



State of the SAVANNAH RIVER SITE ENVIRONMENT, 2001 REPORT

INFORMING THE PUBLIC —

This document is one step in providing the public a clearer understanding of the health of the SRS environment.

Showing off crimson leaves against a backdrop of green at SRS is a swamp tupelo.

THE health of the Savannah River Site (SRS) environment is better than it has been since the beginning of site operations in 1952, and with a strong commitment to environmental stewardship, it continues to improve.

The environmental health of SRS is reflected by an impressive variety of ecological habitats and predators, a diversity of plant and animal species, growing populations of endangered species, and numerous habitats that are recovering from the effects of past operations. Contaminated areas remain, but these are being addressed through an ongoing, environmental remediation program.

Much of SRS was crop and pasture land 50 years ago. Today, about 10 percent of the 310-square-mile site has been developed, with the rest being hardwood and pine forests, lakes, streams, Carolina bays, and other wetlands. These natural and seminatural undeveloped areas provide habitats for many plants and animals, including seven federally endangered or threatened species and about 70 sensitive species.

Among the plants and animals thriving at SRS are cypress trees, wild azaleas, deer, raccoons, quail, turkeys, turtles, alligators, snakes, and red-cockaded woodpeckers. The biodiversity of water insects in Upper Three Runs, which flows through the site, reportedly is among the greatest in the world. SRS is home to 42 species of amphibians and 59 species of reptiles, more than have been recorded at any publicly owned land in the United States, including the Florida Everglades and the Great Smoky Mountains. Seventy-nine species of freshwater fish live in SRS wetlands, and about 260 species of birds breed and/or visit at SRS, including the bald eagle.

COMMITMENT TO PROTECTING ENVIRONMENTAL HEALTH —

SRS is committed to protecting the health of its environment, and stewardship of that environment is a critical mission at the site.

To accomplish this mission—as well as to protect its employees and the public—SRS conducts operations according to DOE orders, site procedures, and federal and state environmental laws and regulations. Environmental considerations have been integrated into daily site operations through the standard ISO 14001 Environmental Management System (EMS), which challenges SRS management and employees to reduce the impact of site operations on the environment. An important SRS Strategic Plan goal is to control tritium releases to the Savannah River. The SRS Environmental Restoration Program supports this goal by continuing to deploy groundwater systems that capture and redirect tritium away from site streams that feed the Savannah River. During 2001, the total amount of tritium released to the Savannah River from SRS decreased by approximately 28 percent (from 5,960 curies



Prevalent at SRS, the eastern box turtle may live for more than 50 years.

A double auger is used in K-Area for in-situ soil solidification—part of the environmental restoration activities at SRS.



in 2000 to 4,320 curies in 2001). Most of this decrease is attributed to the diversion of tritium in groundwater away from Four Mile Creek, which supports continued efforts to maintain a long-term trend of decreased tritium in the river.

Pollution prevention (P2) is integral to the SRS EMS, which is an essential part of the SRS Integrated Safety Management System. SRS embraces pollution prevention as a primary strategy to operate in a compliant, cost-effective manner that protects the environment and the safety and health of employees and the public. The SRS P2 Program establishes a preference for (1) source reduction and recycling over treatment, storage, and disposal and (2) the use of energy-efficient and resource-conservative practices and operations. These practices were employed as site waste generators implemented nearly 100 projects in 2001. The projects resulted in SRS being able to avoid the generation of approximately 222,000 cubic feet of radiological and hazardous waste, with an estimated annual savings of about \$50 million. The 181,000 cubic feet of radiological and hazardous waste generated by routine operations in 2001 represents the lowest volume since implementation of the P2 Program in 1993.

MAINTAINING ENVIRONMENTAL HEALTH –

SRS maintains the health of its environment through environmental restoration, waste management, and environmental and natural resource management.

Environmental Restoration – SRS works with the U.S. Environmental Protection Agency - Region IV (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC), with input from the SRS Citizens Advisory Board and the public, to address contaminants released to the environment. The site, which is responsible for the remediation of soil, sediments, surface water, and

groundwater, has a total of 515 waste sites in its environmental restoration program. Innovative technologies continue to be deployed to increase the effectiveness and efficiency of remediation/cleanup activities at SRS—with most of the work focused on the higher risk locations. By the end of 2001, 305 of the 515 waste sites were completed or were in remediation.

Waste Management – SRS waste management activities are eliminating or reducing releases and potential releases of contaminants to the environment.

Prior to storage and disposal, some wastes are reduced in volume, toxicity, and/or mobility. As waste storage, treatment, and disposal become necessary, SRS uses various approaches in managing different types of wastes to protect human health and the environment. Examples include the following:

- Solid low-level waste is disposed of permanently in engineered concrete vaults and trenches.
- A water treatment facility removes radioactive and nonradioactive contaminants, except tritium, from process effluents prior to their discharge to a site stream.
- Having poured its four-millionth pound of vitrified waste January 1, 2001, the Defense Waste Processing Facility (DWPF) leads the world in producing environmentally acceptable borosilicate glassified waste. Nowhere else has this quantity been achieved from one facility, marking a significant milestone in stabilizing the high-level waste. Converting the liquid radioactive waste form into a solid immobilizes it, making it safer to handle than the liquid contained in underground storage tanks. The waste eventually will go to a national repository.

Empty canisters at DWPF await worker certification before being used to hold vitrified waste. The molten waste-glass mixture is poured into the stainless steel canisters, where the glassified waste cools and hardens.





Diatoms, a type of microscopic algae, are one of the media collected from the Savannah River to assess the potential effects of SRS on the river.

- All 9,000 transuranic waste drums that were stored under earthen cover have been retrieved and purged of potentially explosive gases. Shipments of certified transuranic waste are being sent to the New Mexico Waste Isolation Pilot Plant (WIPP) for disposal. By the end of 2001, SRS had completed seven shipments of TRU waste to WIPP; each shipment contained forty-two 55-gallon drums of waste.

Environmental and Natural Resource Management – SRS operations are conducted in a manner that fully protects human health and the environment and that complies with all applicable federal and state regulations. Federal and state environmental requirements are contained in site permits, administrative agreements, and plans approved by the site, by SCDHEC, and by EPA. Newly proposed activities or significant modifications to existing site programs have been evaluated to identify their potential for impact on the environment. This helps ensure that protection of the site's natural resources is strongly considered in their design.

Active management of the site's natural resources continues. This involves the maintenance of forests and wildlife habitats; the restoration of wetlands, such as Pen Branch and Fourmile Branch (damaged by past thermal discharges); and the management of wildlife, including threatened and endangered species such as the bald eagle, the American alligator, the wood stork, the red-cockaded woodpecker, the smooth purple coneflower, and the pondberry.

As a National Environmental Research Park, the site continues to support long-term environmental research to improve the understanding of how its activities affect the environment. About seven percent of the site has been

designated as set-aside areas (30 areas covering about 14,000 acres), where relatively undisturbed long-term environmental research is conducted. Research that began in 1951, with baseline studies of many plants and animals, continues today. The baseline allows SRS to compare new research results with past results. Natural systems can suffer when large-scale industrial activities are present, but research has shown that site operations and the environment can coexist.

MONITORING ENVIRONMENTAL HEALTH –

SRS collects numerous samples of environmental media each year and conducts long-term research to monitor the health of its environment. Independent monitoring in and around the site also is conducted by SCDHEC and the Georgia Department of Natural Resources.

Environmental monitoring is conducted within a wide area in and around SRS—including neighboring cities, towns, and counties in Georgia and South Carolina—and extends down the Savannah River to the Atlantic coast. Thousands of samples of air, rainwater, surface water, drinking water, groundwater, food products, wildlife, soil, sediment, and vegetation are collected and analyzed for radioactive and/or nonradioactive contaminants. Results, which are reported to the public annually, consistently indicate that releases of hazardous substances from SRS operations pose minimal risk to human health and the surrounding environment. Also, as part of the surface water program, the site monitors tritium concentrations in the Savannah River and reports the results to downstream water users weekly.

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This document is one step in providing the public a clearer understanding of the health of the SRS environment. This is the third annual edition.

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