DOE/EA-1501

ENVIRONMENTAL ASSESSMENT FOR THE CONSTRUCTION, OPERATION, AND CLOSURE OF THE BURMA ROAD II BORROW PIT AT THE SAVANNAH RIVER SITE

JULY 2004

U. S. DEPARTMENT OF ENERGY
SAVANNAH RIVER OPERATIONS OFFICE
SAVANNAH RIVER SITE

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LIST OF ABBREVIATIONS/ACRONYMS

The following is an alphabetized list of the abbreviations and acronyms found within the text of this document:

C&D	-	construction and demolition
CEQ	-	Council on Environmental Quality
CFR	-	Code of Federal Regulations
DOE	-	U.S. Department of Energy
DOE-SR	-	U.S. Department of Energy – Savannah River Operations Office
EA	-	environmental assessment
EIS	-	environmental impact statement
FONSI	-	finding of no significant impact
HNUS	-	Halliburton NUS
mrem	-	1/1000 roentgen equivalent man
msl	-	mean sea level
NEPA	-	National Environmental Policy Act
NERP	-	National Environmental Research Park
NPDES	-	National Pollutant Elimination Discharge System
NUS	-	Nuclear Utilities Services
OSHA	-	Occupational Safety and Health Act
PBU	-	Project Design and Construction Business Unit
SCDHEC	-	South Carolina Department of Health and Environmental Control
SRARP	-	Savannah River Archaeological Research Program
SRS	-	Savannah River Site
USFS-SR	-	U.S. Forest Service – Savannah River
USGS	-	U.S. Geological Survey

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1.0 INTRODUCTION

The U.S. Department of Energy (DOE) prepared this environmental assessment (EA) to analyze the potential environmental impacts of a new borrow pit, and its alternatives, at the Savannah River Site (SRS), located near Aiken, South Carolina (Figure 1-1). The proposed action would entail the construction, operation, and eventual closure of a new facility known as the Burma Road II Borrow Pit. Recent projections of SRS construction activities (i.e., for fiscal years 2004 through 2007) have identified the need for readily-available suitable soil to be used as structural fill material. The existing SRS borrow pits are either nearly depleted, already obligated to ongoing environmental restoration projects, or would not provide fill with the proper specifications. Therefore, DOE proposes to establish and operate the new Burma Road facility to meet these recently-identified site needs.

This document was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended; the requirements of the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 CFR Parts 1500-1508); and the DOE Regulations for implementing NEPA (10 CFR Part 1021). NEPA requires the assessment of environmental consequences of Federal actions that may affect the quality of the human environment. Based on the potential for impacts described herein, DOE will either publish a finding of no significant impact (FONSI) or prepare an environmental impact statement (EIS).

1.1 Background

Both planned and potential future activities at SRS involve the need for suitable soil to be used as structural subbase and general fill material in a variety of site operations, maintenance, and new construction. In addition, there has been an increasing need for such materials for waste site closure activities (e.g., closure caps and fill). The current onsite sources of suitable soils include the old Burma Road Borrow Pit, the North Burial Ground Borrow Pit, and the Central Shops Borrow Pit. However, none of these existing SRS facilities can support the projected site needs for structural fill material. The old Burma Road Borrow Pit, which has been extensively used for SRS construction projects, is essentially depleted. Materials available in the North Burial Ground facility have been designated exclusively for use in Soil and Groundwater Closure projects only. The Central Shops Borrow Pit contains fill materials high in clay content with fines ranging from 28-60 percent. Soils needed for structural fill in onsite construction projects must be sands or silty sands, with fines ranging from 0-25 percent (i.e., material similar to that which was previously available from the old Burma Road Borrow Pit). To meet the structural fill quantity and quality requirements, a new source of such materials for SRS projects and activities needs to be identified and implemented.

A survey of SRS for the presence of suitable fill material resulted in the identification of a tract of land near the old Burma Road Borrow Pit. A preliminary investigation of that new location (Brown 2004) confirmed the presence of sufficient quantities (i.e., 2.0 to 3.8 million cubic yards) of the desirable soils that meet the appropriate testing criteria

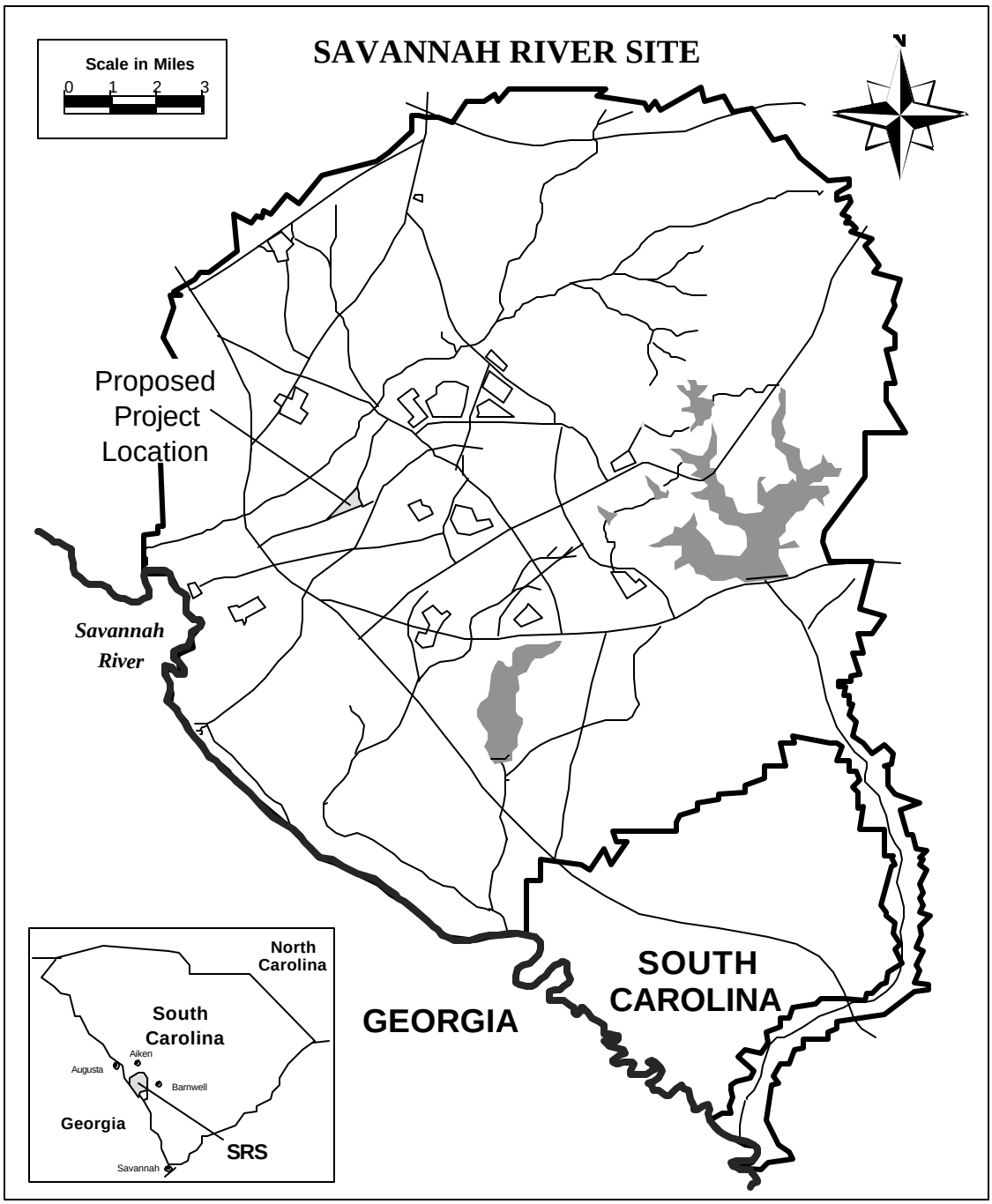

Figure 1-1. Location of the proposed Burma Road II Borrow Pit at the Savannah River Site, South Carolina.

(e.g., ASTM D 5778, ASTM D-2488-93, and ASTM D 1140) for the needed fill material. The development of that location as a new site borrow pit would have the potential to support SRS's projected structural fill needs for several decades (Brown 2004, Carroll et al. 2004).

1.2 Purpose and Need for Action

The purpose of the proposed action is to provide SRS with an onsite source of suitable soils for use as structural fill material. DOE needs to establish a readily-available onsite source for these materials to support SRS construction and maintenance activities, as well as waste site closure actions.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The proposed action is to implement the Burma Road II Borrow Pit project. This entails three specific components: 1) construction of the proposed facility; 2) operation of the facility; and 3) close-out and restoration of the site. Illustrations of the specific location and conceptual design layout of the facility are provided in Figures 2-1 and 2-2, respectively.

The proposed Burma Road II Borrow Pit would be located in the central western portion of SRS and would be bounded by Burma Road and SRS Road A-6 (Figure 2-1). The proposed site encompasses an area of approximately 154 acres. This site is bounded by north coordinates N70533.00 to N72840.71 and east coordinates E35418.71 to E41292.64 (Garrison 2004).

The proposed borrow pit would cost an estimated $600,000 to build and begin operations. The annual operational and maintenance budget would be $74,000. Operations are expected to begin in October 2004. This facility is expected to remain operational, meeting the SRS need for structural fill past the year 2020. Following the depletion of that location's soil reserves, the facility's excavation pits could, if properly permitted, be used as a construction and demolition (C&D) debris landfill.

Construction of the proposed facility would begin with clearing/grading of the project site. This would initially include an area of approximately 34 acres. Following a harvest of merchantable timber in that portion of the project location by the U.S. Forest Service-Savannah River (USFS-SR), the site would be cleared and grubbed. The topsoil would then be stripped and stockpiled for future site use. Next, the facility's infrastructure would be set up, including an office facility (i.e., mobile office trailer), supply storage facility (e.g., Handi-House/portable shed), access road, lockable gates at access points, sedimentation basin, and erosion control structures (Figure 2-2). Electrical power for office lighting and heating/cooling would be provided by a stand-alone portable generator. Except in the area of the access road entrance, standing timber would

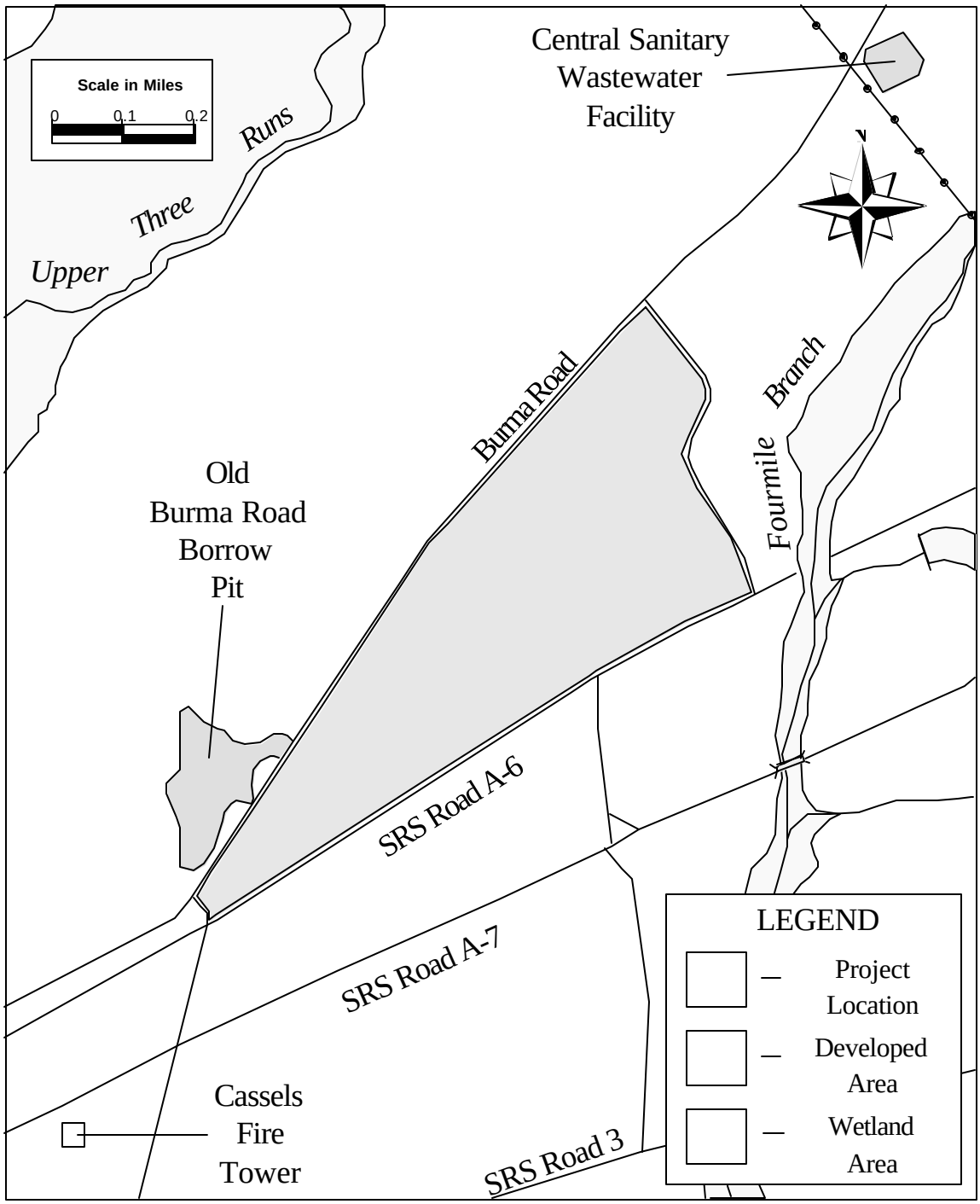

Figure 2-1. Specific location of the proposed Burma Road II Borrow Pit at the Savannah River Site, South Carolina.

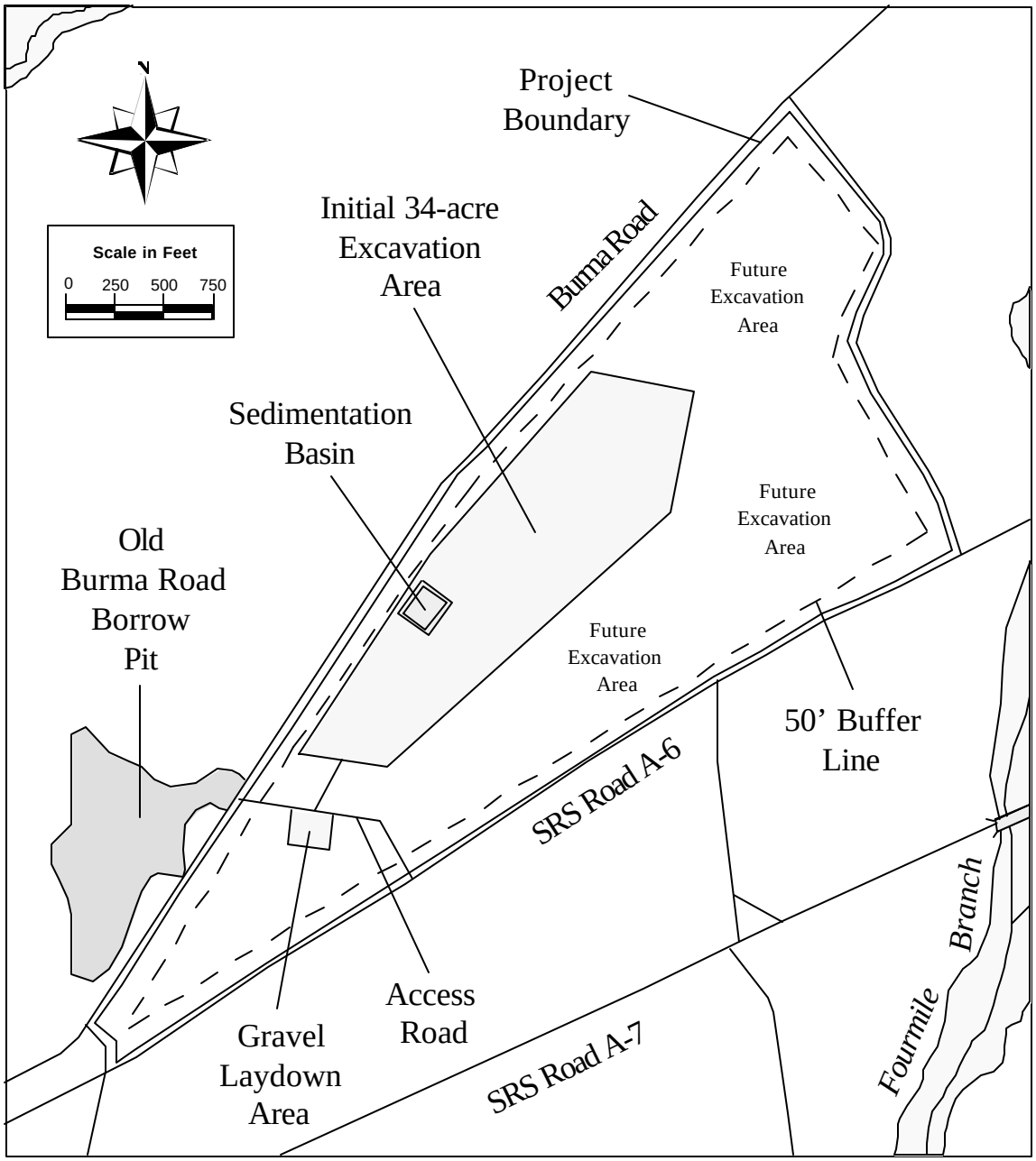

Figure 2-2. Preliminary conceptual design layout of the proposed Burma Road II Borrow Pit at the Savannah River Site, South Carolina.

be left around the boundaries of the borrow pit footprint. This would provide both a wind buffer and visual screen for the proposed facility. The initial 34-acre area would provide approximately 900,000 cubic yards of fill to SRS projects over the next three years. During peak construction, 17 to 20 site workers would be employed.

The proposed action would be implemented in a phased manner as site needs are identified. The initial phase would encompass the previously mentioned 34 acres. Ultimately, the facility could be expanded to include a total of 80 acres of excavation pits based on site needs. A 50-foot-wide buffer would be maintained around the boundary of the proposed project location. With the exception of the access roads, no facility infrastructure would be built in that portion of the site.

Operational activities at the proposed borrow pit would entail the use of face excavation practices. The excavation activities would vary from approximately 6 feet to approximately 40 feet in depth. Excavation operations would be accomplished by means of a backhoe filling one or more dump trucks used for hauling the borrow material to a specific project location onsite. A bulldozer would also be used to support excavation activities.

The proposed facility would operate for a maximum of approximately 260 days during the calendar year. However, because fill materials are needed only at certain times, the facility would be closed during most of any year. Only one ten-hour shift would be implemented during any excavation activities for the life of the project. The number of site employees at the proposed facility would vary from two to four.

No site utilities would be needed to support the subject facility. The stand-alone portable generator would only be operated as needed. Emergency services (i.e., fire, medical and law enforcement) would be provided by SRS. The facility would only be accessible through a locked gate in order to control access. The perimeter of the facility would not be fenced.

Vehicle entry to the borrow pit would be via a facility access road connected to both Burma Road and SRS Road A-6 (Figures 2-1 and 2-2). Transportation of material to specific project locations would be over the existing SRS roadway system. Traffic signs would be erected on Burma Road and SRS Road A-6 warning drivers of the truck traffic entering that site roadway from the proposed facility.

The proposed facility would have a stormwater management system, draining into a sedimentation basin. The effluent discharging to this basin would result from storm water runoff. This basin would be designed to contain a 25-year storm event.

Following termination of the excavation activities, the project site could be used as a C&D landfill. The operation of that facility would be permitted by the South Carolina Department of Health and Environmental Control (SCDHEC). Inert C&D debris is defined as materials that are generated as a result of construction, remodeling, repair and demolition of structures, road building, and land clearing in the course of operations on property under the same ownership or control as the structural fill activity and that have not been in direct contact with hazardous constituents (e.g., pesticides, etc.), petroleum products, or painted with lead-based paint. Acceptable debris for disposal would include the following: hardened concrete, brick, block, untreated lumber, and other items

specifically approved in writing by SCDHEC. The C&D landfill operations would be staffed by one full-time attendant and one operating engineer. Per regulations, closure of the filled excavation areas would entail the placement of a final cover. This must consist of a two-foot-thick final earth cover with at least a 1 percent but not greater than 4 percent surface slope, graded to promote positive drainage. The side slope cover would not exceed three horizontal feet to one vertical foot (i.e., a 3:1 slope). The finished surface of the disposal area would be stabilized (i.e., seeded with native grasses or other suitable ground cover). The integrity of the final cover has to be maintained. The final cover would be expected to be approximately 20 feet above the existing grade. The project site would then be allowed to continue further re-vegetation naturally.

2.2 Alternatives to the Proposed Action

In accordance with NEPA regulations, DOE examined the following alternatives to the proposed action:

- No action, continue to use existing SRS borrow pits
- Build the borrow pit at another onsite location
- Use offsite commercial sources of structural fill material

2.2.1 No Action, Continue to Use Existing SRS Borrow Pits

One alternative to the proposed action is to take no action. This would consist of DOE continuing to use the existing SRS borrow pits to provide structural fill materials in support of site activities. If DOE chooses this alternative, the impacts described in Section 4 would not occur. This alternative would not enable SRS to meet the immediate need for suitable and readily available borrow material. The site would not be able to complete either facility and infrastructure construction and maintenance or waste site closure actions in a timely or cost-effective manner.

2.2.2 Build the Proposed Borrow Pit at Another Onsite Location

Another alternative would be to implement the proposed action at a different location on SRS. A total of three potential alternate locations were explored by assessing their capability to provide suitable soil to support the site criteria. These alternate locations included two sites near SRS Road F approximately two miles northwest of Z Area, and one location near the intersection of SRS Roads F and 4. Due to water table issues and layer thickness of available material, these sites would have required the development of two to three times the acreage to access the same quantity of fill material as the proposed Burma Road facility. This would have resulted in an increase to both the project cost and level of impact to the environment.

2.2.3 Use Offsite Commercial Sources of Structural Fill Material

A third alternative would be to obtain the needed borrow material from an offsite commercial source. Although this option might meet the site needs, it would necessitate the purchase of fill material and increase the transportation scope of work to include an offsite component. The cost of fill from offsite sources would be approximately $16 per cubic yard, while the onsite cost at the proposed facility would be approximately $2-3 per cubic yard (i.e., a difference of $49,400,000 based on a material volume equal to the full development of the borrow pit). The use of such offsite sources would not be cost effective.

3.0 AFFECTED ENVIRONMENT

SRS occupies an area of approximately 310 square miles in southwestern South Carolina (Figure 1-1). The site borders the Savannah River for about 17 miles near Augusta, Georgia, and Aiken and Barnwell, South Carolina. SRS contains five non-operational nuclear production reactor areas, two chemical separations facilities, waste treatment, storage and disposal facilities, and various supporting facilities. The SRS High-Level Waste Tank Closure Final EIS (DOE 2002) and the most recent socioeconomic survey of the six-county SRS area of influence (HNUS 1997) contain additional information on SRS facilities and the areas surrounding the site.

3.1 Land Use

The proposed borrow pit is located on a 154-acre site situated to the south of Burma Road (Figure 2-1). The project site has to date only been used for timber management activities.

3.2 Meteorology and Climatology

The SRS region has a temperate climate with mild winters and long summers. The average annual rainfall at SRS is about 49.5 inches and the average annual relative humidity is 70 percent (DOE 2002). Tornadoes have been observed during every month of the year in the area encompassing SRS, but occur most frequently in the spring (Bauer et al. 1989). Only a few instances of slight to moderate tornado damage to support facilities have been documented for the site to date. Bauer et al. (1989) contains additional information on SRS meteorology and climatology. The general meteorological and climatological data for SRS would be representative of that for the borrow pit location.

3.3 Geology and Seismology

SRS is located in the Aiken Plateau physiographic region of the upper Atlantic Coastal Plain approximately 25 miles southeast of the Fall Line which separates the Piedmont Plateau from the Atlantic Coastal Plain. The topographic surface of the coastal plain

slopes gently seaward and is underlain by a wedge of seaward-dipping unconsolidated and semiconsolidated sediments from the Fall Line to the coast of South Carolina. The Atlantic Coastal Plain tectonic province in which SRS is located is characterized by generally low seismic activity that is expected to remain subdued (Haselow et al. 1989).

The borrow pit project site is relatively level. The site's elevations vary from approximately 236 feet above mean sea level (msl) at the westernmost corner of the facility boundary down to an approximate elevation of 183 feet msl at the easternmost corner of the facility boundary.

The soil types within the proposed project location are dominated by Lakeland sands. This soil association consists of excessively drained, rapidly permeable soils that have a 0 to 10 percent slope. These soils are typically associated with broad ridges and the adjacent side slopes (Rogers 1990).

No faults are located within the proposed project area. The most active seismic zones in the southeastern United States are all located over 100 miles away from the site. A recent EIS (DOE 2002) contains information on SRS fault location and earthquake occurrences.

3.4 Hydrology

The Savannah River forms the western boundary of SRS and receives drainage from five major tributaries on the site: Upper Three Runs, Fourmile Branch, Pen Branch, Steel Creek, and Lower Three Runs. These tributaries receive varying types of wastewater discharges from plant processes and sanitary treatment systems, all of which are permitted through the National Pollutant Discharge Elimination System (NPDES). On SRS, various plant processes also require the pumping of Savannah River water and/or onsite groundwater. A recent EIS (DOE 2002) contains information on groundwater systems on SRS and in the surrounding region.

The proposed facility site is located on a ridgetop that drains to the west into the main channel of Fourmile Branch (USGS 1988). The easternmost corner of the proposed facility footprint is located approximately 450 feet west of the nearest jurisdictional wetlands boundary associated with the previously mentioned drainage corridor (Figure 2-1). No wetlands are located on the project site itself (Osteen 2004). This same easternmost corner of the project site is situated approximately 352 feet west of the nearest 100-year floodplain, which is also located on Fourmile Branch (NUS Corporation 1984).

The depth to uppermost groundwater ranges from approximately 27 to 60 feet below grade. The direction of flow of the uppermost groundwater is to the east-southeast. The nearest domestic water well (i.e., 607-64G, Central Sanitary Wastewater Facility) is located approximately 0.5 miles to the northeast in a lateral gradient to the proposed project site. No groundwater contamination exists at the project location (Mamatey 2003, Haselow et al. 1989).

3.5 Ecological and Cultural Resources

Since 1951, when the U.S. Government acquired SRS, natural resource management practices and natural succession outside of the construction and operation areas at SRS have resulted in increased ecological complexity and diversity of the site. Forested areas support a diversity of wildlife habitats that are restricted from public use. Forest management practices include controlled burning, harvesting of mature trees, and reforesting. Wildlife management includes control of white-tailed deer (*Odocoileous virginianus*) and wild pig (*Sus scrofa*) populations through supervised hunts. SRS, which was designated as the first National Environmental Research Park in 1972, is one of the most extensively-studied environments in this country. Halverson et al. (1997) contains additional information on the biotic characteristics of SRS.

Seven species on SRS are afforded protection by the Federal Government under the Endangered Species Act of 1973. These are the bald eagle (*Haliaeetus leucocephalus*), wood stork (*Mycteria americana*), red-cockaded woodpecker (*Picoides borealis*), American alligator (*Alligator mississippiensis*), shortnose sturgeon (*Acipenser brevirostrum*), smooth purple coneflower (*Echinacea laevigata*), and pondberry (*Lindera melissifolia*). None of these species are known to occur on or near the proposed facility location (Halverson et al. 1997, Imm 2004). However, one small population (i.e., 100+ individuals) of sandhill lily (*Nolina georgiana*), a State-listed species of concern, is present within the proposed facility boundaries (Imm 2004).

Three general upland habitat types are present within the proposed project site boundaries. These included dry oak-pine forest, mixed pine forest, and upland pine-hardwood forest. A limited amount of transitional wetland habitat (lowland pine-hardwood and small stream bottom) also exists near the northern proposed project boundary (Imm 2004).

The dry oak-pine forest habitat is dominated by an unevenly aged, partially to marginally open canopy that is dominated by, in order of abundance, loblolly pine (*Pinus taeda*), post oak (*Quercus stellata*), blackjack oak (*Q. marilandica*), longleaf pine (*P. palustrus*), southern red oak (*Q. falcata*), sand hickory (*Carya pallida*), and lesser amounts of bluejack oak (*Q. incana*), turkey oak (*Q. laevis*), black oak (*Q. velutina*), sand laurel oak (*Q. hemisphaerica*), water oak (*Q. nigra*), shortleaf pine (*P. echinata*), hawthorn (*Crataegus spp.*), persimmon (*Diospyros virginiana*), cherry (*Prunus serotina v. alabamensis*), and sassafras (*Sassafras albinum*). The understory varies in composition with some areas dominated by litter and exposed soil, other areas dominated by mixed grasses with low diversity of other species, and still others dominated by mixed assemblages of grasses (*Andropogon* spp., *Aristida* spp., *Panicum* spp., *Sporobolus* spp.), sandhill lily (*Nolina georgiana*), composites (*Liatris* spp., *Heterotheca* spp., *Carphephorus belliflorus*, *Chrysoma* spp.), legumes (*Baptisia spp*., *Lupine* spp., *Desmodium* spp., *Lespedeza spp*.), bracken fern (*Pteridium aquillinum*), goldenrod (*Solidago* spp.), silkgrass (*Pityopsis graminifolia*), coreopsis (*Coreopsis* spp.), throughwort (*Eupatorium* spp.), dog-fennel (*Eupatorium capillifolium*), goat's-rue (*Tephrosia* spp.), partridge-pea (*Cassia* spp.), pineweed (*Hypericum gentianoides*), st.

johns-worts (*Hypericum* spp.), poison ivy (*Toxidendron radicans*), sparkleberry (*Vaccinium arboreum*), and deerberry (*Vaccinium stamineum*). Other species are also present at lower densities. The majority of this habitat is present in the north and western sections of the project area along the sandy hill tops and hill slopes (Imm 2004).

The majority of the project area is dominated by mixed pine forest habitat. This habitat is dominated by both planted and naturally-established loblolly pine, longleaf pine, and slash pine (*P. elliottii*). These areas range from near-monocultures of each of the pines to near-equal dominance of all combinations of the pine species. Further, these areas include pine stands that are young (11-20 yrs.), mature (50+ yrs), and unevenly aged with wide variances of size classes. The pine dominated habitats have understory conditions similar to those described above, with a greater proportion being dominated by pine litter and areas occasionally dominated by reindeer moss (*Cladina* spp.) and prickly-pear cactus (*Opuntia compressa*) or wax myrtle (*Myrica cerifera*) (Imm 2004).

The least abundant habitat type in the project area is the upland pine-hardwood forest habitat. This habitat consists of closed to partially open canopy of loblolly pine, water oak, sand laurel oak, southern red oak, black oak, mockernut (*Carya alba*), sweetgum (*Liquidambar styraciflua*) and lesser amounts of longleaf pine, white oak (*Q. alba*), flowering dogwood (*Cornus florida*), plum (*Prunus umbellata*), sassafras, persimmon, black cherry, American holly (*Ilex opaca*), and sand hickory. Beneath the canopy, there are patches of deerberry, sparkleberry, grape (*Vitis rotundifolia*), Japanese honeysuckle (*Lonicera japonica*), Carolina jassimine (*Gelsenium sempervirens*), pipsissiwa (*Chimaphila maculata*), partridge berry (*Mitchella repens*), panic grasses (*Dichanthelium* spp.), ebony spleenwort (*Asplenium platyneuron*), bluestems, woodland coreopsis (*Coreopsis major*), wild indigo (*Baptisia* spp.), *Lespedeza* spp., beggars ticks (*Desmodium* spp.), sandhill lily, and seedlings of various species. This habitat occurs along formerly existing fence-line areas, flanking slopes along the intermittent stream to the north, and upland areas with higher percentages of surface clays (Imm 2004).

Very limited amounts of lowland pine-hardwood and bottomland forest are present in the northern section of the proposed project area. These habitats are dominated by mixtures of pine and hardwoods suited to moist to wet poorly-drained soil conditions. In addition to loblolly pine, other tree species include sweetbay (*Magnolia virginiana*), sweetgum, red maple (*Acer rubrum*), water oak (*Q. nigra*), willow oak (*Q. phellos*), red bay (*Persea borbonea*), tulip poplar (*Liriodendron tulipifera*), black gum (*Nyssa sylvatica*), sycamore (*Plantanus occidentalis*), and lesser amounts of upland hardwoods. Common shrubs include wax myrtle (*Myrica cerifera*), blackhaw (*Viburnum nudum*), and hollies (*Ilex* spp.) (Imm 2004).

A number of wildlife species are present in and around the general area of the proposed project location. The species composition is comparable to similar habitat types elsewhere on SRS. Comprehensive listings of wildlife species can be found in Halverson et al. (1997).

The management and utilization of forests, soils, watersheds, and wildlife at SRS are described in the SRS Natural Resources Management Plan (DOE 1991) and defined under the terms of a Memorandum of Agreement between DOE Savannah River Operations Office (DOE-SR), USFS-SR, the Natural Resources Conservation Service, and Westinghouse Savannah River Company. DOE-SR uses this Memorandum of Agreement to define the roles and responsibilities of the various agencies and organizations in the management of natural resources on SRS.

Most of the proposed project location is situated within either the medium (Type II) or lowest (Type III) archaeological sensitivity zones for SRS. However, the southeastern corner of the facility footprint is located within the highest (Type I) archaeological sensitivity zone (SRARP 1989). The areas specifically proposed for development have been reviewed by the University of South Carolina's Savannah River Archaeological Research Program (SRARP). Most of the proposed project location has not yet been subjected to specific archeological surveys. However, the area along the eastern margin of the project footprint was surveyed in the mid-1990s, and contains evidence of four archaeological sites (Stephenson 2004). Cultural resources at SRS are managed under the terms of a Programmatic Memorandum of Agreement among DOE-SR, the South Carolina State Historic Preservation Officer, and the Advisory Council on Historic Preservation. DOE-SR uses this Programmatic Memorandum of Agreement to identify cultural resources, assess these in terms of National Register eligibility, and develop mitigation plans for affected resources in consultation with the South Carolina State Historic Preservation Officer. DOE-SR would comply with the stipulations of the Programmatic Memorandum of Agreement for all activities related to the proposed Burma Road II Borrow Pit.

3.6 Radiation Environment

A person residing in the Central Savannah River Area (within 50 miles of SRS) receives an average annual radiation dose of about 360 mrem; SRS contributes less than 0.05 percent of that total. Natural radiation sources contribute about 300 mrem, medical exposures contribute about 53 mrem, and consumer products contribute about 10 mrem. The most recent SRS annual environmental report (Mamatey 2003) contains more information on the radiation environment.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

4.1 Facility Construction

The total undeveloped area to be cleared for the proposed Burma Road II Borrow Pit encompasses approximately 80 acres. At present, 96 percent (185,325 acres) of SRS lands are undeveloped (Halverson et al. 1997). Therefore, the percent of site lands proposed for use by this action would be minimal. The area to be cleared is presently occupied by pine forest habitat. At present, 69 percent (133,434 acres) of SRS is

occupied by pine-dominated forested habitat (Workman and McLeod 1990). The project site represents less than 0.06 percent of the site's pine stands. Further use of the location for timber management would be eliminated during the life of the subject facility. The merchantable timber formerly standing on the proposed project site would be sold by USFS-SR to an offsite commercial firm, harvested by that firm, and removed from the property.

No direct or indirect socioeconomic impacts would be expected to result from the proposed borrow pit expansion construction workforce (i.e., 17 to 20 individuals) when compared to the present total SRS employment of approximately 12,000 people. The workforce would be derived from the existing ranks of onsite personnel.

The clearing of the project site would limit the use of the lands by wildlife species. Some of the small, less mobile species of mammals, reptiles and amphibians would possibly be physically harmed or killed by the logging and earth-moving equipment. However, most species of mammals and birds which inhabit or use the project area would be largely displaced by the land clearing, but probably neither injured nor killed. Those animals displaced by construction into adjacent or marginal habitats may either die or experience reduced reproduction. The net result would be a lower quality habitat being available and therefore fewer individual animals being present.

Pursuant to Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, the impact of the proposed SRS borrow pit on migratory birds must be evaluated. The only aspect of the proposed scope that would affect such avian species would be the construction phase of the project. Such impacts would be in the form of forested habitat loss as a result of the proposed land clearing activities. However, given the percentage of this habitat type that the proposed project represents on SRS (i.e., 0.04 percent of the total forested habitat of this type on SRS), the proposed borrow pit would not be expected to have a measurable impact on any migratory avian species.

As part of the SRS Site Use application review process, the project site was evaluated for the documented presence of any endangered, threatened, or sensitive species prior to clearing. No Federally-listed species were found to be present in the proposed facility site. One species of South Carolina State-listed species of concern (i.e., sandhill lily) was identified in the proposed project site during site surveys conducted by USFS-SR (Imm 2004). The individuals of this species would be relocated to a nearby (i.e., west of Burma Road) unoccupied site that has suitable light and soil conditions. Some unfound individuals may be left behind, but the loss of these individuals via the proposed project would be incidental to the status of the species in the immediate area as well as at the site-wide level.

A preliminary archaeological review was conducted for the proposed project location. The four potential sites along the eastern margin of the project area would require additional testing to assess eligibility status for the National Register of Historic Places. In addition, field surveys would be conducted in the areas designated for construction of specific excavation pits prior to any ground disturbance activities. Based on the

identification of potentially eligible sites, a consultation process would be initiated with the South Carolina Historic Preservation Office to formally determine the status of specific sites, and to determine necessary and appropriate mitigation measures (Stephenson 2004). Any required mitigation would be completed prior to the start of construction.

Construction of the borrow pit would not impact wetlands or floodplains. No components of the proposed action would be constructed in either of these environmentally sensitive habitats. A stormwater and erosion/sediment control plan would be developed and implemented for the proposed construction activities. The erosional or sedimentation impacts of any surface runoff resulting from extreme storm events during construction activities would be contained by silt fences and the berm formed by the boundary roads along the northern and southern borders of the site. In addition, best management practices and standard erosion/sedimentation control measures would be used during construction of the proposed facility.

The proposed infrastructure construction would generate minor amounts of building material debris. These waste streams would be disposed of at either the C&D landfill or municipal solid waste landfill being used by SRS at that time. Because the proposed project location is previously undeveloped, no contaminated soils or waste sites are expected to be encountered during construction.

Air quality effects associated with the construction of the Burma Road II Borrow Pit would be the result of equipment use and soil disturbance. Diesel operated equipment (i.e., trucks, backhoes, graders) would be used for grading and in the performance of other routine construction activities. The operation of this type of equipment does not require an air quality permit from SCDHEC. A variety of methods (e.g., tillage, irrigation, barriers, and calcium chloride application) would be implemented to prevent blowing and movement of dust from exposed soil surfaces, reduce onsite and offsite impacts, health hazards, and improve traffic safety.

4.2 Facility Operation

The operation of the Burma Road II Borrow Pit would employ a total of two to four site workers. No measurable socioeconomic impacts would be expected as a result from this portion of the proposed action.

No surface water or groundwater would be used during operation of the proposed facility. Stormwater runoff from the cleared areas would drain into the sedimentation basin. The capacity of the basin would be designed to contain a 25-year storm event. Areas disturbed by immediate excavation activities would be re-stabilized as soon as possible to minimize erosional and sedimentation impacts.

Because of the localized nature of each excavation effort, no negative impacts would be expected to affect any environmentally sensitive areas or protected species. Because the site would not be enclosed by a perimeter fence, some limited use of the facility lands by

local wildlife species would be realized during the active life of the borrow pit. Although none are expected to be encountered, any cultural or archaeological resources discovered during excavation activities would be reported to SRARP for evaluation and potential recovery.

During normal operations, no hazardous chemicals would be used at the proposed facility. Any spills or leaks (e.g., fuel, hydraulic fluid, and coolant from excavation vehicles) occurring during facility operations would be cleaned up in accordance with site procedures and protocols.

Air emissions from excavation operations would be generated by diesel operated equipment (i.e., trucks, backhoes, bulldozers and portable generators). Emissions from these sources would be expected to have only minimal impacts to local air quality. The stand-alone portable generator would consist of one of the already-permitted units available onsite. The emissions of those individual units are minimal, and have already been accounted for from both a State regulatory and site-wide impacts perspective.

4.3 Facility Closure

Upon termination of excavation activities at and prior to the final closure of the Burma Road II Borrow Pit, the facility's excavation pits could be used as a C&D Landfill. Some limited effects, similar to those possible during facility operations (e.g., vehicle emissions), would be realized during the operation of the landfill activities. Following the closure of the landfill operations, the site would be graded and seeded. The remaining facility infrastructure would be removed. Over time, the site would be expected to re-vegetate naturally. In two to three years, it would be further expected that the site would be occupied by an old-field type of floral habitat. During the same period, additional wildlife species would be reestablished in the former borrow pit location.

4.4 Transportation

Construction of the borrow pit would create a small, short-term increase in traffic flow along Burma Road and SRS Road C as a result of the movement of equipment and materials. These impacts are expected to be minimal.

Based on the current traffic volume using Burma Road and SRS Road C, traffic associated with operations at the Burma Road II Borrow Pit would result in an increase of less than 46 percent and 0.2 percent, respectively, even during major excavation projects. The current traffic volume (i.e., Burma Road – 8 vehicles per hour; SRS Road C - 542 vehicles per hour) is considerably below the design maximum capacity for those roads (i.e., Burma Road – 1,000 vehicles per hour; SRS Road C - 1,500 vehicles per hour). In addition, most (approximately 75 percent) of the SRS traffic volume along these site roads is during the morning and evening shift changes. Most of the truck traffic hauling fill material from the Burma Road II Borrow Pit would not be present at those periods of peak traffic flow. All truck traffic traveling to and from the proposed facility would be

during daylight hours. This would further reduce the potential for accidents associated with this increase in traffic volume.

4.5 Human Health Effects

The Occupational Safety and Health Act (OSHA) regulations (29 CFR Part 1910) require that employers comply with safety and health standards set by the act to provide each employee with a worksite that is free from recognized hazards that are likely to cause death or serious injury. Personal protective clothing and equipment would be used as appropriate. Therefore, human health impacts would be minimal.

4.6 Environmental Consequences of the Alternatives

The no action alternative would have none of the potential or expected impacts associated with the proposed action. The lack of available borrow material would limit the abilities of the site to implement waste site closures, and construction and maintenance activities. Siting the borrow pit at another SRS location would have similar, but potentially larger impacts than the proposed action because of the increased footprint necessary at the three alternate locations. The third alternative would result in increases in traffic impacts (e.g., fatal and non-fatal accidents, vehicle emissions) and operational costs, both due to the increase in truck mileage required to obtain the necessary suitable fill material from offsite sources. None of the other onsite environmental impacts would be realized.

4.7 Cumulative Impacts

The principal cumulative impacts from the proposed action would be those effects associated with the loss of less than 0.04 percent of forested lands encompassed by the entire SRS. The site lands available for timber management would be reduced by less than 0.06 percent during the life of the project. There would be no measurable impact on the local economy as a result of the proposed action. No additional adverse impacts to either site surface or groundwater quality would be expected. A temporary loss of less than 0.04 percent of the available wildlife habitat on SRS would result from the construction and operation of the new borrow pit. The proposed action would have no additional adverse impacts on threatened and endangered species, cultural resources, floodplains, or wetlands on SRS. Additional impacts to the local air quality would be negligible. The proposed action would not pose any additional potential problems for either public health or safety. There would be no change in the latent fatal cancers within the region as a result of the proposed action. Any increases in site traffic accident and fatality rates would be minimal as a result of the proposed action.

5.0 REGULATORY AND PERMITTING PROVISIONS CONSIDERED

DOE policy is to carry out its operations in compliance with all applicable Federal, State, and local laws and regulations, as well as all DOE Orders. This section provides a

discussion of the major regulatory permit programs that might be applicable to the proposed action.

5.1 National Environmental Policy Act of 1969 as amended

This EA has been prepared in compliance with the NEPA of 1969, as amended, and the requirements of the CEQ Regulations for Implementing NEPA (40 CFR Parts 1500-1508), and DOE Regulations (10 CFR Part 1021), and DOE Order 451.1B. NEPA, as amended, requires "all agencies of the Federal Government" to prepare a detailed statement on the environmental effects of proposed "major Federal actions significantly affecting the quality of the human environment." This EA has been written to comply with NEPA and analyze the potential environmental impacts of the construction, operation, and closure of the Burma Road II Borrow Pit at SRS.

5.2 Solid Waste Regulations

The SCDHEC regulation R.61-107-11, "Solid Waste Management: Construction, Demolition and Land-Clearing Debris Landfills" establishes minimum criteria for C&D landfills in the State. The use of the excavation pits for the disposal of C&D debris would be implemented in accordance with these regulations.

5.3 Stormwater Management and Sediment Reduction Regulations

The SCDHEC regulation R.72-300, "South Carolina Standards for Stormwater Management and Sediment Reduction" requires that stormwater management and sediment control plans must be approved by the State prior to engaging in any land disturbing activity related to residential, commercial, industrial or institutional land use which are not specifically exempted or waived by these regulations. Land disturbing activity means any use of the land by any person that results in a change in the natural cover or topography that may cause erosion and contribute to sediment and alter the quality and quantity of stormwater runoff. The construction of the proposed borrow pit would be implemented in accordance with these regulations.

5.4 Air Emissions Regulations

Operation of the class of construction and heavy equipment to be used in implementing the proposed action does not currently fall within the SCDHEC requirements for air permitting activities. The use of the stand-alone portable generator is an already-permitted site activity.

6.0 AGENCIES AND PERSONS CONSULTED

The USFS-SR and the University of South Carolina's SRARP were consulted during the preparation of this EA.

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