

**DEPARTMENT OF DEFENSE  
DEPARTMENT OF THE ARMY**

**DRAFT FINDING OF NO SIGNIFICANT IMPACT  
DRAFT FINDING OF NO PRACTICABLE ALTERNATIVE  
DECOMMISSIONING AND DISMANTLEMENT OF THE DEACTIVATED SM-1 NUCLEAR  
REACTOR FACILITY**

**United States Army Garrison Fort Belvoir  
Fairfax County, Virginia**

Pursuant to the Council on Environmental Quality regulations, 40 *Code of Federal Regulations* (CFR) Part 1500-1508, implementing procedural provisions of the National Environmental Policy Act and the provisions of 32 CFR Part 651, the United States Army Corps of Engineers (USACE) gives notice that a Draft Environmental Assessment (EA), Draft Finding of No Significant Impact (FNSI), and Draft Finding of No Practicable Alternative (FONPA) have been prepared for the proposed decommissioning and dismantlement of the Deactivated Stationary Medium Power Model 1 (SM-1) Nuclear Reactor Facility at United States Army Garrison Fort Belvoir (Fort Belvoir) in Fairfax County, Virginia (Proposed Action). The Proposed Action has been thoroughly reviewed by USACE and it has been determined that it will have no significant adverse effects on the local environment or quality of life that would require the preparation of an Environmental Impact Statement (EIS) as defined at 32 CFR Part 651.41, *Conditions requiring an EIS* and 32 CFR Part 651.42, *Actions normally requiring an EIS*.

**Background:**

SM-1 was the Army's first nuclear-powered, electricity-generating station and the first pressurized water reactor to be connected to an electrical grid in the United States. SM-1 operated from 1957 to 1973 and was deactivated between 1973 and 1974. It was placed in a safe storage (SAFSTOR) configuration in 1974. The Deactivated SM-1 Nuclear Reactor Facility is maintained under Reactor Possession Permit Number SM1-1-19 issued by the US Army Nuclear and Countering Weapons of Mass Destruction Agency (USANCA). Oversight is provided by the Army Reactor Office (ARO). The Deactivated SM-1 Nuclear Reactor Facility has been part of a routine monitoring program that is consistent with Army Regulation (AR) 50-7 and implemented by USACE.

Under USACE's Deactivated Nuclear Power Plant Program, decommissioning a nuclear reactor is required within 60 years of its final shutdown in order to be consistent with US Nuclear Regulatory Commission (NRC) regulations. The Deactivated Reactor Management Plan outlines a process for managing the Army's deactivated nuclear power plants, including SM-1. Decommissioning includes the full range of actions taken to bring radioactivity levels at the site down to the unrestricted release standards. This includes construction-related activities such as decontamination, removal of radioactive materials, building demolition, and site remediation. AR 50-7 requires USACE to obtain a Decommissioning Permit from the ARO prior to initiating decommissioning.

**Proposed Action:**

The Proposed Action is to decommission the Deactivated SM-1 Nuclear Reactor Facility and dismantle existing structures in accordance with the ARO-approved SM-1 Decommissioning Plan (DP) to allow the site to be released for unrestricted future use. All radioactive and non-radioactive wastes (e.g., buildings, underground utility lines, contaminated soils) would be removed from the SM-1 site. Radioactive, hazardous, and non-radioactive waste would

be segregated and prepared on-site for transport to an appropriate disposal or recycling facility. The decommissioning of SM-1 would reduce residual radioactivity to levels that would allow USACE to release the site for unrestricted use, as defined in 10 CFR Part 20.1402, *Radiological Criteria for License Termination*, and return the property to Fort Belvoir for future use.

The purpose of the Proposed Action is to safely remove, transport, and dispose of all materials, equipment, and structures associated with the Deactivated SM-1 Nuclear Reactor Facility and remediate environmental impacts from the facility such that residual radioactivity levels meet the applicable criteria for unrestricted use. The Proposed Action is needed to complete the decommissioning of the Deactivated SM-1 Nuclear Reactor Facility within 60 years of its final shutdown in accordance with the NRC regulations as adopted by the ARP in AR 50-7. The Proposed Action would complete the final phase of an All Hazards Assessment required under AR 50-7 to allow for permit termination. Implementing the Proposed Action would reduce costs associated with maintaining the Deactivated SM-1 Nuclear Reactor Facility, and would allow USACE to meet mission objectives to decommission SM-1 and terminate the possession permit. Upon its completion, the Proposed Action would return the property to Fort Belvoir.

### Existing Conditions:

Fort Belvoir is a strategic sustaining base for the Army that provides logistical, intelligence, and administrative support to a diverse mix of tenant commands, activities, and agencies. The Deactivated SM-1 Nuclear Reactor Facility is located on Fort Belvoir's South Post within the secured 300 Area, on an approximately 3.6-acre site along the shoreline of Gunston Cove, a tidal embayment of the Potomac River. The SM-1 site contains the reactor building, an inactive wastewater lift station, a small warehouse, a water intake pier and pump house, a concrete discharge pipe, and outfall structure. The water intake pier and pump house, concrete discharge pipe, and outfall structure are located in the 100-year floodplain and tidal wetlands associated with Gunston Cove. Based on its age and exceptional historic importance, the SM-1 Reactor Facility has been determined eligible for listing in the National Register of Historic Places (NRHP).

### Alternatives Analyzed:

The EA analyzes two alternatives to the Proposed Action: 1) the Proposed Action Alternative, which would execute the Deactivated SM-1 Nuclear Reactor Facility DP; and 2) the No Action Alternative, which would not implement the SM-1 DP and would allow the continued maintenance of the Deactivated SM-1 Nuclear Reactor Facility in a SAFSTOR condition and future Reactor Possession Permit extensions.

Under the Proposed Action Alternative, the Deactivated SM-1 Nuclear Reactor Facility would be decommissioned and dismantled. All radioactive and non-radioactive materials and equipment and remnant structures, including the intake pier and pumphouse, concrete discharge pipe, and outfall structure, would be removed from the SM-1 site. Removal of in-water structures would require work in the 100-year floodplain and tidal wetlands associated with Gunston Cove. All radioactive and non-radioactive materials and waste associated with the site would be packaged, transported, and disposed of in accordance with applicable laws and regulations. Fort Belvoir's existing road network would be used to access the SM-1 site, and to transport materials and waste off-post for disposal or recycling.

Following decommissioning, the site would be restored, including the placement of clean fill soils and grading to mimic the site's current elevation and topography, and released for unrestricted use. The 100-year floodplain and tidal wetlands would return to a pre-disturbance condition following the removal of the remnant in-water structures. Adherence to applicable safety plans and standard operating procedures would minimize health and safety risks. The Proposed Action Alternative would avoid, minimize, or mitigate any potential adverse environmental impacts to the maximum extent possible.

Under the No Action Alternative, USACE would continue to maintain the Deactivated SM-1 Nuclear Reactor Facility in a SAFSTOR condition under the current reactor possession permit (No. SM1-1-19). The No Action Alternative would require USACE to continue bearing the cost of maintenance and would not allow the site to be restored or returned to a natural state. Although the No Action Alternative does not meet the Proposed Action's purpose and need, it represents the status quo and serves as a comparative baseline for analysis in the EA, in accordance with 40 CFR Part 1502.14.

### Environmental Effects:

The EA presents an analysis of the potential environmental impacts associated with the Proposed Action Alternative and No Action Alternative. Potential direct, indirect, and cumulative impacts were evaluated for water resources; air quality; biological resources; radiological safety and health; occupational safety and health; cultural resources; transportation and traffic; non-radiological hazardous materials and non-hazardous solid waste; and geology, topography, and soils. Neither Alternative would have significant adverse impacts on these resources.

By necessity of the location of the intake pier, pump house, and wastewater outfall pipe and the requirement to remove those structures to complete decommissioning and dismantlement of SM-1, activities to facilitate their removal must occur in tidal wetlands and the 100-year floodplain to satisfy the Proposed Action's purpose and need. Activities within the floodplain and wetlands would cease after all remnant structures have been removed; therefore, adverse short-term impacts on those resources from the Proposed Action Alternative would be less than significant. Long-term impacts would be beneficial as those resources return to a pre-disturbance condition. In accordance with Executive Order 11988, this Draft FNSI incorporates USACE's Draft FONPA explaining its decision to implement the Proposed Action Alternative in the 100-year floodplain associated with Gunston Cove. The detailed rationale and analysis for this finding is provided in the Draft EA.

USACE has determined that the Proposed Action Alternative would have an adverse effect on the NRHP-eligible SM-1 Reactor Facility. To ensure this adverse effect remains less than significant, USACE has developed mitigation and minimization measures in consultation with the Virginia Department of Historic Resources (VDHR; the Commonwealth of Virginia's State Historic Preservation Office [SHPO]), the Advisory Council on Historic Preservation (ACHP), and other consulting parties. These measures are memorialized in a Memorandum of Agreement (MOA) and summarized as follows:

- A. USACE will produce a modified Historic American Engineering Record (HAER) for the SM-1 Reactor Facility which will document SM-1 operations within its historical context as a nationally significant nuclear energy resource. This documentation will include information such as location and address, owner, operational and decommissioning narratives, and architectural details, supported by a complete bibliography and electronic repository, including motion picture film, photographs, and documents, as appropriate. Due to the loss of original as-built drawings, the HAER documentation will include a 3-dimensional rendering of the facility using Light Detection and Ranging (LIDAR) scans.
- B. USACE will conduct interviews with personnel who were closely associated with the construction, operation, and initial closure of the SM-1 Reactor Facility. These interviews will be conducted, recorded, and transcribed in accordance with applicable standards. In addition, research will be conducted at Fort Belvoir, and at repositories elsewhere in Virginia and Washington, DC, including review of historic photographs, training videos, aerials, maps, documents, plans, newspapers, and scientific journals. Digital images will be saved and labeled in accordance with SHPO standards for architectural surveys.
- C. All field work, photography, and research necessary to produce the HAER of the SM-1 Reactor Facility will be carried out by or under the direct supervision of a Secretary of the Interior-qualified architectural historian, who meets the appropriate *Secretary of the Interior's Professional Qualification Standards* (SOI

Standards; 48 *Federal Register* 44738-9, Sept. 29, 1983). All work will be conducted in accordance with *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (36 CFR Part 61); and *Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR Part 68).

- D. USACE will provide the SHPO with a thirty (30)-day period to review and comment on the HAER documentation.
- E. USACE will implement other mitigation measures identified in the MOA, such as moving the commemorative plaque affixed to Building 372 to a facility for restoration and display; salvaging historical items to be placed on loan for traveling exhibits; and erecting a historical marker commemorating the SM-1 Reactor Facility.
- F. USACE will complete the HAER and other mitigation measures identified in the MOA within six months after completion of the decommissioning and demolition of the SM-1 Reactor Facility.

With implementation of measures specified in the MOA and other applicable best management practices and minimization measures described in the EA, the Proposed Action Alternative would have no significant adverse impacts on human health or the environment.

### **Finding of No Practicable Alternative:**

Pursuant to Executive Order 11988, I find that there is no practicable alternative to siting elements of the Proposed Action entirely outside of floodplains. USACE will ensure that all practicable measures to minimize impacts on and within the floodplain environment are incorporated into the Proposed Action. This decision has been made after taking into account all submitted information and considering a full range of practical alternatives that meet project requirements.

### **Finding of No Significant Impact:**

Based on information gathered and analyzed in the EA, the Department of the Army finds that implementing the Proposed Action would not significantly impact the quality of the natural or human environment as defined at 32 CFR Part 651.41-42; therefore, preparation of an EIS is not required.

### **U.S. Army Corps of Engineers, Baltimore District**

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Date

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COL John T. Litz  
District Engineer

### **U.S. Army Garrison Fort Belvoir**

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Date

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Michael H. Greenberg  
Colonel, US Army  
Commanding