

## 1 SUMMARY

### 1.1 PURPOSE AND NEED

Under the Naval Nuclear Propulsion Program, sponsored jointly by the Departments of Defense and Energy, enriched uranium is produced by a Department of Energy Gaseous Diffusion Plant. This uranium ( $UF_6$ ) is shipped to the present commercial supplier of naval fuel materials, which converts it into a form that can be used to fabricate naval reactor cores for propulsion. Presently, 40 percent of the Navy's major combat fleet is nuclear powered, including all the ballistic missile submarines. These vessels all depend on this single supplier for fuel materials for their reactor cores.

With only this one source for nuclear fuel, there is no contingency against unforeseen events. Additionally, capacity limitations at the existing facility preclude a significant buildup of the naval nuclear fuel inventory. Two commercial firms expressed interest in constructing and operating a second fuel materials facility, but they would not undertake such a venture with their own capital and at their own risks. Because of these concerns, the Department of Energy determined that it was in the national interest to build a second fuel materials facility at a DOE site.

The purpose of this document is to assess the environmental impacts from the construction and operation of the proposed fuel materials facility at the Savannah River Plant (SRP).

### 1.2 ALTERNATIVES AND PROPOSED ACTION

The Department of Energy considered the no-action alternative and determined it to be unacceptable for the reasons stated in Section 1.1.

The planning process for the fuel materials facility considered siting alternatives. A formal siting study was conducted to select a preferred site and alternate sites for the facility. This study determined that the Savannah River Plant was the preferred location. The Oak Ridge Reservation was selected as an alternate location.

One chemical process has been demonstrated to be capable of converting enriched uranium to the fuel form that possesses the high-performance characteristics needed for the Naval Nuclear Propulsion Program. This process is the only one that has passed the extensive and lengthy qualification work needed to demonstrate satisfactory fuel material performance. This process has been used successfully in the manufacture of naval fuel materials for more than 15 years and will be the process employed in the Fuel Materials Facility, which is the subject of this environmental assessment.

The proposed action that is considered in this assessment is the construction and operation of a Fuel Materials Facility (FMF) at the Savannah River Plant in South Carolina.

### 1.3 AFFECTED ENVIRONMENT OF PROPOSED ACTION

The FMF site consists of 6.4 acres on the 192,000-acre Savannah River Plant in South Carolina. The Plant is about 37 kilometers southeast of Augusta, Georgia, and 27 kilometers south of Aiken, South Carolina. Within the SRP area, the FMF site is a previously disturbed open field inside the security fence surrounding the 200-F Separations Area. It lies in the Upper Three Runs Creek drainage area.

About 90 percent of the controlled-access SRP land contains pine and bottomland hardwood forests, which support a diversity of wildlife habitats. These areas are protected from the public except for controlled cutting, reforestation, and hunting. The Plant is drained by several streams that flow into the Savannah River. Downstream from Augusta, the Savannah River is a Class B waterway that is suitable for industrial and agricultural uses, and the propagation of fish; after treatment, the water is suitable for domestic use.

The six-county area surrounding the Plant is predominantly forested and agricultural. Since 1970, it has experienced a combined population growth of 18 percent. Public services and facilities are adequate.

### 1.4 ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTION

Table 1-1 summarizes the potential impacts of the construction and operation of the Fuel Materials Facility at the Savannah River Plant.