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ENVIRONMENTAL IMPLEMENTATION PLAN (U)

Volume 1
Executive Summary

Derivative Classifier

Westinghouse Savannah River Company
Savannah River Site
Aiken, SC 29808

PREPARED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT NO. DE-AC09-76SR00001
(NOW CONTRACT NO. DE-AC09-88SR18035)

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1.0 Introduction

Formal sitewide environmental planning at the Savannah River Site (SRS) began in 1986 with the development and adoption of the Strategic Environmental Plan (Du Pont, 1986). The Strategic Environmental Plan describes the philosophy, policy, and overall program direction of environmental programs for the operation of the SRS. Input to the plan was obtained from a large number of operating contractor personnel, the Department of Energy (DOE), and the Environmental Advisory Committee. The document contains:

- The philosophy and policy statements
- Key planning assumptions
- Visions for the future
- General objectives
- Management strategy
- Key planning assumptions
- Legal Requirements
- Program strategies for protecting groundwater and soil
- Program strategies for protecting surface waters and wetlands
- Program strategies for protecting the atmosphere
- Program strategies for managing SRS land and wildlife.

The Strategic Environmental Plan provided the basis for development of the Environmental Implementation Plan (EIP). The EIP is the detailed, comprehensive environmental master plan for operating contractor organizations at the SRS. The EIP provides a process to ensure that all environmental requirements and obligations are being met by setting specific measurable goals and objectives and strategies for implementation. The plan is the basis for justification of site manpower and funding requests for environmental projects and programs over a five-year planning period.

A great deal of input was provided by personnel in the various SRS departments and by the DOE for the development of the EIP. The EIP is written primarily for use by operating contractor management and environmental professionals. It will also be useful to the Department of Energy Savannah River (DOE-SR) Environmental Division (ED) and to the environmental coordinators of other site contractors. The plan is designed to be a practical and useful document. Details of activities are limited to the project and section program level. The entire plan will be updated annually.
2.0 Site Description

The SRS produces nuclear materials, primarily tritium and plutonium, for national defense. Constructed in the early 1950s, the installation near Aiken, South Carolina, is owned by the DOE and operated by an operating contractor.

The SRS produces nuclear materials by manufacturing fuel and target components, irradiating the components in nuclear reactors, chemically extracting the desired nuclear materials from the irradiated fuel and targets, separating radioactive waste, and solidifying the radioactive wastes in glass for final offsite geologic disposal. The SRS also produces fuel for the U. S. Navy's nuclear fleet in a newly constructed facility.

The SRS is located in south central South Carolina and occupies an almost circular area of approximately 325 square miles. The Savannah River forms the southwestern boundary of the plant, which is a controlled area with limited public access. The production facilities occupy less than five percent of the SRS area with the remainder being forested lands or wetlands. Eighteen production, service, and research and development areas are scattered across the site. These include five production reactors (three operational, one in cold standby and one in shutdown status), two chemical separations areas, waste processing facilities, fuel and target fabrication facilities, heavy water rework facility, powerhouse, general facilities, semi-works research facilities, administrative, technical and shops services areas, and U. S. Forest Service (USFS) areas.

The site employs more than 18,000 people of which approximately 97 percent are employed by the operating contractor and its subcontractors. The remainder are employed by the DOE, Wackenhut Services Incorporated, Savannah River Ecology Laboratory (SREL, University of Georgia), and the USFS.

Within the operating contractor, environmental protection and regulatory compliance are line organization responsibilities. Each department is responsible for the facilities it operates.

3.0 EIP Overview

The EIP is comprised of three volumes. Volume I, is the Executive Summary designed for operating contractor management, identifies the significant environmental issues and the manpower and funding needed to meet the site environmental obligations. Volume II contains the Environmental Protection Programs. These are the programs and projects that directly protect the environment. Volume III contains the Management and Support Programs which are management and administrative programs that enhance and improve
the protection programs, e.g., training and audits. The overall structure of the plan is shown in Figure 1.

Volume II, Protection Programs, and Volume III, Management and Support Programs, are the key portions of the EIP. Volume II is divided into media areas including air, surface waters and wetlands, groundwater protection and waste management, wildlife and land use, decontamination and decommissioning, and safe drinking water and other miscellaneous compliance programs. Volume III includes information on program areas including auditing and appraisals, employee education, community outreach and emergency planning related to Superfund Amendments and Reauthorization Act (SARA) Title III, organizational responsibilities, regulatory and DOE order compliance, and resource requirements.

4.0 Objectives

Each of the media and program areas in Volumes II and III contain objectives which provide the basis for implementing environmental programs at the SRS. The objectives are described in each of the following sections.

5.0 Surface Waters and Wetlands Protection

The objectives for Surface Waters and Wetlands Protection include:

- Comply with the Federal Clean Water Act, the National Environmental Policy Act, South Carolina Department of Health and Environmental Control (SCDHEC) Wastewater Treatment Regulation 61-76, applicable federal and state regulations and orders, DOE orders, and operating contractor requirements related to allowable discharge limits, National Environmental Policy Act (NEPA) review, wetlands assessments, and accident risk minimization.

- Operate within discharge limits based on applicable effluent guidelines or site-specific water quality criteria for selected radiological and nonradiological species that may pose an environmental hazard.

- Control radionuclide discharges so that the Savannah River meet the primary drinking water standards for radioactivity.

- Monitor the quality of the Savannah River and inform the public and regulatory agencies of the results regularly.

- Maintain a spill response capability and a realtime emergency tracking system that can respond rapidly to accidental releases to surface waters.
Minimize the loss of wetlands from existing operations and prevent any significant losses from future operations.

Program Summary:

Large quantities of water, primarily noncontact cooling water, are pumped from the Savannah River, PAR Pond, and wells to support SRS operations and are subsequently discharged to onsite streams and tributaries after use. Industrial and urban growth along the Savannah River above and below the SRS is expected to expand and use more Savannah River water. The increasing demand for water will require continued management of the river, wetlands, and onsite streams. The Surface Waters and Wetlands Protection Program establishes the overall management framework for the protection of these resources.

SRS operations meet environmental regulations and site policies related to the protection of surface waters and wetlands except for the thermal discharges from K Reactor and D Area Powerhouse. These thermal discharges exceed the 90°F thermal limit for discharges to Class B streams as set forth in Section 316(a) of the Federal Water Pollution Control Act (as amended by the Clean Water Act). A consent order between the DOE and South Carolina Department of Health and Environmental Control (SCDHEC) allows the two facilities to operate outside the temperature limits until mitigation facilities are placed in operation. An Environmental Impact Statement (EIS) was prepared for alternative cooling water systems. Extensive environmental information documents water from the L, K, and C reactors and the D Area Powerhouse on water quality and aquatic ecology in the receiving bodies of water. The Record of Decision (ROD) issued February 12, 1988, selected a recirculating cooling system for K Reactor as the alternative most likely to be successfully permitted. Increasing Savannah River flow to the D Area power facility for increased cooling water flow was chosen as well in the ROD. Estimated funding for the cooling tower is $127 million and funding issues must be resolved before design, construction, and startup of the selected system can begin.

The site is implementing a sitewide stream management program to coordinate numerous surface water and wetlands initiatives. The stream management program will provide a comprehensive and long-term approach to ensure that the quality of surface waters and wetlands is protected. A management policy will be developed for each stream similar to the existing Upper Three Runs Stream Policy. These policies will be the basis for decisions related to installing and operating wastewater treatment facilities and to the site and other operating facilities.

Nonradiological discharges are regulated by the site National Pollutant Discharge Elimination System (NPDES) permit. The site has an effective NPDES program with a greater than 99 percent compliance rate over the last
three years. The permit renewal application has been submitted to the State of South Carolina, and is scheduled for renewal in late 1989. Several issues may be associated with the new permit including other thermal sources, toxicity testing requirements, combining/eliminating outfalls, using effluent treatment facilities for treating additional streams, and limiting residual chlorine. If limits are placed on residual chlorine in the new permit, it could require the installation of dechlorination facilities. Estimated funding required to comply with the proposed residual chlorine requirement is $9.4 million, but will depend on conditions specified in the new permit.

The Savannah River is monitored extensively for radiological and nonradiological constituents. Small measurable quantities of low-level radioactive (alpha and beta-gamma emitting radionuclides and tritium) and nonradioactive effluents reach the river from process discharges to the onsite streams. Extensive monitoring and studies have shown that these do not have an impact on the aquatic biota or human health. Tritium composes 97 percent of the existing radiological releases to the river. Discharges of tritium increased with the operation of the F/H Effluent Treatment Facility. The downriver tritium concentrations still average 20 percent or less of the Environmental Protection Agency (EPA) drinking water standard. Alternatives to reduce tritium discharges by segregation of the H Area Separations process will be explored should river concentrations be significantly higher than expected after startup of the F/H ETF.

Costs for the Surface Water and Wetlands Protection program during the five-year planning period (FY89 through FY93) are expected to total about $385 million. Manpower requirements total $50 million. Operating costs account for about $94 million. Capital expenditures are projected to be about $242 million. The major capital items are the K Reactor cooling tower and potential dechlorination facilities.

Figure 2 depicts the percentage of the total Surface Water and Wetlands Protection Program costs for FY89 through FY93 by program issue.

Figure 3 shows manpower, operating, and capital costs by fiscal year, FY89 through FY93, for the Surface Water and Wetlands Protection Program.

6.0 Safe Drinking Water and Other Protection Programs

Objectives for the Safe Drinking Water, and other programs include:

- Compliance with Safe Drinking Water Act of 1974, as amended, and the South Carolina Primary Drinking Water Regulations (which includes the S.C. Industrial Water Supplies Regulation), including DOE obtaining applicable permits and satisfactorily completing required sample analyses
Executive Summary

and site inspections of public/industrial water supplies and sources of drinking water.

- Compliance with and implementation of DOE Order 5440.1C and other DOE guidelines for the National Environmental Policy Act (NEPA).
- Compliance with Toxic Substances Control Act (TSCA), as amended, Section 6, which prohibits use of Polychlorinated Biphenyl (PCBs) except in a totally enclosed manner; compliance with procedures for handling, storing, and disposing of regulated PCBs and PCB-containing materials is also required.
- Compliance with TSCA, Section 5(a), premanufacture notification to Environmental Protection Agency (EPA) 90 days prior to commercial manufacture, and Section 5(a)(2), reporting to EPA of significant new uses of existing chemicals or an appreciable increase in utilization for an existing purpose.
- Compliance with Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, and the S.C. Pesticide Control Act which establish procedures for handling, storing, applying and disposing of pesticides.

Program Summary:

The SRS actively participates in various other protection programs that are mandated by law: the Safe Drinking Water Act (SDWA), NEPA, TSCA, and a program for the use of pesticides under the FIFRA.

The SRS has 27 domestic water systems which are independent of the water systems in surrounding communities. The construction, modification, and operation of the site domestic water supplies and wells are regulated by the SCDHEC under the State Primary Drinking Water Regulations. These regulations include such items as:

- construction and operating permits for new systems or modifications to existing systems.
- operation of existing facilities by certified operators of the proper grade.
- periodic sampling of finished water to verify proper treatment and potability.

The SRS NEPA Program was initiated in July 1982 to ensure that the requirements of the National Environmental Policy Act were met. This program is administered and coordinated for SRS by the NEPA Activities Group within the Environmental Protection Section (EPS). The NEPA Activities Group works with various SRS organizations in gathering the information necessary to
prepare the necessary NEPA documentation for major federal actions. This includes administering a NEPA Checklist program and NEPA training program to inform SRS employees of their obligations under the Act.

The purpose of the TSCA is to protect human health and the environment by requiring the reporting of and necessary use restrictions on certain chemical substances. Since 1980, the SRS has had an active program to remove and properly dispose of PCBs which are regulated under TSCA. Operations continue to be conducted to remove all PCB fluids and materials from the site. Some PCB containing materials are shipped offsite for disposal at an EPA approved facility; others are stored in two facilities which meet federal regulations. The Premanufacture Notification Program is coordinated by the EPS; the Health Protection Section maintains the SRS chemical inventory.

The primary objective of the SRS Pesticide Program is to select and use pesticides that are safe and effective. To accomplish this goal, the program defines responsibilities regarding pesticide selection, approval, procurement, formulation for use, application, cleanup, disposal of empty containers, and contractor services and liaison. Standard procedures are established covering individual application programs. These procedures include the proper reporting of pesticide activities and stress personal safety factors. Training programs are also instituted to ensure proper application of pesticides by pesticide applicators and their supervisors.

Total costs for the Safe Drinking Water Act Protection Program, NEPA, TSCA, and the Pesticide Program during the five-year planning period (FY89 through FY93) are expected to be over $62 million. Manpower requirements and operating costs are projected to total $8.7 and 7.8 million, respectively. Capital expenditures are expected to exceed $46 million.

Figure 4 depicts the percentage of the total Safe Drinking Water and Other Compliance Programs costs for FY89 through FY93 by program issue.

Figure 5 shows manpower, operating, and capital costs by fiscal year, FY89 through FY93, for the Safe Drinking Water and Other Compliance Programs.

7.0 Land Use and Wildlife Protection

Objectives to support the Land Use and Wildlife Protection Program include:

- Compliance with all applicable federal and state land preservation/management laws and regulations.

- Coordination of land development plans with the DOE and other contractor programs.
• Continued land reclamation programs where practical.

• Compliance with all applicable federal and state wildlife laws and regulations.

• Understanding the effects of plant operations by quantifying the impacts to site lands and wildlife.

• Management of SRS wildlife populations to ensure employee safety and to protect SRS facilities.

Program Summary:

Less than five percent of the SRS land area is used for industrial purposes (buildings, roads, etc.). The majority of the remaining land is managed as a forest. Other components of SRS natural resource management include soil, water, and plant conservation: fish and wildlife management; preservation and study of historical and cultural sites; and land use activities associated with the site's designation as a National Environmental Research Park (NERP).

The SRS meets environmental regulations and site policies related to land use and wildlife protection. The operating contractor participates with other onsite contractors in a Site Use Coordination System to meet land use requirements and to promote beneficial uses of site lands. SRS also participates in studies and management programs for protection of animal species that are classified as endangered under the Endangered Species Act. Principal activities involving wildlife on the site include biological monitoring and population control. Land reclamation and erosion control activities are underway to revegetate bare or altered areas.

Total costs for the land use and wildlife protection program during the five year planning period (FY89 through FY93) are expected to total $17 million. Manpower requirements total $10.1 million. Operating costs are projected to be $6.9 million.

Figure 6 depicts the percentage of the total Land Use and Wildlife Protection Program costs for FY89 through FY93 by program issue.

Figure 7 shows manpower and operating costs by fiscal year, FY89 through FY93, for the Land Use Wildlife Protection Program.
8.0 Groundwater Protection and Waste Management

Groundwater Protection and Waste Management Program objectives include:

- Compliance with applicable federal and state regulations, DOE orders, and operating contractor policies related to groundwater protection, waste treatment, and waste disposal activities.
- Protecting the quantity and quality of groundwater resources by managing consumption for best resource utilization.
- Understanding the natural conditions of hydrology and geology that exist in the vicinity of the site.
- Assessing groundwater quality in an effort to determine any impacts that have occurred as a result of site operations.
- Protecting water resources by managing the quality of water being used in comparison to the resources available.
- Providing a waste disposal strategy consistent with applicable laws, DOE orders, and operating contractor policies for each waste stream.
- Closing all inactive waste sites in accordance with applicable laws and regulations, DOE orders, and operating contractor policies.
- Improving the quality of SRS degraded groundwater to limits agreed upon with regulatory agencies.
- Operating SRS facilities utilizing groundwater protection designs and procedures.

Program Summary:

The SRS uses large quantities of groundwater as drinking water, process water, and noncontact cooling water. Continued industrial and residential growth along with additional agricultural irrigation in areas adjacent to the SRS will increase the demand for groundwater. This increasing demand will require a comprehensive management system to ensure that the needed quality and quantity of groundwater is available for all users. The Groundwater Protection and Waste Management Program establishes the overall framework for the protection of this resource. The site's comprehensive waste management and disposal strategy includes several elements: compliance, cleanup/remediation, new management/treatment/disposal strategies and construction of new facilities, waste minimization, monitoring, research, and groundwater use conservation.
Groundwater under the SRS is monitored extensively for radiological and nonradiological constituents. Although SRS operations have impacted groundwater quality at about 33 onsite locations, offsite groundwater supplies have not been affected. Onsite and offsite drinking water supplies are monitored to ensure they are not impacted. The site has over 1000 monitoring wells from which groundwater samples are analyzed for radiological and nonradiological constituents. It is estimated that approximately 100 additional monitoring wells per year will be added over the next five years.

The SRS is in compliance with all regulations or has entered into compliance agreements related to groundwater protection, waste treatment, and waste disposal. Consent order requirements related to M Area groundwater monitoring, F and H Area Seepage Basin point-of-compliance monitoring wells, and quarterly groundwater reports are being met. The F/H Effluent Treatment Facility became operational in October 1988, and all discharges to the F and H Area Seepage Basins ceased. Plans for closure of the basins are being developed. The existing waste storage facilities are permitted or are being permitted. Existing hazardous and mixed waste storage facilities are being included in the site RCRA Part A and B permits. Part B permits are in the process of being submitted for many of the new hazardous and mixed waste treatment, storage, or disposal facilities.

The Savannah River Laboratory (SRL) has an extensive effort underway to define the regional hydrogeological system. Current programs include geologic sampling, groundwater monitoring, and aquifer modeling efforts both on and offsite to further understand the SRS hydrogeological system. The SRL will also conduct studies on the quantities of water SRS removes from aquifers relative to the production capability of the formation.

To protect the groundwater from SRS generated wastes, the site has a comprehensive waste management program. This strategy requires that all wastes be treated and disposed onsite whenever practical. Facilities for the treatment and disposal of radioactive, hazardous, mixed, and nonradioactive, nonhazardous wastes either currently exist, are under construction, or are planned for the near future. Some of these facilities include the Defense Waste Processing Facility (DWPF) which will convert liquid high-level waste into a permanent solid glass wasteform for offsite geological disposal. Low-level radioactive waste will be disposed in a new Low-Level Waste Disposal Facility which will feature stabilization and containment of the radionuclides. A new Consolidated Incineration Facility will be constructed to volume reduce radioactive waste and detoxify hazardous waste. Treatment and disposal facilities for non-incinerable hazardous and mixed waste are planned. New facilities for the retrieval and packaging of stored TRU waste for shipment to offsite geological storage are also planned.
Increased waste minimization activities have also begun. These activities will focus on improved process efficiency to reduce the amount of waste generated. The strategy will be to conduct a site inventory of waste streams, identify candidate streams for cost effective reductions, and implement facility reduction measures. The site will continue the efforts to reduce the amount and volume of low-level radioactive waste going to the Low-Level Waste Disposal Facility.

Activities toward closing 202 waste sites will continue. The SRS waste site closure strategy is to close regulatory required sites first, sites near the plant boundaries second, and finally sites interior to the site. RCRA closure activities began at the M Area Settling Basin and the Mixed Waste Management Facility in 1988, and began at the F and H Area Seepage Basins in 1989. In addition to waste closures, remediation activities are underway in M Area to remove chlorocarbons from the groundwater to prevent the existing plume from spreading.

Systems to prevent and detect groundwater impacts from existing and future facilities are in place. Site specifications for underground storage tanks, diking systems, well installation, and well abandonment have been developed.

Costs for the groundwater protection program during the five-year planning period (FY89 through FY93) are expected to total $30 million. Manpower requirements total $5.6 million. Operating costs account for $23.3 million. Capital expenditures are projected to be $650,000.

Waste management and waste minimization are expected to total $1.7 billion over the five-year planning period. Manpower requirements total $70 million. Operating costs account for $1.2 billion. Capital expenditures are projected to be $422 million.

Waste site closure costs are estimated at $285 million. Waste site closure manpower requirements total $15 million. Operating costs account for $269 million. Capital requirements are projected to be $1 million.

Underground storage tank program requirements are expected to total $16.6 million. Manpower requirements total $3.1 million. Operating costs account for $13.5 million.

Figure 8 depicts the percentage of the total Groundwater Protection and Waste Management Programs costs for FY89 through FY93 by all issues.

Figures 9 and 11 depict the percentage of total Protection Program costs for FY89 through FY93 by issue for the Groundwater Protection Program, and Waste Management, Disposal Practices, and Minimization Program, respectively.
Figures 10 and 12 show manpower, operating, and capital costs by fiscal year FY89 through FY93 for the Groundwater Protection Program, and Waste Management, Disposal Practices, and Minimization Program, respectively.

Figure 13 shows manpower, operating, and capital costs by fiscal year FY89 through FY93 for the Waste Site Closure and Remedial Action Program.

Figure 14 depicts the percentage of the total Underground Storage Tanks Program costs for FY89 through FY93 by program issue.

Figure 15 shows manpower, operating costs by fiscal year FY89 through FY93 for the Underground Storage Tanks Program.

9.0 Atmospheric Protection Program

Objectives for the Atmospheric Protection Program are:

- Compliance with the Federal Clean Air Act, SCDHEC Regulation 61-62, and other applicable federal and state regulations, DOE orders, and corporate policies related to accident risk minimization and allowable emissions rates.

- Striving to maintain emissions of radioactive, nonradiological, and toxic air pollutants per unit of production at or below current levels.

- Quantifying sitewide air pollutant emission levels, understanding the transport and interaction mechanisms of pollutants, and evaluating the impacts on human health and the environment.

- Maintaining a realtime emergency response system at the SRS that has a both onsite and two-state offsite capabilities.

- Utilizing a cost/benefit methodology for evaluating air emission initiatives.

Program Summary:

The SRS Atmospheric Protection Program includes a permitting program, emissions management, and a comprehensive air monitoring program to evaluate air quality and potential impacts of emissions from plant operations. Data shows that air quality near the SRS is within applicable federal and state limits, confirming that the impact of SRS operations on air quality has been minimal. Industrial and urban growth along the Savannah River above and below the SRS is expected to expand; thus continued protection and management of this resource is required. The Atmospheric Protection Program describes the overall management framework for protection of air quality.
SRS operations meet applicable federal and state standards and site policies related to protecting air quality, except for occasional high-opacity results from the F Area process stack. Following renovation of the nitric acid absorption column for the process stack, the opacity requirement will be met. Atmospheric emissions of sulfur dioxide from powerhouse stacks are determined from analysis of burned coal.

Limited amounts of radioactivity are released from SRS facilities in the normal course of operations. This radioactivity is monitored at the source of release for atmospheric emissions. Annual radiological release guides are set for the site and each operating facility as part of SRS emissions management program. These guides are based on past performance, projected production rates and planned improvements in emission control. Progress is measured against these guides monthly and appropriate action is initiated if emissions approach or exceed prorated goals.

Costs for the Atmospheric Protection Program during the five-year planning period from FY89 through FY93 are expected to total over $111 million. Manpower requirements total $31 million. Operating costs account for $35 million. Capital expenditures are projected to be over $45 million.

Figure 16 depicts the percentage of the total Atmospheric Protection Program costs for FY89 through FY93 by program issue.

Figure 17 shows manpower, operating and capital costs by fiscal year, FY89 through FY93, for the Atmospheric Protection Program.

10.0 Decontamination and Decommissioning Program

Objectives for the Decontamination and Decommissioning (D&D) Program include:

- Compliance with federal and state regulations, DOE D&D policies, and operating contractor environmental philosophy.

- Performance of necessary long-term planning for decommissioning surplus facilities to ensure optimum use of site resources.

- Developing new technologies when existing technologies are not applicable or cost-effective for SRS D&D activities.

Program Summary:

The site D&D activities include the development of a site program plan, compliance with regulatory, DOE and operating contractor requirements, and the development of technologies needed to carry out major decommissioning
activities. Historically, SRS D&D activities have been directed toward providing space for new facilities in existing buildings. However, the age of the site facilities may require major D&D activities in the near future.

The SRS will develop a site D&D program plan during FY89. The EPS will take the lead in determining D&D organizational responsibilities for a site program plan. The SRS Long-Range Planning Group and the Operational Planning Group will continue to provide long-range planning support until the site program is developed.

The total cost for the D&D program during the five-year planning period (FY89 through FY93) is estimated at $50 million. This includes capital expenditures of $33 million.

Figure 18 depicts the percentage of the total Decontamination and Decommissioning Program costs for FY89 through FY93 by program issue.

Figure 19 shows manpower, operating, and capital costs by fiscal year, FY89 through FY93, for the Decontamination and Decommissioning Program.

11.0 Environmental Auditing and Appraisal Program

Environmental Auditing and Appraisal Program objectives include:

- Providing technical and physical assistance to external agencies (DOE, SCDHEC, EPA, and others) during their audits of the SRS.

- Implementing a sitewide environmental appraisal program to monitor environmental performance as well as compliance with federal and state environmental regulations and operating contractor requirements.

- Identifying, tracking, and correcting conditions that may potentially cause adverse environmental impacts.

- Implementing a management appraisal program that will annually review operation organizations' environmental appraisal programs.

Program Summary:

The SRS environmental appraisal program is designed to monitor environmental performance and to ensure regulatory requirements are met. The appraisal is a two-tiered system which consists of external audits and internal appraisals. External audits are conducted by organizations not reporting to the SRS. The internal appraisals are conducted by site organizations referred to as operation organizations.
The total appraisal program will cost $7 million during the five-year planning period (FY89 through FY93) which does not include the cost of followup or corrective actions in response to findings. Manpower requirements and operating costs are projected to be $6.6 million and $510,000, respectively.

Figure 20 depicts the percentage of the total Environmental Auditing and Appraisal Program costs for FY89 through FY93 by program issue.

Figure 21 shows manpower and operating costs by fiscal year, FY89 through FY93, for the Environmental Auditing and Appraisal Program.

12.0 Employee Education

Employee Education objectives include:

- Implementing a site awareness program to communicate site environmental goals to employees and to enhance employee commitment to environmental protection.

- Providing environmental training that meets federal and state regulatory requirements, including certification and emergency response.

- Providing specialized training onsite that meets the needs of site environmental professionals in a cost-effective manner.

Program Summary:

Employee education is enhanced through awareness and training. The awareness program is designed to communicate site environmental philosophy and policy (goal) to employees. A formal awareness program, the Environmental Awareness Day, was implemented in FY88. The training program is designed to identify training activities needed to teach job-specific skills that protect the environment and satisfy regulatory training requirements. Most environmental training is provided by line management; however, some specialized training for environmental professionals is scheduled onsite by the EPS. The site environmental awareness and training programs are coordinated through the Education Subcommittee of the Central Environmental Committee (CEC). The EPS provides leadership and partial financial support for sitewide environmental awareness and training programs.

The employee education effort will require manpower requirements of $700,000. Manpower commitments required of other organizations are not defined at this time; therefore, that cost is not tabulated. In addition to manpower costs, an estimated $475,000 is required for the planning period to fund programmatic needs.
Figure 22 depicts the percentage of the total Employee Education Program costs for FY89 through FY93 by program issue.

Figure 23 shows manpower and operating costs by fiscal year, FY89 through FY93, for the Employee Education Program.

13.0 Community Outreach and Emergency Planning

Objectives for Community Outreach and Emergency Planning include:

- Developing and conducting a community outreach program to provide information for educational purposes to the general public, news media, and local and state agencies about SRS operations and site environmental programs.

- Maintaining and communicating about SRS emergency plans required by Superfund Amendments and Reauthorization Act (SARA) Title III to the general public and news media and to other federal, state and local agencies involved in emergency planning in order to ensure adequate off-site protection as well as regulatory compliance.

Program Summary:

Since startup, the SRS has been involved with emergency planning activities both onsite and with other federal, state and local agencies involved in emergency planning and emergency preparedness. This planning, however, has primarily focused on radiological incidents, fires, explosions, etc., and is outside the scope of the EIP.

There are, however, requirements in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the Resource Conservation and Recovery Act (RCRA), and other environmental legislation that requires emergency plans and planning activities. Community Outreach is an activity that is also required under SARA. The main focus of this section of the EIP is the development of a program to meet the requirements in CERCLA/SARA Title III, Community Outreach and Emergency Planning. The EPS is working with the appropriate SRS committees, the Public Relations, DOE, and other groups in order to coordinate planning and implementation efforts.

Costs for the Community Outreach and Emergency Planning Program during the five-year planning period (FY89 through FY93) are $850,000.

Figure 24 depicts the percentage of the total Community Outreach and Emergency Planning Program costs for FY89 through FY93 by program issue.
Figure 25 shows manpower and operating costs by fiscal year, FY89 through FY93, for the Community Outreach and Emergency Planning Program.

14.0 Environmental Compliance Tracking and Data Management

Environmental Compliance Tracking and Data Management Program Objectives include:

- Monitor the progress of the site environmental programs in a manner that ensures regulatory and Department of Energy (DOE) commitments are met by developing and implementing a tracking system.

- Review, modify and apply to particular situations as needed, and accept all DOE environmental orders.

- Develop an integrated environmental information system to define data consistently, allow data sharing among organizations, and deliver an easy to use system to Savannah River Site professionals.

Program Summary:

A number of informal tracking systems exist to track environmental regulatory compliance, DOE requirements, and other commitments. These systems track items such as permit applications, National Environmental Policy Act (NEPA) documentation Resource Conservation and Recovery Act (RCRA) requirements, etc. There are also reports generated in response to regulatory and DOE requirements which utilize information from these systems, such as monitoring and budget reports. A tracking system is being developed for environmental appraisals including implementation of appraisal findings. There currently is no single integrated mechanism for tracking all environmental commitments.

The Environmental Data Management (EDM) steering committee was formed in October of 1987 to provide a focal point for the development of an integrated environmental information system. Prior to the development of the committee, individual departments and groups were taking steps necessary to meet regulatory requirements and their own group objectives. Time did not always permit the development of standards, and in many cases, the control of environmental information was left to environmental staff.

As the number of environmental regulations increased and individual database applications grew, a plan was developed and implemented which began addressing immediate departmental data management needs, and at the same time, was compatible with other environmental data systems being developed long-term for the site. Applications addressed as a part of this effort included
National Pollutant Discharge Elimination System (NPDES) discharge monitoring, RCRA quarterly reports, chemical information/inventory and spill response applications.

In many cases, the sitewide network will serve as the system. Database applications will be relational and will reside largely in VMS environments. With the networking technology that currently exists at the SRS, it makes sense to put data in a location that has a controlling interest in the integrity of the data. In some cases, it may be appropriate to use the mainframe; however, technology exists today that will allow centralized management without dictating centralization on one physical system.

Currently, there are a number of tracking systems for monitoring environmental compliance and commitments at the SRS. Existing tracking systems will be reviewed and efforts to design and develop a coordinated tracking system/method will be initiated in FY89 and extend into FY90.

The DOE established policy and guidelines for implementing various laws and programs system-wide through an order mechanism. DOE orders apply to contractor program implementation and facility operation. Those orders that affect the environment are referenced in various sections of this plan. Some of the DOE environmental orders are currently being revised and updated due to recent changes in laws.

During FY89, DOE orders affecting the environment will be reviewed and the status of acceptance by the operating contractor will be verified.

The overall goal is to develop an integrated environmental information system for the SRS. This extensive effort will require communication and coordination among several groups at the site. It is therefore necessary to reach a consensus across management to commit resources necessary to develop and maintain sitewide environmental systems.

The Environmental compliance tracking and data management effort will require $3.4 million over the five-year planning period. Manpower requirements total $1.2 million. Operating costs are projected at $1.5 million.

Figure 26 depicts the percentage of the total Environmental Compliance Tracking and Data Management Program costs for FY98 through FY93 by program issue.

Figure 27 shows manpower, operating, and capital costs by fiscal year, FY89 through FY93, for the Environmental Compliance Tracking and Data Management Program.
15.0 Resource Summary

The manpower and funding requirements for the Savannah River Site (SRS) environmental program are estimated at $2.7 billion. This includes over 4,155 man-years of effort. The average annual cost is over $530 million.

Nearly 33 percent of the $2.7 billion will be incurred by the Waste Management Department. Total Waste Management Department costs will be approximately $872 million. The Defense Waste Processing Facility (DWPF) accounts for $720 million or 27 percent of the total five-year cost. The Reactors Department costs rank third at eight percent, or $213 million, of which $127 million is targeted for a K cool tower. Total Savannah River Laboratory (SRL) costs are $339 million or almost 13 percent of the total.

The Groundwater Protection and Waste Management Program is expected to require the largest amount of resources. The program, which includes solid waste disposal and waste site closures, is expected to cost $2 billion or nearly 76 percent of the total $2.7 billion. The Surface Waters and Wetlands program is next at $384 million or 15 percent with $127 million for a K Reactor cooling tower. The Atmospheric Protection Program is expected to cost $12 million over five years.

The operating budget, excluding manpower, is expected to increase over 26 percent from $268 million in FY89 to $361 million in FY93. The increase is due to increased waste management and waste site closure activities during the period.

The five-year capital costs are expected to be $800 million. The Surface Waters and Wetlands program needs are $244 million. These funds will be used primarily for the construction of K Reactor cooling tower and effluent treatment facilities. The Groundwater Protection and Waste Management Program will require $424 million. Most of this will be needed for waste disposal facilities such as the Consolidated Incineration Facility and the Hazardous Waste/Mixed Waste Disposal Facility.

Figure 28 depicts the percentage of total EIP Program costs by all issues for FY89 through FY93.

References

FIGURE 2. SURFACE WATER AND WETLANDS PROTECTION PROGRAM
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

- THERMAL MITIGATION 38.2%
- WASTEWATER TREATMENT 34.5%
- NPDES 3.5%
- RIVER MONITORING <1%
- EROSION CONTROL <1%
- INCLUDES MANPOWER, OPERATING, & CAPITAL COSTS
- RAD. EFFLUENT ASSESSMENT 12.4%
- STREAM MGMT <1%
- WETLANDS <1%
FIGURE 3. SURFACE WATER AND WETLANDS PROTECTION PROGRAM
MANPOWER, OPERATING, AND CAPITAL COSTS (FY89 - FY93)

$ 120,000

$ 100,000

$ 80,000

$ 60,000

$ 40,000

$ 20,000

0

FY89 FY90 FY91 FY92 FY93

MP = Manpower Costs
OP = Operating Costs
CAP = Capital Costs

Dollars in Thousands
FIGURE 4. SAFE DRINKING WATER AND OTHER COMPLIANCE PROGRAMS PERCENTAGE OF TOTAL COSTS BY ISSUE (FY98 - FY93)

SDWA 93.7%
NEPA 3.9%
TSCE 1.3%
FFRA 1.0%

INCLUDES MANPOWER, OPERATING, & CAPITAL COSTS
FIGURE 5. SAFE DRINKING WATER AND OTHER COMPLIANCE PROGRAMS MANPOWER, OPERATING, AND CAPITAL COSTS (FY89 - FY93).
FIGURE 6. LAND USE AND WILDLIFE PROTECTION PROGRAM
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

- LAND USE 86.9%
- LAND RECLAMATION AND EROSION CONTROL 3.8%
- OTHER WILDLIFE 9.3%
- ENDANGERED SPECIES <1%

INCLUDES MANPOWER AND OPERATING COSTS
FIGURE 8. GROUNDWATER PROTECTION AND WASTE MANAGEMENT PROGRAMS

PERCENTAGE OF TOTAL COSTS BY ALL ISSUES (FY89 - FY93)

- WASTE MINIMIZATION <1%
- GROUNDWATER CONSERVATION <1%
- GROUNDWATER MONITORING <1%
- WASTE CONSERVATION PREVENTION <1%
- CONTAMINATION DETECTION <1%

WASTE MANAGEMENT 83.4%

INCLUDES MANPOWER, OPERATING, & CAPITAL COSTS
FIGURE 9. GROUNDWATER PROTECTION PROGRAM
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

- WATER CONSERVATION 3.6%
- GROUNDWATER CONSUMPTION 1.6%
- GROUNDWATER MONITORING 62.0%
- HYDROLOGICAL REGIME 32.7%

INCLUDES MANPOWER, OPERATING, & CAPITAL COSTS
FIGURE 10. GROUNDWATER PROTECTION PROGRAM MANPOWER, OPERATING, AND CAPITAL COSTS (FY89 - FY93)

Dollars in Thousands

FY93

MP=Manpower Costs
OP=Operating Costs
CAP=Capital Costs
FIGURE 11. WASTE MANAGEMENT, DISPOSAL PRACTICES, AND MINIMIZATION
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

WASTE MANAGEMENT 99.7%
WASTE MINIMIZATION <1%

INCLUDES MANPOWER, OPERATING, & CAPITAL COSTS
FIGURE 12. WASTE MANAGEMENT, DISPOSAL PRACTICES, AND MANPOWER, OPERATING, AND CAPITAL COSTS (FY89 - FY93)
FIGURE 13. WASTE SITE CLOSURE AND REMEDIAL ACTION MANPOWER, OPERATING, AND CAPITAL COSTS (FY89 - FY93)
FIGURE 14. UNDERGROUND STORAGE TANKS
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

CONTAMINATION
DETECTION 41.2%

CONTAMINATION
PREVENTION 58.8%

INCLUDES MANPOWER AND
OPERATING COSTS
FIGURE 15. UNDERGROUND STORAGE TANKS MANPOWER AND OPERATING COSTS (FY89 - FY93)

Dollars in Thousands
Note: No Capital Costs

MP - Manpower
OP - Operating Cost

FY89
FY90
FY91
FY92
FY93

$6000
5000
4000
3000
2000
1000
0
FIGURE 16. ATMOSPHERIC PROTECTION PROGRAM
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

- AIR EMISSIONS PERMITTING <1%
- AIR QUALITY ASSESSMENTS 9.8%
- EMERGENCY RESPONSE 7.2%
- NONRADIOLOGICAL EMISSIONS MGMT 34.6%
- RADIOLOGICAL EMISSIONS MGMT 48.1%

INCLUDES MANPOWER, OPERATING, & CAPITAL COSTS
FIGURE 18. DECONTAMINATION AND DECOMMISSIONING PROGRAM
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

SITE D&D PLAN <1%

OTHER D&D PROJECTS 16.0%

TANK 16 DECOMMISSIONING 37.0%

HB-LINE DECOMMISSIONING 32.1%

HWCTR 14.6%

INCLUDES MANPOWER, OPERATING,
& CAPITAL COSTS
FIGURE 21. ENVIRONMENTAL AUDITING AND APPRAISAL PROGRAM
MANPOWER AND OPERATING COSTS (FY89 - FY93)

Dollars in Thousands
Note: No Capital Costs

- MP = Manpower Costs
- OP = Operating Costs

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FIGURE 22. EMPLOYEE EDUCATION
PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

TRAINING 49.6%

AWARENESS 50.4%

INCLUDES MANPOWER AND OPERATING COSTS
FIGURE 24. COMMUNITY OUTREACH AND EMERGENCY PLANNING PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

COMMUNITY OUTREACH 17.5%

ANNUAL ENVIRONMENTAL MONITORING REPORT 82.5%

INCLUDES MANPOWER AND OPERATING COSTS
FIGURE 25. COMMUNITY OUTREACH AND EMERGENCY PLANNING MANPOWER AND OPERATING COSTS (FY89 - FY93)
FIGURE 26. ENVIRONMENTAL COMPLIANCE TRACKING AND DATA MANAGEMENT PERCENTAGE OF TOTAL COSTS BY ISSUE (FY89 - FY93)

- DATA MANAGEMENT 78.3%
- COMPLIANCE TRACKING 14.7%
- DOE ORDERS 7%

Includes manpower, operating, & capital costs.
FIGURE 27. ENVIRONMENTAL COMPLIANCE TRACKING AND DATA MANAGEMENT, OPERATING, AND CAPITAL COSTS (FY89 - FY93)
FIGURE 28. SUMMARY OF TOTAL EIP PROGRAM COSTS BY ALL ISSUES (FY89 - FY93)

- DRINKING WATER & OTHER 2.2%
- ATOMIC PROTECTION 4.2%
- LAND USE & WILDLIFE 11%
- COMPLIANCE TRACKING 1%
- OUTREACH 1%
- EMPLOYEE EDUCATION 1%
- AUDIT/APPRAISAL 1%
- WASTE MANAGEMENT 63.5%
- INCLUDES MANPOWER, OPERATING, & CAPITAL COSTS

- UNDERGROUND TANKS 1.1%
- GROUNDWATER PROTECTION 1.1%
- WASTE SITE CLOSURES 10.5%

TOTAL EIP PROGRAMS 100%