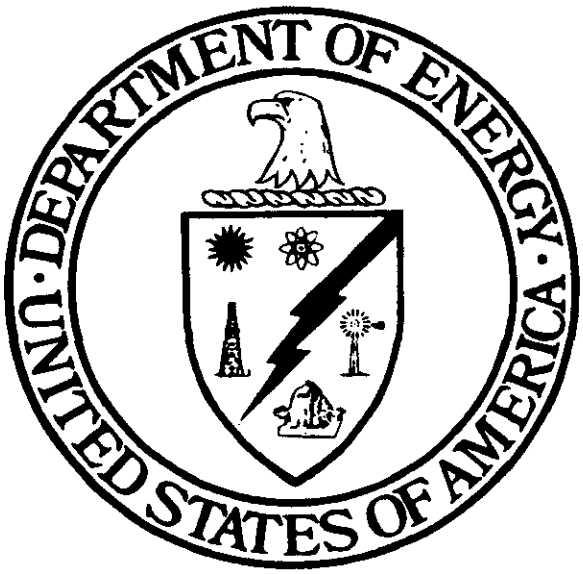
DOE/EA-1205

ENVIRONMENTAL ASSESSMENT FOR THE IMPLEMENTATION OF THE WETLAND MITIGATION BANK PROGRAM AT THE SAVANNAH RIVER SITE



APRIL 1999

U. S. DEPARTMENT OF ENERGY
SAVANNAH RIVER OPERATIONS OFFICE
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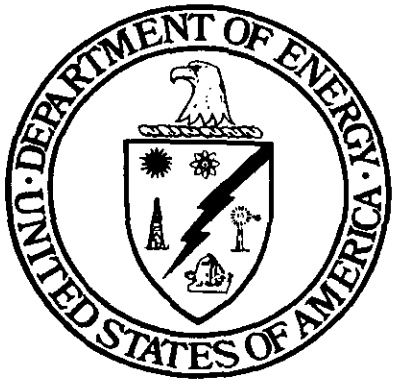

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LIST OF ABBREVIATIONS/ACRONYMS

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

µCi/mL	-	micro curies per milliliter
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	-	Code of Federal Regulations
COE	-	U. S. Army Corps of Engineers
CWA	-	Clean Water Act
DOE	-	U. S. Department of Energy
EA	-	Environmental Assessment
EG&G/EM	-	EG&G Energy Measurements, Inc.
EIS	-	Environmental Impact Statement
EPA	-	U. S. Environmental Protection Agency
HNUS	-	Halliburton NUS Corporation
km	-	kilometers
MAP	-	Mitigation Action Plan
MBRT	-	Mitigation Banking Review Team
mi	-	miles
MOA	-	Memorandum of Agreement
mrem	-	1/1000 roentgen equivalent man
NEPA	-	National Environmental Policy Act
NERP	-	National Environmental Research Park
NMFS	-	National Marine Fisheries Service
NPDES	-	National Pollutant Discharge Elimination System
NRCC	-	Natural Resources Coordinating Committee
NRCS	-	Natural Resources Conservation Service
NUS	-	NUS Corporation
OSHA	-	Occupational Safety and Health Act
SCDHEC	-	South Carolina Department of Health and Environmental Control
SCDNR	-	South Carolina Department of Natural Resources
SR	-	Savannah River Operations Office
SRARP	-	Savannah River Archaeological Research Program
SREL	-	Savannah River Ecology Laboratory
SRI	-	Savannah River Natural Resource Management and Research Institute
SRS	-	Savannah River Site
USC	-	United States Code
USFWS	-	U. S. Fish and Wildlife Service
WHOEP	-	White House Office on Environmental Policy
WSRC	-	Westinghouse Savannah River Company
WTG	-	Wetlands Task Group

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1.0 INTRODUCTION

This environmental assessment (EA) has been prepared by the Department of Energy (DOE) to analyze the potential environmental impacts associated with implementing a wetland mitigation bank program at the Savannah River Site (SRS), located near Aiken, South Carolina (Figure 1-1). The proposed action is embodied in an interagency Memorandum of Agreement (MOA) between DOE Savannah River Operations Office (SR) and several Federal and State regulatory and resource agencies. The proposed action would include both the general mitigation (e.g., restoration and enhancement) of SRS wetlands and the management of the resulting site wetland mitigation bank program. The proposed action would enable DOE-SR to gain credit for wetland restoration work that would not otherwise be accomplished through alternative programs or actions.

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 Regulations for Implementing NEPA (40 CFR 1500-1508), and the DOE Regulations for implementing NEPA (10 CFR 1021), as amended. 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 or prepare an environmental impact statement (EIS).

1.1 Background

Since the period of early colonial settlement, it is estimated that the United States has lost through draining and filling activities approximately 30 to 40 percent of the total wetland acreage present within the nation's boundaries. This habitat destruction has continued in this country at a rate of 121,410-202,350 hectares (300,000-500,000 acres) per year, although the ongoing loss of wetlands has slowed markedly in the past two decades (Brumbaugh and Reppert 1994).

In 1972, Congress passed the Federal Water Pollution Control Act Amendments, also known as the Clean Water Act (CWA) of 1972. Section 404 of the CWA established a permit program regulating discharges of dredged and fill material into waters of the United States. This program is jointly administered by the U.S. Army Corps of Engineers (COE) and the U.S. Environmental Protection Agency (EPA). In addition, the U.S. Fish and Wildlife Service (USFWS) of the U.S. Department of the Interior, the National Marine Fisheries Service (NMFS) of the U.S. Department of Commerce, the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture, and State resource agencies have important advisory roles in this regulatory program. Initially, this program's jurisdiction was limited to traditionally navigable waters, including adjacent wetlands, but excluded many small waterways and most wetlands. In 1975, a Federal district court directed COE to revise and expand its regulations to include these others waters. In 1977, COE issued final regulations on the Section 404 permit

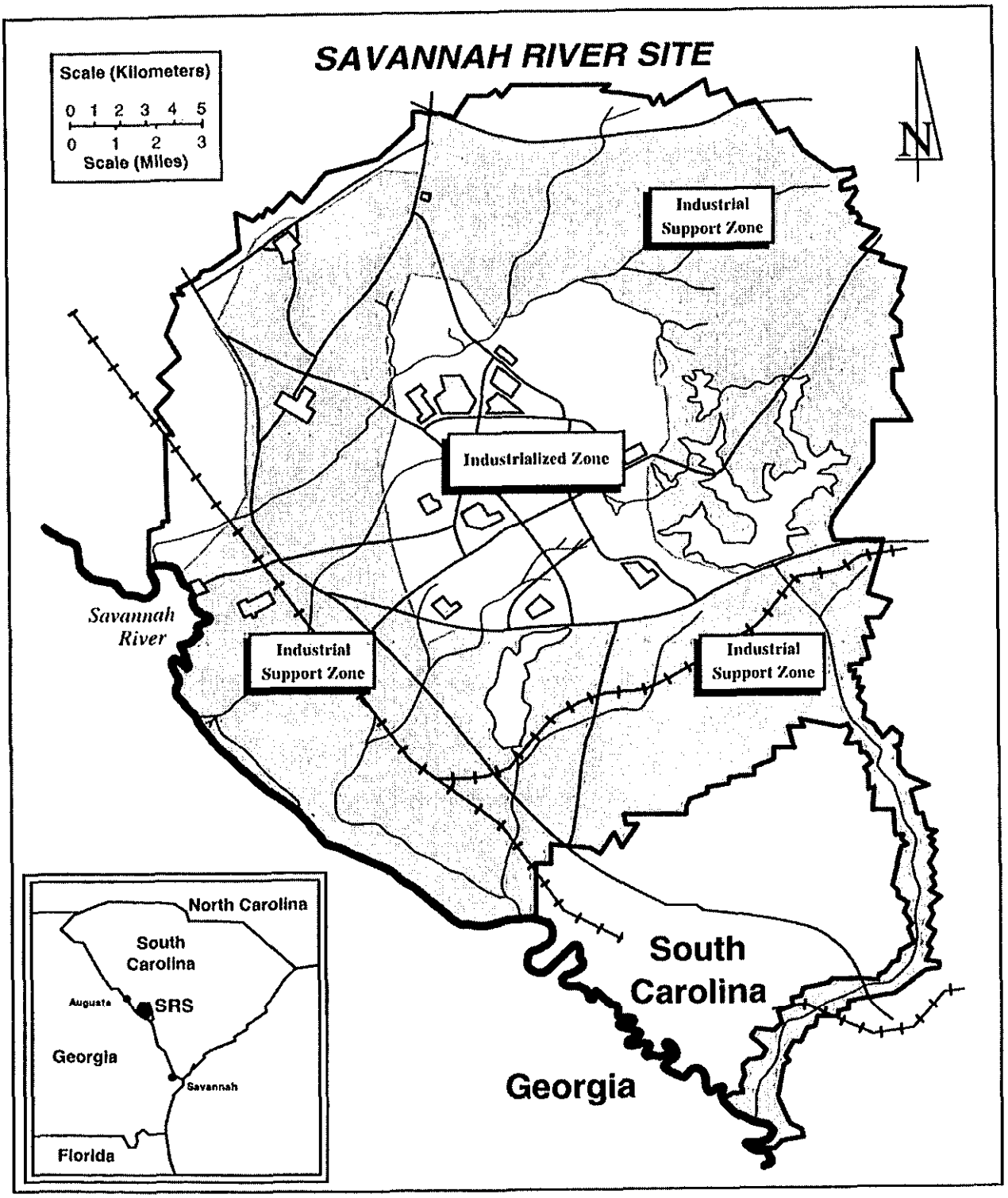

Figure 1-1. Map of the Savannah River Site, South Carolina showing the industrialized and industrial support zones.

program which explicitly included "isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not part of a tributary system to interstate waters or to navigable waters of the United States." At present, all unavoidable losses of wetlands are replaced by compensatory mitigation under the Section 404 permit program. Mitigating the adverse impacts of necessary development actions on the nation's wetlands is a central premise of this Federal wetland regulatory program. The Section 404 regulatory program relies upon a sequential approach to mitigating these adverse effects by first avoiding unnecessary impacts, then minimizing environmental impacts, and, finally, compensating for remaining unavoidable damage to wetlands and other waters through mitigation activities. Such mitigation typically involves the creation, restoration, or enhancement of replacement wetlands on or adjacent to the development or project site.

In parallel to the development of the Federal wetland regulatory process, a variety of documents and orders were issued by Government agencies toward furthering the protection of the nation's wetlands. In response to the continuing loss of wetlands on a national scale, the EPA issued a policy statement to preserve wetland ecosystems and to protect them from destruction. Within that statement, the Agency mandated that its policy would include protecting wetlands from adverse dredging and filling practices (Ruckelshaus 1973). Four years later, President Carter issued Executive Order 11990 on the protection of wetlands (Carter 1977). That Executive Order, issued in the furtherance of NEPA, directed Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the late 1980s, the Bush Administration established the national wetland goal as "no-net-loss" in wetland acreage and function in the short term, to be followed by a net gain as the long-term goal (Conservation Foundation 1988; Shabman et al. 1994). Within the DOE complex, this national goal of no-net-loss of wetlands received further support through a Secretary of Energy policy statement issued on June 12, 1989 (Watkins 1989). In 1993, the White House Office on Environmental Policy issued a policy statement on a proposed approach for protecting the nation's wetlands resources. This approach, described as "fair, flexible, and effective," fully endorsed the use of wetland mitigation banking as a compensatory mitigation option under the Section 404 regulatory program (WHOEP 1993).

Wetland mitigation banking is a relatively new natural resources management concept, which provides for advance compensation of unavoidable wetland losses due to development activities. Mitigation banking is achieved through the creation, restoration, enhancement, or, in certain defined circumstances, preservation of other wetland areas of equivalent value which are generally located outside of the immediate area of the project-specific impacts. Wetland mitigation banks are typically relatively large blocks of wetlands whose estimated tangible and intangible values, termed "credits," are managed in a crediting-debiting system analogous to that of a financial bank account. As development takes place, credits equivalent to the estimated unavoidable wetland losses are withdrawn or debited from the bank to compensate for the losses incurred (Reppert

1992). The use of these banks for advance compensation of such losses is accepted by the regulatory agencies as a viable method of mitigation. Forty-six operating and 64 proposed wetland mitigation banks were identified in the United States as early as July 1993 (McElfish et al. 1994; Environmental Law Institute 1994).

SRS has a higher percentage of wetland acreage within its boundaries than any other individual site within the DOE complex. Future SRS proposed actions such as the environmental remediation of existing waste sites and the repair/replacement of bridges will likely impact some wetland areas. Because of these circumstances, the establishment of a wetland mitigation bank at SRS would enable DOE-SR to locate, restore, monitor, and receive credit for mitigation activities accomplished prior to the realization of any potential wetland impacts.

The MOA entered into by DOE-SR on February 20, 1997, established the basic components and inner workings of the SRS wetland mitigation bank. The signatories to the MOA included DOE-SR and the following regulatory and resource agencies: COE (Charleston District); EPA (Region IV/Atlanta); USFWS; NRCS; the South Carolina Department of Health and Environmental Control (SCDHEC); and the South Carolina Department of Natural Resources (SCDNR). The NMFS will continue to coordinate with SRS wetland impact and mitigation issues, but was legally prohibited from becoming a signatory party to this MOA. The MOA further established the use of a mitigation banking review team, an interagency group designated to review and consult with DOE-SR regarding compensation proposals. This team consists of the agencies which signed the MOA, and the NMFS.

Based on the MOA, the SRS wetland mitigation bank program would gain "credit" for current and future wetland restoration work not required as part of any existing Mitigation Action Plan (MAP), and in expectation of future mitigation needs at SRS. Implementation of the proposed program would save DOE-SR both time and expenses by not having to conduct wetland mitigation on a project-by-project basis.

1.2 Purpose and Need for Action

The purpose of the proposed action is to provide SRS with a timely and cost-effective means of compensating for unavoidable wetland losses due to site projects and development activities. DOE needs to implement a site-wide program at SRS to provide comprehensive support and further the achievement of the established national goal of "no-net-loss" of wetlands (Conservation Foundation 1988; Shabman et al. 1994). By establishing a wetland mitigation bank prior to such impacts, DOE-SR can incorporate mitigation efforts required for new projects in a timelier manner. For future remediation and construction projects that require compensatory wetland mitigation, the bank would save the time and money needed to locate a suitable wetland for restoration and to obtain approval for its use.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

DOE proposes to implement a wetland mitigation bank program at SRS. The complete scope of the proposed action is embodied in the MOA, which is provided in Appendix A of this EA. This wetland mitigation bank would be a dedicated bank to be used for SRS project needs only. This use would be limited to compensation of wetland impacts or losses from environmental restoration and construction projects on SRS. Use of the bank's credits for compensation relative to resource injury due to the release of any hazardous substance as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) must be approved by the appropriate Natural Resource Trustees as designated pursuant to CERCLA. In addition, the proposed action would be implemented in conjunction with the landscape-scale land use planning effort that is currently being developed at SRS (DOE 1998). The existence of degraded wetlands such as drained Carolina bays, channelized streams, and thermally impacted swamp forests provide DOE-SR the opportunity to develop a wetland mitigation bank with a high probability of success.

The scope of the proposed action would encompass both the general mitigation activities on SRS wetlands and the overall management of the resulting site "banking" program (Figure 2-1). However, other than the general conceptual aspects, the debiting portion of the bank and the activities associated with debiting the bank credits are not included in the scope of the proposed action in this EA. Separate NEPA reviews would be prepared for any future SRS actions which would require debiting the bank for wetland mitigation purposes.

In such instances, the use of bank credits by DOE-SR to offset unavoidable impacts of either individual or Nationwide Section 404 permits to wetlands resources would be allowed only after demonstration by the applicant to the satisfaction of COE that wetlands have been avoided and impacts to affected wetlands have been minimized to the maximum extent practicable. Further, it must be determined that there is also no possibility of feasible onsite mitigation to compensate for the proposed wetland impacts. Compliance with appropriate sections of CWA 404(b)(1) guidelines would also be required before the use of the bank could be considered. The banking credits cannot be used to offset impacts to Federally protected species. Similarly, the bank cannot be used to absolve cultural resources impacts requiring consideration under Section 106 of the National Historic Preservation Act of 1966 (16 USC 470). In addition, special cases involving adverse impacts to certain anadromous fish species would also preclude the use of the bank.

The Mitigation Banking Review Team (MBRT) is an interagency group designated in the MOA to review and consult with DOE-SR regarding the implementation and operation of the SRS wetland mitigation bank. The MBRT is composed of the agencies signatory to the MOA and the NMFS. The MBRT will:

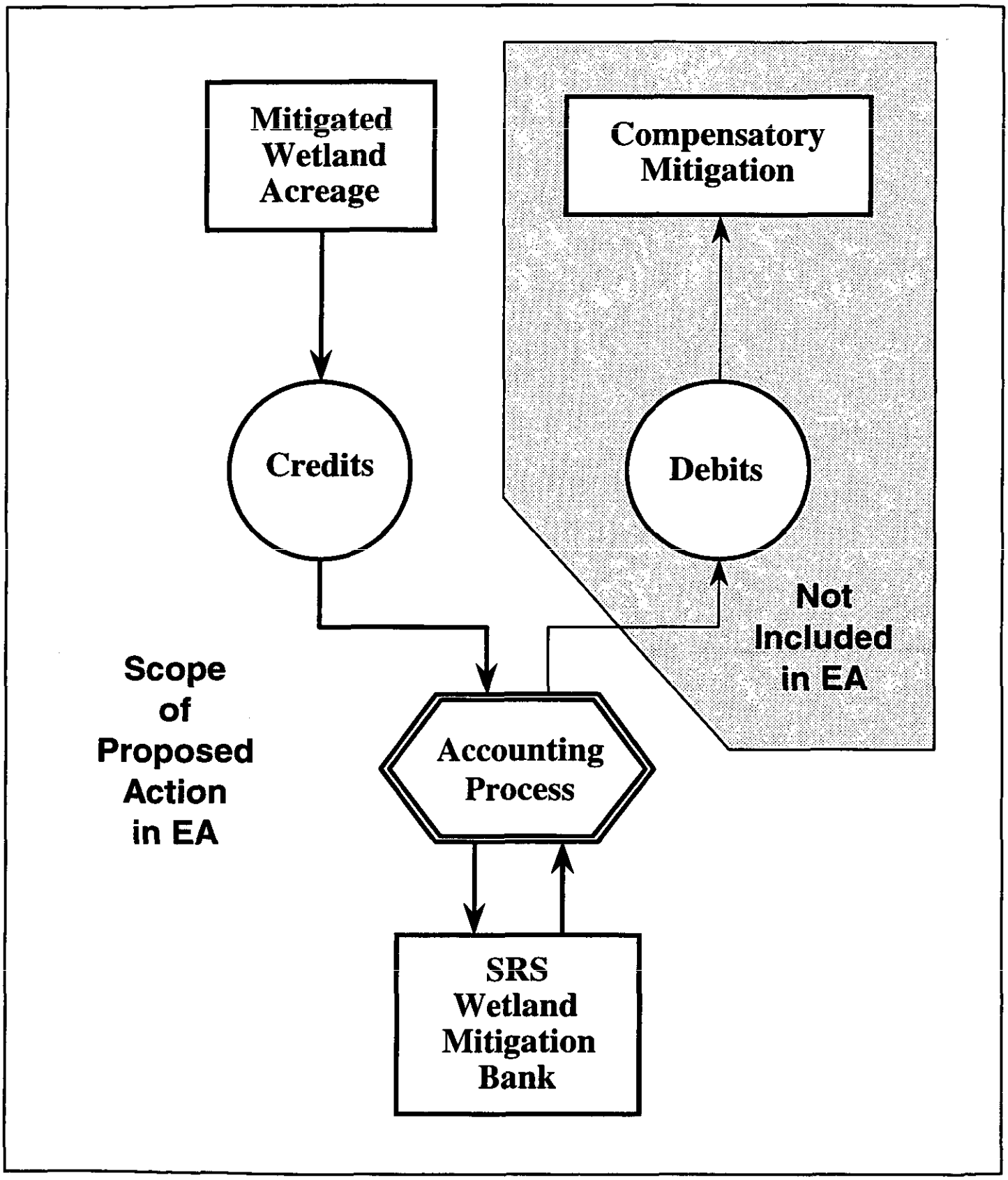

Figure 2-1. Schematic illustration of the scope of the proposed SRS Wetland Mitigation Bank Program encompassed in this EA.

- Review and have approval authority over the site-specific management plans for proposed mitigation projects;
- Review annual reports on the monitoring and success of these projects;
- Review and have approval authority over the amount and input of credits to the bank; and
- Review and have approval authority over the debits taken from the bank.

The responsibilities of this interagency group will also include: conducting field visits to SRS project sites as needed; providing advice and input to SRS regarding techniques for restoration, monitoring, and success; and provide input on and concur on any remedial actions deemed necessary to ensure the success of a mitigation project.

A number of SRS organizations would also be participants in implementing the proposed action. The SRS Wetlands Task Group (WTG) was chartered in 1990 to enhance communications and understanding among onsite organizations concerning wetland research and management. Membership consists of representatives from the land management and research organizations on SRS. The WTG reports to the SRS Natural Resources Coordinating Committee (NRCC). The NRCC was established in 1991 to enhance cooperation among SRS organizations by providing a forum for discussion of onsite natural resources issues and to provide technical advice and policy recommendations to DOE-SR in order to effectively manage natural resources at SRS. The WTG will be responsible for reviewing all mitigation banking activities and forwarding recommendations on to the NRCC, which would then pass these on to DOE-SR. Various organizations, including the U.S. Forest Service Savannah River Natural Resource Management and Research Institute (SRI), NRCS, Savannah River Ecology Laboratory (SREL), SCDHEC, SCDNR, and Westinghouse Savannah River Company (WSRC) would be responsible for identifying suitable mitigation areas and submitting these to the WTG for consideration. The SRI, NRCS, SREL, and WSRC would also be responsible for implementing and conducting the various mitigation projects on site.

The SRS wetland mitigation bank would involve the restoration and enhancement of small isolated wetlands, as well as major wetland systems scattered throughout the site's nonindustrialized area (Figure 1-1). The primary goal of the bank would be the restoration and enhancement of degraded Carolina bays and streamside bottomland hardwood forest on SRS. Mitigation opportunities within the industrialized area may also be explored to provide mitigation sites where feasible. A key advantage for establishing the bank at SRS is the presence of experienced land management and research groups on site. The combination of available land and onsite knowledge would lower the total cost of the proposed action and ensure its success.

To fulfill the regulatory agencies' mandate for "onsite, in-kind" mitigation, the proposed action would include most types of wetlands found on SRS. A number of SRS wetlands have been adversely impacted by past site operations, and provide opportunities for

restoration. Restoration is emphasized over creation because of the high cost of creation and the greater opportunity for a creation project to fail; hence the preference for restoration by the regulatory and resource agencies. Examples of restoration projects of isolated wetlands (e.g., Carolina bays) and adjacent wetlands (i.e., riparian or stream systems) are provided in Appendix A. Site-specific management plans (e.g., Appendix B) would be developed for each approved restoration project and would include specific information on the type and amount of baseline data that would be collected before restoration started. The management plans would also include details on the site-specific monitoring, success criteria, and remediation contingencies. A buffer zone would be established around all mitigated areas to minimize any potential adverse impacts and protect any restored/enhanced wetlands.

These efforts would initially concentrate on Carolina bay restorations. Since the impacted Carolina bays on SRS vary as the type and extent of damage incurred, it was decided to conduct restoration efforts on a small number of impacted bays to better identify potential techniques and strategies to use for future mitigation actions. Through a compilation of databases and notes from researchers at both SREL and SRI, a search was performed for Carolina bays on SRS that had the potential for restoration. Approximately 70 Carolina bays or bay-like depressions in the size class of 0.75-3.00 hectares (1.85-7.41 acres) were identified as having at least some potential for this type of mitigation. Site visits were made to each of these bays or bay-like depressions. Each site was photo documented, a variety of site habitat notes were recorded, and a restoration potential value (i.e., 0-10, with 10 having the highest restoration potential) was assigned to each site. The restoration potential was based on visual inspection of ditches and other field indicators that are related to the extent of damage (e.g., water marks on trees, litter color). A subsequent visitation was made in January 1998 during high water conditions to 30 of the bays or bay-like depressions that had restoration ratings of 5 or higher. The results of these subsequent visits confirmed the restoration potential of 20 of the sites. The bays or bay-like depressions that were observed draining during this latter visit and that are considered to have a high restoration potential include the following bay/site numbers: 5, 108, 118, 124, 126, 147, 5001, 5011, 5016, 5017, 5036, 5055, 5071, 5092, 5128, 5135, 5184, 5190, 5204, and 5239. The locations of these bays/sites are provided in Figure 2-2. The results of these trial restorations would be evaluated and any useful techniques that were identified would be employed in future bay restoration efforts.

Each mitigated wetlands unit would be monitored to determine potential success. Hydrological control structures (i.e., weirs, drop log structures, or ditch plugs), that are used to restore the natural hydrology of the wetlands, would be monitored annually for 5 years. Hydrophytic vegetation, either regenerated from seed sources in the degraded wetlands or planted, would be monitored once a year for 5 years, and every 5 years for an additional 20 years, unless determined otherwise in the site-specific management plan. The results of the monitoring would be reported to the MBRT in an annual report submitted by DOE-SR. Projects would be judged successful 5 years after the hydrological control structures have stabilized and maintenance is no longer necessary,

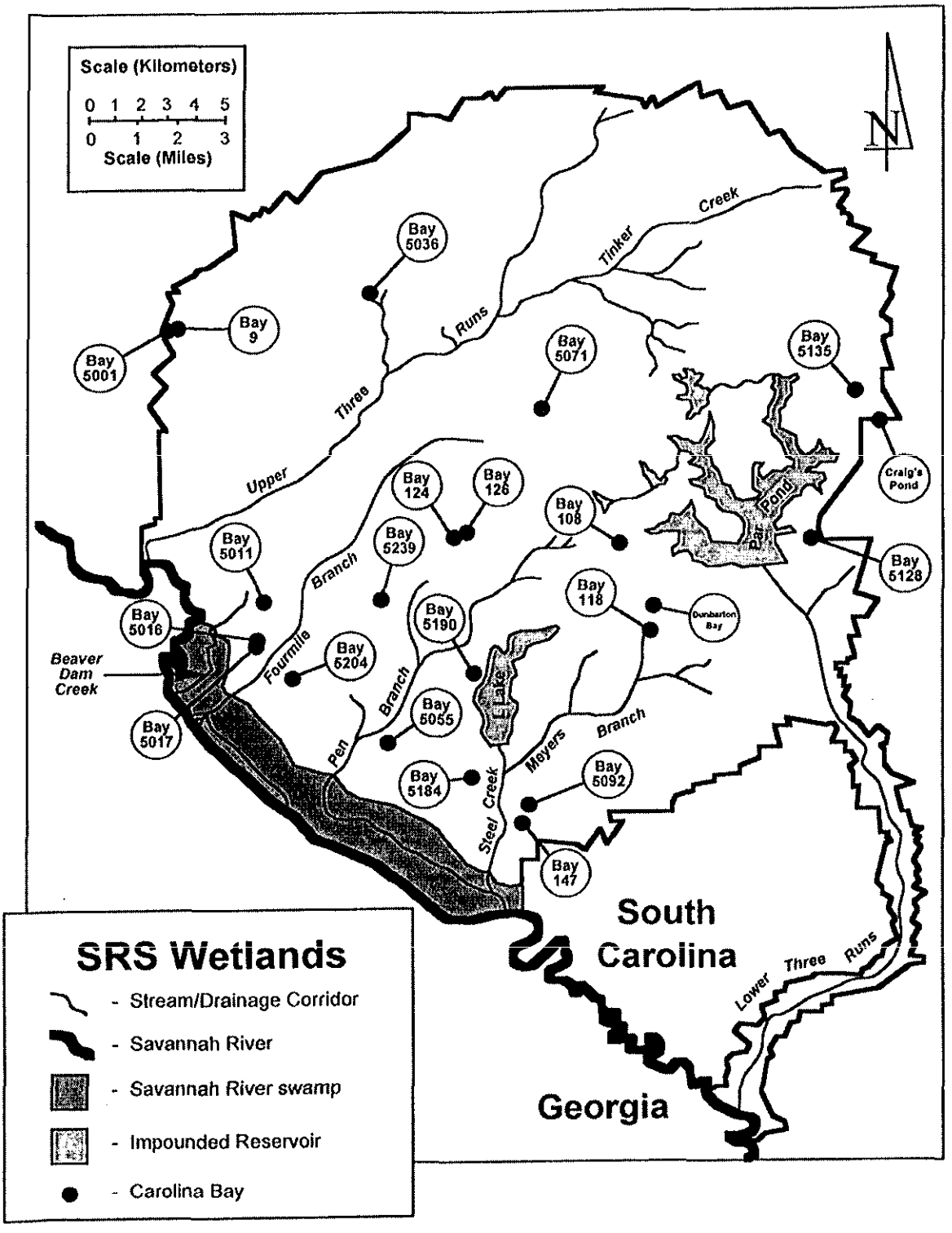

Figure 2-2. Locations of various wetlands areas discussed in this environmental assessment.

and when the desired hydrology and plant community have become established as envisioned in the site-specific management plan.

The method used for valuation of mitigation credit is a matrix system developed by COE and currently approved for use in South Carolina (COE 1996). The specific matrices for calculating credits and debits are provided in Appendix C of the attached MOA (Appendix A). Based on information in the site-specific management plan, credits would be determined using these matrices and added to the bank's accounting system. DOE-SR would be responsible for the accounting of the bank credits. Separate accounting systems would be established for isolated wetlands and adjacent wetlands to facilitate the use of the bank on an in-kind compensatory basis. The withdrawal of credits (i.e., debiting) would be allowed as compensation activities occur and interim success criteria are met.

The SRS wetland mitigation bank would be implemented in a phased manner. To ensure conservative credit withdrawal during the initial period of wetland compensation/crediting to the bank, no more than 15 percent of the available credits could be debited during the first 3 years of the bank's operation. Mitigation measures would be reviewed by the MBRT after the initial 3-year period to determine usage. If success criteria are being met, no restrictions would be placed on future transactions. DOE-SR would provide data sheets and a summary for each credit/debit transaction to the MBRT member agencies at 1-year intervals.

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 implement mitigation on a project-by-project basis
- Implement a variation of the proposed wetland mitigation bank program
- Purchase offsite mitigation credits for compensation

2.2.1 No Action, Continue to Implement Mitigation on a Project-By-Project Basis

One alternative to the proposed action is to take no action. This would consist of DOE continuing to implement compensatory wetland mitigation on a project-by-project basis. The mitigation activities would continue to take place only on SRS lands. The project schedule delays and cost increases would continue to be realized as a result of conducting mitigation actions on an only-as-needed basis. No regulatory or future project benefits would be realized from any SRS wetland restoration or enhancement activities, which were conducted on the basis of good stewardship of the site's natural resources.

2.2.2 Implement a Variation of the Proposed Wetland Mitigation Bank Program

This alternative would entail implementing the proposed action with the change that any new development/facility projects that could withdraw credits from the bank would only be allowed to be located within the SRS industrial zone. This scope modification would further not include or affect environmental restoration projects. This alternative would not preclude any future project or facility development in the industrial support zone. However, such proposed actions would not be allowed to use the wetland mitigation bank as a source of compensation credits or acreage for any potential wetland losses or impacts resulting from project implementation. Such projects would be required to conduct mitigation activities on a project-specific basis. Therefore, wetland mitigation would be more costly and less timely for these SRS projects.

2.2.3 Purchase Offsite Mitigation Credits for Compensation

Another alternative would be for DOE-SR to purchase mitigation credits from an offsite source to provide for compensation of onsite project-related wetland losses. This alternative would necessitate finding an offsite commercial wetland mitigation bank that could sell credits to the Federal Government. Such credits are very expensive, and would greatly increase the project costs associated with having to conduct wetland mitigation.

3.0 AFFECTED ENVIRONMENT

SRS occupies an area of approximately 800 km^2 (300 mi^2) in southwestern South Carolina (Figure 1-1). The site borders the Savannah River for about 27 km (17 mi) near Augusta, Georgia, and Aiken and Barnwell, South Carolina. SRS contains five nuclear production reactor areas, two chemical separations facilities, waste treatment, storage and disposal facilities, and various supporting facilities. The Final EIS for Shutdown of the River Water System at SRS (DOE 1997a) and the most recent socioeconomic survey of the six-county SRS area of influence (HNUS 1997) contain additional information on SRS areas and facilities, and the areas surrounding SRS.

3.1 Land Use

With the exception of SRS facilities or developed areas, the onsite land cover consists of a wide variety of natural vegetation types encompassing over 90 percent of the site lands. Since the acquisition of the site in 1951 by the Federal Government, these undeveloped lands have been used for natural resources management and research activities, archaeological research, timber production, and public hunts. The various site wetland habitats are largely within this undeveloped part of SRS. In certain instances, these site uses also affect or take place in or around wetlands habitats on site. In addition, several of the streams and most of the impounded lakes and ponds on site have been used as receiving waters for thermal effluent discharged from operating production reactors at SRS. Currently, however, these reactors are shut down with no contingency for restart.

Other possible uses of the site's streams and impounded bodies of water are discussed in DOE (1997a and 1997b).

3.2 Geology and Seismology

SRS is located in the Aiken Plateau physiographic region of the upper Atlantic Coastal Plain approximately 40 km (25 mi) 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).

Three of the seven general soils units or associations found on SRS occur within certain wetland areas on site. The various stream and drainage corridors on site are dominated by soils in either the Vaucluse-Ailey association or Troup-Pickney-Lucy association. The first of these two soil series consists of well-drained soils that have a loamy substrate with dense, brittle layers. The Vaucluse-Ailey association consists of sloping and strongly sloping soils in scattered areas around the head and sides of small drainageways in the uplands. The Troup-Pickney-Lucy association is composed of well drained to very poorly drained soils. Some have a sandy surface layer and loamy subsoil and are sandy throughout, being subject to flooding. This association consists of moderately steep and steep soils on uplands and nearly level soils on the floodplains along streams. The Savannah River swamp is dominated by soils in the Chastain-Tawcaw-Shellbluff association. These are poorly drained, somewhat poorly drained, and well-drained soils that are clayey or loamy throughout and are subject to flooding. This last wetlands soil association consists of nearly level soils on the floodplains along major streams and rivers. The soils found underlying Carolina bays are typically either Rembert or Ogeechee series loams, but also include Williman loamy sands. These consist of poorly drained, slowly-to-moderately permeable soils that formed in sandy, loamy, or sandy marine sediments of the Coastal Plain. Interior to these sandy bay rims, Orangeburg are less frequently encountered. These are well-drained, moderately permeable soils that formed in marine sediments (Rogers 1990).

3.3 Hydrology

SRS has a total of 19,819.2 hectares (48,973.2 acres) of wetland habitat (Table 3-1), 24.7 percent of the total SRS area. The Savannah River forms the western boundary of SRS and receives drainage from five major tributaries on the site: Upper Three Runs, Beaver Dam Creek, Fourmile Branch, Pen Branch, Steel Creek, and Lower Three Runs (Figure 2-2). 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). Two of these streams, Steel Creek and Lower Three Runs, have been impounded to form reactor thermal effluent cooling

Table 3-1. Summary of wetland areas[a] present on SRS.

Type of Wetlands	Area (in hectares)	Area (in acres)	Percent of Total Wetlands
Bottomland Hardwood Forest	13,823.7	34,158.4	69.75
Swamp Forest	2,331.7	5,761.6	11.77
Bottomland Scrub-Shrub	843.1	2,083.3	4.25
Emergent Wetlands	519.4	1,283.4	2.62
Aquatic Beds	85.9	212.3	0.43
Intermittent Flooded Areas	51.2	126.5	0.26
Non-Vegetated Wetlands	24.8	61.3	0.13
Carolina Bays	15.0	37.1	0.08
Ponds/Lakes	1,528.9	3,777.9	7.71
Savannah River	381.9	943.7	1.93
Streams	138.4	342.0	0.70
Canals	45.5	112.4	0.23
Other waterways	29.7	73.4	0.15
Total Wetlands	19,819.2	48,973.2	100.00

[a] Source: Halverson et al. (1997)

reservoir systems (i.e., L Lake and the Par Pond Reservoir System). In addition, there are a number of remnant farm ponds along some of the other drainages, which date back prior to 1951. On SRS, various plant processes also require the pumping of Savannah River water and/or onsite groundwater. A recent EIS (DOE 1997a) contains information on groundwater systems on SRS and in the surrounding region.

The existence of adversely impacted wetlands due to either pre-1951 land use practices or early SRS operations provides DOE with current mitigation opportunities to generate credits for the wetland mitigation bank. There are three types of degraded wetlands, which would be affected by implementation of the proposed action. These three types are discussed in the following paragraphs.

Carolina bays are naturally occurring shallow-depressional wetlands of the upland interstream areas of the southeastern Coastal Plain. Carolina bays contain hydric or mesic communities and range in general habitat type from lakes to shallow marshes, herbaceous bogs, shrub bogs, or swamp forests (Wharton 1978). A Carolina bay can generally be distinguished from other southeastern Coastal Plain wetlands on the basis of several unique features. These isolated wetlands range in size from less than 0.1 hectares (0.3 acres) to approximately 50 hectares (125 acres). Perhaps the most useful diagnostic characteristics are an elliptical contour with northwest to southeast alignment of the long axis and the frequent presence of a marginal sand rim (Schalles et al. 1989). Situated predominantly in the headwaters of watersheds, Carolina bays are extremely vulnerable to man-induced alterations. Often, only a short ditch is all that is required to penetrate the surrounding rim and drain the bay. Following draining, many Carolina bays have been logged and converted to pine plantations or farmland. Lide et al. (1995) reported that there might be as many as 350 to 400 Carolina bays on SRS. Many of the bays are located in the industrial support zone and are suitable for restoration or enhancement.

Prior to 1951, Meyers Branch was a relatively unimpacted blackwater stream. Between 1951 and 1952, the upper reaches of this drainage were channelized. These alterations have also impacted the hydrologic regime of nearby Dunbarton Bay. The channelized ditch is 0.9-1.9 meters (3-6 feet) deep and over 3.5 meters (10 feet) wide with large spoils piles on both sides of the channel. Although much of the impacted area is still jurisdictional, several wetland functions (e.g., wildlife habitat, flood storage, and improved water quality) have been eliminated because of the channelization of this drainage corridor.

Between 1954 and 1988, portions of the Savannah River swamp, Fourmile Branch, Pen Branch, and Steel Creek were adversely impacted by the discharge of thermal effluent from the site's production reactors. These wetland systems received reactor heated effluent that killed vegetation and destroyed aquatic habitat, scoured streambeds, and deposited sediment in the downstream areas, smothering and killing additional vegetation. Since reactor operations ceased, these streams are in various stages of succession, including emergent marsh, scrub/shrub wetlands, and regenerating stands of bottomland hardwood forest. Experimental reforestation of Pen Branch and Fourmile

Branch is currently being undertaken by several SRS organizations. Large-scale reforestation and enhancement of the other streams and thermally impacted areas could be initiated using the techniques developed at Pen Branch. Any enhancement credits resulting from identified beneficial remedies would include only those functional gains realized through DOE actions not required by any statute or regulation.

3.4 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 SRS white-tailed deer (*Odocoileus virginianus*) and wild swine (*Sus scrofa*) populations through supervised public hunts. SRS, which was designated as the first National Environmental Research Park (NERP) 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.

Wetland areas of SRS include a mosaic of vegetation forms and species. Species that are characteristically dominant for a given wetland type may differ depending on whether the wetland is disturbed, had received thermal effluents, or is undergoing successional revegetation following cessation of cooling-water releases. Also, in wetlands undergoing successional revegetation, species may differ depending on the stage of succession (Halverson et al. 1997).

A number of fish and wildlife species are present in and around the various wetland habitats found on SRS. The species composition or diversity is typically unique to each general wetland habitat type, with individual species or guild overlap occurring among other wetland types across the site. Comprehensive listings of fish and wildlife species can be found in Halverson et al. (1997).

Six species on SRS are afforded protection by the Federal Government under the Endangered Species Act of 1973. Of these, four are found to either inhabit or frequently occur in SRS wetland habitats. These include the bald eagle (*Haliaeetus leucocephalus*), wood stork (*Mycteria americana*), American alligator (*Alligator mississippiensis*), and shortnose sturgeon (*Acipenser brevirostrum*).

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-SR, SRI, NRCS, and WSRC. 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.

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 wetland mitigation bank program.

Most stream and drainage corridors fall within the archaeological sensitivity zones I and II. As a generalization, these two sensitivity zones are considered to be the zones of highest archaeological site density, and which capture the majority of the prehistoric and historic record on SRS that contains the most complex archaeological sites. In addition, although Carolina bays are typically found in archaeological sensitivity zones II and III, these isolated wetlands have the potential to contain unique and significant archaeological resources (SRARP 1989).

3.5 Radiation Environment

A person residing in the Central Savannah River Area (within 80 km or 50 mi of SRS) receives an average annual radiation dose of about 360 mrem; SRS contributes less than 1 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 (Arnett and Mamatey 1997a) contains more information on the radiation environment.

Previous site operations have resulted in radioactivity in liquid effluents being discharged into several of the streams and drainage corridors, which flow into the Savannah River. Annual monitoring of the radioactivity levels in stream water was conducted at surveillance stations located on Upper Three Runs, Fourmile Branch, Pen Branch, Steel Creek, and Lower Three Runs. The maximum readings for radioactivity (in μCi/mL) were as follows: gross alpha - 2.14E-09; gross beta - 8.66E-09; and tritium - 2.10E-04. Complete results from these monitoring activities can be found in Arnett and Mamatey (1997a, 1997b).

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

4.1 Wetland Mitigation Activities

As stated in Section 2.1, the scope of impact assessment of this EA is the consequences of the general mitigation activities implemented as part of the proposed action. The potential impacts resulting from future actions which would result in debiting mitigation credits from the SRS wetland mitigation bank will require separate NEPA reviews.

The current land use of the different mitigated wetland areas may change following completion of the restoration or enhancement activities. These impacts would depend on the compatibility of the current land use and that possible after mitigation. Because of the potential for altering habitat types (e.g., restoring a Carolina bay from an existing planted pine forest to an emergent marsh type of ecosystem) and the presence of buffer areas around the mitigation sites, timber production would potentially be impacted by the proposed action. However, given the small percent of SRS lands occupied by either Carolina bays (Table 3-1) or that would be occupied by buffer areas, the impact to the site timber production acreage of approximately 54,000 hectares (133,434 acres) would be less than 1 percent. Other site land use activities (e.g., environmental resource management and research, supervised public hunts) would not be likely to change as a result of the proposed action.

Direct and indirect socioeconomic impacts of the workforce needed to implement the proposed wetland mitigation bank would consist of approximately 2 program managers (i.e., 1 DOE-SR and 1 Management and Operations Contractor representative), the 12 members of the WTG, and approximately 15-20 site employees to conduct the various individual mitigation projects. This total workforce would be derived from the ranks of onsite DOE, contractor, and subcontractor employees. These numbers are negligible when compared to the current SRS employment of approximately 14,000 people. No measurable impact on the local economy would be expected from the proposed action.

During implementation of the proposed action, potential activities that could take place in floodplain and wetland areas might include grading, timber harvest (e.g., removal of overstory upland trees in drained Carolina bays), placement of soils (e.g., plugging of drainage ditches or restoration of hydric soils), planting of hydrophytic vegetation, and monitoring and maintenance efforts. Some of these activities would require temporary construction access during certain restoration/enhancement projects.

During mitigation activities, no hazardous chemicals would be used at the various project sites. Any spills or leaks (e.g., fuel, hydraulic fluid, and coolant from grading or logging vehicles and equipment) would be cleaned up in accordance with site procedures and protocols.

Air emissions from grading and logging activities would be generated by diesel operated equipment (i.e., bulldozers, log skidders and trucks). Emissions from this source would be expected to have only minimal impacts to local air quality. Further, operation of this class of heavy equipment does not currently fall within the SCDHEC requirements for air permitting activities.

Both grading and timber harvesting activities have the potential to impact local wildlife species. Some of the small, less mobile species of mammals, reptiles, and amphibians would probably be physically harmed or killed by the grading or logging equipment. However, most species of mammals and birds, which inhabit or use the subject wetlands

habitats would have been largely displaced by these activities, but probably not either injured or killed. Those animals displaced by the grading or logging activities into adjacent lands could re-colonize the site following completion of the mitigation activities, disperse to nearby habitats which are more suitable to the needs of any one species, or be adversely impacted (e.g., either die or experience reduced reproduction) because of the lack of available suitable habitat. However, given the small size of the project sites and the overall positive impacts of mitigation and restoration, the net impact on the SRS populations of these wildlife species would be minimal.

A number of mitigation activities would be implemented in either existing floodplain and wetland areas. Operation of construction equipment in the wetland and floodplain areas would be minimized. Depending upon the type of mechanized construction equipment to be employed, the use of platform support mats may be required to minimize the impacts to the wetland soils in the project area. Silt fences and other erosion control structures would be installed as needed to ensure there is no deposition in the downslope wetland areas. Best management practices would be employed during any construction activities associated with this proposed action. The consequences of these activities are discussed in Appendix C of this EA.

The proposed action would not be expected to adversely impact any of the Federally-listed species documented to either use or occur in the potential wetland mitigation project sites (LeMaster 1998). The result of the proposed action would be a beneficial increase in SRS aquatic sites, which would be available for use by the bald eagle, wood stork, and American alligator. Potential impacts to these species would also be evaluated in the site-specific management plans and biological evaluations prepared for the different sites as these are selected for restoration or enhancement.

The potential impacts to cultural or archaeological resources due to the proposed action would be minimal. Most mitigation projects would not employ earth disturbing or excavation activities that have the potential to significantly impact these resources. Specific restoration and enhancement projects would require the submittal of a completed SRS Site Use Permit Application (i.e., SR-88) prior to implementing the proposed activities. These applications are reviewed by the Savannah River Archeological Research Program (SRARP) of the University of South Carolina for the potential to impact onsite cultural or archaeological resources. Any projects having this potential would require pre-project sampling (e.g., shovel or pit testing of the excavation location) and monitoring by trained professional archaeologists during the earth-disturbing activities to determine the presence of any potentially significant cultural or archaeological resources. The presence of any such resources would then require either preservation or recovery under Section 106 of the National Historic Preservation Act of 1966 (16 USC 470).

The Occupational Safety and Health Act (OSHA) regulations (29 CFR 1910) require that employees 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. During the various mitigation activities, personal protective clothing and equipment would be used as appropriate. Therefore, human health impacts would be minimal.

The only potential radiological impacts associated with the proposed action would be in the streams and drainage corridors that had been previously impacted by liquid effluents. Wetlands areas of radioactive contamination have been previously identified through over-flight surveillances (e.g., EG&G/EM 1993) and *in situ* sampling (e.g., Arnett and Mamatey 1997a, 1997b). Areas determined to have potentially harmful levels of radioactive contamination would not be selected as mitigation or compensation project sites. Consequently, no human health impacts due to radioactivity would be expected as a result of the proposed action.

4.2 Wetland Mitigation Bank Accounting Activities

This portion of the proposed action is strictly a numeric accounting process. The same group of SRS employees that would participate in the any mitigation activities would also participate in the activities encompassed in this portion of the scope of the proposed action. Aside from socioeconomic impacts, no other impacts would be expected to occur during this portion of implementing the SRS wetland mitigation bank program. As stated in the previous section, no measurable socioeconomic impact would be expected to affect the local economy as a result of these activities.

4.3 Environmental Consequences of the Alternatives

The no-action alternative would potentially have some of the same impacts associated with the proposed action. Under the no-action alternative, it is assumed that wetland mitigation or compensation activities would be conducted on a project-by-project basis. Therefore, some wetlands would be restored as needed for mitigation purposes, and others would be impacted by future SRS projects. However, the potential surplus of restored or enhanced wetlands that would likely result from the proposed action would not occur if no action was chosen. Further, the no-action alternative would result in both project schedule and budget impacts because of prolonging the wetlands regulatory process.

The alternative to modify the proposed wetland mitigation banking program would have all of the same impacts as the proposed action, except for those future projects which would have wetlands losses in the SRS industrial support zone. For those projects, the operational impacts would be the same as stated above for future projects under the no-action alternative.

Another alternative, to purchase offsite mitigation credits, would have most of the same impacts as the no-action alternative, except that there would be no need for any onsite mitigation activities. Again, the potential surplus of restored or enhanced wetlands is not likely to occur under this alternative. The primary impact of this alternative would the

increased cost of future SRS projects toward attaining sufficient compensation from offsite sources for wetland losses.

4.4 Cumulative Impacts

The principal cumulative impact from the proposed action would be the loss of SRS lands currently used for timber production. The loss of such land use would be less than 0.001 percent on an annual basis, with the estimated losses for the entire proposed action at less than 0.01 percent. There would be no measurable impact on the local economy because of the proposed action. The impacts to 100-year floodplain and jurisdictional wetlands would only be temporary in nature. Some mortality of small and less mobile wildlife would result from grading and logging activities at the individual mitigation sites. The proposed action would have no adverse impacts on threatened and endangered species.

Overall, the restoration and enhancement of SRS wetlands would result in beneficial impacts to these protected species in that more onsite aquatic habitat would be present for use by bald eagles, wood storks, and American alligators. Given the minimal amount of soil excavation activities associated with most wetland restoration and enhancement activities, the potential impacts to cultural and archaeological resources should be negligible. However, site-specific assessments would be necessary as individual mitigation locations are selected to ensure that no significant impacts to these resources are realized. Cumulative ambient air quality impacts would be negligible. Assuming that both protective clothing and adequate safety measures are employed, the proposed action should not pose any potential problems for either human health or worker safety. There would be no measurable impact to either public health or safety as a consequence of the proposed action. No adverse impacts to either surface or groundwater quality would be expected from implementing the proposed wetland mitigation bank at SRS.

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

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 1500-1508), and DOE Regulations (10 CFR 1021), and DOE Order 451.1A. 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

assess the potential environmental impacts of the implementation of a wetland mitigation bank at SRS.

5.2 Section 404 of the Clean Water Act

Overall, the objectives of the CWA are to restore and maintain the chemical, physical, and biological integrity of the nation's waterways. In 1977, Section 404 of the CWA (33 USC 1344) enacted to specifically regulate discharges of dredged and fill material into jurisdictional wetlands and waters of the United States. The implementation and operation of a wetland mitigation bank are conducted in accordance with and toward compliance of Section 404 regulations.

5. 3 Endangered Species Act

The Endangered Species Act of 1973 (16 USC 1531 et seq.) ensures Federal protection for species defined as either threatened or endangered under the act. Section 7 of the Endangered Species Act (i.e., Interagency Cooperation) requires Federal agencies to consult with the USFWS for any proposed actions that are likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. The proposed wetland mitigation bank, which was developed in cooperation with the USFWS, would be likely to only have beneficial impacts on any of the local Federally-listed species.

5.4 National Historic Preservation Act

The National Historic Preservation Act (16 USC 460 et seq.) of 1966 requires coordination on activities that may affect historic and archaeological resource preservation. Further, this act enables the placement of sites with significant historical value on the National Register of Historic Places. If such activities are being proposed through a Federal agency, consultation with the State Historic Preservation Officer are required to ensure the proper identification of potentially significant resources and the implementation of appropriate mitigation actions. DOE-SR operates in accordance with the Programmatic Memorandum of Agreement, discussed in Section 3.4 of this EA, toward compliance with this Federal regulation.

5.5 Executive Orders 11990 and 11988

Executive Order 11990, "Protection of Wetlands," requires Federal agencies to avoid short- and long-term adverse impacts to wetlands if a practicable alternative exists. Executive Order 11988, "Floodplain Management," directs Federal agencies to establish procedures to ensure that they consider potential effects of flood hazards and floodplain management in any action undertaken. Agencies are further required to avoid impacts to floodplains to the extent practicable. DOE regulations (10 CFR 1022) establish procedures for compliance with these Executive Orders. A Floodplain/Wetlands

Assessment was prepared in compliance with 10 CFR 1022, and is included as Appendix C to this EA.

6.0 AGENCIES AND PERSONS CONSULTED

The U. S. Army Corps of Engineers/Charleston District and the U. S. Fish and Wildlife Service office in Charleston, South Carolina were consulted during the preparation of this EA.

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APPENDIX A

Memorandum of Agreement for the Savannah River Site Wetland Mitigation Bank

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Memorandum of Agreement
for the
Savannah River Site
Wetland Mitigation Bank

U.S. Department of Energy
Savannah River Operations Office

Effective Date: January 1, 1997

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MEMORANDUM OF AGREEMENT FOR THE SAVANNAH RIVER SITE WETLAND MITIGATION BANK

1.0 INTRODUCTION AND GENERAL PROVISIONS

This Agreement is by and between the U.S. Department of Energy-Savannah River Operations Office (DOE-SR); the U.S. Army Corps of Engineers, Charleston District, Regulatory Branch (COE); the U.S. Environmental Protection Agency (EPA-Region 4); the U.S. Department of the Interior, Fish and Wildlife Service (FWS); the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS); the South Carolina Department of Health and Environmental Control (SCDHEC); and the South Carolina Department of Natural Resources (SCDNR). The U.S. Department of Commerce, National Marine Fisheries Service (NMFS) has indicated they would like to continue to coordinate with Site wetland impact and mitigation issues but legally they are prohibited from becoming a signatory party to this Memorandum of Agreement (MOA).

The purpose of this MOA is to establish a Wetland Mitigation Bank (hereafter referred to as "The Bank") at the Savannah River Site (SRS). Wetland impact avoidance and minimization will be employed prior to compensatory mitigation. The Bank is being established to provide DOE-SR with a compensatory alternative for unavoidable wetland losses associated with future authorized construction and environmental restoration projects in SRS wetlands and to gain "credit" for wetland restoration work that would not otherwise be accomplished through alternative programs or means. Future projects such as the remediation of waste sites and the repair and maintenance of the roads and bridges on SRS probably will impact some wetland areas. By establishing a Wetland Mitigation Bank prior to such impacts, DOE-SR can incorporate mitigation efforts required for new projects in a more timely manner. For future remediation and construction projects that require compensatory wetland mitigation, The Bank will save the time and money needed to locate a suitable wetland for restoration and to obtain approval for its use.

The parties to this MOA are in agreement that mitigation banking can be a viable mitigation alternative and that it can provide DOE-SR an excellent opportunity to develop a Wetland Mitigation Bank in conjunction with the landscape-scale land-use planning effort that is under way (WSRC 1994). The existence of degraded wetlands such as drained Carolina bays, channelized streams, and thermally impacted swamp forests in proximity to a large tract of high-quality forested wetland (the Savannah River swamp) and old-age upland forest provide DOE-SR the opportunity to develop a Wetland Mitigation Bank with a high probability of success.

The Bank will involve the restoration and enhancement of small often isolated wetlands, as well as major wetland systems scattered throughout the SRS nonindustrialized management area (Figure 1). The primary goal of The Bank will be restoration and enhancement of

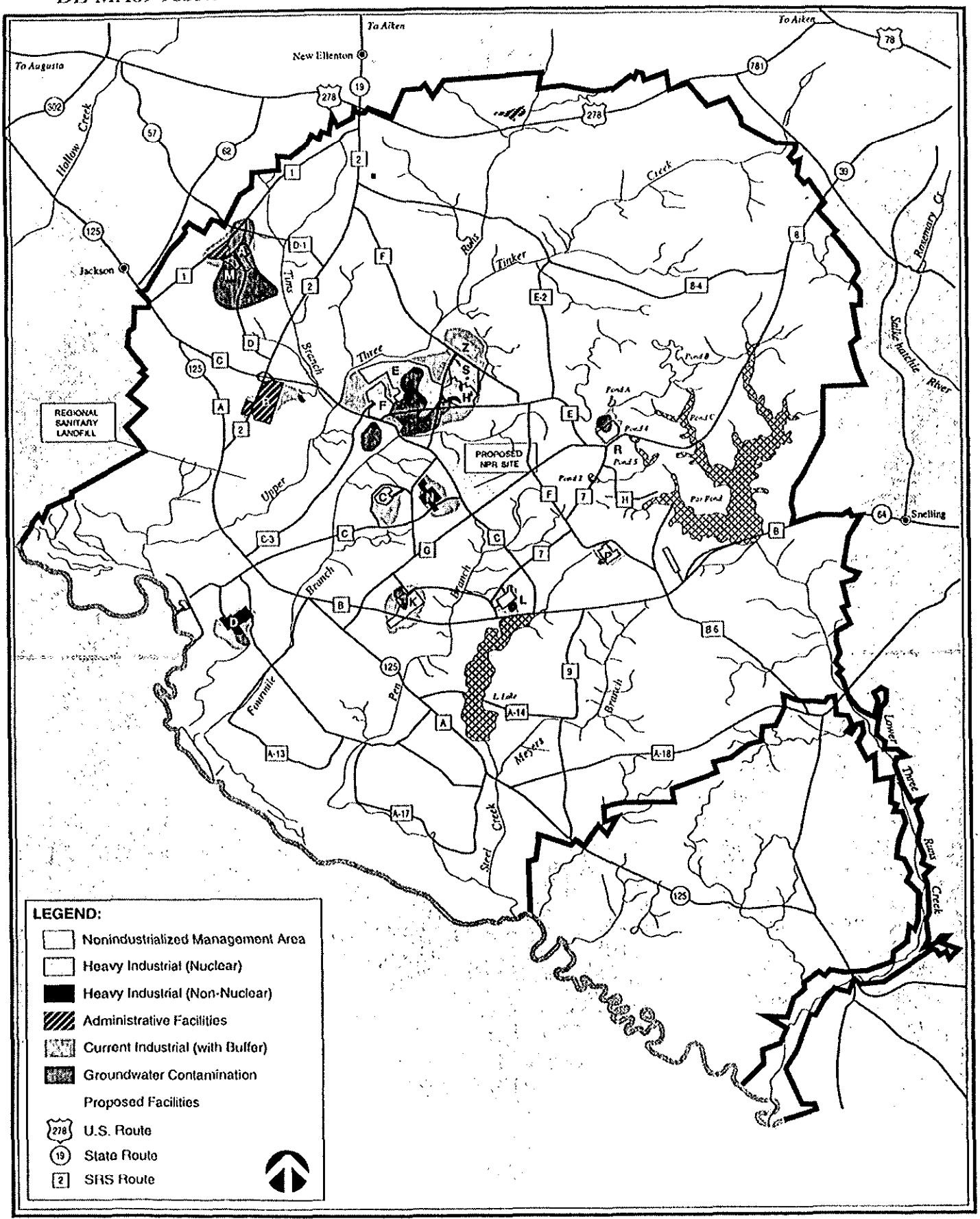

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Figure 1. Savannah River Site Map

degraded Carolina bays and stream-side bottomland hardwood forests on SRS. This type of Site use is in agreement with recommendations made in the recently completed Savannah River Site Future Use Project Report issued in January 1996 (DOE 1996).

A key advantage for establishing The Bank at SRS is the onsite presence of experienced land management and research groups [USDA Forest Service (USFS)-Savannah River Forest Station and the Southern Research Station, NRCS, SCDNR, Savannah River Ecology Laboratory (SREL), and Westinghouse Savannah River Company-Savannah River Technology Center (WSRC-SRTC)]. The combination of available land and onsite knowledge will lower the total cost of the mitigation effort and ensure its success.

WHEREAS, restoration and enhancement of degraded wetlands at SRS will result in net gains in wetland functions, and in consideration of the above discussion,

THEREFORE, it is mutually agreed among the parties to this MOA that the following general provisions are adopted and will be implemented upon signature of this agreement.

GENERAL PROVISIONS

1. Terms for establishment of The Bank are proposed until accrued credits have been exhausted. However, review and evaluation of the program will occur after an initial period of 3 years.

2. Modification to this MOA can be proposed at any time, but mutual agreement by all signature agencies is required before changes can be adopted. If agreement by all parties to this MOA is not forthcoming within 6 months after submission of the modification proposal, the agency proposing the revision can choose to terminate its participation in the program.

3. DOE-SR will assume responsibility for completion of needed mitigation and for monitoring. Mitigation will be deemed successful and monitoring will no longer be required on achievement of the success criteria outlined in Section 5.0. Monitoring and repair of hydrological control structures will be the responsibility of DOE-SR for the life of The Bank.

4. The Bank will be used only to compensate for wetland losses associated with construction and environmental remediation projects on SRS. Use of The Bank for compensation relative to trust resource injury due to the release of any hazardous substance as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) must be approved by the appropriate Natural Resource Trustees as designated pursuant to CERCLA.

5. The Bank can be used to offset unavoidable impacts of individual permits to wetland resources only after demonstration by the applicant to the satisfaction of COE that wetlands have been avoided and impacts to affected wetlands have been minimized to the maximum extent practicable. The Bank can also be used to offset wetland impacts under the Nationwide Permit (NWP) Program. Compliance with appropriate sections of Clean Water Act 404(b)(1) guidelines is imperative before use of The Bank can be considered.

6. The Mitigation Banking Review Team (MBRT) is an interagency group designated to review and consult with proponents (in this case, DOE-SR) regarding Compensatory Mitigation Bank proposals.

7. To concentrate wetlands mitigation sites away from the industrialized portions of SRS, compensatory mitigation of impacts to interior wetlands will take place in the nonindustrialized management area of SRS. Mitigation opportunities within the industrial area may also be explored to provide mitigation sites where feasible.

8. The Bank cannot be used to offset impacts on Federally protected species. Similarly, The Bank cannot be used to absolve cultural resource impacts requiring consideration under Section 106 of the National Historic Preservation Act of 1966 (16 USC 470). Special cases involving adverse impacts to certain anadromous fish species would preclude use of The Bank.

9. In lieu of utilizing standard replacement ratios or quantifying wetland value lost on individual projects (debits), resource mitigation credits gained by banking will be calculated as established by the methods identified in this MOA.

10. DOE-SR may not sell, trade, or otherwise dispose of mitigation credits generated by banking. The Bank is for the sole use of DOE-SR, unless otherwise agreed to by all parties of the MOA.

11. The Bank will be implemented through a phased approach. To ensure conservative credit withdrawal during the initial restoration/enhancement period, no more than 15 percent of available credits can be debited during the first 3 years of the banking program. Mitigation measures will be reviewed by signature authorities after the initial 3-year period to determine future usage. If success criteria are being met, no restrictions will be placed on future transactions.

12. DOE-SR will provide data sheets and a summary for each credit/debit transaction to all signature agencies to this agreement at 1 year intervals.

13. This MOA does not eliminate the applicant's or agencies' responsibilities under all applicable Federal, state, and local laws or regulations.

14. This MOA will be considered effective on the first day of the month following the month in which the COE Charleston District Engineer signs the MOA. Withdrawal of credits from The Bank may begin as restoration, enhancement, or preservation activities occur and interim success criteria are met.

15. Prior to a site being included in The Bank, a site-specific restoration/enhancement plan including site-specific success criteria, monitoring and remediation contingencies shall be developed and approved by the MBRT. Based on this information, credits will be determined and added to The Bank. As part of the review process, an appropriate opportunity for field review by the MBRT of proposed sites will be made available.

2.0 ORGANIZATIONAL RESPONSIBILITY

The SRS Wetlands Task Group (WTG) was chartered in 1990 to enhance communication and understanding among onsite organizations concerning wetlands research and management. Membership consists of representatives from the land management and research organizations on SRS. The WTG reports directly to the SRS Natural Resources Coordinating Committee (NRCC).

The NRCC was established in 1991 to enhance cooperation among SRS organizations by providing a forum for discussion of onsite natural resource issues and to provide technical advice and policy recommendations to DOE and all site users in order to effectively manage the natural resources of SRS.

Specific organizational responsibilities are as follows:

The WTG will be responsible for reviewing all mitigation bank activities and forwarding recommendations to the Natural Resources Coordinating Committee (NRCC), which will forward recommendations to DOE-SR for use in preparation of an annual report. DOE-SR will prepare an annual report which will be submitted to the MBRT and which identifies The Bank activities during the previous year. DOE-SR will also prepare a report on all proposed restoration projects for the upcoming year. This report will be submitted in conjunction with the annual report, but will not be a part of the annual report. The DOE-SR list of proposed restoration projects for the next year will be submitted to the MBRT for their review and comment (see general provision number 15). The MBRT will be responsible for providing any comments on the proposed restoration projects in a timely manner. All comments on the proposed list of restoration projects will be sent to DOE-SR who will submit them to the WTG for any necessary revisions.

During normal field activities USFS, NRCS, SREL, SCDHEC, SCDNR, and WSRC will be responsible for identifying suitable mitigation areas and submitting these areas to the Wetlands Task Group for action. USFS and NRCS will survey the elevations and provide logistical support to accomplish the selected mitigation activity after the WTG has agreed upon the appropriate action. SREL, USFS and WSRC will be responsible for the

coordination of monitoring and research activities before and after completion of the mitigation process. DOE-SR will be responsible for the accounting of The Bank credits.

3.0 IMPLEMENTATION OF A WETLAND MITIGATION BANK AT SRS

Projects on SRS often impact wetlands on a much larger scale than that commonly seen in private industry. For example, the construction of L Lake destroyed approximately 200 acres of bottomland hardwood forest; the remediation of contaminants in the M-Area seepage basin and Lost Lake (a Carolina bay) impacted 28 acres; and past SRS operations have impacted approximately 583 acres on Pen Branch and in the Savannah River swamp. Attempting to mitigate the loss of such large wetland areas has been difficult. Individual restoration projects of sufficient size and quality that would be both in-kind and onsite to offset these kinds of large-scale impacts have been difficult to locate. The establishment of a Wetland Mitigation Bank at SRS will enable DOE to locate, restore, monitor, and receive credit for mitigation accomplished prior to an impact. Restoration is emphasized over creation because of the high cost of creation, the greater opportunity of a creation project to fail, and hence the preference for restoration by the regulatory agencies. Many wetlands on SRS have been adversely impacted by past anthropogenic changes; they provide good opportunities for restoration.

The Bank will involve the restoration and enhancement of small often isolated wetlands, as well as major wetland systems scattered throughout the SRS nonindustrialized management area (Figure 1). This management area includes Land Use Management Area 2 (WSRC 1994), which was established in 1986 through negotiation between FWS and DOE-SR for management of the red-cockaded woodpecker (RCW; Picoides borealis). Land Use Management Area 2 is comprised of the largely undeveloped 5-mile-wide buffer of land between the industrial facilities in the center of the Site and the SRS boundary. Plant and animal populations within the restored wetlands will benefit from their proximity to the Savannah River swamp and the major streams on the Site. The proximity of relatively unimpacted wetlands to restored wetlands will provide increased potential for migration of semiaquatic vertebrates between wetland systems across a minimum of manmade impediments such as paved roads and developed areas.

The development of a Wetland Mitigation Bank in an area where the uplands are being restored to the native longleaf pine-wiregrass (Pinus palustris-Aristida stricta) community and where the landscape is being managed to establish a viable RCW population adjacent to an area dedicated to environmentally progressive industrial development and waste site remediation exemplifies the concept of ecosystem management currently being proposed by Secretary of Energy Hazel O'Leary (DOE 1994).

To fulfill the regulatory agencies' mandate for "onsite, in-kind" mitigation, The Bank will include most wetland types found on SRS. Efforts will concentrate on Carolina bay restorations such as those the USFS and SREL are conducting and the enhancement of aquatic systems impacted by Site operations. Separate accounting systems will be

established for isolated wetlands (Carolina bays) and adjacent wetlands (riparian) to facilitate use of The Bank on an "in-kind" compensatory basis.

Several wetland mitigation projects have been completed on SRS. Appendix A provides descriptions of these projects. The following sections describe examples of current and potential restoration and enhancement projects for various SRS wetlands that will be considered for inclusion in The Bank. These projects are for restoration of either isolated wetlands or adjacent wetlands.

Isolated Wetlands Example: Restoration of Carolina Bays

Carolina bays are isolated depressional wetlands that provide valuable habitat for native plants and wildlife including threatened, endangered, and sensitive species. On SRS, three Federal Category 2 plant species [little bur-head (Echinodorus tenellus), swamp lobelia (Lobelia boykinii), and awned meadow-beauty (Rhexia aristosa)] one Federally threatened animal species [the bald eagle (Haliaeetus leucocephalus)] and fourteen plant species classified as sensitive by Hyatt (1994) have been located in or use Carolina bays (Lide and Davis 1992).

Situated predominantly in the headwaters of watersheds, Carolina bays are extremely vulnerable to man-induced alterations. Often, a short ditch is all that is required to penetrate the surrounding rim and drain the bay. Following drainage, many Carolina bays have been logged and converted to pine plantations or farmland. In 1983 the South Carolina Heritage Trust Program initiated a long-term study of Carolina bays in South Carolina (Bennett and Nelson 1991). The study located 2,651 Carolina bays larger than 2 acres. Only 3 percent were unimpacted by human activity. The remaining 97 percent were altered by ditches; planted in row crops or pines; logged; converted to residential and commercial development; bisected by roads or rights-of-way; or dredged for farm ponds. In 1992, SREL, in cooperation with DOE-SR and EPA, identified 46 Carolina bays on SRS suitable for inclusion in the EPA Advanced Identification Project to identify ecologically significant wetlands (Lide and Davis 1992).

Although Schalles et al. (1989) documented only 194 Carolina bays on SRS, recent work by SREL (Lide, Kirkman and Wein 1995) indicates that approximately 350 to 400 Carolina bays might be present. Many of these depression wetlands are in the nonindustrialized management area and are suitable for restoration or enhancement. In 1991 and 1992, the Wetlands Task Group investigated 41 Carolina bays for their restoration potential (DOE 1993). Thirty-six percent (15 Carolina bays) contain functioning ditches that continued to drain portions of the bays even after 40 years of abandonment. Other bays that were originally drained by ditches had been temporarily plugged by beavers (Castor canadensis). Many of the bays investigated, although partially drained, contained wetland communities described as regrowth bays (Bennett and Nelson 1991), which are indicative of altered hydrology; other bays, also partially drained, contained stands of large bald cypress (Taxodium distichum) and pond cypress (T. ascendens) more indicative of a stable hydrology.

Under this MOA, all Carolina bays in the nonindustrialized management area would eventually be investigated and assessed for restoration and enhancement potential during the timber compartment prescription process performed by USFS. This effort probably will take more than 10 years to complete. Carolina bays will be evaluated and ranked according to the following three criteria/questions:

1. A hydrological alteration can be done easily and with little cost; if so, then the bay would be considered for restoration.

2. A change in the current vegetation community would impact threatened, endangered, or sensitive plant and animal species; if so, then the bay should not be considered for restoration at this time.

3. Restoration of the bay would result in adverse impacts to roads, railroads, or other structures; if so, then the bay should not be considered for restoration at this time.

These three screening criteria would form the basis for presentation to the Wetlands Task Group of the Natural Resources Coordination Committee (NRCC) for further consideration for restoration. These criteria are broad based and designed for field screening by USFS/SRFS; further visits to other potential bays or to bays determined by the USFS/SRFS in their screening not to be viable restoration sites could be revisited after a discussion at a Wetlands Task Group meeting.

Restoration will initially consist primarily of plugging ditches in drained or partially drained bays to increase the water depth and extend the hydroperiod, allowing the vegetation to revert naturally to species characteristic of increased inundation or extended hydric soil conditions. As new restoration and enhancement techniques are developed, they will be implemented as appropriate.

Often, hydrophytic plants indicative of past extended hydroperiods remain as a small component of the current degraded systems; these plants can serve as a seed source. Increasing the water level to eliminate those species not adapted to life in saturated or flooded soils should allow the hydrophytic plants more characteristic of Carolina bay wetlands to flourish and eventually dominate the system. To accelerate the succession of the bays dominated by regrowth communities [primarily loblolly pine (P. taeda) and sweetgum (Liquidambar styraciflua)], it might, on occasion, be desirable to harvest timber in the bay during a dry autumn before plugging the ditch. Several snag trees at each restoration site will be retained to provide habitat for wildlife. Research by SREL indicates that by removing the forest cover, light will penetrate to the forest floor, allowing the herbaceous hydrophytic plants to flourish. Skidding the trees over the soil surface will remove portions of the leaf litter, expose the mineral soil, and expedite restoration. By encouraging natural succession and minimizing planting, restoration costs will be kept low. Two bays [Bay 204 (2 acres) and Bay 93 (8 acres)] were restored in this manner in 1992 and 1993, respectively, and are being monitored by SREL scientists. As many as 30 to 40 percent of SRS bays (120 to 160

bays) could be restored as described. Baseline conditions will determine if enhancement or restoration credits will be accrued pursuant to the mitigation SOP.

Adjacent Wetlands Example: Enhancement of the Upper Reach of Meyers Branch Set-Aside

Aerial photographs indicate that, prior to 1951, the upper reach of Meyers Branch (Figure 2), including the headwaters in Dunbarton Bay, was a relatively unimpacted blackwater stream. The upper reach of Meyers Branch was channelized between 1951 and 1953. This channelization altered the hydrology in Dunbarton Bay and for 1.5 to 2 miles downstream. The ditch is 3 to 6 feet deep and over 10 feet wide with large spoil piles on both sides of the stream. Dunbarton Bay today is characterized by an interior area of small bald cypress that is usually flooded to a depth of 1 foot during wet winters. While bald cypress with knees and water tupelo (Nyssa aquatica) are still present along the upper reach of Meyers Branch and much of the area is still a jurisdictional wetland, floodwaters rarely, if ever, overtop the banks of the current drainage ditch. Floodwaters are shunted downstream through the large ditch, thus eliminating several functions of an unaltered wetland system, particularly wildlife habitat, flood storage, and improved water quality. Because of the complexity of this system, the options for restoring the stream and the relative merits of proposed actions will be investigated by the various resource regulatory agencies and the research organizations on SRS. A permit pursuant to Section 404 of the Clean Water Act might be required before starting work impacting jurisdictional wetlands. COE will be contacted during the planning stages of this project. DOE-SR will continue to seek suitable sites of this type to reverse adverse effects of channelization projects.

Adjacent Wetlands Example: Enhancement of the Thermally Impacted Portions of the Savannah River Swamp, Fourmile Branch, and Steel Creek

Portions of the Savannah River swamp, Fourmile Branch, and Steel Creek were adversely impacted by thermal effluents from SRS operations (Figure 2). These streams received heated effluent that killed vegetation and destroyed aquatic habitat, scoured streambeds, and deposited sediment in the Savannah River swamp, smothering and killing additional vegetation. Since operations ceased in 1988, the streams are in various stages of succession, including emergent marsh, scrub/shrub wetlands and regenerating stands of bottomland hardwood forest. For example, experiments by WSRC, the Southern Research Station, and SREL on the reforestation of these areas are under way on Pen Branch and Fourmile Branch. Large-scale reforestation and enhancement of the other streams can be initiated using assessment methodology reforestation techniques developed at Pen Branch. Closely tied to this wetlands enhancement is an initiative recently proposed by USFS to restore structural fisheries habitats in these impacted and degraded streams. Any enhancement credits resulting from identified beneficial remedies will include only those functional gains realized through DOE actions not required by any statute or regulation.

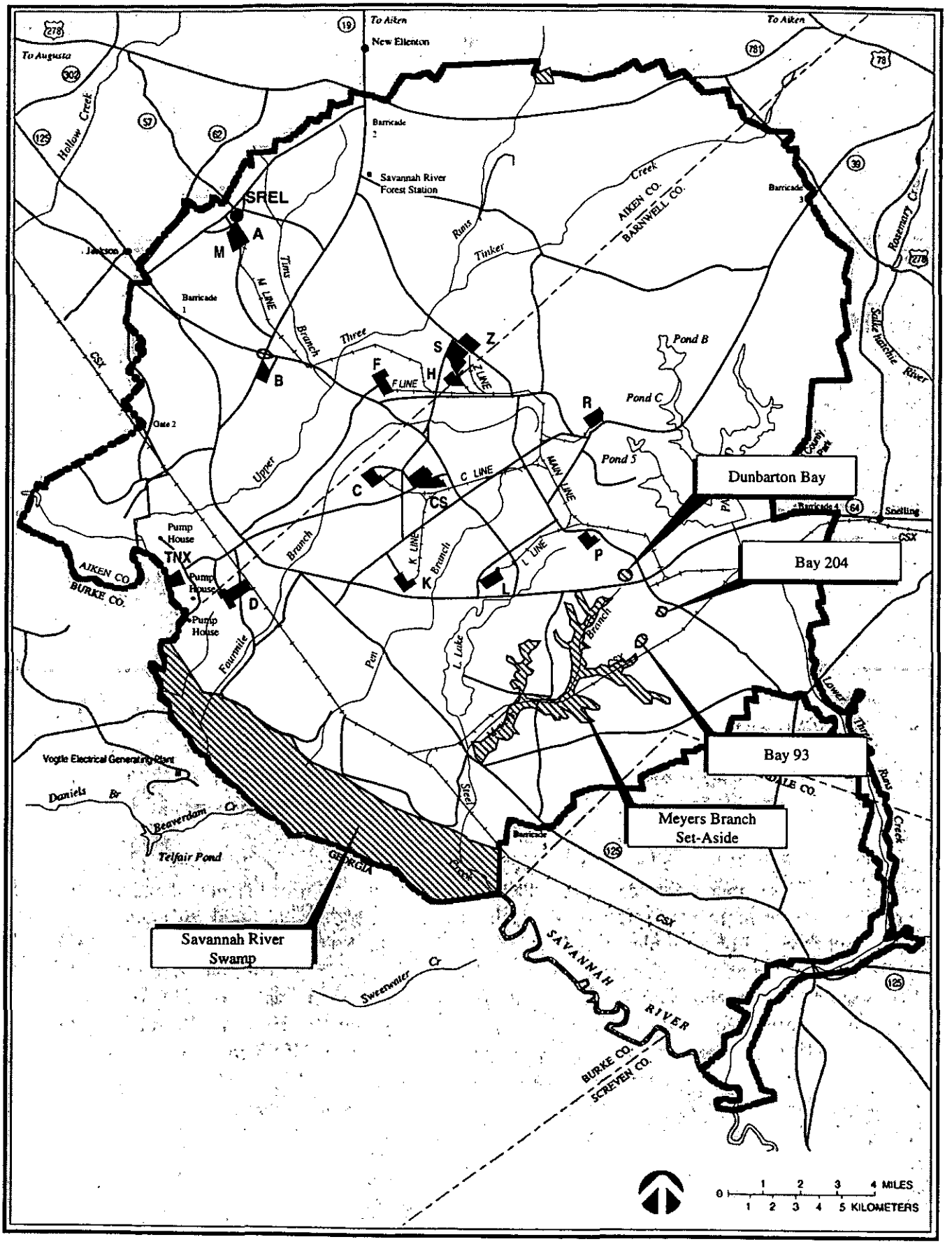

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Figure 2. Examples of Current and Potential Wetland Mitigation Areas on the Savannah River Site

4.0 MONITORING AND MAINTENANCE

A buffer zone will be established around each mitigated wetland in order to minimize adverse impacts and will be protected as a unit with the wetland. Recommended activities specific to each area will be highlighted in a management plan prior to restoration. In most of the cases described above, hydrologic control structures (i.e., weirs, drop log structures, or ditch plugs) will be used to restore the natural hydrology of the wetlands.

These structures will be monitored annually for 5 years and inspected more frequently if unusual storm events result in large amounts of rainfall. Hydrophytic vegetation will be allowed to regenerate naturally from the seed sources within the degraded wetland or planted as necessary to achieve the individual project objectives.

Vegetation monitoring will be conducted once a year for 5 years and every 5 years for an additional 20 years unless it is determined that additional monitoring is needed in the site-specific management plan. The results of the monitoring will be documented and included in the annual report to the MBRT. The site-specific management plan developed for each approved restoration project would include specific information on the type and amount of baseline data that would be collected before restoration started and would also include details on monitoring the project during and after the restoration.

5.0 SUCCESS CRITERIA

Projects will be judged successful 5 years after the hydrologic control structures have stabilized and maintenance is no longer necessary, and when the desired hydrology and plant community have become established as outlined in the site-specific management plan. Long-term monitoring will continue every 5 years for 20 years to evaluate success and the need for further remedial action. However, DOE will be responsible for the integrity of the hydrologic control structures for the life of The Bank. Site-specific management plans will outline techniques to determine success including but not restricted to the monitoring of hydrology and the selection of reference controls. These techniques would be developed by the Wetlands Task Group with input from the MBRT.

A Carolina bay restoration will be deemed a success when the restored hydrologic regime (e.g., ditch plug) has stabilized for 5 years and the associated wetland community is dominated by hydrophytic vegetation more commonly found in wetlands than in the community occupying the site immediately before restoration. For instance, if a Carolina bay regrowth community of loblolly pine [a facultative species (FAC)] and sweetgum (FAC) is replaced by a community dominated by rushes, sedges, and aquatic vegetation [(Juncus spp., Scirpus spp., Potamogeton spp., and Utricularia spp.), facultative wetland species (FACW)]; maidencane [(Panicum hemitomon), an obligate wetland species (OBL)]; and buttonbush (Cephalanthus occidentalis), (OBL) it will be considered a success. However, if sweetgum (FAC) and poison ivy (Toxicodendron radicans) (FAC) dominate, the restoration will be considered unsuccessful and no credit will be requested. Bald cypress, pond cypress, water

tupelo, pond pine, or other woody species may be planted to provide a woody component to portions of restored bays.

Enhancement of a thermally impacted stream will be considered successful 5 years after there is successful establishment of representative bottomland hardwood species. Determination of successful establishment will be based on success criteria included in the management plan for the specific site.

6.0 CONTINGENCY

If, during the monitoring period, it appears that the success criteria will not be met, remedial action will be taken. If remedial action is necessary, DOE-SR will discuss the action to be taken with the MBRT and obtain their concurrence on the action. As appropriate, the site-specific management plan will be amended.

7.0 ACCOUNTING OF MITIGATION CREDITS

To reduce the implementation costs of The Bank, DOE-SR will use the matrix system recently developed by COE and currently approved for use in the State of South Carolina (COE 1993). More recently, the reference SOP has undergone revisions to make it more applicable to larger projects, including mitigation banks. COE, working in consultation with other regulatory agencies, developed SOPs for the development of compensatory mitigation plans for nationwide permits and small projects (less than 10 acres) in the State of South Carolina. The SOP has provided predictability and consistency for the development, review, and approval of compensatory mitigation plans and would be valuable in the preparation of a mitigation bank at SRS. Using the SOP will negate the need for an in-depth habitat assessment on all mitigation projects (regardless of size) and all impacts less than one acre, and thus will save considerable time and money. Construction projects which impact more than one acre will be reviewed by COE and other regulatory agencies. When the impacts have been minimized and avoided to the satisfaction of the regulatory and resource agencies, The Bank will be used to offset all unavoidable impacts. Credits available in The Bank will be calculated using the factors shown in Appendix C.

The required mitigation credits withdrawn from The Bank (i.e., debits) for adverse impacts will be determined on a project-specific basis using the SOP in place at the time the action is proposed. The proposed mitigation bank will continue to be available for compensatory mitigation for as long as a balance remains in The Bank.

8.0 SUMMARY

The establishment of a Wetlands Mitigation Bank at SRS will consolidate current wetlands mitigation efforts by USFS (including the Southern Research Station), SREL, and WSRC under the existing Wetlands Task Group and will provide the various programs with focused goals and long-range planning. The long-range coordinated planning should reduce costs and concentrate efforts on those systems where restoration will be the most cost effective and

successful. Encouraging the restoration of the Carolina bays through hydrologic alteration with natural revegetation and reforestation of the impacted stream corridors with minimal channel alteration will reduce costs. Monitoring and research will document the success of the mitigation or identify problems that need to be corrected.

While little or no additional funding will be required to incorporate the banking concept into current programs, maintaining the current level of funding will be necessary. It might be perceived that this effort will "lockup" additional lands and prevent future development options for SRS. The question might arise, "What if DOE-SR must adversely impact a restored and banked wetland?" Should a mitigated wetland be adversely impacted by future Site operations, the credits earned for its mitigation as well as the credits necessary to offset the unavoidable impacts will be debited from The Bank. Should any portion of a banked mitigated wetland be sold, the deed will contain an appropriate conservation easement.

The Bank will provide a cost-effective approach to wetlands mitigation. With approximately 20 percent of the Site classified as wetlands, almost any major project can be expected to have an adverse impact on some wetlands. Regulatory agencies will be instrumental in establishing The Bank and thus will have a stake in its success. This cooperative approach between DOE-SR and the regulatory agencies should reduce permitting time when future SRS projects require wetland mitigation. Finally, The Bank will increase the cooperation of researchers, managers, and regulators; reduce duplication of effort; and ultimately save revenue while restoring ecologically valuable components of the environment.

IN WITNESS THEREOF, the parties have caused this agreement to be executed on the first day of the month following the month in which the Charleston District Engineer signs the MOA:

Mario P. Fiori, Manager
U.S. Department of Energy-Savannah River Operations Office

26 April 96
Date

For Noreen K. Clough, Regional Director
U.S. Fish and Wildlife Service

NOV 08 1996
Date

John H. Hankinson, Jr., Regional Administrator
U.S. Environmental Protection Agency, Region 4

June 13, 1996
Date

Lt. Col. Thomas F. Julich, District Engineer
U.S. Army Corps of Engineers
Charleston District

6 Dec 96
Date

Dr. James A. Timmerman, Jr., Executive Director
South Carolina Department of Natural Resources

25 June 96
Date

Douglas E. Bryant, Commissioner
South Carolina Department of Health and Environmental Control

May 31, 1996
Date

for Mark W. Berkland, State Conservationist
U.S. Department of Agriculture
Natural Resources Conservation Service

11-20-96
Date

APPENDIX A
Wetland Mitigation Experience at SRS

Construction of the Defense Waste Processing Facility, Construction of Refuge Ponds, and Long-Term Environmental Monitoring of Rainbow Bay

Construction of the Defense Waste Processing Facility (DWPF) began during the mid-1980s. The project destroyed one Carolina bay (Sun Bay) and adversely affected the headwaters of a stream. To offset these adverse impacts, DOE-SR constructed refuge ponds near the developed site and funded research to determine, among other objectives, if the reptile and amphibian species that previously inhabited Sun Bay used the refuge ponds. These studies which began in FY1979 demonstrate the DOE commitment to long-term ecological research. Pechmann et al. (1993) contains information on Sun Bay and the research at the refuge ponds.

Construction of L Lake, Revegetation of the L-Lake Shoreline, and Construction of Kathwood Lake

DOE completed L Lake, a 1,000-acre once-through cooling reservoir, in 1985. Mandates in Section 316(a) of the Clean Water Act Amendments of 1972 required the establishment of a balanced biological community (BBC) in the new lake. The USFS developed and implemented a wildlife habitat improvement strategy which included planting terrestrial plants on the shoreline and the establishment of fish habitat structures in the lake. To maintain compliance and hasten the establishment of a BBC, DOE-SR requested SREL to stabilize the L-Lake shoreline with aquatic vegetation. During 1987, approximately 14,000 feet of shoreline were planted with 100,000 plants representing 40 species. Kroeger (1990) presents the results of this wetlands mitigation project.

Potential adverse impacts to wood stork (Mycteria americana) foraging areas in the Savannah River swamp downstream of L Lake necessitated DOE funding for the construction of the Kathwood Lake wood stork foraging ponds on National Audubon Society property near Jackson, South Carolina. The periodic lowering of water levels in these ponds concentrates fish and enhances foraging habitat for the Federally endangered wood stork (Coulter 1993).

Restoration of Lost Lake

In 1991, Lost Lake, a 28-acre Carolina bay contaminated by hazardous and radioactive waste was remediated and restored to a "natural wetland system." The Wetlands Task Group facilitated the preparation of a planting plan and an implementation schedule, which was initiated by USFS, NRCS, and WSRC. At present, WSRC is monitoring the system to determine which of several methods of wetlands restoration was most effective.

APPENDIX A
Wetland Mitigation Experience at SRS

Restoration of the Pen Branch Corridor and Delta

Thermal effluents from past SRS operations adversely impacted Pen Branch. The stream received heated effluent from K-Reactor for 34 years. The hot water killed the flora and fauna in the stream channel and the increased flows scoured the streambed and deposited sediment in the Savannah River swamp, smothering and killing additional vegetation. Since 1988, when DOE shut down K-Reactor, the stream and associated wetlands have begun the process of natural succession. Today, the wetlands are in various stages of succession including emergent marsh, scrub/shrub wetlands, and regenerating stands of bottomland hardwood forest and cypress.

Experiments by WSRC, Southern Research Station, and SREL on the reforestation of these impacted areas are under way in compliance with regulatory commitments made in the Mitigation Action Plan required for the continued operation of K-Reactor (Arnett, Karapatakis, and Mamatey 1994). Initial mapping of the wetlands in Pen Branch has identified approximately 239 acres where trees were not becoming reestablished by natural succession. To date, approximately 208 acres of these wetlands have been planted by USFS with bottomland hardwood species and cypress.

Restoration of Carolina Bay 204

In 1991 and 1992, at the request of DOE-SR and as part of the proposed New Production Reactor (NPR) siting process, the Wetlands Task Group reviewed approximately 41 Carolina bays for suitability for restoration (DOE 1993). The report described Carolina bay 204 as a 2-acre bay dominated by sweetgum and drained by a 4-foot-wide, 5-foot-deep ditch and suitable for restoration. Although the NPR project was discontinued, USFS selected the bay for the initial Carolina bay restoration project on SRS in 1992. The bay was surveyed, the sweetgum trees were removed, and the ditch was plugged in 1992. SREL is continuing to monitor the success of the bay restoration.

Restoration of Carolina Bay 93

In 1993, SREL and USFS selected Carolina bay 93 as the second Carolina bay restoration project. This 8-acre bay was also described in DOE (1993). The area was surveyed, various clearing techniques were applied to different quadrants as part of a research project on the effects of different restoration techniques, and the ditch was plugged. SREL is currently conducting an in-depth study of the ecological factors affected by the restoration including vegetation, soils, hydrology, and water chemistry.

APPENDIX B
Definitions of Terms for Mitigation Factors

For the purposes of this MOA the following terms are hereby defined.

Control means the entity empowered or responsible for enforcing the preservation requirements. Related terms are:

Conservancy means a qualified, experienced, non-profit conservation organization or government agency.

POA means a property owners association or other similar, formally chartered, non-profit organization.

Private means a private individual or business enterprise.

Subdivided means more than one owner has separate ownership of a portion of the mitigation site.

Compensatory Mitigation as used in this MOA means:

Creation means the conversion of non-aquatic habitat to aquatic habitat. Wetland creation usually includes grading, providing a suitable substrate, hydrology, and establishment of appropriate vegetation. Creation mitigation will not be included in the mitigation bank without prior review and approval by the MBRT.

Enhancement means increasing or improving one or more of the functions or values of an existing aquatic area.

Preservation means the conservation of an area to prevent its destruction or degradation. Areas which are given mitigation credits under the enhancement or restoration categories are not considered primarily preservation areas for the purposes of this MOA. Mitigation which is primarily preservation (i.e., has not been given restoration, enhancement, or creation credits) will not be included in the mitigation bank without prior review and approval by the MBRT.

Restoration means actions taken to correct previous alterations which have either destroyed or seriously impaired the values and functions of an aquatic area. An example of restoration is hydrological alteration followed by planting of appropriate wetland vegetation in a bottomland hardwood area that had previously been converted to another use, such as agriculture or silviculture.

APPENDIX B
Definitions of Terms for Mitigation Factors

Credit Schedule (i.e. Timing) means the relative time when the mitigation will be performed. Related terms include:

Schedule 1. Means that no credits may be withdrawn prior to final determination of success.

Schedule 2. Means that no more than 10% of the credits may be withdrawn prior to final determination of success.

Schedule 3. Means no more than 20% of the credits may be withdrawn prior to final determination of success.

Schedule 4. Means that no more than 30% of the credits may be withdrawn prior to final determination of success.

Schedule 5. Means that more than 30% of the credits may be withdrawn prior to final determination of success.

Degree of Threat is an assessment of the level of imminent risk of loss or damage to a system.

Hydrology, means the properties, distribution, and circulation of water on the surface of the land, in the soil, and underlying rocks. Related terms include:

Created hydrology means the permanent manipulation of the topography resulting in an ecologically significant change in the hydrology of the area.

Mechanical hydrology means the employment of mechanical methods (e.g., pumps) to supply water to an area thereby causing an ecologically significant change in the hydrology of the area.

Natural hydrology means the area's hydrology as it existed prior to the actions of modern man. Hydrology which has been restored to its natural state qualifies as natural hydrology. Examples of such restoration include effectively filling ditches which drain the area or removing berms which prevent inundation.

Kind is a factor used to compare the relative functions and values of the mitigation site to the impacted site. The following kind categories shall be used for this bank.

Category 1 is defined to mean In-Kind mitigation.
Categories 2, 3, and 4 are not applicable to this bank.
Category 5 is defined to mean Out-of-Kind mitigation.

In-kind Mitigation means the replacement of the impacted aquatic site with one of the same plant community type (same species composition). However, if the new ecosystem has more desirable functions and values than the impacted ecosystem, as determined by the MBRT, then the mitigation may be considered in-kind for calculation of mitigation credits.

APPENDIX B
Definitions of Terms for Mitigation Factors

Out-of-kind Mitigation means the replacement of an impacted aquatic site with one of a different plant community type (different species composition). For example, if a wooded swamp habitat is filled or altered and the mitigation consists of grading an area and planting it in freshwater emergent marsh species, this would be out-of-kind. Use of the Bank for out-of-kind mitigation requires approval of the MBRT on a case-by-case basis.

Location is a factor used to compare the relative location of the mitigation site to the impacted site. The following zones shall be used for this bank. No other locations shall be allowed to use this bank without prior review and approval by the MBRT. Also, use of Zone 5 shall require prior review and approval by the MBRT.

Zone 1 is defined to mean within the DOE-SR site as shown in the MOA.
Zones 2, 3, and 4 are not applicable to this bank.
Zone 5 is defined to mean outside of the DOE-SR site as shown in the MOA.

Maintenance means any long term or perpetual manipulation or action after completion of the monitoring period which is necessary to achieve the mitigation goal. Remedial or planned work during the monitoring period is not considered maintenance but is rather just a part of the mitigation work. Minimal (low level) maintenance includes weeding or removal of unwanted species. Moderate maintenance includes some replanting of the desired vegetation. High level maintenance includes significant replanting, addition of soils, hydrology manipulation, or other similar actions.

Monitoring & Contingencies (M & C Plans) means the actions which will be undertaken during the mitigation project to measure the level of success of the mitigation work and to correct problems or failures observed. Related terms include:

Contingencies means the actions which will be employed to correct deficiencies or failures found during the monitoring period and to achieve the specified success criteria.

Monitoring means the collection of field data to measure the success of a mitigation effort. It usually includes analysis of the data, and submittal of a comprehensive report containing the data, analyses, and a narrative discussion of the findings and conclusions.

Minimum Level Monitoring & Contingencies Plans will typically include the following elements:
At least 5 years of monitoring (unless approved otherwise)
Restrictive covenants and/or conservation easements
Vegetation survival monitoring (including a commitment to replant if success is not achieved)

APPENDIX B
Definitions of Terms for Mitigation Factors

Moderate Level Monitoring & Contingencies Plans will typically include the following elements:
At least 5 years of monitoring
Restrictive covenants and/or conservation easements
Vegetation survival monitoring (including a commitment to replant if success is not achieved)
Basic hydrological monitoring
Collection of suitable baseline data

Substantial Level Monitoring & Contingencies Plans will typically include the following elements:
At least 5 years of monitoring
Conservation easements
Vegetation survival monitoring (including a commitment to replant if success is not achieved)
Extensive hydrological monitoring
Collection of suitable baseline data
Reference site comparison monitoring

Strong Level Monitoring & Contingencies Plans will typically include the following elements:
At least 7 years of monitoring
Conservation easements
Vegetation survival monitoring (including a commitment to replant if success is not achieved)
Extensive hydrological monitoring
Collection of suitable baseline data
Reference site comparison monitoring
Suitable bonding
Alternative site provisions if mitigation site is determined unsuccessful

Net improvement is an evaluation of the net level of enhancement or restoration of the affected functions and values of an aquatic site. Adverse effects caused by the work must be considered in determining the net improvement. The MBRT shall review and approve the value for this factor for each area added to the bank.

Soil means the upper layer of earth which may be dug or plowed and in which plants grow. Related terms include:

Existing Suitable Soil (E. S. S.) means the appropriate use of soils existing at the mitigation site or contiguous with the site and which have been determined to be of a proper type for the proposed mitigation.

APPENDIX B
Definitions of Terms for Mitigation Factors

Transferred Suitable Soil (T. S. S.) means the appropriate use of soils imported to the mitigation site from a non-contiguous location which have been determined to be of a proper type for the proposed mitigation.

Unknown Suitability Soil (U. S. S.) means use of a soil type or source that is of unproven or uncertain suitability for the proposed mitigation.

Vegetation means the plant material within a defined area. Related terms used in this SOP include:

Natural vegetation involves no planting and allows spontaneous revegetation.

Planted means using transplanted or nursery stock vegetation.

APPENDIX C
Worksheets for Mitigation Credits Calculations

RESTORATION AND ENHANCEMENT MITIGATION FACTORS

Factors	Options				
Net Improvement	Modest Enhancement 0.1 ---------- to ---------- Excellent Restoration 2.0				
Vegetation			N. A. 0	Natural † 0.1	Planted 0.3
Soils		N. A. 0	U. S. S. 0	T. S. S. 0.1	E. S. S. † 0.3
Hydrology		N. A. 0	Mechanical 0	Created 0.1	Natural † 0.3
Maintenance		N. A. † 0	Moderate 0	Low 0.1	None 0.3
Monitoring & Contingencies Plan	N. A. † 0	Minimum 0.1	Moderate 0.2	Substantial 0.3	Strong 0.4
Credits Schedule	Schedule 5 0	Schedule 4 0.1	Schedule 3 0.2	Schedule 2 0.3	Schedule 1 0.4
Kind	Category 5 0.1				Category 1 0.5
Location	Zone 5 0.1				Zone 1 0.5

N. A. = Not Applicable

† Use this option to calculate credits for enhancement by buffering.

Special Notes and Restrictions:

1. Carolina Bay Areas.
For Carolina bay restoration projects that are added to the bank which are similar in nature to the examples on pages 7-8 of this MOA, the options listed below should typically apply. The MBRT will review any warranted changes in these values during their review of newly proposed projects. The net improvement factor shall be determined on a case-by-case basis in consultation with the MBRT.

Vegetation	=	Natural	=	0.1
Soils	=	E.S.S.	=	0.3
Hydrology	=	Natural	=	0.3
Maintenance	=	None	=	0.3
M&C Plans	=	Strong	=	0.4
Credits Schedule	=	20% max	=	0.2
Kind	=	Category 1	=	0.5
Location	=	Zone 1	=	0.5

2. Other Isolated (non- Carolina Bay) and Non-Isolated Aquatic Areas.
All factor options for other isolated (non- Carolina bay) and non-isolated mitigation areas added to the bank will be determined on a case-by-case basis in consultation with the MBRT.

3. Kinds and Locations.
The following definitions given in Appendix B are noted here for ready reference. No other kinds or locations shall be allowed to use this bank without MBRT approval. Also, Kind Category #5 and Zone #5 shall not be used without MBRT approval.

Kind Category #1 is defined to mean In-Kind mitigation.
Kind Category #5 is defined to mean Out-of-Kind mitigation.

Zone #1 is defined to mean within the DOE-SR site as shown on page 2 of the MOA.
Zone #5 is defined to mean outside of the DOE-SR site as shown on page 2 of the MOA.

APPENDIX C
Worksheets for Mitigation Credits Calculations

Shown below is a sample of the worksheet to be used in calculating mitigation credits added to the bank. Each project approved for addition to the bank shall be assigned a unique "unit number" for tracking and accounting of bank credits and bank acres. Factors used in calculating credits for a given bank unit are selected from the options given in the factors table in accordance with the MOA procedures and based on consultation with the MBRT.

Type of Wetland _____ (Sheet # ___ of ___)
(Isolated or Adjacent)

RESTORATION AND ENHANCEMENT CREDITS CALCULATIONS

Factor	Unit #	Unit #	Unit #	Unit #
Net Improvement				
Vegetation				
Soils				
Hydrology				
Maintenance				
M & C Plan				
Credit Schedule				
Kind				
Location				
Sum of m Factors	M =	M =	M =	M =
Mitigation Area	A = *acres*	A = *acres*	A = *acres*	A = *acres*
M × A	credits	credits	credits	credits

Sum of Restoration and Enhancement Credits From This Sheet = $\sum$ (M × A) = credits

Sum of Restoration and Enhancement Credits From All Previous Sheets (if any) = credits

Total Restoration and Enhancement Credits From All Sheets = **credits**

APPENDIX C
Worksheets for Mitigation Credits Calculations

Type of Wetland _____ (Sheet # ___ of ___)
(Isolated or Adjacent)

BANK CREDITS RECORD

UNIT #	Credits Used	Credits Remaining		Used + Remaining	
		Minimum	Maximum	Minimum	Maximum
TOTALS					

Clarifying Notes and Explanations (if needed):

I certify that the above accounting is an accurate and complete record of mitigation credits in accordance with the Memorandum of Agreement for the Savannah River Site Wetland Mitigation Bank which is dated _____.

_____ _____ _____
Name Signature Date

_____ _____ _____
Name Signature Date

APPENDIX C
Worksheets for Mitigation Credits Calculations

Type of Wetland _____ (Sheet # ___ of ___)
(Isolated or Adjacent)

BANK ACRES RECORD

UNIT #	Acres Used	Acres Remaining	Used + Remaining	% of Acres Used
TOTALS				

Clarifying Notes and Explanations (if needed):

I certify that the above accounting is an accurate and complete record of mitigation acres in accordance with the Memorandum of Agreement for the Savannah River Site Wetland Mitigation Bank which is dated _____.

_____ _____ _____
Name Signature Date

_____ _____ _____
Name Signature Date

APPENDIX C
Worksheets for Mitigation Credits Calculations

CREATION MITIGATION FACTORS

Factors	Options				
Soils		N. A. 0	U. S. S. 0	T. S. S. 0.1	E. S. S. 0.3
Hydrology		N. A. 0	Mechanical 0	Created 0.1	Natural 0.3
Vegetation			N. A. 0	Natural 0.1	Planted 0.3
Maintenance		N. A. 0	Moderate 0	Low 0.1	None 0.3
Monitoring and Contingencies Plan	N. A. 0	Minimum 0.1	Moderate 0.2	Substantial 0.3	Strong 0.4
Credits Schedule	Schedule 5 0	Schedule 4 0.1	Schedule 3 0.2	Schedule 2 0.3	Schedule 1 0.4
Kind	Category 5 0.1				Category 1 0.5
Location	Zone 5 0.1				Zone 1 0.5

N. A. = Not Applicable

Special Notes and Restrictions:

1. All Creation factor options for areas added to the bank will be determined on a case-by-case basis in consultation with the MBRT.

2. Kinds and Locations.
The following definitions given in Appendix B are noted here for ready reference. No other kinds or locations shall be allowed to use this bank without MBRT approval. Also, Kind Category #5 and Zone #5 shall not be used without MBRT approval.

Kind Category #1 is defined to mean In-Kind mitigation.
Kind Category #5 is defined to mean Out-of-Kind mitigation.

Zone #1 is defined to mean within the DOE-SR site as shown on page 2 of the MOA.
Zone #5 is defined to mean outside of the DOE-SR site as shown on page 2 of the MOA.

APPENDIX C
Worksheets for Mitigation Credits Calculations

PRESERVATION MITIGATION FACTORS

Factors	Options				
Control	Subdivided 0.1	Private 0.2	POA 0.3	Conservancy 0.4	
Degree of Threat	None 0	Low 0	Moderate 0.1	High 0.2	
Kind	Buffers† 0	Category 5 0			Category 1 0.4
Location	Buffers† 0	Zone 5 0			Zone 1 0.4

† When allowed, upland buffers are given a value of zero for kind and location factors.

Special Notes and Restrictions:

Kinds and Locations.
The following definitions given in Appendix B are noted here for ready reference. No other kinds or locations shall be allowed to use this bank without MBRT approval. Also, Kind Category #5 and Zone #5 shall not be used without MBRT approval.

Kind Category #1 is defined to mean In-Kind mitigation.
Kind Category #5 is defined to mean Out-of-Kind mitigation.

Zone #1 is defined to mean within the DOE-SR site as shown on page 2 of the MOA.
Zone #5 is defined to mean outside of the DOE-SR site as shown on page 2 of the MOA.

APPENDIX C
Worksheets for Mitigation Credits Calculations

Proposed Creation Mitigation Sample Worksheet

Factor	Area 1	Area 2	Area 3	Area 4	Area 5
Soils					
Hydrology					
Vegetation					
Maintenance					
M & C Plan					
Credit Schedule					
Kind					
Location					
Sum of m Factors	M_1 =	M_2 =	M_3 =	M_4 =	M_5 =
Mitigation Area	A_1 =	A_2 =	A_3 =	A_4 =	A_5 =
M x A =					

Total Creation Credits = $\sum (M \times A)$ =

Proposed Preservation Mitigation Sample Worksheet

Factor	Area 1	Area 2	Area 3	Area 4	Area 5
Control					
Threat					
Kind					
Location					
Sum of m Factors	M_1 =	M_2 =	M_3 =	M_4 =	M_5 =
Mitigation Area	A_1 =	A_2 =	A_3 =	A_4 =	A_5 =
M × A					

Total Preservation Credits = $\sum (M \times A)$ =

APPENDIX C
Worksheets for Mitigation Credits Calculations

Mitigation Summary Worksheet For Project #_____

I. Required Mitigation

A.	Total Required Mitigation Credits =

II. Non-Banking Mitigation Credit Summary	**Credits**	**Acres**
B. Creation		
C. Restoration and/or Enhancement		
D. Total No Net Loss Non-Bank Mitigation = B + C		
E. Preservation		
F. Total Proposed Non-Bank Mitigation = D + E		

III. Banking Mitigation Credit Summary	**Credits**	**Acres**
G. Creation		
H. Restoration and/or Enhancement		
I. Total No Net Loss Bank Mitigation = G + H		
J. Preservation		
K. Total Proposed Bank Mitigation = I + J		

IV. Grand Totals	**Credits**	**Acres**
L. Total Preservation Mitigation = E + J		
M. Total Non-Preservation Mitigation = D + I		
N. Total Proposed Mitigation = F + K		

The total Mitigation Credits (Row N) should be equal to or greater than the total Required Mitigation Credits (Row A) for the proposed mitigation to be acceptable. The other requirements in the bank MOA must also be satisfied. If the answer to either of the questions below is no, then the proposed mix and/or quantity of mitigation is not acceptable and the plan should be revised or rejected, unless a variance is approved by the MBRT.

	Yes	**No**
PMC $\geq$ RMC or in words Are the Credits in Row N greater than or equal to Row A ?		
$PMC_{Non\text{-}Preservation} \geq$ ½ RMC or in words Are the Credits in Row M greater than or equal to 50% of Row A ?		

APPENDIX D
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APPENDIX D
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Schalles, J. F., R. R. Sharitz, J. W. Gibbons, G. J. Leversee, and J. N. Knox, 1989. *Carolina Bays of the Savannah River Plant.* SRO-NERP-18, Savannah River Ecology Laboratory, Savannah River Site, Aiken, South Carolina.

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Addendum

Identification Of Changes to the "Memorandum Of Agreement For The Savannah River Site Wetland Mitigation Bank"

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IDENTIFICATION OF CHANGES TO THE "MEMORANDUM OF AGREEMENT FOR THE SAVANNAH RIVER SITE WETLAND MITIGATION BANK"

The Memorandum of Agreement (MOA) for the Savannah River Site Wetland Mitigation Bank was approved and signed by the Department of Energy (DOE-SR) in April 1996. As the agreement was circulated for review and final approval by the Mitigation Banking Review Team (MBRT), revisions of the document were made and are reflected in the version finally approved and signed by the U.S. Army Corps of Engineers on December 6, 1996. As noted in the attached memorandum dated February 10, 1997, the MBRT has reviewed changes to the MOA and has decided the document will not be required to go through additional review for signature.

The following identify changes in the MOA and the reason for the change. Page and line numbers are from the January 1997 MOA currently circulating for approval and issuance.

1. Page 1, paragraph 1, line 4. The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) was added as a signatory agency to the agreement. The addition of the NRCS is also reflected on the signature page at the end of the agreement. This change came at the request of the NRCS on-site representative as the importance of NRCS involvement became more apparent.

2. Page 4, item number 6. The following sentences: "Signatory and/or other appropriate agencies shall designate an individual and alternate to serve on the SRS Mitigation Banking Review Team (MBRT). The duties of the MBRT are specified in Section 2.0, Organizational Responsibility," were reworded to clarify the structure and purpose of the MBRT.

3. Page 4, item number 9 and page 12, line 24. These items identify how mitigation credits are to be calculated. Originally it was stated that the U.S. Army Corps of Engineers (COE) Standard Operating Procedure (SOP) for mitigation banking in place at the time of final approval was to be used. This was changed to state that methods and values identified in the body of the MOA (Appendix C) are to be used. This reflects a desire by DOE to have the Mitigation Banking MOA act as a stand alone document, containing as much of the information that will be needed by those who will be implementing the agreement. This change affords DOE-SR the opportunity to more effectively plan and allocate resources to the wetlands restoration program on SRS. By having the calculation of mitigation credits delineated in the MOA, DOE-SR will be able to accurately compare the cost of different potential restoration projects and the mitigation credits that will be generated from them. The changes required the addition of two appendixes to define terminology and delineate the mitigation credit methodology. See also related comments 8 and 9.

4. Page 5, item 15. A statement was added which allows for a field visit by the MBRT to sites proposed for inclusion in The Bank as a part of the review process. This change was made at the request of the U.S. Fish and Wildlife Service (USFWS) and COE.

5. Page 5, paragraph 6, line 11. The sentence was changed by deleting the words "member of the MBRT." This is an editorial correction.

6. Page 5, paragraph 7, line 1. Westinghouse Savannah River Company was added to the list of SRS organizations that will be responsible for identifying suitable mitigation areas and submitting them for consideration to the Wetlands Task Group for action. This change was made at the request of DOE-SR and will allow for more effective implementation of the wetlands restoration program.

7. Page 7, paragraph 1, lines 2 through 5. The addition of "examples of" was added by DOE-SR for clarification. The sentence, "These projects are for restoration of either isolated or adjacent wetlands," was added by DOE-SR for additional clarification. The subheadings for the examples were also changed to include words labeling the examples as either isolated or adjacent wetlands. These changes were made as a result of conversations with COE and USFWS. It had not been understood by these agencies that the projects described were merely examples of potential restoration projects and not the only types of restoration that DOE-SR intended to undertake.

8. Page 12, paragraph 4, line 1. The sentence was reworded to clarify that a debit involves the withdrawal of a required number of mitigation credits from The Bank and that the COE SOP in place at the time of the action (rather than at the time of MOA approval) is the one that will be used to calculate the amount of the debit required for the adverse impacts anticipated. This change reflects the desires of COE and USFWS to calculate debits throughout the region using a single standard, the SOP in place at the time of the proposed actions.

9. As discussed in comment 3, Appendixes B and C were added to the MOA as supporting material. Appendix B contains a definition of terms used in the agreement. It was based on the COE SOP in place at the time the agreement was signed and is tailored for SRS. Appendix C contains the worksheets needed to calculate mitigation credits for SRS wetlands restoration projects. The worksheets contain values negotiated by DOE-SR and COE for use specifically on SRS projects. This appendix is also based on the COE SOP in place at the time the agreement was finally approved.

Determination: Based on the information in this assessment of the changes to the MOA, DOE-SR has reviewed and approves each of the identified changes.

Signed in Aiken, South Carolina, this 14 day of Feb, 1997.

Mario P. Fiori
Manager
Savannah River Operations Office

DEPARTMENT OF THE ARMY
CHARLESTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 919
CHARLESTON, S.C. 29402-0919

REPLY TO
ATTENTION OF

Memorandum

Date: February 10, 1997

To: Steve Danker, DOE-SR
cc: Steve Gilbert (FWS), Susan Davis (SCDNR), Rheta Geddings (SCDHEC), Jeff Thompson (SCDHEC), David Rackley (NMFS), Ben Stuckey (NRCS), Marjaan Farzaad (EPA), Danny Thompson (SCDNR), Chris Dowling (COE), Bob Riggs (COE), Prescott Brownell (NMFS)

From: Steven J. Coker, USACE-SAC-CO-P

Subject: SRS Mitigation Banking Plan

This memorandum is in response to recent phone calls and email from Steve Danker of DOE-SR wherein he requested an opinion from the South Carolina Mitigation Banking Review Team (MBRT) regarding issues related to the subject mitigation bank. In particular, an opinion was requested from the MBRT regarding the "significance" of certain itemized changes or clarifications made to the SRS banking documents during the signature process. I have attached to this memorandum copies of text files showing the itemized changes/clarifications and the request for MBRT review.

The MBRT last met on February 5, 1997. The agenda for that meeting included discussion of this request. At that meeting the MBRT was provided copies of the attached email request and itemized list of changes/clarifications. The MBRT requested that I provide DOE-SR with this memorandum documenting the MBRT discussion.

It was the concensus of the MBRT that the listed changes/clarifications were all made with the full knowledge and agreement of the MBRT member agencies. In fact, it was recognized that most of these changes were made at the suggestion or request of the MBRT.

The MBRT agreed that these changes/clarifications were fully discussed by the MBRT at several meetings during the bank approval process. Representatives from DOE-SR also attended the October 2, 1996, meeting of the MBRT to explain and discuss the changes/clarification. This is demonstrated in the record by the fact that the SRS Bank was on the MBRT monthly agenda for discussion in March, April, June, July, August, and October of 1996. It was the concensus of the MBRT at the October meeting that all the changes/clarifications were acceptable to the MBRT, did not change the goals or intent of the banking agreement, and did not warrant resigning of the agreement by the MBRT member agencies.

The "Joint State and Federal Administrative Procedures For The Establishment And Operation Of Wetland Mitigation Banks In South Carolina" defines and establishes the MBRT. Among other functions, these procedures give the MBRT the responsibility for developing banking instruments, monitoring bank operations, determining bank credits, determining reporting requirements, suspending use of banks for noncompliance, and approving resumption of bank use following suspensions. Example statements found in the procedures agreement establishing these authorities of the MBRT include the following:

"Develop an individual banking instrument in coordination with the MBRT."

"The MBRT shall evaluate and seek concensus regarding all major elements of the banking proposal."

"The MBRT will monitor operation of the bank."

"... the MBRT will determine if the bank is functioning ..."

"The MBRT ... will determine the exact number of available credits within the bank."

"... reporting should be continued at a regular interval, to be determined by the MBRT."

"... use of the bank may be resumed, subject to approval of the MBRT."

In light of the duties and responsibilities assigned to the MBRT in the procedures agreement, it is the concensus opinion of the MBRT that the MBRT had authority to consider, request, and approve the itemized changes and clarifications to the SRS Mitigation Bank documents. This MBRT opinion should be retained by the bank operator for the bank records.

Steven J. Coker, Environmental Engineer
Army Corps of Engineers, Charleston District
Mitigation Banking Review Team Representative

APPENDIX B

Example of a Draft Carolina Bay Restoration Project Plan at the Savannah River Site

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Carolina Bay Restoration Project Plan: Bay 170

U. S. Forest Service

Savannah River Institute

Savannah River Site

Natural Resource Management Program

1999

Introduction:

Wetland restoration or wetland improvement should result in habitat that favors the incorporation of wetland species that are typical of Carolina bays. The primary emphasis of restoration activities should focus on the re-creation of suitable physical conditions and vegetational conditions. Additional considerations should be the definition of an achievable projected condition and the progress toward achieving that condition. Two primary signature biotic groups exist in Carolina Bays; these include zooplankton/aquatic macro-invertebrates and plant communities. In addition to these, unique herpto-fauna and avians are associated with wet depressions including Carolina Bays. Each of these groups represent specific aspects of the Carolina Bay ecosystem and can be used to assess the current status of a Carolina Bay.

While the primary objective for the proposed Carolina Bay enhancement is to improve the habitat for native flora and fauna, a secondary objective is to "Bank" this restoration effort into the SRS Wetland Mitigation Bank (see Memorandum of Agreement (MOA) for the SRS Wetland Mitigation Bank). Any credits earned through the restoration of these bays will provide DOE-SR with a compensatory alternative for wetland losses associated with future authorized construction and environmental restoration projects in SRS wetlands. By having "credits" in a wetland mitigation bank prior to such impacts, DOE-SR will be able to incorporate mitigation efforts required for new remediation and construction projects in a more timely manner, thus saving money. In order to fully comply with the requirements set forth in the MOA, monitoring efforts will focus on the three wetland criteria identified in the U.S. Army Corps of Engineers' handbook on wetland delineation: vegetation, soils and hydrology. This approach is consistent to guidance given by the participating agencies which will comprise the SRS Mitigation Banking Review Team (MBRT).

Proposed Activities:

Current Condition:

Bay 170 is occupied by a mix of wetland and upland species and is traversed by a deep ditch (12-24") that has a forested margin. This bay is located east of the Four Mile stream corridor and south of SC 125 (see Appendix A). The wetland species are typical of Carolina Bays and are restricted to the central portion that is periodically flooded. Along the Bay margin dense numbers of loblolly pine saplings have invaded along with scattered hardwood saplings. Along the ditch outside of the bay interior are large bald cypress trees. Herbaceous communities are dominated by grasses, sedges, meadow-beauty, and other flowering species. Preliminary surveys suggest that roughly 30-40 herbaceous species are present in the bay interior. The surrounding area includes a mid-rotation loblolly pine stand, a mature pine stand, and a bottomland hardwood forest. The presence of a forested ditch and saplings along the bay margin has greatly altered light conditions and has likely altered internal hydrologic budgets. Bay 170 is currently classed as forested/herbaceous by Schalles et al. (SRO-NERP-18, 1989), also Appendix B. Topography is slight (Appendix C) with total relief being less than 2 meters. The bay interior is listed as having a Williman Sand (Loamy, siliceous, thermic Arenic Ochraquult) that are surrounded by a Blanton sand (Loamy, siliceous, thermic, Grossarenic Paleudults). Little soil disturbance is evident and the current ditch banks are stable and uninterupted. This bay is known to hold water seasonally (Appendix D).

Proposed Action:

We propose four modes of action to restore this bay, these include: plugging of the current ditch, removal of saplings, eliminating of existing trees along the ditch interior, and post restoration planting of cypress seedlings. Access for all mechanical events will be from the northern perimeter along a old fire line.

The primary action will be to fill the current drainage ditch with a clay "plug" of undetermined dimensions. The placement of the clay plug is in the southeastern corner of the bay (see Appendix C). The clay plug will be composed of natural clays. These clays are primarily kaolinitic 1:1 clays. The plug will be 10 ft. in length and tapered at each end with a 3:1 grade. The plug width and depth will be that of the ditch. The proposed plug location is 12-24 inches in depth and 2-3 ft. in width. Prior to placement some of the surface soil will be loosened to allow for proper sealing. The plug will be mechanically packed and slightly graded to the topography of the surrounding area. This should result in a restored hydrologic condition and reduce the abundance of species characteristic of upland old fields and forests.

Our second proposed action is to mechanically remove existing saplings. This is intended to restore suitable light conditions. After harvest, these saplings will be allowed to decompose in place. In the future, fire may be used to further reduce the amount of woody debris if wet conditions develop without plant community response. Kirkman (1992) had some success with the use of fire to stimulate plant recruitment from the existing seed bank.

The third proposed action is to eliminate existing trees along the ditched interior. Currently, two options are being discussed; the first is to chemically treat the trees with a herbicide and allow the trees to serve as snags. The second option is to harvest the trees and remove them from the bay. The latter option may be employed if it is determined that the addition of woody debris would greatly impact decompositional processes and in turn alter water and soil chemistry conditions. The latter may be possible because of low cation exchange capacities brought about by a sandy surface profile. Standing and fallen snags would provide alternative habitat conditions for other flora and fauna.

Finally, we propose that a sparse planting of cypress seedlings be placed in the wetter areas of the bay. Cypress trees are common to Carolina bays and are typically arranged in a sparse non-uniform manner. Seedlings will be hand planted in areas which have deeper water conditions. Though pond cypress seedlings would be preferred, bald cypress is also known to occur in Carolina bays and are more readily available.

Monitoring:

Biotics:

Plant communities and plant distribution patterns reflect growing conditions. In turn, plants modify their environment over time. However, the initial vegetation development is governed by post restoration conditions and biological imprints from existing and invasive vegetation. The intent of restoration is to rehabilitate, revitalize or restore formerly existing conditions that are suitable for species associated with temporal wetland ecosystems. Sampling will be conducted each year for five years following the restoration of each bay (see Memorandum of Agreement for the SRS Wetland Mitigation Bank).

Most Carolina Bays have 2-4 distinct vegetation zones that reflect hydrologic conditions. The inner most zones tend to have well defined boundaries because clonal plants tend to be involved and they quickly dissipate in areas with unsuitable conditions. The inner most zone is most tolerant to flooding while those at the forest margin are more reflective of upland conditions. With restoration, the inner most zone would be expected to expand in area as hydrology returns to a more frequent and deeper flooding condition. Finally, with excessive flooding a "new" zone of vegetation could possibly develop and be almost entirely composed of obligate wetland species. The intent of sampling will be to detect vegetation change, which will be used to assess the restoration effort. Vegetation sampling will be conducted during the late summer months during the peak period of flowering for most species. This will aid in species identification. Sampling during the late summer months allows for a more accurate assessment of compositional proportions.

Vegetation monitoring of pre- and post- restoration conditions will be conducted using two approaches that include transect plots, and vegetation zone mapping (see Appendix E). The transect method will be used to detect shifts in species abundance relative to hydrologic gradients. Those species associated with intermediate flooding conditions should become established in areas with higher topography and nearer to the bay margin. Mapping of vegetation zones will be used with the intent of detecting changes in proportional area occupied by the various vegetation zones. Seemingly the vegetation type most suited for frequently flooded conditions should occupy greater proportional area. One transect will be placed parallel to the primary bay axis, the second transect parallel to the secondary bay axis. Each will extend from the upland transition zones through the geometric center of the bay. Along each transect, 0.5 m x 2.0 m plots will be placed at 5 meter intervals. These same positions will be used for elevations determinations.

Vegetation mapping will focus on vegetational composition and structure. The geographic positioning system (GPS) will be used for mapping. If this technique is found to be ineffective then traditional mapping techniques will be employed. If additional zones develop they will also be mapped.

To sample each vegetation zone two variables exist, plot size and plot number. Plot size will be dependent upon vegetation type and dispersion pattern. The number of plots required to effectively sample each zone will be dependent upon plot size, compositional complexity, and the relative amount of area occupied by each zone. The placement of individual plots will be randomly determined but focused toward sampling the central portions of each zone. As previously stated, the definition of each zone will be governed by zonal structure and composition.

Herpto- and avifauna will be monitored in these restored areas using the Automated Recording System (frog-logger) developed by Mike Dorcus (SREL). This method is designed to concentrate on the vocalizing species during selected time periods. This technique requires purchase of a Sony TCD-5PR011 Stereo Recorder and Audio Technica AT815a Cardiod Microphone. This sampling equipment will be placed next to the ditch "plug". Sound recordings of anuran calls will be sampled at 24 second intervals every 30 minutes for 5 sequential days. Recordings will be made during peak calling months (April through June) and upon collection individual calls will be classified to species and then categorized according to number of calling individuals. This effort will be cooperatively implemented and interpreted by SRFS and SREL.

Abiotic Processes:

Abiotic features such as hydrology and soil conditions will also be assessed and used to assess restoration progress and success. Hydrologic monitoring is currently being conducted by SREL personnel (R. Lyde) using staff gauges (Appendix F). Additional monitoring of soil and hydrologic conditions will also be conducted.

Fine-scale topographic measurements will also be determined. These measurements will then be used to integrate hydrologic information to the landscape scale. These measurements will be determined by SRFS Engineering personnel. Hydrologic and topographic information will then be used to project flooding regimes at various potential water levels. Hydrologic information and contour intervals of Bay 170 are given in appendix D and F.

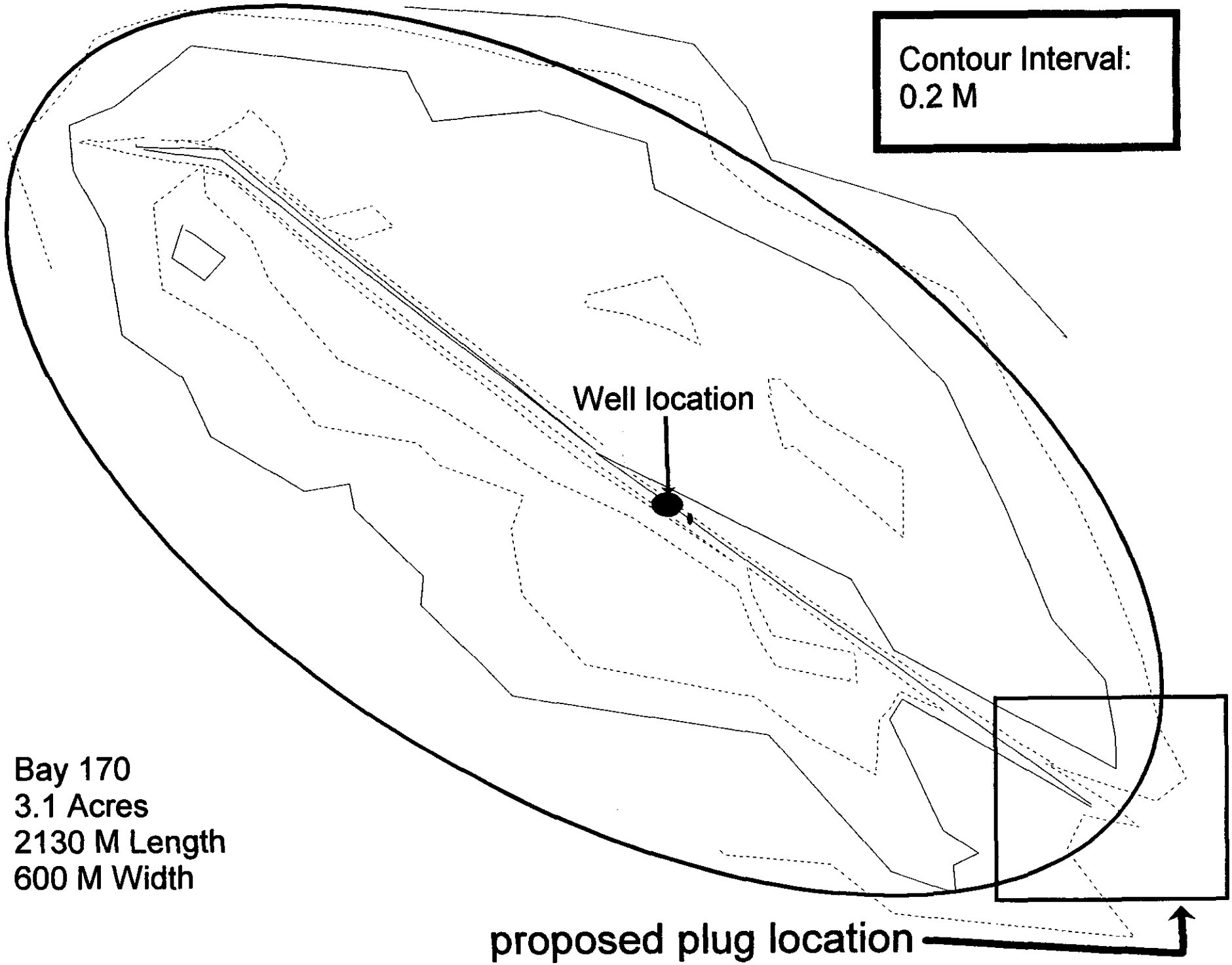
A technique previously employed by William McKee (USFS) to integrate water level conditions will also be used. This technique is often referred to as the "Rusty rod" technique involves the monitoring of the water level position that is associated with the oxidation of iron along the rod. This technique is based on water redox conditions and is effective to measure water level conditions. The monitoring values will then be compared with those associated with hydrologic monitoring by SREL personnel.

Soil profile measurements will also be taken to detect shifts in soil conditions. The soil is currently listed as a Williman sand. If appropriate, depth to mottling and thickness of mottling will be determined along the hydrologic gradient. Umbric and A horizon thickness and chroma will also be used to assess changes in soil conditions. Sampling will be nested with vegetation sampling efforts.

Soil deposition and loss will be assessed using a technique developed by R. L. Potter (UGA). This technique involves the placement of a rod at designated locations within a wetland. Surface soil position along the rod is then etched and a metal and snugly fit buoyant washer is placed over the rod. At quarterly intervals, washer position is assessed. The buoyant washer position reflects the maximum water depth during the period. If the metal washer is below the etched position then soil loss or soil settling can be determined. The amount of deposition is reflected by the amount of soil above the washer. Carolina Bays are known to have low deposition rates but with restoration, organic deposition may occur.

Other Opportunities:

Many opportunities exist to study a variety of ecological functions associated with the restoration process. We would encourage participation and research proposal to be submitted which will support these proposed activities. Additional activities and research may be added if deemed feasible by the wetland task group and the original intent of the bay enhancement is not impacted. An overriding goal of this entire process is to keep things simple and inexpensive.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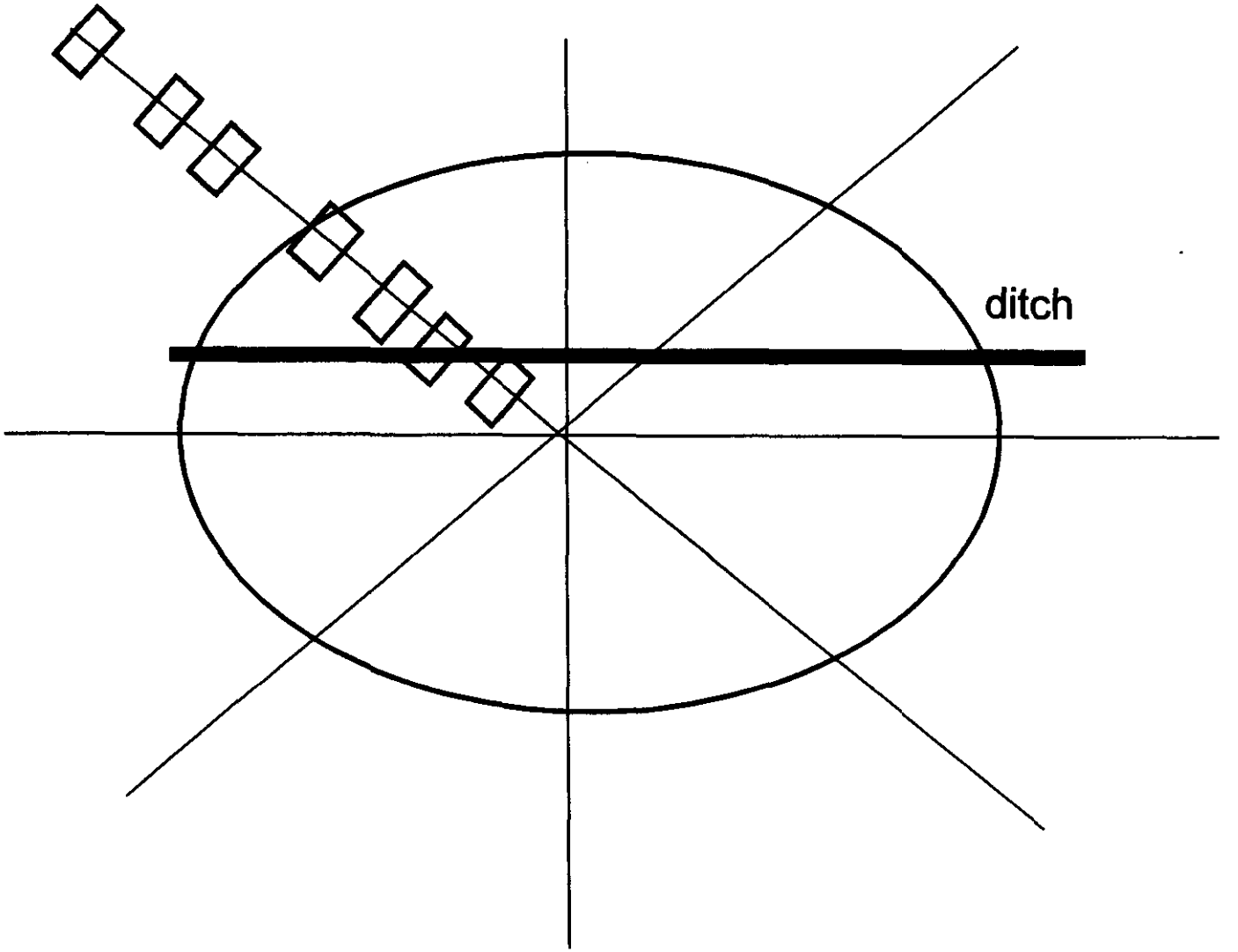
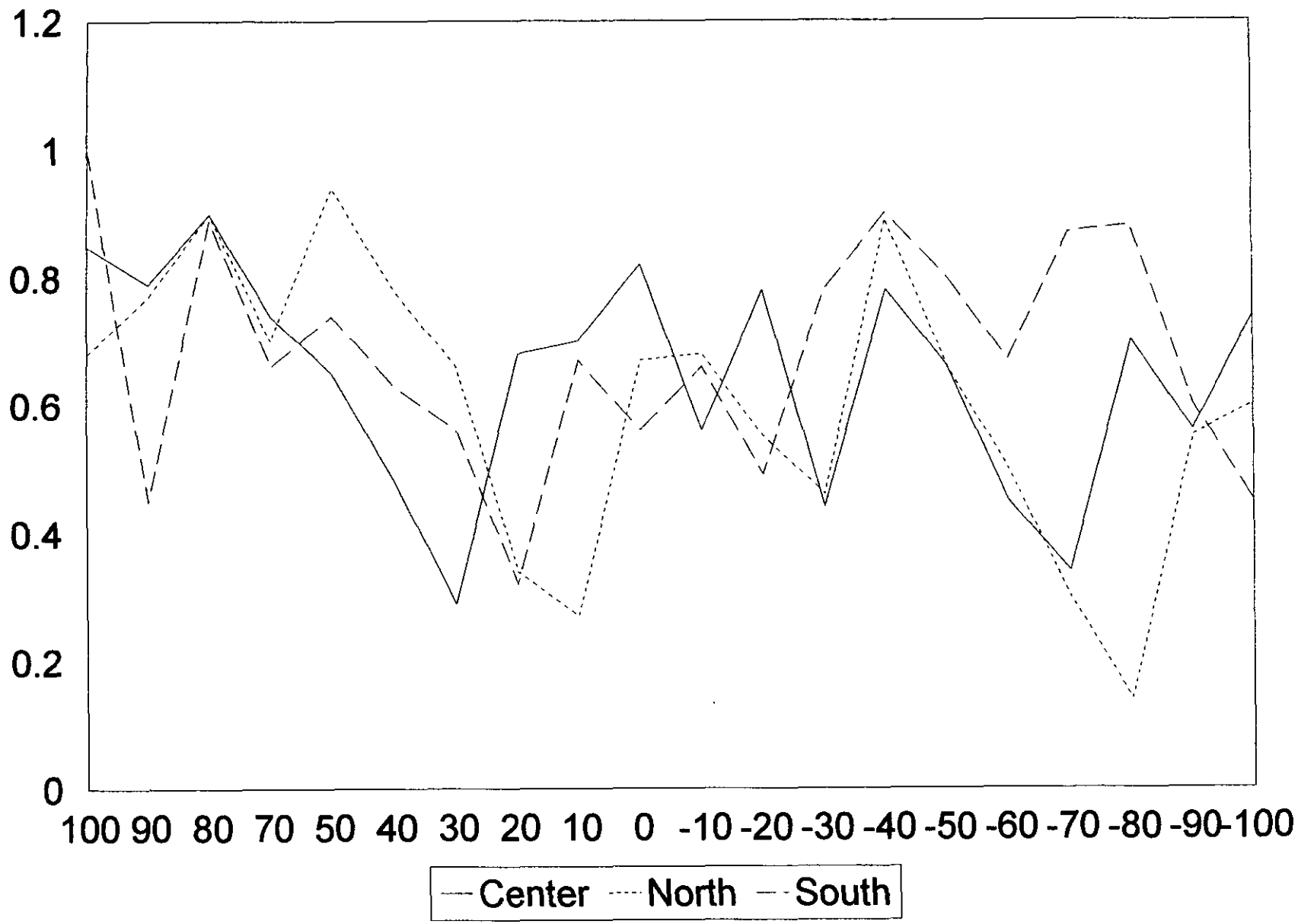
600 M Width
proposed plug location

Monitoring Design




Percent Similarity along Secondary Axes
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1
0.8
0.6
0.4
0.2
0
100 90 80 70 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100
Center
North
South

APPENDIX C

Floodplain/Wetlands Assessment for the Implementation of the Wetland Mitigation Bank Program at the Savannah River Site

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Floodplain/Wetlands Assessment
for the
Implementation of the Wetland Mitigation Bank Program
at the
Savannah River Site

1.0 DESCRIPTION OF PROJECT

This Floodplain/Wetlands Assessment was prepared in compliance with 10 CFR 1022 as an Appendix to the **Environmental Assessment for Implementation of the Wetland Mitigation Bank Program at the Savannah River Site** (DOE/EA-1205). The Department of Energy (DOE) proposes to implement a wetlands mitigation bank program at the Savannah River Site (SRS), located near Aiken, South Carolina. A wetland mitigation bank is a regulatory accounting program that provides for advance compensation of unavoidable wetland losses due to development activities. The purpose of the proposed action is to provide DOE Savannah River Operations Office (SR) with a compensatory alternative for unavoidable wetland losses associated with future authorized environmental restoration and construction projects in SRS wetlands. The proposed action would also enable DOE-SR to gain credit for wetland restoration work that would not otherwise be accomplished through alternative programs or means. Future projects such as the remediation of waste sites and the repair and maintenance of roads and bridges on SRS probably will impact some wetland areas. By establishing a wetland mitigation bank prior to such impacts, DOE-SR can incorporate mitigation efforts required for new projects in a timelier manner. For future SRS environmental restoration and construction projects that require compensatory wetland mitigation, the bank would save DOE-SR the time and money needed to locate a suitable wetland for restoration and to obtain approval for its use.

This proposed action would encompass both the general mitigation activities on SRS wetlands and the overall management of the resulting site "banking" program. In all instances, wetland impact avoidance and minimization would be employed prior to being able to use compensatory mitigation. This wetland mitigation bank would be a dedicated bank, to be used for SRS project needs only. The proposed action would be implemented in conjunction with the landscape-scale land use planning effort that is currently being developed at SRS (DOE 1998). The existence of degraded wetlands, channelized streams, and thermally impacted swamp forested wetlands and old-age upland forest provide DOE-SR the opportunity to develop a bank with a high probability of success. A key advantage for establishing the bank at SRS is the presence of experienced land management and research groups on site.

The scope of the proposed action is detailed in an interagency Memorandum of Agreement (MOA) between DOE-SR and the U. S. Army Corps of Engineers, the U. S. Environmental Protection Agency (Region IV), the U. S. Fish and Wildlife Service of the

U.S. Department of the Interior, the Natural Resources Conservation Service of the U.S. Department of Agriculture, the South Carolina Department of Health and Environmental Control, and the South Carolina Department of Natural Resources. The National Marine Fisheries Service of the U.S. Department of Commerce will continue to coordinate with SRS wetland impact and mitigation issues, but legally was prohibited from becoming a signatory party to this MOA. The MOA established the basic components and inner workings of the SRS wetland mitigation bank. The MOA also established the mitigation banking review team, an interagency group designated to review and consult with DOE-SR regarding compensation proposals. This team consists of the same agencies that signed the MOA and the National Marine Fisheries Service.

The SRS wetland mitigation bank would involve the restoration and enhancement of small isolated wetlands, as well as major wetland systems scattered throughout the site's nonindustrialized area. The primary goal of the bank would be the restoration and enhancement of degraded Carolina bays and streamside bottomland hardwood forest on SRS. Mitigation opportunities within the industrialized area may also be explored to provide mitigation sites where feasible.

2.0 EFFECT ON FLOODPLAINS OR WETLANDS

The proposed action would take place in both the 100-year floodplain and wetland areas found on SRS. Given the types of wetland mitigation activities (i.e., restoration and enhancement projects) that are being proposed under this program, existing jurisdictional wetlands (e.g., degraded Carolina bays) would be more likely to be potential project sites than would lands encompassing the 100-year floodplain on SRS. However, mitigation projects along stream channels would be likely to take place in 100-year floodplain areas.

The 100-year or base floodplain on SRS covers approximately 15,026 hectares (37,128 acres) and is primarily associated with the Savannah River and the five principal streams that drain the site. All SRS floodplain areas are part of the Savannah River drainage basin. Nearly one-half of this floodplain is adjacent to the Savannah River. Based on records taken at the SRS Boat Dock, this portion of the site near the river floods approximately 22 percent of the time during any given year. The balance of the 100-year floodplain occupies the drainage corridors of Upper Three Runs (19 percent), Fourmile Branch (2.4 percent), Pen Branch (1.7 percent), Steel Creek (4.6 percent), and Lower Three Runs (17.3 percent) (NUS Corporation 1984). The 100-year floodplain map of SRS is shown in Figure C-1.

Wetlands on SRS are both extensive and widely distributed (Figure C-2). Most are associated with floodplains, creeks, and impoundments on site. A total of 19,819.2 hectares (48,973.2 acres) of wetlands are estimated to exist on SRS. This comprises approximately 24.7 percent of the total site area. The largest contiguous wetland area is the Savannah River swamp forest, which covers approximately 3,020 hectares (7,462 acres) along the Savannah River. Six major streams drain SRS and eventually flow into

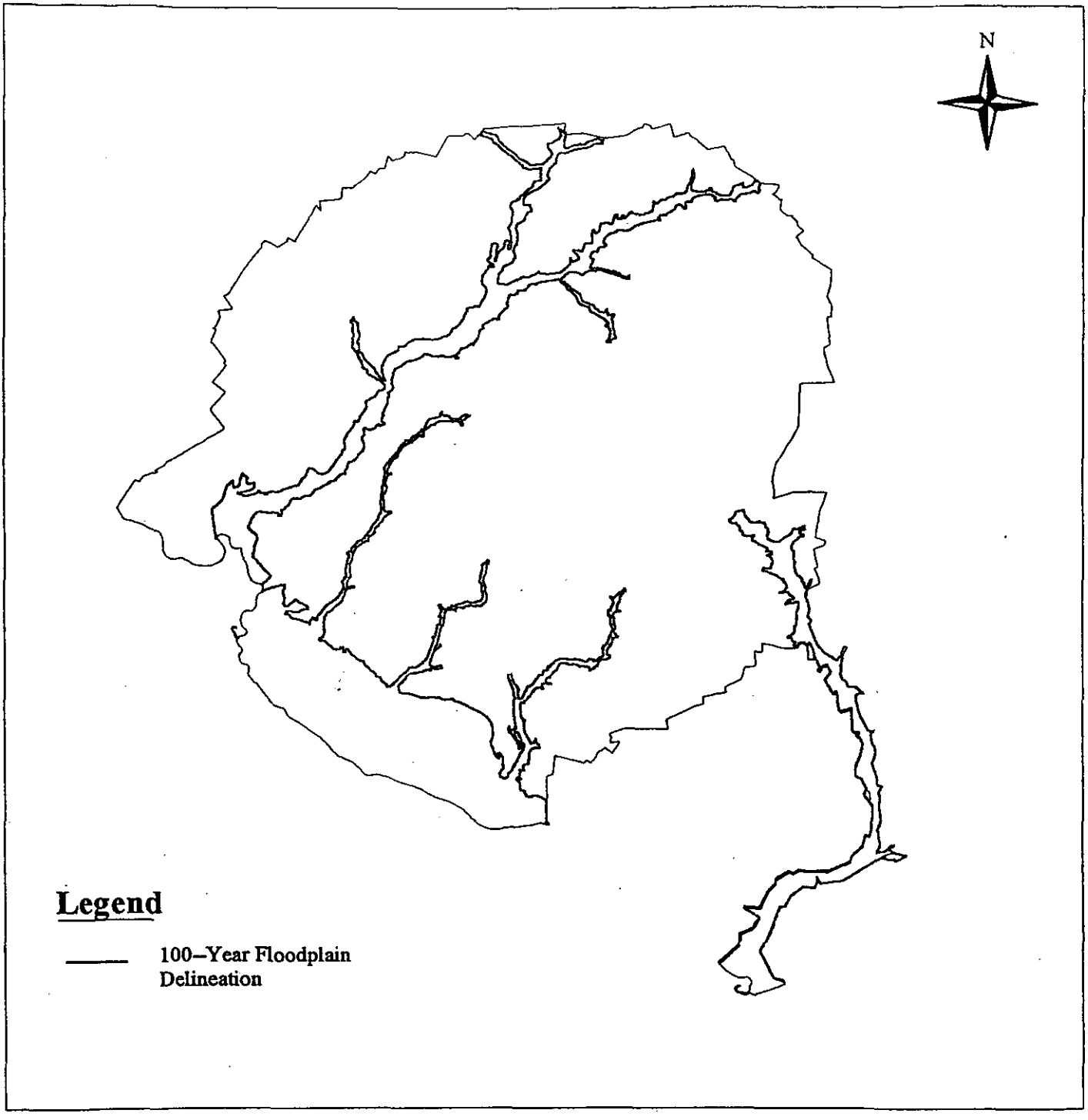

Figure C-1. Location of the 100-year floodplain on the Savannah River Site, South Carolina

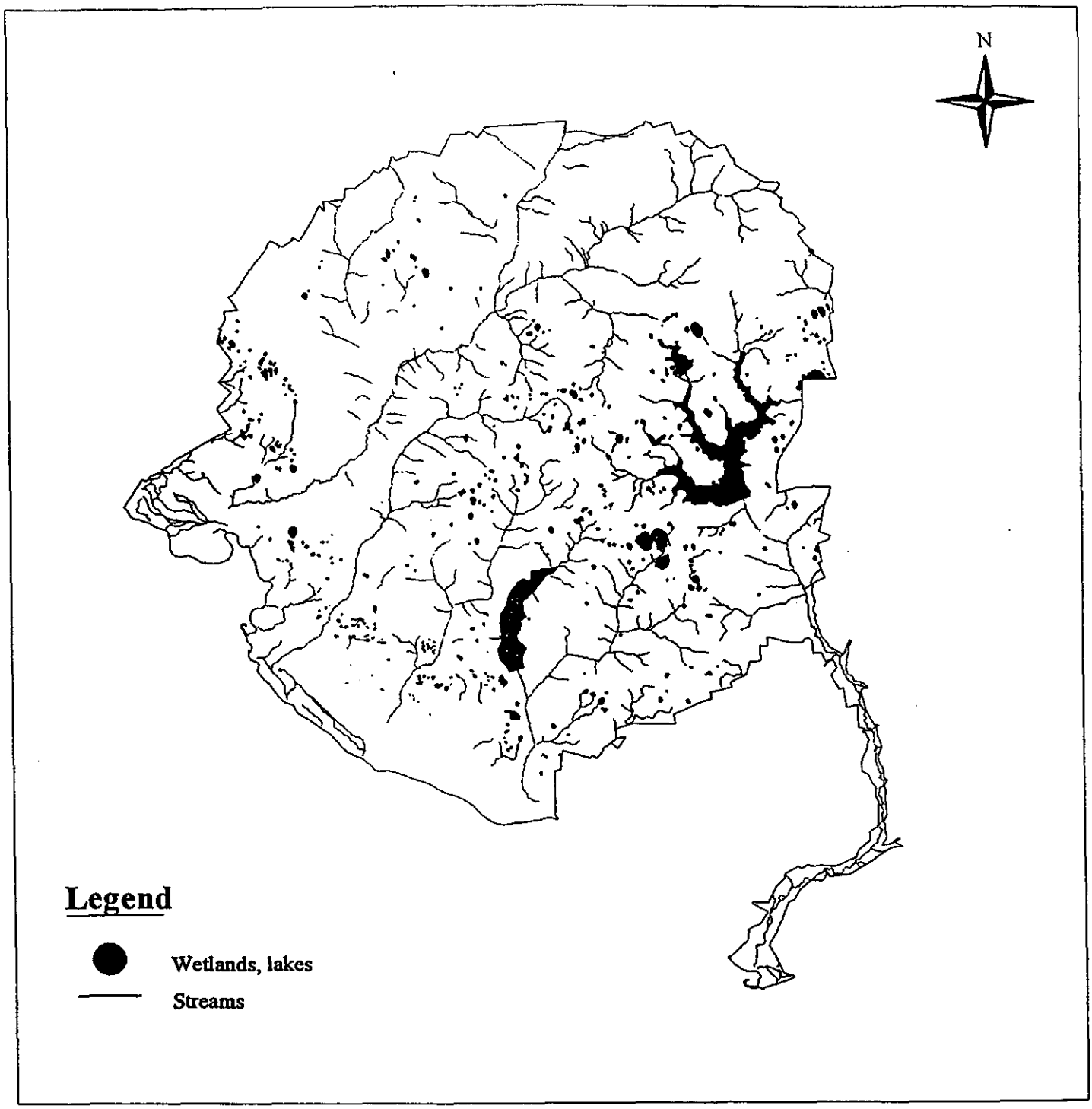

Figure C-2. Location of the wetland areas on the Savannah River Site, South Carolina

the Savannah River. Upper Three Runs and Lower Three Runs flow directly into the river. Beaver Dam Creek converges with Fourmile Branch in the swamp and then both flow into the river. Pen Branch and Steel Creek drain into the swamp, where their flows merge and discharge into the river at the mouth of Steel Creek. The Savannah River swamp, and other wetlands types such as Carolina bays, bottomland hardwood forest, scrub-shrub, and emergent wetlands provide an interspersion of structurally diverse and productive wetland communities on the site. The two most likely types of wetlands to be impacted by the proposed action would either bottomland hardwood forest along stream corridors or Carolina bays.

The most abundant type of wetlands found on site is bottomland hardwood forest, which covers 13,823.7 hectares (34,158.4 acres) or 69.75 percent of all SRS wetlands. This habitat type is primarily found in association with the margins of the Savannah River swamp and along the various stream drainage corridors on site. The bottomland hardwood forest adjacent to the Savannah River swamp is dominated by bald cypress (*Taxodium distichum*) and tupelo gum (*Nyssa sylvatica*) in the low areas, and red maple (*Acer rubrum*), water ash (*Fraxinus caroliniana*), water elm (*Planera aquatica*), and other bottomland hardwoods in the higher areas. Canopy dominants along the stream corridors include sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), laurel oak (*Q. laurifolia*), ash, American sycamore (*Platanus occidentalis*), sugarberry (*Celtis laevigata*), American elm (*Ulmus americana*), tupelo gum, bald cypress, and red maple. The bottomland hardwood forest habitats along the stream and drainage corridors on site are dominated by soils in either the Vaucluse-Ailey association or the Troup-Pickney-Lucy association. The first of these two soil series consists of well-drained soils that have a loamy substrate with dense, brittle layers. The Vaucluse-Ailey association consists of sloping and strongly sloping soils in scattered areas around the head and sides of small drainageways in the uplands. The Troup-Pickney-Lucy association is composed of well drained to very poorly drained soils. Some have a sandy surface layer and loamy subsoil and are sandy throughout, being subject to flooding. This association consists of moderately steep and steep soils on uplands and nearly level soils on the floodplains along streams (Rogers 1990).

Carolina bays are naturally occurring shallow-depressional wetlands of the upland interstream areas of the southeastern Coastal Plain. Carolina bays contain hydric or mesic communities and range in general habitat type from lakes to shallow marshes, herbaceous bogs, shrub bogs, or swamp forests. A Carolina bay can generally be distinguished from other southeastern Coastal Plain wetlands on the basis of several unique features. These isolated wetlands range in size from less than 0.1 hectares (0.3 acres) to 50 hectares (125 acres). Perhaps the most useful diagnostic characteristics are an elliptical contour with northwest to southeast alignment of the long axis and the frequent presence of a marginal sand rim. Carolina bays are situated predominantly in the headwaters of watersheds. A xeric to hydric gradient occurs from the sandy rim to the center of bay depressions; however, all Carolina bays on SRS dry out periodically. Several plant community types typical of undrained coastal plain wetlands are found in SRS Carolina bays. Topographic relief and hydrology are the principal determinants of vegetational composition in the bays,

although edaphic conditions play a role. The duration and magnitude of inundation creates a range of conditions favoring different vegetation associations. Craig's Pond, one of the largest Carolina bays on SRS, can be used as an example of the floral variation found in these unique isolated wetlands. The outermost zone is dominated by trees such as loblolly pine (*Pinus taeda*), longleaf pine (*P. palustris*), tupelo gum, blackjack oak (*Q. marilandica*), turkey oak (*Q. laevis*), and sweetgum. Several shrubs, such as sumac (*Rhus copallina*), gallberry (*Ilex glabra* and *I. coriacea*), and red bay (*Persea borbonia*) also occur in this zone. Inside of this zone of woody species are several bands of herbaceous vegetation. The first of these is characterized by broomsedge (*Andropogon virginicus*), but also contains numerous herbs including pitcher plants (*Sarracenia* spp.). Inside of this zone is a band of vegetation dominated by three-awn grass (*Aristida affinis*) and in deeper water areas by maidencane (*Panicum* spp.). In the middle of the bay are typical floating-leafed aquatic plants such as water lilies (*Nymphaea odorata*) and floating heart (*Nymphoides aquaticum*) (Schalles et al. 1989). The soils found underlying Carolina bays are typically either Rembert or Ogeechee series loams, but can also include Williman loamy sands. These consist of poorly drained, slowly-to-moderately permeable soils that formed in sandy, loamy, or sandy marine sediments of the Coastal Plain. Interior to these sandy bay rims, Orangeburg series soils are less frequently encountered. These are well-drained, moderately permeable soils that formed in marine sediments (Rogers 1990).

The SRS wetland mitigation bank would involve the restoration and enhancement of small isolated wetlands, as well as major wetland systems scattered throughout the site's nonindustrialized area. Many wetlands on SRS have been adversely impacted by past site operations, and provide good opportunities for restoration. These efforts would concentrate on Carolina bay restorations. Restoration is emphasized over creation because of the high cost of creation, the greater opportunity of a creation project to fail, and hence the preference for restoration by the regulatory agencies

During implementation of the proposed action, restoration or enhancement project activities could result in short-term impacts to either areas of the base floodplain or existing wetlands. Examples of potential activities that could take place in floodplain and wetland areas might include grading, timber harvest (e.g., removal of overstory upland trees in drained Carolina bays), placement of soils (e.g., plugging of drainage ditches or restoration of hydric soils), planting of hydrophytic vegetation, and monitoring and maintenance efforts. Some of these activities would require temporary mechanized equipment or vehicle access during certain restoration/enhancement projects. A number of mitigation activities would be implemented to minimize potential impacts to the floodplain and wetland areas. Operation of construction equipment in the wetland and floodplain areas would be minimized. Depending upon the type of mechanized construction equipment to be employed, the use of platform support mats may be required to minimize the impacts to the wetland soils in the project area. Silt fences and other erosion control structures as needed would be installed to ensure there is no deposition in the downslope wetland areas. Any impacts resulting from the operation of mechanized equipment (e.g., localized soil disturbance or compaction) would be corrected prior to

project completion. Best management practices would be employed during construction and maintenance activities associated with this proposed action.

All of the long-term impacts to either 100-year floodplain or wetlands areas which would result from implementation of the proposed action would be largely beneficial. These would include an increase in wetland acreage (and possibly 100-year floodplain acreage) on the site.

3.0 ALTERNATIVES CONSIDERED

Alternatives to the proposed action are covered in **Environmental Assessment for *Implementation of the* Wetlands Mitigation Bank at the Savannah River Site** (DOE/EA-1205)

4.0 REFERENCES

DOE (U. S. Department of Energy), 1998. **Savannah River Site Future Use Plan.** Savannah River Operations Office, Aiken, South Carolina.

NUS Corporation, 1984. **Floodplain/Wetlands Assessment of Forest Management Activities at the Savannah River Plant**, SRC-84-8010/1, October 1984, NUS Corporation, Aiken, South Carolina.

Rogers, V. A. 1990. **Soil Survey of Savannah River Plant Area, Parts of Aiken, Barnwell, and Allendale Counties, South Carolina,** U. S. Department of Agriculture, Soil Conservation Service, Aiken, South Carolina.

Schalles, J. F., R. R. Sharitz, J. W. Gibbons, G. J. Leversee, and J. N. Knox, 1989. **Carolina Bays of the Savannah River Plant**. SRO-NERP-18, Savannah River Ecology Laboratory, Aiken, South Carolina.

APPENDIX D

Response to Public Comments

Table of Contents

Section I. Introduction

In thge spring of 1997, the Department of Energy (DOE) Savannah River Operations Office decided to initiate the preparation of an environmental assessment (EA) for the implementation of the wetland mitigation bank program at the Savannah River Site (SRS). This document preparation effort was implemented in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended, the requirements of the Council on Environmental Quality Regulations for Implementing NEPA (40 CFR Parts 1500-1508), and the DOE Regulations for Implementing NEPA (10 CFR Part 1021). The assessment of environmental consequences of Federal actions that may affect the quality of the human environment is required under NEPA. Based on the potential for impacts described in the resultant document, DOE will either publish a Finding of No Significant Impact (FONSI) or prepare an environmental impact statement (EIS).

An initial internal scoping meeting was held on May 7, 1997, for this EA pursuant to the guidelines specified in the **Savannah River Site NEPA Program Quality Assurance Plan: Preparation and Review of Environmental Assessments (U)** (WSRC-RP-97-010). The proposed action, alternatives, specific assessment studies needed, project time frame, and public participation were discussed at that meeting. Notification was sent to the States of South Carolina and Georgia on April 10, 1997, regarding DOE's intent to prepare this EA. Preparation of the preliminary draft EA was begun in May 1997. On June 6, 1997, a notice was published in the **SRS Environmental Bulletin** announcing to the general public DOE's intent to prepare this EA. A total of five requests for copies of the draft EA from stakeholders were received following the issuance of that notice.

On November 11, 1997, one of the members of the Risk Management and Future Use Subcommittee (RMFUS) of the SRS Citizen's Advisory Board contacted DOE-SR concerning the wetland mitigation banking program MOA and the associated EA. A package of information was mailed out to this person on November 20, 1997. Later, at the request of this stakeholder, a presentation on the EA was made to the RMFUS on January 12, 1998. A follow-up meeting was later held on April 14, 1998 with that same RMFUS member to further discuss the scope of the proposed action in this EA.

Pursuant to 10 CFR Part 1022, the DOE Floodplain and Wetlands involvement notification for the proposed action was published in the April 15, 1998, issue of the **Federal Register** (Vol. 63, No. 72). The preliminary draft EA was completed by late July 1998. As required in 10 CFR Part 1021, the predecisional draft EA was transmitted to the States of South Carolina and Georgia on August 20, 1998, for review and comment. The associated State comment period, scheduled for 14-30 days as per DOE NEPA regulations, began on August 25, 1998, the date of receipt of the draft EA transmittal package by both States. The availability of the predecisional draft EA for the proposed action was announced in the August 28, 1998, issue of the **SRS Environmental Bulletin**, which had been distributed to several thousand stakeholders in both South Carolina and Georgia, including Federal, State, and local agencies, government officials,

and members of environmental interest groups as well as interested citizens. The public comment period was initially planned for closure on September 30, 1998. However, at the request of a private stakeholder group, this period was extended to allow for the submittal of additional comments. Twelve copies of the predecisional draft EA were requested for review as a result of this announcement. A total of four responses were received, ranging in length from one to two pages. Agency responses numbered two. The remaining two were provided by private sector stakeholders.

The remainder of this appendix is contained in one section. That section (i.e., Section II) presents the unedited text of all letters received and the direct response to each question or comment raised or references another location where the issue has already been addressed in the EA.

April 20, 1998

Mr. Drew Granger
SRS, NEPA

Subject : Public Comments Concerning MOA for SRS Wetlands Mitigation Program

Dear Mr. Granger

First I wish to express my appreciation for the meeting on 7 April that , Dennis Ryan (DOE-SR) and Jack Mayer, Vernon Osteen, and Gail Jernigan (WSRC) held with me to discuss my concerns with this Memorandum of Agreement for the SRS Wetland Mitigation Bank.

Let me start by saying that I fully support the concept of a Wetlands Mitigation Program. I also share the belief that good stewardship also refers to taxpayer dollars as well as protecting the environment and wetlands. In that respect I can understand that funding for ER activities usually has a higher priority than restoring a wetland. I have been told that once this Wetlands Mitigation Bank is implemented it will be easier for SRS to find the money for the
reconstruction of old wetlands. For that very reason, funding implementation of this MOA needs to include specific performance measures for restoration and not rely on the current SRS program that has not restored even one of over 400 Carolina Bay on site in the last five years.

I also realize that it is currently site policy to avoid or minimize destruction of existing wetlands, as well as to restore wetlands. However, this MOA does not specifically, in writing, require all viable alternatives to destruction be considered prior to mitigation and development. I hope that the requirement to determine alternatives will be part of the final NEPA decision as this requirement is missing completely from this MOA.

My next concern is a complete lack of public/shareholder input into development of this MOA and in the future implementation of this program. There was no shareholder input at all to its development. I further understand that the same various regulators that wrote this MOA will be responsible for checking to ensure that SRS does not unnecessarily destroy wetlands and would ensure that all credits were valid credits when they do. This does not excuse the fact that the
public should have been involved in the development of the MOA and must be made a part of its implementation. As a result of our 7 April meeting I have been assured that in the future before there is any type of destruction of a wetland for remediation or construction of a new facility that impact wetlands, there will be public involvement through the National Environmental Policy Act (NEPA) and application of Corps of Engineer permit system. This is totally not adequate. The Corps of EWngineers system is not effective and not pubic friendly at its very best. SRS needs to do more than just their NEPA system. SRS needs to include public meeting and CAB subcommittee meetings for starter ideas.

Last. The recently issued Site Future Use Plan which does away with what many of us have always called the old Buffer Zone and is now called the Industrial Support Zone, does by definition open this NERP , SRS site endangered species habitat and SREL future research areas to facility development. I am concerned that with that Future Land Use change in mission and now with this Mitigation concept facilitating wetland destruction, the whole concern for ecological balance on SRS is shifting from research and conservation to facility construction. I was very pleased when Dr. Mayer said at our 7

Comment L1. Page 1 of 2.

April meeting that another alternative for the Environmental Assessment could be to implement the Wetlands Mitigation Bank with modifications. This alternative would consider restricting projects that may be debits to the bank to areas within the Industrial Zone. I fully support that plan. However, I also recognize the need to remediate old waste sites still in the new Industrial Support Zone . I could support adding to Dr Mayer s suggestion the MOA could also be used for remediation in the Industrial Support Zone. I ask that no new construction in the industrial Support Zone be authorized to debit the Wetland bank.¶ I hope with the implementing of this MOA with needed modifications that the zone name change will not change the way that land is allocated for future use.

Restoration of Carolina Bays and damage done by DOE over the past years to natural wetlands on SRS should have been in the past an on going program with specific performance measures. I do hope that one of the items that comes out of this NEPA study of this MOA is that a definitive program will be implemented with a time line and specific performance measures. I hope five years from now we still do not have only two Carolina Bays restored on SRS and these were restored in 1993. The MOA also states that 140 Carolina Bays are left on SRS that could be but have not been restored. Does DOE not have a plan already in place to restore them? In answer to this question, Mr. Ryan said is that SRS does not have a specific plan to restore Carolina bays; however, there is a program to restore wetlands at SRS. He went on to say that the meaningful purpose of Carolina bays is to be wetlands, and that the site is working toward the goal of restoring Carolina bays to wetland status. Mr. Ryan explained that currently DOE-SR, USFS, SREL and SRTC are all working together for the restoration of these wetlands. There are 16 sites under a research program (that has yet to be implemented nor determined how long it will last) to determine the most effective ways for restoration. Once the restoration is complete for these, the lessons learned will be applied to the restoration other wetlands. I contend that without a time line and specific performance measures, none of us may ever live to see another Carolina Bay restored at SRS. I am told there are over 400 Bays on site. Since this MOA has been approved SRS needs to meet with SREL and select a specific number and identify Bays for immediate natural regeneration. SRS needs to begin filling in drain ditches, now as a part of this MOA. Yes I support the need for SREL to do its study with 16 bays. But out of 400 Bays I am sure SRS could begin naturally restoration immediately with many.

Sam Booher
706-863-2324 // sbooher@aol.com

CC: All parties concerned

Comment L1. Page 2 of 2.

Response to Comment L1

Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

Mr. Sam Booher
4387 Roswell Drive
Augusta, Georgia 30907

JUN 09 1998

Dear Mr. Booher:

SUBJECT: Memorandum of Agreement (MOA) for the Savannah River Site (SRS) Wetland Mitigation Bank and NEPA

Thank you for your letter of April 20, 1998, with your comments on the MOA for the SRS Wetland Mitigation Bank Program. I appreciate your interest and time in providing comments to the Department of Energy (DOE) Savannah River Operations Office (SR).

In your letter you requested that specific performance measures for wetland restoration be included in the implementation of the MOA. Paragraph 5.0, Success Criteria, page 11 of 31, describes the measures for success for the restoration of a wetland. Specifically, projects are judged successful 5 years after the hydrologic control structures have stabilized and maintenance is no longer necessary, and when the desired hydrology and plant community have become established. To ensure continued success, long-term monitoring will continue for any wetland restoration every 5 years for a 20-year period to evaluate success and to determine if further remediation is needed. In addition, each mitigation plan, prior to implementation, will be reviewed, commented and approved by the Mitigation Banking Review Team (MBRT), the interagency group which will regulate the implementation of the planned Mitigation Bank. Furthermore, before any project can proceed, whether it be for construction of a new facility or remediation of an inactive waste unit, the project will be reviewed under the National Environmental Policy Act (NEPA) criteria to determine if an environmental assessment (EA) or environmental impact statement (EIS) would be necessary.

Ideally we would like to be able to schedule the remediation of many wetlands and Carolina bays at SRS. However, current budget constraints and the Federal budget cycle preclude definitive scheduling as you proposed. Currently, the remediation of wetlands has a low priority on the SRS budget priority list, after more urgent risks and issues, such as regulatory-required projects and surveillance and maintenance activities necessary to ensure that the health and safety of our workers and the public are addressed. We hope the implementation of this Wetland Mitigation Bank will help us remediate and restore more wetlands.

You also asked that all reasonable alternatives be included in the final NEPA decision. NEPA requires that all reasonable alternatives be considered before decisions are made, and alternatives will be discussed as we write the EA for this program. Regulations for environmental permits, including the Nationwide Permit Program, also require the evaluation of alternatives. The avoidance and minimization of wetland destruction must be reviewed by the Corps of Engineers prior to any work in wetlands, as part of the permitting system. As we explained in your meeting with SRS staff, this MOA is only for the credit side of the Wetland Mitigation Bank; the debits to the bank must be evaluated separately and will require alternatives, as required by NEPA. NEPA also has public involvement requirements.

While we may not have had public meetings on the development of this MOA, the MBRT is composed of the site's regulators who represent the public's interest. The several members of the MBRT are also Natural Resource Trustees for the site and ensure that we minimize and/or avoid impacts to the natural resources of the site. Again, any project that may impact wetlands will be reviewed through the NEPA process, and this will include public involvement. Since the implementation of this MOA is being evaluated under NEPA, there will be opportunities for public comment and review prior to implementation of the MOA. Under NEPA, public meetings may be held, depending on the amount of interest in the project and the level of NEPA assessment. For example, if an EIS is needed, then there are public meetings for the scoping process and to solicit comments on the draft statement. However, EAs typically do not require public meetings, but public meetings can be held to discuss these analyses. The members of the SRS Citizens Advisory Board (CAB), through the Risk Management and Future Use Subcommittee, have NEPA status reports at the subcommittee meeting; and copies of the NEPA Monthly Report are always available at SRS CAB meetings and on the internet. The Risk Management and Future Use Subcommittee will continue to have presentations on various NEPA projects, as they request them.

The development and implementation of the Wetlands Mitigation Bank Program will not replace DOE's commitment to the CAB on future use. We will continue to place new construction within current industrial zones whenever possible. In addition, we will be sensitive to wetlands in the industrial area and will continue to minimize and avoid impacts to wetlands whenever possible.

During the April 7 meeting with SRS staff, Dennis Ryan promised you a report on the status of the restoration of the 16 Carolina bays onsite. This is a research project with the Savannah River Technology Center, Savannah River Natural Resource Management and Research Institute (Forest Service), and the Savannah River Ecology Laboratory to determine which remediation methods are best suited for various wetlands at SRS. Due to budget limitations, the number of wetlands in this project has been reduced to 12.

We have developed a tentative schedule for the restoration of these Carolina bays. We hope to have the site use permits and approvals for the bays by the fall of this year, and restoration plans are expected to be completed by December. This will require coordination with the Savannah River Institute, Savannah River Ecology Laboratory, and Westinghouse Savannah River Company. The present schedule projects pre-restoration characterization of the bays in July 1999 with the restoration of the bays to begin in the fall of 2000. Once the restoration is complete, post-treatment monitoring and assessments will begin with additional hydrologic manipulations scheduled to be conducted in the outyears (2003-04) for further characterization. Monitoring is required for two reasons. First, the regulators want us to monitor the restoration of wetlands. Second, we can only predict how these systems will respond. We need to use the lessons learned from the restoration of these bays to help us with the restoration of other bays. Monitoring is an integral function of Ecosystem Management and provides future data that allows natural resource managers to make informed decisions.

DOE-SR is committed to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands wherever there is a practicable alternative. The Wetlands Task Group and the Natural Resources Coordinating Committee are two SRS environmental groups whose duties include providing technical advice and policy recommendations in order that DOE-SR minimizes the destruction, loss, or degradation of wetlands, and conserves and enhances the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

Again, I want to thank you for your interest and comments on SRS activities. If you wish to receive further information concerning this project or further information about DOE-SR's NEPA process, please contact Andrew R. Grainger at DOE-SR, NEPA Compliance Officer, P.O. Box A, Aiken, SC 29802, or telephone Mr. Grainger at (803) 725-1523 (email: nepa@srs.gov).

Sincerely,

Original Signed By
Lowell Tripp

Lowell E. Tripp, Director
Engineering and Analysis Division

EAD:SAD:ap

VC-98-0110

JUN 09 1998

bc:
J. J. Mayer, WSRC, 773-42A
G. F. Jernigan, WSRC, 742A
D. V. Osteen, WSRC, 742A
W. T. Hinds (EH-422), HQ
D. P. Ryan, SRNRG (Concur)
R. L. Ford, OEA (Concur)
B. T. Hays, OCC (Concur)
V. M. Gardner, OSS (Concur)
E. T. LeMaster, SRI (Concur)
B. D. McGee, NRCS (Concur)
M. B. Caudell, SCDNR (Concur)
EAD Reading File
AMHSTS Reading File

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

September 24, 1998

Mr. Andrew R. Grainger
DOE Savannah River Operations Office
NEPA Compliance Officer
P.O. Box A
Aiken, SC 29802

Subject: Environmental Assessment(EA)for the Implementation of a Wetland Mitigation Bank at the Savannah River Site (SRS)(DOE/EA-1205)

Dear Mr. Grainger:

Pursuant to Section 309 of the Clean Air Act, EPA, Region IV has reviewed the subject document which discusses the proposed action of general mitigation of SRS wetlands, and the management of the site Wetland Mitigation Bank program. The program is designed to incorporate wetland mitigation efforts for new projects in a more timely manner. Future projects, such as the remediation of waste sites and repair and maintenance of roads and bridges on SRS, may impact some wetland areas.

The alternatives to the proposed action are also discussed in the EA. The proposed action would restore small wetlands and major wetland systems. In the absence of this corrective action, the alternatives would be to implement wetland mitigation on a project-by-project basis, or to implement a variation of the proposed wetland mitigation bank program, or to purchase offsite mitigation credits.

On the basis of the information provided, we concur with the proposed project goal of timely mitigation of unavoidable impacts to wetlands. We also concur that efforts should be made to avoid wetland impacts on future projects, because reclamation does not truly replace original wetlands and other impacted sensitive areas. EPA encourages preservation of existing wetlands.

If we can be of further assistance in this matter, Ramona McConney (404/562-9615) will serve as initial point of contact.

Sincerely,

Heinz Mueller

Heinz J. Mueller, Chief
Office of Environmental Assessment

Comment L2. Page 1 of 1.

STATE OF SOUTH CAROLINA

State Budget and Control Board

OFFICE OF STATE BUDGET

1122 LADY STREET, 12TH FLOOR
COLUMBIA, SOUTH CAROLINA 29201
(803) 734-2280

LES BOLES
DIRECTOR

October 13, 1998

Mr. Andrew R. Grainger
NEPA Compliance Officer
Engineering and Analysis Division
Savannah River Operations - Post Office Box A
Aiken, South Carolina 29802

Project Name: Environmental Assessment (EA) for the Implementation of a Wetland Mitigation Bank at the Savannah River Site (SRS (DOE/EA-1205)

Project Number: EIS-980808-008

Dear Mr. Grainger,

The Office of State Budget, has conducted an intergovernmental review on the above referenced activity as provided by Presidential Executive Order 12372. All comments received as a result of the review are enclosed for your use.

The State Application Identifier number indicated above should be used in any future correspondence with this office. If you have any questions call me at (803) 734-0485.

Sincerely,

Rodney P. Grizzle
Grants Services Coordinator

Enclosures

Fax: (803) 734-0645

Comment L3. Page 1 of 8.

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia, SC 29201

State Application Identifier EIS-980808-008
Suspense Date 9/24/98

Earl F. Brown, Jr
South Carolina Human Affairs Commission

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

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AUG 31 1998
State Budget Control Board
OFFICE OF STATE BUDGET

If you have any questions, call me at (803) 734-0485. Rodney Grizzle

- [x] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

Signature: Earl F. Brown, Jr. Date: 8-28-98

Title: Executive Assistant Phone: (803) 737-7821

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia, SC 29201

State Application Identifier EIS-980808-008
Suspense Date 9/24/98

Joel T. Cassidy
South Carolina Employment Security Commission

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

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Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485. (Rodney Grizzle)

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- [x] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

Signature: Joel T. Cassidy Date: September 1, 1998

Title: Executive Director Phone: 803-737-2617

Comment L3. Page 3 of 8.

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia , SC 29201

State Application Identifier EIS-980808-008
Suspense Date 9/24/98

Cornelia Gibbions
Governor's Division of Health & Human Services

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

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Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485. Rodney Grizzle

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OFFICE OF STATE BUDGET

- [x] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

Signature: _____ Date: 9/1/98

Title: _____ Phone: _____

Comment L3. Page 4 of 8.

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia, SC 29201

State Application Identifier EIS-980808-008
Suspense Date 9/24/98

Steve Davis
S.C. Department of Health and Enviromental Control

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

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Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485. Rodney Grizzle

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Budget & Control Board
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- ☐ Project is consistent with our goals and objectives.
- ☐ Request a conference to discuss comments.
- ☐ Please discontinue sending projects with this CFDA# to our office for review.
- ☑ Comments on proposed Application are as follows:

see attached comments

Signature: M Chesta Seddings Date: September 11, 1998

Title: Manager, Water Quality Certification, Standards & Wetlands Programs Section Phone: 803-734-5329

Comment L3. Page 5 of 8.

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

State Application Identifier EIS-980808-008

The Department of Health and Environmental Control was an active participant in the review and final approval of this wetlands mitigation bank. The Department was also a signatory to the Memorandum of Agreement for the bank. Accordingly, we do not anticipate adverse impacts to water quality or designated uses and support the use of this mitigation bank.

Comment L3. Page 6 of 8.

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia, SC 29201

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SEP 02 1998
Emergency Preparedness Division
Office of the Adjutant General

State Application Identifier EIS-980808-008
Suspense Date 9/24/98

Stan M. McKinney
Office of the Adjutant General

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

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Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485. Rodney Grizzle

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SEP 10 1998
Budget & Control Board
OFFICE OF STATE BUDGET

- [x] Project is consistent with our goals and objectives.
- [ ] Request a conference to discuss comments.
- [ ] Please discontinue sending projects with this CFDA# to our office for review.
- [ ] Comments on proposed Application are as follows:

Signature: Stan M. McKinney Date: 9-14-98

Title: Director Phone: 734-8020

Comment L3. Page 7 of 8.

Office of State Budget

South Carolina Project Notification and Review System

1122 Lady Street, 12th floor
Columbia , SC 29201

State Application Identifier EIS-980808-008
Suspense Date 9/24/98

George Bistany
South Carolina Department of Commerce

The Office of State Budget is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

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Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0485. Rodney Grizzle

- ☐ Project is consistent with our goals and objectives.
- ☐ Request a conference to discuss comments.
- ☐ Please discontinue sending projects with this CFDA# to our office for review.
- ☐ Comments on proposed Application are as follows:

Signature: George Bistany Date: 9-4-98

Title: Grants Mgr. Phone: 734-0454

Comment L3. Page 8 of 8.

NATIONAL WILDLIFE FEDERATION®
People and Nature: Our Future Is in the Balance

Office of Federal and International Affairs

November 4, 1998

Mr. Andrew R. Grainger
NEPA Compliance Officer
U.S. Department of Energy
Savannah River Operations Office
Building 742-A, Room 185
Aiken, SC 29802

Dear Mr. Grainger:

Introduction

Thank you for this opportunity to share the National Wildlife Federation's (NWF) comments on the August 1998 Draft *Environmental Assessment for the Implementation of the Wetland Bank Program at the Savannah River Site* prepared by the Department of Energy (DOE). This statement is presented solely on behalf of NWF.

NWF commends the Savannah River Site's (SRS) decision to prepare an Environmental Assessment (EA) for the proposed mitigation bank. This is a rare but necessary, event. In general, the EA does a good job of considering the appropriate components of the proposed bank. However, it leaves unanswered several essential issues. We hope to provide applicable comments and hope the SRS will address the concerns in future plans. Until they are answered, SRS cannot reach a "Finding of No Significant Impact" (FONSI) for the proposed bank.

The National Wildlife Federation is the Nation's largest conservation education organization. Founded in 1936, NWF works to educate, inspire and assist individuals and organizations of diverse interests to conserve wildlife and other natural resources and to protect the environment in order to achieve a peaceful, equitable, and sustainable future.

Position of Mitigation Banking in General

Section 404 (§404) protects wetlands and other waters by prohibiting the dredging and filling of these waters without a permit from the U.S. Army Corps of Engineers (Corps). The Corps must issue or deny §404 permits in accordance with the §404(b)(1) guidelines. The heart of the §404(b)(1) guideline is the requirement to avoid the destruction of wetlands and other waters whenever possible. If aquatic impacts cannot be avoided through practicable, less environmentally destructive project alternatives, then such impacts must be minimized to the maximum extent practicable. As a last resort, those aquatic ecosystem impacts that cannot be avoided or minimized must then be mitigated. This leads us to the mitigation bank assessment.

1400 16th Street, NW, Suite 501, Washington, D.C. 20036 Tel: 202-797-6800 Fax: 202-797-6646
EnviroHotline: 202-797-6644 Fax-On-Demand:202-797-6655 Email: action@nwf.org Website: http://www.nwf.org/

Comment L4. Page 1 of 3.

Mitigation banking holds some limited promise, but it also has many pitfalls. If mitigation banks become widespread substitutes for natural wetlands–and those banks fail–the result will be more natural wetlands and their functions lost, financial and administrative resources wasted, and further erosion of the credibility of wetlands regulatory programs. NWF feels that the DOE has taken the appropriate steps in the development of the mitigation bank for the SRS.

Concerns Regarding the SRS Bank

NWF recomends that mitigation projects be limited to the restoration of degraded wetlands, where the basic ingredients for success–wetland hydrology, soils, and vegetation–are most likely to be available. The assessment states a similar view: "The SRS wetland mitigation bank would involve the restoration and enhancement of small isolated wetlands, as well as major wetland systems, scattered throughout the site's non-industrialized area. The primary goal of the bank would be the restoration and enhancement of degraded Carolina bays and streamside bottomland hardwood forest on SRS." NWF applauds the SRS Bank's focus on restoration rather than creation. NWF also appreciates the long history of wetland research on the site.

NWF also supports the decision not to allow the sales of advanced credits for the Bank. While financing is required up-front to finance bank planning and construction, the revenue from the bank comes when the wetlands' credits produced are sold. This situation presents two problems. First, it creates a pressure to sell wetland credits before they actually mature–a practice that amounts to speculating in wetland credits futures. Second, the need for up-front financing also creates a pressure to rely on public lands and public agencies' technical expertise to ease the way for mitigation banks. In both cases, the public shoulders a significant portion of the burden of mitigating for the loss of wetlands to private development activity. In the first instance, the public bears the risk of bank failure. In the second instance, the taxpayers directly subsidize private development activity.

One concern for this mitigation scheme is the question of whether the compensation will be "in-kind", and in cases where the mitigation is not "in-kind", whether the degraded wetlands' functions and values will be adequately replaced. The Memorandum of Agreement (MOA) only states that "the bank will include most wetland types found on SRS", and that "separate accounting systems will be established for isolated wetlands and adjacent wetlands to facilitate use of The Bank on an 'in-kind' compensatory basis". The prospect of not having an adequate amount of a specific type of restored wetland to support "in kind" compensation, however, is a very real concern. The DOE must assure an adequate accounting system to compensate for the lost values and functions.

The EA also states that "restoration is emphasized over creation". A question arises. If upon completion of the selected sites to be restored, a lack of a certain type or the total number of acres to be restored is not suitable, will creation be used to compensate for the deficiency of a certain amount of a specific type of wetlands or will creation also be used to increase the total amount of wetland "credits"?

Once the proposals have been finalized and the project is underway, the mitigation bank construction and operation must be carefully monitored, not only by bank operators and regulators, but also by resource agencies and the public. Public participation is key not only in the advanced review of detailed, site-specific plans, but also within the implementation process. However, the plan does not outline adequate public participation procedures for this Bank. NWF urges the SRS to revise the MOA to include public participation throughout the Bank's creation process, not only in the review of the initial plans.

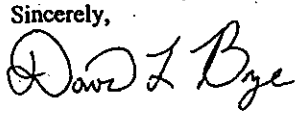
Mitigation projects must have adequate contingency plans for re-establishing bank credits should the project fail, and financial assurances (such as a bond) that provide a source of funding upon project failure. These plans and assurances must be incorporated into the banking agreement and the wetland permit. Within the SRS draft EA, an inadequate statement for such contingency states "if remedial action is necessary, DOE-SR will discuss the action to be taken with the Mitigation Bank Review Team (MBRT) and obtain their concurrence on the action". The EA and MOA should state what specific actions will be taken, and be drafted to provide for credit adjustments when projects fall short of actual compensation requirements. The SRS bank should not be approved without a clear assignment of liability, identification of remedies for bank failure, and clear designation of enforcement tools and enforcement responsibility.

The final paragraphs of the draft raise the question, "What if DOE-SR must adversely impact a restored and banked wetland?" The EA states that the credits earned for mitigation as well as the credits necessary to offset the unavoidable impacts, will be debited from the bank. The EA also states that "should any portion of a banked mitigated wetland be sold, the deed will contain an appropriate conservation easement". NWF believes that deed restrictions and financial assurances must be in place to insure the long-term protection and conservation of mitigation bank wetlands. Therefore, SRS must ensure that future projects do not affect banked and restored wetlands.

In conclusion, NWF commends SRS's decision to prepare an EA for the proposed mitigation bank. In general, the EA does a good job of considering the appropriate components of the proposed bank. However, it leaves unanswered three essential questions: how adequate is the function and values accounting system; how will public participation be accommodated, and how will enforcement authority for the bank's success be assured. These questions are critical to bank success or failure. Until they are answered, SRS cannot provide a "Finding of No Significant Impact" (FONSI). We urge SRS to address these very important issues.

We thank you for your consideration of our views.

Sincerely,



David L. Bye
National Wildlife Federation

Comment L4. Page 3 of 3.

Response to Comment L4

Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

FEB 0 2 1999

Mr. David L. Bye
National Wildlife Federation
1400 16th Street, NW, Suite 501
Washington, DC 20036

Dear Mr. Bye:

Subject: Response to Comments on Draft Environmental Assessment (EA)

Thank you for your letter of November 4, 1998, with your comments on the draft EA for the implementation of the wetland mitigation bank program (WMBP) at the Savannah River Site (SRS) (DOE/EA-1205). I appreciate your interest and time in providing comments to the Department of Energy (DOE) Savannah River Operations Office (SR).

Before addressing the specific comments in your letter, I wanted to briefly clarify a few general points regarding the WMBP at SRS. First, for any mitigation credits to be added to the WMBP account, the wetland restoration/enhancement project must first be determined to be a success. This determination is based on a decision by the Mitigation Banking Review Team (MBRT). If some question remains as to the determination of success as defined in the Memorandum of Agreement (MOA), then no credits will be granted by the MBRT. Since the bank is not yet operational, there are no credits currently accrued in the WMBP's accounts. In addition, there are no future projects at SRS that have already been identified as needing to depend upon the bank as the source of mitigation credits for wetland loss compensation. Further, it should also be noted that not all project-related wetland compensation at SRS will be able to use credits from the WMBP. For whatever reason, some SRS projects may have to conduct separate mitigation in support of the needed wetland compensation under Section 404 of the Clean Water Act (33 USC 1344). The ability of any one site project to be able to utilize credits from this bank is solely at the discretion of the MBRT. With this as a basis, I will now attempt to address your specific comments on the WMBP EA.

In response to your comments regarding the wetland function and values accounting system within the SRS WMBP, the mitigation credit calculation matrices provided in Appendix C of the MOA were developed by the U.S. Army Corps of Engineers (COE) to ensure that adequate compensation for wetland impacts is realized under Section 404. "Kind" is an integral factor used in these matrices for the calculation of wetland mitigation credits. In addition, the MBRT will be overseeing the accounting process within the WMBP to further ensure that wetland parameters are adequately compensated for within the operation of this program at SRS. This review and approval process not only includes the credits going into the bank, but more importantly, the debits being removed from the WMBP accounting system.

Regarding the issue of restoration versus creation, DOE does not have a set goal of specific wetland types to be restored over the lifetime of this program. Therefore, the hypothetical deficiency of a certain type of wetland credits would not drive the need to create wetlands of that kind to increase an *a priori* mitigation target amount. Should a future project require more mitigation credits than are available for "in-kind" compensation, the MBRT would be responsible for either: (1) resolving the inequity of available credits (e.g., by deciding to use "out-of-kind" credits); or (2) determining that the project's mitigation needs cannot be supported by the WMBP.

Regarding your comments on public participation, DOE has no plans to revise the MOA at this time. Within the context of this program, public comments on the implementation of the SRS WMBP can be specifically addressed to the MBRT. The current chairperson of the MBRT is as follows:

Mr. Steven J. Coker
U.S. Army Corps of Engineers, Attn: Regulatory Branch
P. O. Box 919, Charleston, South Carolina 29402-0919
Telephone: (843) 727-4330, or (800) 208-2054
e-mail: steve.coker@sac.usace.army.mil

Further, every future site action that proposes to debit mitigation credits from the WMBP will have a separate National Environmental Policy Act (NEPA) review to evaluate the potential for impacts. In accordance with DOE NEPA regulations (10 CFR Part 1021) and SRS NEPA policy, any proposed action that entails the potential for debiting the wetland mitigation bank would require the preparation of at least an EA and possibly an EIS. Both of these NEPA processes include substantial public review and comment opportunities.

Concerning the issue of a restoration project failing, as stated previously, mitigation acreage cannot be credited to the WMBP's accounting system until the project is deemed a success. The scenario described in your letter would only apply if mitigation credits were withdrawn from the WMBP prior to the completion of the specific compensation efforts. Such a scenario is not addressed in this EA since debiting credits against incomplete mitigation projects is not a viable option under this SRS program. Any debits from the WMBP can only be withdrawn against mitigation credits that stem from successful restoration or enhancement projects.

In general, banked wetlands in the SRS WMBP are like any other wetlands: if they are impacted, the loss must be compensated for by mitigation activities by either additional bank credits or other non-bank related mitigation efforts. Again, such impacts must be addressed by the MBRT within the context of the WMBP and permitted through COE in every case.

The long-term SRS land-use baseline indicates that no site property is planned for future removal from DOE control. Given these long-term administrative controls that the Federal government plans for SRS, there is little likelihood that any deed transfers will ever occur. However, should that happen, DOE must ensure that the deed contains an appropriate conservation easement for the banked mitigated wetland as per the MOA. In addition, pursuant to DOE NEPA regulations, any real estate transfers where the land use changes require at least an EA level of evaluation under NEPA. This would again entail public review and comment opportunities.

Pertaining to DOE's issuance of a finding of no significant impact (FONSI), the SR manager will make a decision whether to issue a FONSI or a notice of intent to prepare an environmental impact statement based on the findings in the final EA. I am anticipating that the EA will be finalized shortly and you will receive a copy of that decision.

Again, I want to thank you for your interest and comments on SRS activities. If you wish to receive further information concerning this project or further information about DOE-SR's NEPA process, please contact me at P. O. Box A, Aiken, SC 29802, or telephone at (803) 725-1523 (e-mail: drew.grainger@srs.gov).

Sincerely,

Andrew R. Grainger
NEPA Compliance Officer
Engineering and Analysis Division

EAD:SAD:ap

VC-99-0024

cc w/encl:
Mr. Steven J. Coker
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