## DEACTIVATED SM-1 NUCLEAR REACTOR FACILITY DECOMMISSIONING AND DISMANTLEMENT

## DRAFT ENVIRONMENTAL ASSESSMENT PUBLIC MEETING

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"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."





CONC

#### TOPICS

- Introduction
- History of the Deactivated SM-1 Nuclear Reactor Facility
- Residual Radiation and Radiation Fundamentals
- Proposed Action
- National Environmental Policy Act (NEPA)
- Draft Environmental Assessment Findings and Conclusions
- National Historic Preservation Act Section 106
- Executive Orders (EO) 11988 and 11990
- Questions and Opportunities to Comment





## INTRODUCTION

- The U.S. Army Corps of Engineers (USACE) has made the Draft Environmental Assessment (EA), Draft Finding of No Significant Impact (FNSI), and Draft Finding of No Practicable Alternative (FONPA) available for a 6-week public review
- The 6-week public review period began on December 20, 2019 and will end on January 31, 2020
- This meeting is your opportunity to learn about the Proposed Action and how to provide feedback
- You may comment orally or in writing at this meeting or submit written comments via email or U.S. Mail



Your participation in this process is highly encouraged!







#### **HISTORIC USE**

- SM-1 provided partial power to Fort Belvoir (first reactor to power a commercial electric grid in U.S.)
- Primarily used to train nuclear operators/technicians (approximately 800 personnel trained over the 16-year lifespan)
- Served as the prototype for the rest of the reactors designed by the Army
- After deactivation, facility operated as a museum highlighting the Army Nuclear Power Program



Service members from the Army, Air Force and Navy are pictured in the control room of SM-1, which was used for training nuclear technicians from all branches.









#### **SM-1 TIMELINE: DETAILS**



#### **1973-74 PARTIAL DECOMMISSIONING ACTIVITIES AND SAFSTOR**

- Removal of the nuclear fuel
- Shipment of the radioactive waste
- Minor decontamination
- Sealing of the reactor containment vessel (which includes the Reactor Pressure Vessel, Steam Generator, Pressurizer, Reactor Coolant Pumps and primary system piping)
- Installing appropriate security, warning signs and monitoring devices
- Remaining radioactivity was contained and has been sealed in safe storage (SAFSTOR) mode for the past 40-plus years
  - Safe storage is a radiological industry practice where radioactive materials are safely stored to allow the shorter-lived radionuclides to decay
- USACE conducts quarterly environmental monitoring to ensure the site does not pose any hazards to the surrounding installation tenants, the community or the environment



#### Proposed Action & Environmental Assessment





#### DRAFT EA ANALYZES TWO ALTERNATIVES

#### **Proposed Action Alternative:**

Complete decommissioning and dismantlement of the Deactivated SM-1 Nuclear Reactor Facility. This alternative includes:

- Removal of the Deactivated SM-1 Nuclear Reactor Facility and associated buildings and structures
- Removal of residual radioactive contamination exceeding regulatory levels
- Restoration of the SM-1 site to a vegetated condition and return of the site to Fort Belvoir for future use
- Termination of USACE's Decommissioning Permit

#### **No Action Alternative:**

Decommissioning would not be completed and the Deactivated SM-1 Nuclear Reactor Facility would be maintained as it currently is for the foreseeable future





## NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA)

- USACE has prepared a Draft EA to analyze this action in compliance with NEPA
- NEPA is the national charter for protection of the environment (42 U.S.C. Part 4321 et seq.)
- NEPA requires federal agencies to analyze the impacts of their proposed actions
- NEPA requires opportunities for public involvement (e.g., Draft EA public comment period, this meeting)









## NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA)

- In parallel with NEPA, federal agencies are also required to analyze the effects of their actions on:
  - Wetlands and floodplains
  - Threatened and endangered species
  - Cultural resources







#### **DRAFT EA ANALYZES THE FOLLOWING RESOURCES**













Radiological safety and health



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Geological resources

Cultural resources

Transportation and traffic



Occupational safety and health

Resources that would not be affected by the Proposed Action are not analyzed in the Draft EA



Non-radiological hazardous materials

and non-hazardous solid waste





#### **SUMMARY OF DRAFT EA FINDINGS**

- The Proposed Action would have no significant impacts on resources analyzed in the Draft EA
- Most adverse impacts would be short-term and temporary, occur during decommissioning / dismantling activities
- The Army and/or its contractors would implement management practices and measures to minimize adverse impacts to the extent possible
- Removal of the Deactivated SM-1 Nuclear Reactor Facility would have long-term beneficial impacts on some resources

The NEPA process will conclude when the Army issues a Finding of No Significant Impact (FNSI).





#### Water Resources

- <u>Short-term adverse impacts</u> from stormwater runoff, increased sedimentation, and/or decommissioning-related disturbances
- Adverse impacts would be minimized through adherence to appropriate management measures and practices
  - Erosion & Sediment Control Plan
  - Stormwater Pollution Prevention Plan









#### Water Resources (continued)

- The Proposed Action would have <u>long-term</u> <u>beneficial impacts</u> on water resources by restoring the site to a vegetated condition
- USACE has prepared a Draft FONPA in accordance with EOs 11988 and 11990 to address proposed activities affecting floodplains and wetlands







- <u>Short-term adverse impacts</u> from pollutant emissions by construction vehicles and equipment. Emissions would vary throughout the project and be comparable to similar types of construction and demolition projects
- Temporary emissions would not degrade regional air quality
- <u>No long-term impacts</u>











#### **Biological Resources**

- <u>Short-term adverse impacts</u> from clearing of vegetation and displacement of common wildlife species. Wildlife would relocate to nearby areas offering similar habitat
- Best management practices would be used to minimize impacts on vegetation and wildlife
- <u>Long-term beneficial impacts</u> on vegetation and wildlife from site restoration









**Biological Resources** (continued)

The Proposed Action:

- is <u>not likely to adversely affect</u>
  federally listed threatened and endangered terrestrial species
- may affect, but is <u>unlikely to</u> <u>adversely affect</u> federally listed fish species
- would have <u>no effect</u> on critical habitat



Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus)

Northern long-eared bat (Myotis septentrionalis)







#### **Biological Resources** (continued)

- The Proposed Action <u>may affect, but is unlikely</u> <u>to adversely affect</u> Essential Fish Habitat
- USACE has consulted with the U.S. Fish & Wildlife Service and National Marine Fisheries Service



Most adverse impacts would occur during demolition activities and would be temporary.





#### Radiological Safety and Health

<u>Short-term adverse impacts</u> from potential exposure to low levels of residual radiation, and the generation of debris containing low levels of residual radiation

- Current levels of radioactivity at the Deactivated SM-1
  Nuclear Reactor Facility are very low
- Radioactive waste and debris generated by the Proposed Action would be classified as Low Level Radioactive Waste (LLRW)
- All LLRW would be packaged and transported for disposal in compliance with U.S. Department of Transportation (USDOT) and Nuclear Regulatory Commission (NRC) regulatory requirements

Most adverse impacts would occur during demolition activities and would be temporary.









#### Radiological Safety and Health (continued)

- A Radiation Safety Program, an Environmental Monitoring and Control Program, and a Waste Management Program would ensure the safe removal of contaminated components and reduce the risk of release to the environment
- Appropriate monitoring of occupational radiation exposure would be provided to staff entering and working in the restricted area
- A Waste Management Plan (WMP) would safely guide the handling and management of LLRW
- Removal of the facility would have a <u>long-term beneficial</u> <u>impact</u>









#### Occupational Safety and Health

- <u>Short-term adverse impacts</u> from decommissioning activities
- Long-term adverse impacts from ongoing site maintenance
- The contractor would prepare, implement, and adhere to an Accident Prevention Plan (APP) before performing work. The APP would be reviewed and updated throughout the project as phases and/or conditions change
  - USACE would provide continuous oversight of the APP
- USACE would enter into agreements with on- and off-post first response services and hospitals to ensure any needed support is available.

Most adverse impacts would occur during demolition activities and would be temporary.







#### Cultural Resources

- The SM-1 Reactor Facility is eligible for listing in the National Register of Historic Places due to its historic significance
- USACE is consulting with the Virginia Department of Historic Resources to record the history and operation of SM-1
- Adherence to mitigation measures will ensure that effects on this National Register-eligible resource remain <u>less than significant</u>
- <u>No effects on traditional cultural resources</u>







#### **Transportation and Traffic**

- <u>Short-term adverse impacts</u> on the on- and off-post transportation networks
- The Proposed Action would generate an estimated 1,150 truck trips over the 5-year project to remove debris and deliver clean fill soils during site restoration
- All debris would be packaged and transported in accordance with USDOT and NRC requirements









#### Non-Radiological Hazardous Materials / Non-Hazardous Solid Waste

- <u>Short-term adverse impacts</u> from waste generated during decommissioning activities
- All waste generated by the Proposed Action would be managed, handled responsibly
- <u>No long-term impacts</u>







#### Geology, topography, and soils

- <u>Short-term adverse impacts</u> on topography, soils, bathymetry, and sediments
- <u>Long-term beneficial impacts</u> from site restoration and removal of soils with low levels of residual contaminants







## **SECTION 106**

- Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their actions on properties listed, or eligible for listing, in the National Register of Historic Places
- The SM-1 Reactor Facility is eligible for listing in the National Register due to its historic significance
- Under Section 106, the Proposed Action would have an <u>adverse effect</u> on the SM-1 Reactor Facility
- USACE is mitigating the Section 106 adverse effect by preparing a modified Historical American Engineering Record (HAER) document to record SM-1's historic significance, and will implement other measures in consultation with Virginia Department of Historic Resources (VDHR)









## FLOODPLAIN MANAGEMENT AND PROTECTION OF WETLANDS

- The former water intake pier and discharge pipe must be removed as part of the Proposed Action
- Removal of these structures will allow the shoreline to return to a natural condition, resulting in a beneficial long-term impact
- No practicable alternative exists to remove the pier and discharge pipe that would avoid disturbance of floodplains and wetlands
- USACE has prepared a Draft Finding of No Practicable Alternative (FONPA) to address floodplain disturbance







#### DECOMMISSIONING RISKS AND HOW WE REDUCE THEM

- Safety is the Army's number one priority—the safety and health of the community and our workers are paramount to the success of our project
- Trained professionals will use proven techniques and precautions to ensure the safety of the workers and the public
- Work will be completed using appropriate engineering controls
- All wastes will be properly packaged in compliance with USDOT and NRC requirements
- Wastes will be disposed of at permitted off-post facilities with adequate capacity to handle and manage them









#### **FEDERAL OVERSIGHT**







- U.S. Army Corps of Engineers will provide quality assurance over the contractor and their quality control program
- Corps of Engineers National Environmental Center of Expertise
- Army Reactor Office and Reactor Council
- Oak Ridge Associated Universities Independent Review





## **TIMELINE / SCHEDULE**



## QUESTIONS AND HOW TO LEARN MORE

Learn more about the SM-1 Project online at: www.nab.usace.army.mil/SM-1/ Sign up for the SM-1 stakeholder update e-mail list by e-mailing: CENAB-CC@usace.army.mil

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#### HOW TO COMMENT ON THE DRAFT EA, DRAFT FONSI, AND DRAFT FONPA

**Tonight:** Fill out a comment form or dictate your comment to the stenographer

#### Send written comments to:

U.S. Mail: Brenda Barber, P.E. USACE Project Manager c/o AECOM 4840 Cox Road Glen Allen, Virginia 23060 E-mail: cenab-cc@usace.army.mil

Written comments must be postmarked by January 31, 2020







