CHAPTER 1

NEED AND PURPOSE | TC

The Savannah River Plant (SRP) near Aiken, South Carolina, is a major installation of the U.S. Department of Energy (DOE). The Plant, which began operation in the early 1950s, is the nation's primary source of reactor-produced defense materials.

Since the beginning of Plant operations, DOE and its predecessor agencies have conducted waste management activities to protect public health and the environment. An assessment of SRP waste management activities (ERDA, 1977) resulted in the adoption of a program to make improvements to the existing waste management practices in accordance with Energy Research and Development Administration (ERDA, now DOE) policies and standards. This program included regular assessments and improvements to waste management practices, studies of improved waste storage techniques, and studies to reduce the volume of waste generated.

The adoption of this program also resulted in the continuation of several waste management activities and practices at the SRP, including the use of seepage basins for the disposal of low-level radioactive liquid wastes and chemicals. Although these practices resulted in localized contamination of groundwater and land areas (Marine and Bledsoe, 1985), this contamination does not affect the offsite environment (i.e., releases to the offsite environment are within environmental and health protection standards and criteria); and the contaminated areas are dedicated to waste management activities (ERDA, 1977).

DOE's waste management practices, especially those for hazardous waste, have been subject to increasing scrutiny. On April 13, 1984, a U.S. District Court ruled (LEAF vs. Hodel) that DOE's facilities in Oak Ridge, Tennessee, were subject to the hazardous waste requirements under the Resource Conservation and Recovery Act (RCRA); DOE extended this ruling to all its Atomic Energy Act (AEA) facilities. The 1981 discovery of groundwater contamination under one settling basin at the SRP resulted in an amendment to Public Law 98-181 in 1983, which required DOE to discontinue use of that basin and to develop a plan for the protection of groundwater at the SRP. Subsequent enforcement actions pertaining to DOE's hazardous waste management program have been taken by Federal and State regulatory agencies, citizens' suits, and Congressional hearings. | E-29 | TC

In response to these events, DOE began a number of waste management activities on the Plant to comply with the newly emerging RCRA hazardous waste requirements at applicable AEA facilities. These activities included the preparation of a Groundwater Protection Plan for the Savannah River Plant (DOE, 1984); remedial action for contaminated groundwater discovered in M-Area in 1981 and the construction and operation of a wastewater effluent treatment plant in M-Area in lieu of the M-Area settling basin; the planning and design for the construction and operation of wastewater effluent treatment plants for F- and H-Areas (Separations Areas) and TNX-Area to discontinue the use of seepage basins in these areas; the removal of buried wastes and contaminated soil at the Chemicals, Metals, and Pesticides (CMP) pits; the construction of hazardous and mixed waste storage facilities; the preparation of RCRA permit

applications for hazardous waste facilities; and an expanded monitoring program to characterize groundwater quality and geohydrology on the Plant.

Demonstration programs that will improve waste management activities are also under way; these include a "beta-gamma" incinerator; a box/drum compactor; and a greater confinement disposal (GCD) demonstration. DOE expects these programs to result in improved methods of disposal for mixed and low-level radioactive wastes or reduction in waste volumes to meet applicable regulations.

Although DOE has started these and other modified waste management activities on the Plant, additional actions are required to modify the waste management C-29 program to comply with all current applicable environmental protection requirements, including recently enacted provisions for wellhead protection under the Safe Drinking Water Act (SDWA), as amended.

DOE has given initial consideration to offsite disposal alternatives. However, DOE has dismissed these alternatives from the analysis in this EIS for the following reasons:

- Increased potential for accidental public exposure to wastes transported offsite
- Cost of offsite transportation TC
- Need for siting, permitting, and development of large facilities by private developers in a timely manner
- Potential socioeconomic impacts and adverse public reaction to offsite facilities
- Potential liability for comingled wastes, when disposed of in private facilities

1.1 NEED

Operations at the SRP generate a variety of hazardous, low-level radioactive, and mixed wastes. These include hazardous wastes such as spent degreasing solvents; low-level radioactive wastes such as contaminated gloves, wipes, and liquid discharges from disassembly basins in the reactor areas; and mixed wastes such as condensate from the evaporation of high-level waste (mercury with radionuclides), process water and laboratory wastes (solvents with uranium), tritiated waste oil, and solutions used in measuring radiation (liquid scintillation solvents).

Because of past SRP waste management activities, such as the use of seepage basins and the disposal of wastes in unlined pits, groundwater (primarily water-table aquifers) in the vicinity of several waste sites has been contaminated by a variety of substances, including volatile organics, nitrates, heavy metals (lead, chromium, cadmium, and mercury), pesticides, and radionuclides.

To comply with recently enacted groundwater-protection requirements, including RCRA, the Hazardous and Solid Waste Amendments (HSWA) to RCRA, the

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Superfund Amendments and Reauthorization Act (SARA), and SDWA, DOE actions at existing waste sites and new disposal or storage facilities are required.

Several SRP locations have been used for the disposal or storage of hazardous, low-level radioactive, and mixed wastes. Many of the waste sites identified on the Plant contain or might have received hazardous, low-level radioactive, or mixed wastes. Although only a few sites currently receive low-level radioactive or permitted mixed waste, corrective actions might be required by RCRA/HSWA or CERCLA/SARA at waste sites releasing hazardous constituents, regardless of when such a site received the waste. These corrective actions would prevent the potential migration of contamination beyond the boundaries of the waste site by removing contaminants from soil, surface water, and groundwater, by removing the source of the contamination, or both. TC

Current groundwater protection and other regulations also require the establishment of new waste disposal or storage facilities. New facilities provide the needed capacity for hazardous, low-level radioactive, and mixed waste resulting from removal or exhumation actions at existing waste sites under RCRA requirements; sludges from new effluent treatment facilities that are planned or are in operation to discontinue the use of seepage basins; and wastes from interim storage facilities and ongoing SRP operations. Adequate capacity is not available in existing facilities to store or dispose of these wastes. At present, hazardous and mixed wastes are stored on an interim basis in permitted storage facilities, and the facility for the disposal of low-level radioactive waste has less than two years of capacity remaining.

1.2 PURPOSE

At present, DOE is proceeding with waste management activities to comply with applicable requirements on a priority and project basis; these activities include the submittal of Part B permits under RCRA for individual hazardous waste facilities and the implementation of remedial actions and closure plans pursuant to RCRA permits for individual waste facilities. DOE is committed to full compliance with applicable RCRA hazardous waste requirements on the Savannah River Plant. CERCLA/SARA requirements also apply to hazardous waste sites. TC

These priority and compliance waste management activities will continue; however, DOE recognizes that there is also a need for a comprehensive evaluation of the cumulative effects of individual actions. There is also a need for integrating and evaluating the effects of individual actions with other actions or projects. For example, RCRA might require the removal of hazardous waste from an existing waste site, but the removal is predicated on the availability of a permitted hazardous waste disposal or storage facility that has the capacity to accept the waste. Recognizing this need for a more comprehensive framework to evaluate its future waste management and groundwater-protection projects, DOE announced its intent to prepare this environmental impact statement (EIS) on April 26, 1985 (50 FR 16534).

The proposed action to which this dual-purpose EIS provides environmental input is the modification of waste management activities on the Savannah River

Plant for hazardous, low-level radioactive, and mixed wastes for the protection of groundwater, human health, and the environment. The EIS considers the following modifications to the SRP waste management program:

- Removal, remedial, and closure actions at active and inactive hazardous, low-level radioactive, and mixed waste sites
- Establishment of new waste disposal facilities for hazardous, low-level radioactive, and mixed wastes
- Alternative means for discharge of disassembly-basin purge water from C-, K-, and P-Reactors

The purpose of this proposed action is to identify and select a waste management strategy and project-specific actions for the treatment, storage, and disposal of SRP hazardous, low-level radioactive, and mixed wastes that will protect groundwater resources and comply with applicable regulatory requirements. These activities have the greatest potential for affecting groundwater resources. This EIS assesses modifications for each waste management activity that represent broadly defined strategies that DOE could select to implement future management actions regarding hazardous, low-level radioactive, and mixed waste.

This EIS, which is both programmatic and project-specific, supports the selection of a broadly defined waste management strategy and provides project-level environmental input for project-specific decisions on proceeding with future hazardous, low-level radioactive, and mixed waste management activities. TC Public and Federal and state agency comments have been incorporated in this final EIS. DOE will later identify its selected strategy in a Record of Decision. The strategy decision will precede any project-specific actions. TC Research activities to reduce waste generation and reduce waste toxicity (waste minimization) and to increase waste isolation from the biosphere are continuing, as are interactions with regulatory agencies. As a result, decisions on implementing portions of the overall strategy or some specific actions discussed in the EIS might be delayed. Additional National Environmental Policy Act documents will be prepared, if necessary, to support the implementation of project activities that are not addressed specifically in this EIS. Federal (RCRA, CERCLA, and SDWA, as amended) and State (South Carolina Hazardous Waste Management Act) regulations and DOE Orders will provide the bases for project-specific decisions.

REFERENCES

DOE (U.S. Department of Energy), 1984. Groundwater Protection Plan for the Savannah River Plant, Savannah River Operations Office, Aiken, South Carolina.

ERDA (Energy Research and Development Administration), 1977. Final Environmental Impact Statement, Waste Management Operations, Savannah River Plant, Aiken, South Carolina, ERDA-1537, Washington, D.C.

Marine, I. W., and H. W. Bledsoe, 1985. Supplemental Technical Data Summary, M-Area Groundwater Investigation, DPST-84-112, E. I. du Pont de Nemours and Company, Savannah River Laboratory, Aiken, South Carolina.