power plant units at the Bellefonte site (BLN Unit 1 and/or Unit 2), the cumulative impact would result from construction activities in the immediate vicinity of the site.

The NRC staff has conducted a review of past, present, and the foreseeable future action of extension of the CP and construction for BLN Unit 1. Cumulative impacts associated with the completion of construction of BLN Unit 1 were evaluated for each resource area with the following noteworthy findings. No significant direct, indirect, and cumulative impacts are expected to the pink mucket mussel from dredging and towing barges. USFWS issued a BO for BLN Unit 1 by letter dated April 15, 2010. The BO contains a "take" permit that allows for impacts to the federally listed pink mucket under construction of BLN Unit 1. Due to the poor habitat quality and low densities of mussels present in the project area, and the minimal effects on pink mucket identified in the BA, TVA has committed to providing a total of $30,000 to be used for research and recovery of pink mucket.

Several other actions contemplated by TVA may contribute to cumulative impacts in conjunction with BLN Unit 1, as described in TVA's responses to NRC's RAIs in letters dated August 26, 2002, and November 24, 2008. If construction resumes, TVA may eventually move (relocate) the first half mile of the south entrance road such that it would still join Jackson County Highway 33, but to an intersection that is about 1,200 feet east of the current connection

point. This change would improve traffic visibility and, thereby, increase commuter safety. Some new ground would be disturbed for this road but there are no associated significant environmental impacts.

In addition, new clay backfill borrow pits may be required to support the completion of BLN Unit 1. These would likely be excavated in undisturbed ground east of the main plant buildings. The topsoil would be removed temporarily and replaced to restore the sites after clay removal. Tree cover would be removed in this process.

Other foreseeable potential construction activities on disturbed ground include installing additional waste tanks adjacent to the Unit 1 reactor building and constructing a new power stores building. Also, new plant security requirements would necessitate changes to the gatehouse and protected area fencing.

Based on the above, it is anticipated that potential cumulative impacts from extension of the CP and construction of BLN Unit 1 would not be significant.

One of the considered actions involves an application to build two new nuclear units at the Bellefonte site (BLN Units 3 and 4). By letter dated October 30, 2007, TVA submitted its application for a Combined License (COL) for Bellefonte Units 3 and 4.

On September 29, 2010, TVA requested that the NRC defer its COL review efforts for BLN Units 3 and 4.

At this juncture, the extension of the CP and construction completion of BLN Unit 1 does not constitute a "proposal" that is interdependent with the BLN Units 3 and 4 COL application that is before the agency. The TVA request to extend the CP for BLN Unit 1 fails to constitute a "proposal" of the type that would trigger a National Environmental Policy Act (NEPA) cumulative impact analysis regarding Unit 1 in the NEPA analysis for proposed BLN Units 3 and 4. If construction activities resume for BLN Unit 1, TVA would need to assess the BLN Unit 1 construction impacts relative to BLN Units 3 and 4.

Alternatives to the Proposed Action:

An alternative to the proposed action of extending the CP for BLN Unit 1 would be to deny the request of extending the CP. This option would not eliminate the environmental impacts of construction that have already occurred, and would only limit the additional construction that has been determined to largely have no significant incremental environmental impacts on affected resources, including land use, air quality, water resources, aquatic and terrestrial resources including endangered species, socioeconomic conditions, minority and low-income populations, and human health.

Another alternative to the proposed action of extending the CP for BLN Unit 1 to October 1, 2020, would be to issue a CP extension for a shorter duration. This option is not feasible due to procurement of long-lead components, engineering, design, and construction.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the original FES for construction.

TVA considered a number of alternatives to constructing and operating BLN Units 1 and 2 in its 1974 FES, including various sources of base load generation and alternative plant locations. TVA considered alternatives to nuclear generation, including energy sources not requiring new generating capacity, alternatives requiring new generating capacity, and combinations of alternatives. Alternative sites for additional nuclear generation were also considered.

TVA considered several alternatives that could potentially replace new generating capacity, such as power purchases, repowering electrical generating plants, and energy conservation.

TVA also considered whether building new nonnuclear capacity would address the need for new capacity, such as fossil fuel, wind, solar, biomass, and hydropower.

Combining alternatives could achieve an energy profile similar to base load operation. Combinations can utilize storage technology with wind or solar technology or augment the variability of wind and solar power with the dispatchability of fossil generation (coal and gas) or biomass generation.

TVA concluded that constructing BLN Unit 1 is the preferred option.

Agencies and Persons Consulted:

In accordance with its stated policy, on October 15, 2008, the NRC staff consulted with the Alabama State officials, Mr. Keith Hudson and Ms. Ashley Peters, of the Alabama Department of Conservation and Natural Resources, regarding the environmental impact of the proposed action. The state officials had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the EA, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter, dated October 8, 2010. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland 20852. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) in the NRC Library at http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who

encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff at 1-800-397-4209, or 301-415-4737, or send an e-mail to pdr.Resource@nrc.gov.

Dated at Rockville, Maryland, this 9th day of September 2011.

FOR THE NUCLEAR REGULATORY COMMISSION

Stephen J. Campbell, Chief
Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

September 9, 2011

Mr. Ashok Bhatnagar
Senior Vice President
Nuclear Generation Development and Construction
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BELLEFONTE NUCLEAR PLANT, UNIT 1 – ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO THE REQUEST TO EXTEND CONSTRUCTION PERMIT NO. CPPR-122 (TAC NO. ME4914)

Dear Mr. Bhatnagar:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to the Tennessee Valley Authority request, in letter dated October 8, 2010, to extend Construction Permit No. CPPR-122 for Bellefonte Nuclear Plant, Unit 1 from October 1, 2011, to October 1, 2020.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Stephen J. Campbell, Chief
Special Project Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-438
Enclosure: As stated
cc w/encl: See next page

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