United States Department of Energy

Savannah River Site

Interim Record of Decision
Remedial Alternative Selection for the
H-Area Tank Farm, Waste Tank 16

CERCLIS Number: 89

SRR-CWDA-2015-00157

Revision 1

July 2016

Prepared by: Savannah River Remediation LLC
Waste Disposal Authority
Aiken, SC 29808

Prepared for U.S. Department of Energy Under Contract No. DE-AC09-09SR22505

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Aiken, South Carolina

INTERIM RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

H-Area Tank Farm, Waste Tank 16

CERCLIS Number: 89

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Savannah River Site
Aiken, South Carolina

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Savannah River Remediation LLC
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U. S. Department of Energy under Contract DE-AC09-09SR22505
Savannah River Operations Office
Aiken, South Carolina

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DECLARATION FOR THE INTERIM RECORD OF DECISION

Unit Name and Location

H-Area Tank Farm, Waste Tank 16

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification Number: OU-89

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Identification Number: SC1 890 008 989

United States Department of Energy
Savannah River Site
Aiken, South Carolina

The H-Area Tank Farm (HTF), Waste Tank 16 is listed as a Resource Conservation and Recovery Act (RCRA) 3004(u) Solid Waste Management Unit/CERCLA unit in Appendix C of the Federal Facility Agreement (FFA) for the Savannah River Site (SRS).

The FFA is a legally binding agreement between regulatory agencies [United States Environmental Protection Agency (EPA), South Carolina Department of Health and Environmental Control (SCDHEC) and United States Department of Energy (DOE)] that establishes the responsibilities and schedules for the comprehensive remediation of SRS. The media associated with this operable unit (OU) is limited to HTF Waste Tank 16, which has been operationally closed and removed from service in September 2015 under the approved *Industrial Wastewater General Closure Plan for H-Area Waste Tank Systems* (SRR-CWDA-2011-00022) and the *Industrial Wastewater Closure Module for Liquid Waste Tank 16H, H-Area Tank Farm, Savannah River Site* (SRR-CWDA-2013-00091). The remaining waste tanks and ancillary structures within the HTF will be closed under the same HTF General Closure Plan (GCP) along with a corresponding closure module.

This Interim Record of Decision (IROD) for HTF Waste Tank 16 does not include the groundwater beneath the HTF or the soil surrounding the tank. An HTF Groundwater

Monitoring Plan (SRNS-RP-2012-00146), which describes the monitoring of the groundwater exiting the HTF in accordance with the HTF GCP, supports both the operation and removal from service of the HTF waste tanks and includes requirements for reporting the monitoring results. Groundwater and the soils surrounding the tanks will be addressed in the final Record of Decision (ROD) for the HTF OU.

Statement of Basis and Purpose

This decision document presents the selected interim remedial action for HTF Waste Tank 16 following removal from service in accordance with the South Carolina Pollution Control Act, S. C. Code Ann., Section 48-1-10, et seq. (1985) and all applicable regulations implementing that Act. The interim remedial action was chosen in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the information contained in the Administrative Record File for this site.

The EPA, SCDHEC, and DOE concur with the selected interim remedy.

Assessment of the Site

The DOE intends to remove from service HTF waste tanks that do not meet the standards established in the FFA Appendix B (High-Level Radioactive Waste Tank Systems). Waste tanks and ancillary structures removed from service are cleaned and stabilized with grout to reduce the risk of a leak to the environment and to provide a stable form that is protective of human health and the environment. A 2012 performance assessment (SRR-CWDA-2010-00128) determined that exposure to stabilized residual material in the waste tanks is unlikely during the interim period from the time the individual waste tanks are removed from service under the Industrial Wastewater Construction Permit until final closure of the entire HTF OU under a final ROD. The potential risk lies in the premature degradation of the engineered barriers which could increase the likelihood of exposure. The parties to the FFA determined that the interim remedial action selected in

this IROD was needed for HTF Waste Tank 16 to ensure that the integrity of the stabilization actions were protected from significant damage or deterioration during the interim period.

Description of the Selected Remedy

The selected remedy for the HTF Waste Tank 16 is Annual Visible Engineered Barriers Inspection and Maintenance.

The selected remedy includes annual inspections of the engineered barrier (i.e., visible grout) for physical integrity. In addition, the area will be inspected for excessive water accumulation that may cause premature degradation of the engineered barrier associated with stabilization of the waste tank. The interim action is limited to any maintenance deemed necessary from the annual inspections from the time of removal of a waste tank or associated ancillary equipment from service until a final ROD is issued for the HTF OU. This alternative was selected because it is protective of human health and the environment, and the requirement for annual inspections is consistent with the maintenance and monitoring requirements of the HTF GCP and the tank-specific closure module.

The current land use for the HTF is industrial with DOE maintaining control of the land. The HTF is currently in the operational phase and access is restricted by administrative controls. Land use controls (LUCs) are not part of the interim action. LUCs may be included in the final ROD for the HTF OU in order to prevent inadvertent exposure to remaining contaminated media and to ensure the integrity of the closed tanks by restricting land and groundwater uses within the HTF OU. The Land Use Control Implementation Plan (LUCIP) will be deferred until final closure of the entire HTF OU.

An SRS RCRA permit modification has been submitted to reflect selection of the interim remedy using the procedures under 40 Code of Federal Regulation Part 270 and South Carolina Hazardous Waste Management Regulations R.61-79.264.101; 270.

Statutory Determinations

This interim action is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the limited-scope remedial action, and is cost-effective. This action is interim and is not intended to utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. Because this action does not constitute the final remedy for the HTF OU, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed by the final response action. Subsequent actions may be needed to fully address the threats posed by the conditions at the HTF OU.

Because this interim remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted to ensure that the interim remedy continues to provide adequate protection of human health and the environment within five years after commencement of the interim remedial action. Because this is an IROD, review of the HTF Waste Tank 16 interim remedy will continue as DOE continues to develop final remedial alternatives for the HTF OU.

Data Certification Checklist

This IROD provides the following information:

- Because of ongoing operations, a CERCLA risk assessment has not been conducted and is not required to support the interim action. A performance assessment has been prepared and has determined that exposure to stabilized residual waste in the tanks is unlikely during the interim period.

- Since this is an interim action, quantitative remediation goals (i.e., site-specific concentrations used as cleanup criteria) are not specified.

- The current land use for the HTF is industrial. The HTF is currently in the operational phase and access is restricted by administrative controls. Additional controls are not part of the interim action. A final remedial action will be evaluated and conducted in the future for the entire HTF OU according to the requirements of the FFA. The LUCIP will be deferred until final closure of the entire HTF OU.

- The selected interim action remedy for the HTF Waste Tank 16 is Alternative A-3, Annual Visible Engineered Barriers Inspection and Maintenance. The estimated total present worth cost is $265,737.

- An Explanation of Significant Difference will be used to apply the interim remedy selected in this IROD to each additional HTF waste tank, group of waste tanks, and associated ancillary structures when satisfactorily removed from service in accordance with a SCDHEC approved closure module.

7/13/16
Date

Michael A. Mikolanis
Assistant Manager for Infrastructure and Environmental Stewardship
U. S. Department of Energy
Savannah River Operations Office

7/21/16
Date

for Franklin E. Hill
Director
Superfund Division
U. S. Environmental Protection Agency - Region 4

8/1/16
Date

Daphne G. Neel
Bureau Chief
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control

DECISION SUMMARY
REMEDIAL ALTERNATIVE SELECTION

H-Area Tank Farm, Waste Tank 16

CERCLIS Number: 89

SRR-CWDA-2015-00157
Revision 1

July 2016

Savannah River Site
Aiken, South Carolina

Prepared by:

Savannah River Remediation LLC
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Aiken, South Carolina

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LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CM	Closure Module
DOE	United States Department of Energy
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
GCP	General Closure Plan
GSA	General Separations Area
HTF	H-Area Tank Farm
IASB/PP	Interim Action Statement of Basis/Proposed Plan
ICMI	Interim Corrective Measures Implementation
IRAIP	Interim Remedial Action Implementation Plan
IROD	Interim Record of Decision
LUC	Land Use Controls
LUCIP	Land Use Control Implementation Plan
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	operations and maintenance
OU	Operable Unit
RAIP	Remedial Action Implementation Plan
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SCDHEC	South Carolina Department of Health and Environmental Control
SCHWMR	South Carolina Hazardous Waste Management Regulations
SRR	Savannah River Remediation LLC
SRS	Savannah River Site

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I. SAVANNAH RIVER SITE AND OPERABLE UNIT NAME, LOCATION, AND DESCRIPTION

Unit Name, Location, and Brief Description

H-Area Tank Farm, Waste Tank 16
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification Number: OU-89
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Identification Number: SC1 890 008 989
United States Department of Energy (DOE)
Savannah River Site
Aiken, South Carolina

Savannah River Site (SRS) occupies approximately 310 square miles of land adjacent to the Savannah River, principally in Aiken and Barnwell counties of South Carolina (Figure 1). SRS is located approximately 25 miles southeast of Augusta, Georgia, and 20 miles south of Aiken, South Carolina.

The DOE owns SRS, which historically produced tritium, plutonium, and other special nuclear materials for national defense and the space program. Chemical and radioactive wastes are by-products of nuclear material production processes. Hazardous substances, as defined by the CERCLA, are currently present in the environment at SRS.

The Federal Facility Agreement (FFA) (WSRC-OS-94-42) for SRS lists the H-Area Tank Farm (HTF) as a Resource Conservation and Recovery Act (RCRA) Solid Waste Management Unit/CERCLA unit requiring further evaluation. The HTF was evaluated through a performance assessment (SRR-CWDA-2010-00128) to determine the actual or potential impact to human health and the environment of releases of hazardous substances to the environment.

This Interim Record of Decision (IROD) is being issued by DOE for HTF Waste Tank 16, with concurrence by the United States Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control

(SCDHEC). The selected interim remedial action for HTF Waste Tank 16 is Annual Visible Engineered Barriers Inspections and Maintenance necessary as a result of the inspections. An Explanation of Significant Difference (ESD) will be used to apply the interim remedy selected in this IROD to each additional HTF waste tank, group of waste tanks, and associated ancillary structures when satisfactorily removed from service in accordance with SCDHEC approved closure module(s).

II. SITE AND OPERABLE UNIT COMPLIANCE HISTORY

SRS Operational and Compliance History

The primary mission of SRS has been to produce tritium, plutonium, and other special nuclear materials for our nation's defense programs. Production of nuclear materials for the defense program was discontinued in 1988. SRS has provided nuclear materials for the space program, as well as for medical, industrial, and research efforts up to the present. Chemical and radioactive wastes are by-products of nuclear material production processes. These wastes have been treated, stored, and in some cases, disposed at SRS. Past disposal practices have resulted in soil and groundwater contamination.

Hazardous waste materials handled at SRS are managed under RCRA, a comprehensive law requiring responsible management of hazardous waste. Certain SRS activities require SCDHEC operating or post-closure permits under RCRA. SRS received a RCRA hazardous waste permit from the SCDHEC, which was most recently renewed on February 11, 2014. Module VIII of the Hazardous and Solid Waste Amendments portion of the RCRA permit mandates corrective action requirements for non-regulated solid waste management units subject to RCRA 3004(u).

On December 21, 1989, SRS was included on the National Priorities List (NPL). The inclusion created a need to integrate the established RCRA facility investigation (RFI) program with CERCLA requirements to provide for a focused

environmental program. In accordance with Section 120 of CERCLA 42 United States Code Section 9620, DOE has negotiated an FFA (WSRC-OS-94-42) with EPA and SCDHEC, entered into pursuant to Section 120 of CERCLA and Sections 3008(h) and 6001 of RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (hereinafter jointly referred to as RCRA) and the Atomic Energy Act of 1954, to coordinate remedial activities at SRS into one comprehensive strategy which fulfills these dual regulatory requirements. DOE functions as the lead agency for remedial activities at SRS, with concurrence by the EPA - Region 4 and the SCDHEC.

Operable Unit Operational and Compliance History

The HTF is located at the SRS in Aiken County and Barnwell County, South Carolina (Figure 1) and was constructed to receive waste generated by various SRS production, processing, and laboratory facilities and has treated and stored wastes that contain heavy metals and high levels of radioactivity. The HTF is a 45-acre site within the General Separations Area (GSA), which encompasses E, F, H, J, S, and Z-Areas (Figure 2). The HTF contains 29 liquid waste storage tanks, three evaporator systems, over 74,800 linear feet of transfer pipelines, eight diversion boxes, one catch tank, two concentrate transfer systems and ten pump pits. Figure 3 shows the general layout of HTF. Waste storage and removal operations are governed by an Industrial Wastewater Construction Permit (DHEC_01-25-1993).

There are four major waste tank types in HTF that range in size from 750,000 gallons (Type I tanks) to 1.3 million gallons (Type III/IIIA and Type IV tanks) that have varying degrees of secondary containment and internal tank interferences to waste removal and sampling, such as cooling coils and columns. Additional information on the HTF and Tank 16 are in the Waste Tank 16 Closure Module (CM) (SRR-CWDA-2013-00091).

The use of HTF allowed for isolation of these wastes from the environment, SRS workers, and the public. With HTF and its sister facility, F-Area Tank Farm, facilities are in place to pretreat the accumulated sludge and salt solutions (supernate) to enable the management and treatment of these wastes within other SRS facilities (i.e., Defense Waste Processing Facility and Saltstone Production Facility). These treatment facilities convert the sludge and supernate to more stable forms suitable for permanent disposal in a Federal Repository, or the Saltstone Disposal Facility, as appropriate.

Waste Tank 16 is a Type II tank constructed in the mid-1950s. The Type II tanks primary liners have an 85 foot inside diameter and are 27 feet high with a nominal operating capacity of 1,070,000 gallons. The 0.625 inch-thick carbon steel primary liner sits inside a 5-foot high, 90-foot 1.25-inch inside diameter secondary liner (annulus pan). The primary and secondary liners are enclosed within a 95-foot 8.5-inch outside diameter concrete vault that creates an approximately 2-foot 6.6-inch wide annular space. The vault walls are 33-inch thick reinforced concrete and the roof is 45-inch thick reinforced concrete. Figure 4 shows a cross-section of a typical Type II tank (SRR-CWDA-2010-00128).

Each Type II tank contains 40 vertical cooling coils (20 operating, 20 auxiliary) that are supported from the primary tank roof by hanger and guide rods. Four horizontal cooling coils (two upper operating, two lower auxiliary) crisscross above the waste tank floor and are supported by guide rods welded to the primary liner floor. Supply pipes penetrate the waste tank roof to connect the tank top cooling water system to the cooling coils. There are approximately 29,400 linear feet of 2-inch inside diameter carbon steel pipe cooling coils in a Type II tank (SRR-CWDA-2010-00128).

HTF Closure Activities

Waste Tank 16 was operationally closed and removed from service in 2015 in accordance with the SCDHEC-approved *Industrial Wastewater General Closure Plan for H-Area Waste Tank Systems* (SRR-CWDA-2011-00022) and waste tank system-specific CM (SRR-CWDA-2013-00091). No ancillary structures were included in the Waste Tank 16 removal from service. The tank was isolated from the remaining operating facility and filled with grout. Some equipment installed in the tank, or used in the waste removal and cleaning activities (e.g., transfer pump, transfer jet, rotary spray wash downcomers, thermowells) was entombed in the grout as part of the closure process. Figure 5 shows an aerial view of Waste Tank 16.

DOE is in the process of removing the remaining HTF waste tanks and ancillary structures from service in accordance with the HTF General Closure Plan (hereinafter referred to as the HTF GCP [SRR-CWDA-2011-00022]) and waste tank system-specific CMs. HTF waste storage and removal operations are governed by Industrial Wastewater Construction Permit #17,424-IW issued by SCDHEC on January 25, 1993 and the FFA. The State of South Carolina has authority for approval of wastewater treatment facility operational closure under Chapter 61, Article 82 of the SCDHEC Regulations. The *Ronald Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005*, Section 3116 (a) specifies the criteria for DOE to use to determine whether residuals remaining in the waste tank systems can be managed as non-high level waste at a DOE site in a "covered state" (e.g., South Carolina) where activities are regulated by the state's approved closure plan or permit, authority for the approval or issuance of which is conferred on the State outside of Section 3116. The *Basis for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site* (DOE/SRS-WD-2014-001) has been prepared for HTF, based in part on the environmental protection information provided in the HTF Performance Assessment (SRR-CWDA-2010-00128). Based on the information in the *Basis*

for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site and the HTF Performance Assessment, the Secretary of Energy, in consultation with the United States Nuclear Regulatory Commission, has determined that the residual material in the waste tank systems can be managed as non-high level waste.

In May 2002, DOE issued an Environmental Impact Statement (EIS) on waste tank cleaning and stabilization alternatives (DOE-EIS-0303). The DOE studied five alternatives:

1) Empty, clean, and fill waste tank with grout,
2) Empty, clean, and fill waste tank with sand,
3) Empty, clean, and fill waste tank with saltstone,
4) Clean and remove waste tanks, and
5) No action.

The EIS concluded the "Empty, clean, and fill waste tank with grout" alternative to be the best approach to minimize human health and safety risks associated with closure of the waste tank. The DOE also issued a Record of Decision (ROD) selecting the Fill-with-Grout alternative for SRS waste tank closure (DOE-EIS-0303 ROD).

Waste tanks and ancillary structures are removed from the Wastewater Construction Permit when they are stabilized and removed from service. The parties to the FFA determined that an interim remedial action was needed for the waste tanks and ancillary facilities removed from service to address the period between removal from the Wastewater Construction Permit until final closure of the Operable Unit (OU). The interim action would ensure that the integrity of stabilization actions implemented under the SCDHEC-approved HTF GCP and waste tank system-specific CMs were protected from significant damage or deterioration during the interim period, and would detect any conditions of the tank systems that would require maintenance actions during the interim period.

The HTF GCP requires groundwater monitoring under an approved plan. The *H-Area Tank Farm Groundwater Monitoring Plan and Sampling and Analysis Plan* (SRNS-RP-2012-00146) describes the monitoring of the groundwater exiting the HTF, supports both the operation and removal from service of the HTF waste tanks, and includes requirements for reporting the groundwater monitoring results. The HTF Groundwater Monitoring Plan remains in effect until all waste tanks have been removed from service, at which time a remedial decision, if any is needed, will be made for the HTF OU that includes the stabilized tanks, the surrounding soils, and the groundwater below the HTF. Because these requirements are already in place, groundwater monitoring is not being considered as an interim action in this IROD.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Both RCRA and CERCLA require the public to be given an opportunity to review and comment on the draft permit modification and proposed remedial alternative(s). Public participation requirements are listed in South Carolina Hazardous Waste Management Regulations (SCHWMR) R.61-79.124 and Sections 113 and 117 of CERCLA (42 United States Code Sections 9613 and 9617). These requirements include establishment of an Administrative Record File that documents the investigation and selection of the remedial alternative for addressing HTF Waste Tank 16. The Administrative Record File must be established at, or near, the facility at issue.

The SRS FFA Community Involvement Plan (WSRC-RP-96-120) is designed to facilitate public involvement in the decision-making process for permitting, closure, and the selection of remedial alternatives. SCHWMR R.61-79.124 and Section 117(a) of CERCLA, as amended, require the advertisement of the draft permit modification and notice of any proposed remedial action and provide the public an opportunity to participate in the selection of the remedial action. The *Interim Action Statement of Basis/Proposed Plan for the H-Area Tank Farm, Waste Tank 16* (SRR-CWDA-2015-00125), a part of the Administrative Record

File, highlights key aspects of the investigation and identifies the preferred action for addressing HTF Waste Tank 16.

The FFA Administrative Record File, which contains the information pertaining to the selection of the response action, is available at the following locations:

US Department of Energy
Public Reading Room
Gregg-Graniteville Library
University of South Carolina – Aiken
171 University Parkway
Aiken, South Carolina 29801
(803) 641-3465

Thomas Cooper Library
Government Documents Department
University of South Carolina
Columbia, South Carolina 29208
(803) 777-4866

The RCRA Administrative Record File for SCDHEC is available for review by the public at the following locations:

The South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201
(803) 898-2000

The South Carolina Department of Health and Environmental Control
Midlands EQC Region – Aiken
206 Beaufort Street, NE
Aiken, South Carolina 29801
(803) 642-1637

The public was notified of the public comment period through mailings of the *SRS Environmental Bulletin*, a newsletter sent to citizens in South Carolina and Georgia, and through notices in the *Aiken Standard*, the *Allendale Citizen Leader*, the *Augusta Chronicle*, the *Barnwell People-Sentinel*, and *The State* newspapers. The public comment period was also announced on local radio stations.

The Interim Action Statement of Basis/Proposed Plan (IASB/PP) 45-day public comment period began on February 16, 2016 and ended on March 31, 2016. A Responsiveness Summary, prepared to address any comments received during the public comment period, is provided in Appendix A. A Responsiveness Summary will also be available with the final RCRA permit.

IV. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The scope of the interim response action is limited to the interim controls that the individual HTF waste tanks and ancillary structures will be subject to from the time of removal from the Industrial Wastewater Construction Permit until the final response action for the closure of the entire HTF OU. The interim response action in this IROD is specific for Waste Tank 16, which has been operationally closed and removed from service. This IROD does not include the groundwater beneath the HTF or the soils surrounding the tanks. Groundwater will be addressed in the final ROD for the HTF OU.

An ESD will be used to apply the interim remedy selected in this IROD to each additional HTF waste tank, group of waste tanks, and associated ancillary structures when satisfactorily removed from service in accordance with a SCDHEC approved CM.

V. OPERABLE UNIT CHARACTERISTICS

The HTF is in H Area, which is located in the north-central region of SRS. Figure 2 shows the GSA area at SRS. The GSA is located atop a ridge running southwest-northeast that forms the drainage divide between Upper Three Runs Creek to the north, Fourmile Branch to the south, and McQueen Branch to the east.

Much of SRS lies within the Aiken Plateau, which slopes to the southeast at approximately 5 feet per mile. The Aiken Plateau is bounded by the Savannah and Congaree Rivers and extends from the fall line to the Orangeburg Escarpment. The highly dissected surface of the Aiken Plateau is characterized by broad interfluvial areas with narrow, steep-sided valleys.

VI. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Land Uses

According to the Savannah River Site Future Use Project Report (DOE_01-29-1996), residential uses of SRS land should be prohibited. The HTF is located in an area designated exclusively for industrial use and currently is in an operational phase. The future land use of the HTF OU is reasonably anticipated to remain industrial with DOE maintaining control of the land. No current or projected future development of the HTF is planned. The Land Use Control Implementation Plan (LUCIP) will be deferred until final closure of the entire HTF OU.

Groundwater Uses/Surface Water Uses

There is no current or projected future use of the groundwater or surface water as a drinking water source at the HTF OU. Land use controls will be part of any final remedial action to ensure the prevention of unrestricted uses.

VII. SUMMARY OF OPERABLE UNIT RISKS

The HTF is located in an area designated exclusively for industrial use and currently is in an operational phase. Because of ongoing operations, a CERCLA risk assessment has not been conducted and is not required to support this interim action. However, a performance assessment has been prepared and has determined that exposure to stabilized residual material in the tanks is unlikely during the interim period (SRR-CWDA-2010-00128). The potential risk lies in the premature degradation of the engineered barriers which could increase the likelihood of exposure. More specific findings from a baseline risk assessment and exposure levels for the HTF will be included for all media in the subsequent final action ROD.

VIII. REMEDIAL ACTION OBJECTIVES AND REMEDIAL GOALS

Remedial Action Objectives (RAOs) are media- or OU-specific objectives for protecting human health and the environment. RAOs describe what the remediation must accomplish and are used as a framework for developing remedial alternatives. The RAOs are based on the nature and extent of contamination, threatened resources, and the potential for human and environmental exposure.

The interim RAO is to prevent premature degradation of the engineered barriers associated with the stabilization of Waste Tank 16. If evidence of premature degradation is noted, appropriate action will be taken based on the evidence. Following removal from service of all HTF waste tanks and ancillary structures, an evaluation will be conducted for all media (e.g., soils, groundwater, etc.) in the HTF OU and additional RAOs will be established at that time.

Remedial Goals

Remedial goal options are typically identified along with the RAOs and represent the cleanup goals that are either concentration levels that correspond to a risk or hazard, or are based on Applicable or Relevant and Appropriate Requirements (ARARs). Since this is an interim action, quantitative remediation goals are not specified.

Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), requires that remedial actions for cleanup of hazardous substances must comply with requirements and standards set forth under federal and state environmental laws and regulations that are applicable or relevant and appropriate (i.e., ARARs). ARARs include only federal or state environmental or facility laws and regulations and do not include occupational

safety or worker protection requirements. SARA requires that the remedial action for a site meet all ARARs unless a waiver is invoked.

ARARs consist of two sets of requirements: those that are applicable, and those that are relevant and appropriate. Applicable requirements are those substantive standards that specifically address the situation at a CERCLA site and are promulgated under federal or state environmental laws. If a requirement is not applicable, it may still be relevant and appropriate. "Applicability" is a legal and jurisdictional determination, while the determination of "relevant and appropriate" relies on professional judgment, considering environmental and technical factors at the site. A requirement may be "relevant" in that it covers situations similar to those at the site, but may not be "appropriate" to apply for various reasons and, therefore, not well suited to the site. In some situations, only portions of a requirement or regulation may be judged relevant and appropriate; if however, a requirement is applicable, all substantive parts must be followed. In addition to ARARs, many federal and state environmental and public health programs include criteria, guidance, and proposed standards that are not legally binding, but provide useful approaches or recommendations. Such information is required to be considered when remedial goals are developed.

There are no ARARs for the preferred stabilized Waste Tank 16 interim remedial alternative, which is annual inspection and maintenance. DOE will continue to implement requirements for appropriate inspections, as described in DOE Order 435.1 and its associated manual and guide for the operation of the HTF. DOE Order 435.1 is a To Be Considered criterion for inspections.

IX. DESCRIPTION OF ALTERNATIVES

This section summarizes the interim remedial alternatives to be evaluated. Three interim remedial alternatives were developed for Waste Tank 16. These alternatives are based on site conditions that remain following stabilization (i.e., grouting) of Waste Tank 16 as implemented under the HTF GCP and waste tank system-specific CM.

Alternative A-1: No Action

Total Present Worth Cost *$0*

The No Action alternative is required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) to serve as a baseline for comparison with other remedial alternatives. This alternative would leave Waste Tank 16 in the current stabilized condition with no additional controls or monitoring.

Alternative A-2: Triennial Visible Engineered Barriers Inspection and Maintenance

Total Present Worth Cost *$88,579*

Visible engineered barriers (i.e., visible grout) will be inspected triennially (i.e., every three years) for physical integrity. In addition, the area will be inspected for excessive water accumulation that may cause premature degradation of the engineered barriers associated with the stabilized waste tank.

Alternative A-3: Annual Visible Engineered Barriers Inspection and Maintenance

Total Present Worth Cost *$265,737*

Alternative A-3 includes the maintenance activities described for Alternative A-2, but increases the frequency of the inspections to every year for consistency with the requirements of the HTF GCP.

The detailed cost estimates for the interim remedial alternatives are provided in Appendix B.

X. COMPARATIVE ANALYSIS OF ALTERNATIVES

The NCP [40 CFR 300.430(e)(9)] sets forth nine evaluation criteria to provide the basis for evaluation of alternatives and selection of a remedy. The nine criteria were derived from the statutory requirements of CERCLA Section 121 and fall into categories of threshold criteria, primary balancing criteria, and modifying criteria. Modifying criteria (i.e., state or support agency acceptance and community acceptance) will be evaluated after the public comment period for the IASB/PP. The nine evaluation criteria are detailed in Table 1.

Comparative Analysis of HTF Waste Tank 16 Interim Remedial Alternatives

A comparative analysis of the three interim remedial alternatives evaluated is provided in Table 2. Below is a summary of the comparison of alternatives.

Overall Protection of Human Health and the Environment

The remedial alternatives are assessed to determine the degree to which each alternative eliminates, reduces, or controls threats to human health and the environment through treatment, engineering methods, or institutional controls. Alternative A-1 is protective of human health and the environment because of the engineering controls (i.e., waste tank closure and grouting) implemented under the HTF GCP and waste tank system-specific CM. Alternative A-2 provides additional protection with visual inspections to identify premature degradation associated with stabilization actions. The frequency of every three years for the visual inspections is sufficient because the remainder of the HTF waste tanks will be operational and other inspection activities will be taking place in the general area of the stabilized waste tank. Alternative A-3 increases the frequency of the inspections to annually.

Compliance with ARARs

ARARs are cleanup standards, standards of control and other substantive requirements, criteria or limitations promulgated under federal, state, or local environmental laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Section 121(d) of CERCLA, as amended by the SARA requires that remedial actions comply with requirements and standards set forth under federal and state environmental laws.

There are no ARARs for the preferred interim remedial alternative, which is annual inspection and maintenance for stabilized Waste Tank 16. DOE will continue to implement requirements for appropriate inspections, as described in DOE Order 435.1 and its associated manual and guide for the operation of the HTF. DOE Order 435.1 is a To Be Considered criterion for inspections.

Short-Term Effectiveness

The remedial alternatives are assessed considering factors relevant to implementation of the remedial action, including risks to the community during implementation, impacts to workers, potential environmental impacts (e.g., air emissions), and the time until protection is achieved. Alternative A-1 is effective for the interim period because of the engineering controls (i.e., closure and grouting of tanks) implemented under the HTF GCP and Waste Tank 16 CM. Alternative A-1 poses no short-term risk to human receptors or the environment as a result of tank stabilization and this alternative requires no time to implement. Alternative A-2 and Alternative A-3 pose no additional risk to human health or the environment and site workers will be protected by health and safety plans and procedures. Both Alternatives A-2 and A-3 are readily implemented following waste tank stabilization. Inspections required by Alternatives A-2 and A-3 will assure protection of workers and identify potential environmental impacts during

the interim period until such time as all HTF tanks are closed and a final ROD is implemented.

Long-Term Effectiveness and Permanence

The remedial alternatives are assessed based on their ability to maintain reliable protection of human health and the environment after implementation. Because this is an interim measure, long-term effectiveness and permanence do not apply to any of the three alternatives.

Reduction of Toxicity, Mobility, or Volume through Treatment

The remedial alternatives are assessed based on the degree to which they employ treatment that reduces toxicity (the harmful nature of the contaminants), mobility (the ability of the contaminants to move through the environment), or volume of contaminants associated with the unit. The selected alternative does not involve treatment so the reduction of toxicity, mobility, or volume through treatment does not apply to any of the three alternatives. Stabilization of the tank and residual waste, which did reduce the volume and mobility of the waste (i.e., by tank cleaning and grouting in accordance with the HTF GCP and waste tank system-specific CM), is not part of this interim response action.

Implementability

The remedial alternatives are assessed by considering the difficulty of implementing the alternative, including technical feasibility, constructability, reliability of technology, ease of undertaking additional remedial actions (if required), monitoring considerations, administrative feasibility (regulatory requirements), and availability of services and materials. No implementation is associated with Alternative A-1. Alternatives A-2 and A-3 are readily implemented following waste tank stabilization.

Cost

The evaluation of remedial alternatives must include capital and operations and maintenance (O&M) costs. Present value costs are estimated within +50/-30% according to EPA guidance, with a graduated discount factor for increasing O&M time. There is no interim action cost for Alternative A-1 because no additional action is taken. The cost estimates for Alternatives A-2 and A-3 were prepared from information available at the time of the estimate and the final costs may vary from the estimates presented in Table 2 and Appendix B. Currently, the assumed time frame for Alternatives A-2 and A-3 is 26 years, at which time a final ROD will be issued for the HTF OU.

XI. THE SELECTED REMEDY

The selected interim alternative for Waste Tank 16 is Alternative A-3 to conduct annual visible engineered barriers inspections and perform any maintenance necessary as a result of those inspections in the interim period until final remedial actions for the HTF OU are determined. Although Alternative A-3 is more expensive, this alternative is preferred over A-2 because the requirement for annual inspections is consistent with the maintenance and monitoring requirements of the HTF GCP and the Waste Tank 16 CM.

Based on information currently available, the lead agency (DOE) believes the selected alternative provides the best balance of tradeoffs among the other alternatives with respect to the evaluation criteria. The DOE expects the selected alternative to satisfy the statutory requirements in CERCLA Section 121(b) to: (1) be protective of human health and the environment and (2) be cost-effective.

Cost Estimate for the Selected Remedy

A detailed, activity-based breakdown of the estimated costs associated with implementing and maintaining the selected remedy is presented in Appendix B. A summary of the costs is provided below:

Total Estimated Capital Cost:	*$0*
Total Estimated O&M Cost:	*$265,737*
Total Estimated Cost:	*$265,737*

The information in the cost estimate table is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum in the Administrative Record File, an ESD, or a ROD amendment. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 and –30 percent of the actual project cost.

Estimated Outcomes of Selected Remedy

The interim RAO is to prevent premature degradation of the engineered barriers associated with stabilization of Waste Tank 16 that has been operationally closed and removed from service. If evidence of premature barrier degradation is noted, appropriate action will be taken based on the evidence. Following removal from service of all HTF waste tanks and ancillary structures, an evaluation will be conducted for all media (e.g., soils, structures, equipment) in the HTF OU and additional RAOs will be established at that time.

The selected interim remedy meets the RAO through annual visual inspections of the engineered barriers and maintenance.

The current land use for the HTF is industrial with DOE maintaining control of the land. The HTF is currently in the operation phase and access is restricted by administrative controls. Additional LUCs are not part of this interim action. A final remedial action will be evaluated and conducted in the future for the HTF OU according to the requirements of the FFA. A LUCIP will be deferred until final closure of the entire HTF OU.

This IROD for HTF Waste Tank 16 does not include the groundwater beneath the HTF or the soil surrounding the tank. An HTF Groundwater Monitoring Plan (SRNS-RP-2012-00146), which describes the monitoring of the groundwater exiting the HTF in accordance with the HTF GCP, supports both the operations and operational closure of the HTF waste tanks and includes requirements for reporting the monitoring results. Groundwater will be addressed in the final ROD for the HTF OU.

Waste Disposal and Transport

Because the selected interim remedial action is Annual Visible Engineered Barriers Inspection and Maintenance, there will be no waste streams generated during the interim remedial action.

XII. STATUTORY DETERMINATIONS

This interim action was selected because it is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the limited-scope remedial action, and is cost-effective. This action is interim and is not intended to utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this OU. Because this action does not constitute the final remedy for the HTF, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed by the final response action. Subsequent actions may be needed to fully address the threats posed by the conditions at the HTF OU.

In accordance with Section 121(c) of CERCLA and NCP §300.430(f)(5)(iii)(c), a statutory review will be conducted within 5 years of initiation of the remedial action, and every 5 years thereafter, to ensure that the remedy continues to be protective of human health and the environment.

XIII. EXPLANATION OF SIGNIFICANT CHANGES

The interim remedy selected in this IROD does not contain any significant changes from the preferred alternative presented in the IASB/PP.

XIV. RESPONSIVENESS SUMMARY

The Responsiveness Summary is included as Appendix A of this document. Two comments were received during the public comment period.

XV. POST-ROD DOCUMENT SCHEDULE AND DESCRIPTION

The interim remedial action schedule is provided in Figure 6. An Interim Corrective Measures Implementation/Remedial Action Implementation Plan (ICMI/RAIP) is scheduled to be submitted for approval in February 2017 followed by an Interim Remedial Action start date upon approval of the ICMI/RAIP.

XVI. REFERENCES

DHEC_01-25-1993, *Construction Permit #17,424-IW, SRS F/H-Area, Aiken and Barnwell County,* South Carolina Department of Health and Environmental Control, Columbia, SC, January 25, 1993.

DOE_01-29-1996, *SRS Future Use Project Report, Stakeholder Preferred Recommendations for SRS Land Use Facilities*, United States Department of Energy, Savannah River Operations Office, Aiken, SC, January 1996.

DOE-EIS-0303, *High-Level Waste Tank Closure Final Environmental Impact Statement*, Savannah River Site, Aiken, SC, Rev. 0, May 2002,

DOE-EIS-0303 ROD, *High Level Waste Tank Closure Final Environmental Impact Statement Record of Decision,* Savannah River Operations Office, Aiken, SC, Rev. 0, August 19, 2002.

DOE/SRS-WD-2014-001, *Basis for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site,* Savannah River Site, Aiken, SC, Rev. 0, December 2014.

SRNS-RP-2012-00146, *H-Area Tank Farm Groundwater Monitoring Plan and Sampling and Analysis Plan*, Savannah River Site, Aiken, SC, Rev. 1, November 2012.

SRR-CWDA-2010-00128, *Performance Assessment for the H-Area Tank Farm at the Savannah River Site,* Aiken, SC, Rev. 1, November 2012.

SRR-CWDA-2011-00022, *Industrial Wastewater General Closure Plan for H-Area Waste Tank Systems*, Savannah River Site, Aiken, SC, Rev. 0, May 2012.

SRR-CWDA-2013-00091, *Industrial Wastewater Closure Module for Liquid Waste Tank 16H, H-Area Tank Farm, Savannah River Site,* Savannah River Site, Aiken, SC, Rev. 1, April 2015.

SRR-CWDA-2015-00125, *Interim Action Statement of Basis/Proposed Plan for the H-Area Tank Farm, Waste Tank 16*, Savannah River Site, Aiken, SC, Rev. 1, December 2015.

WSRC-OS-94-42, *Federal Facility Agreement for the Savannah River Site,* Administrative Docket No. 89-05-FF, August 16, 1993.

WSRC-RP-96-120, *Savannah River Site Federal Facility Agreement Community Involvement Plan (U),* Rev. 7, Savannah River Site, Aiken, SC, February 2011.

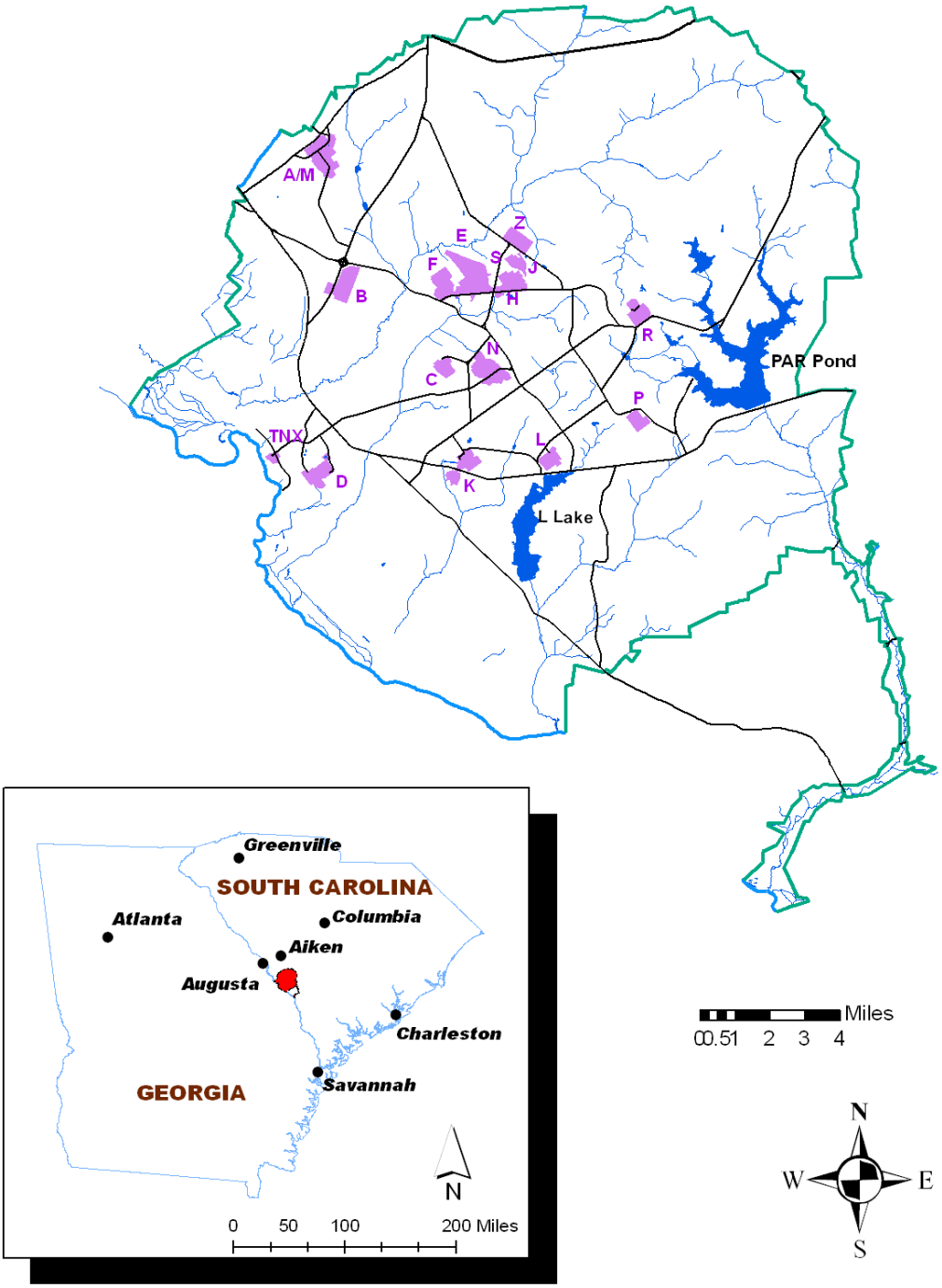

Figure 1. Location of the Savannah River Site

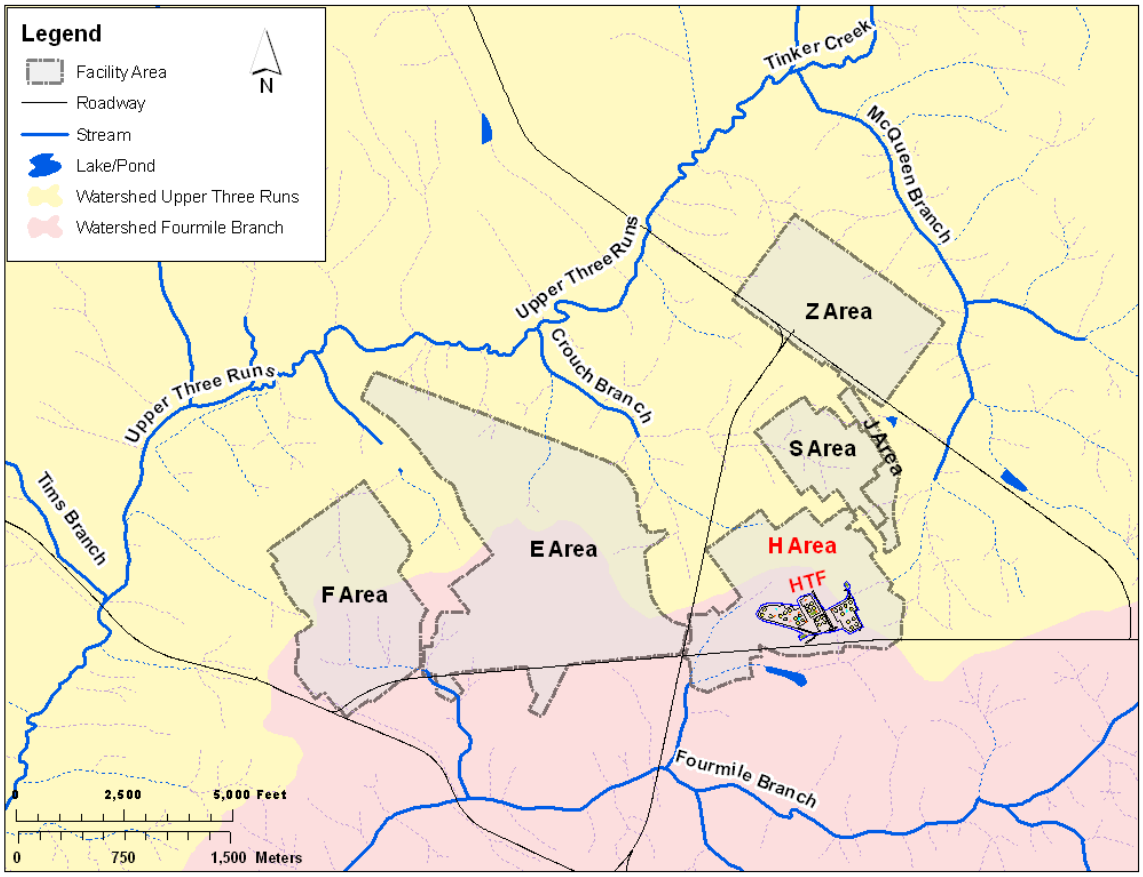

Figure 2. Layout of the General Separations Area

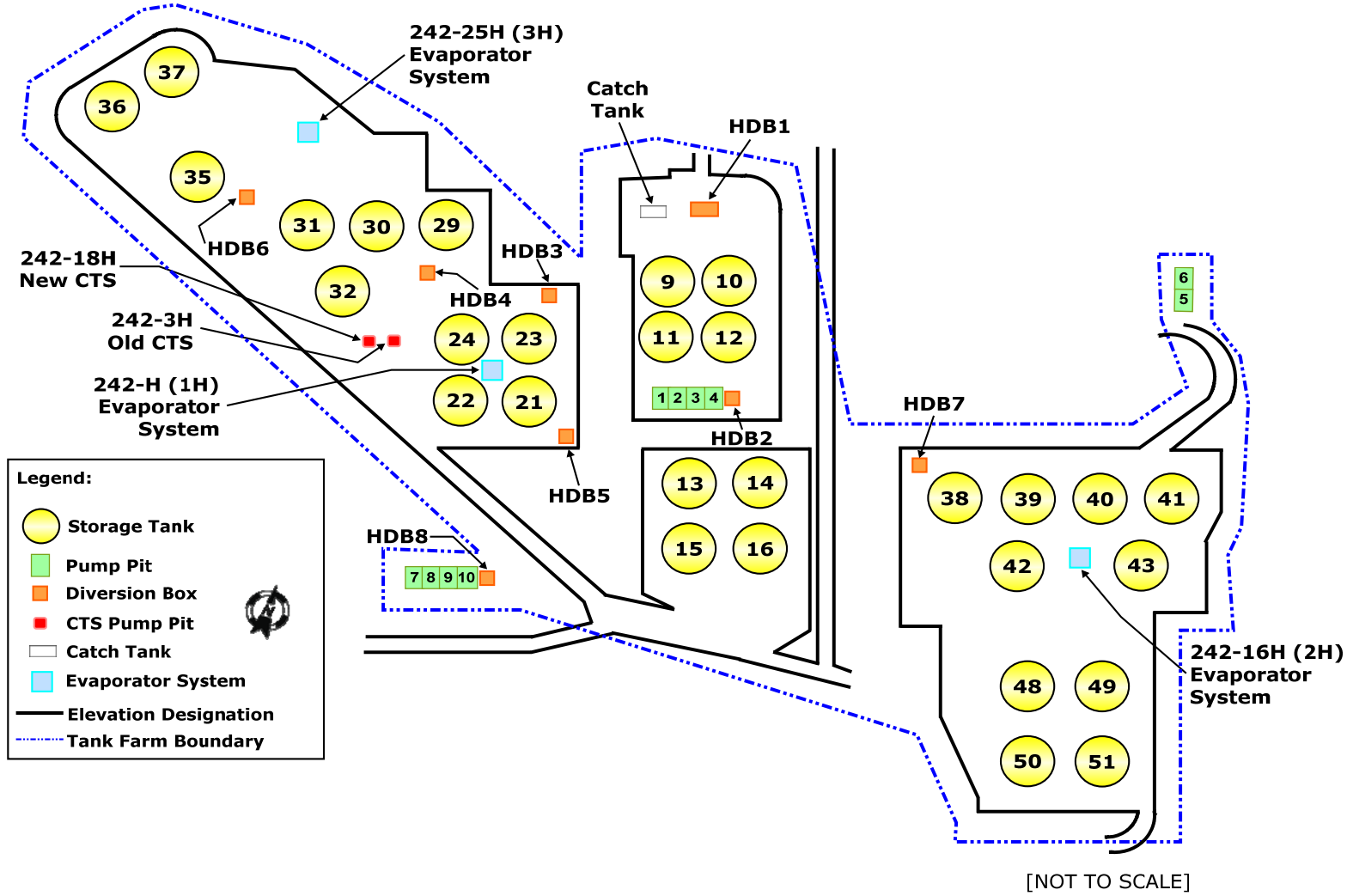

Figure 3. Layout of the H-Area Tank Farm

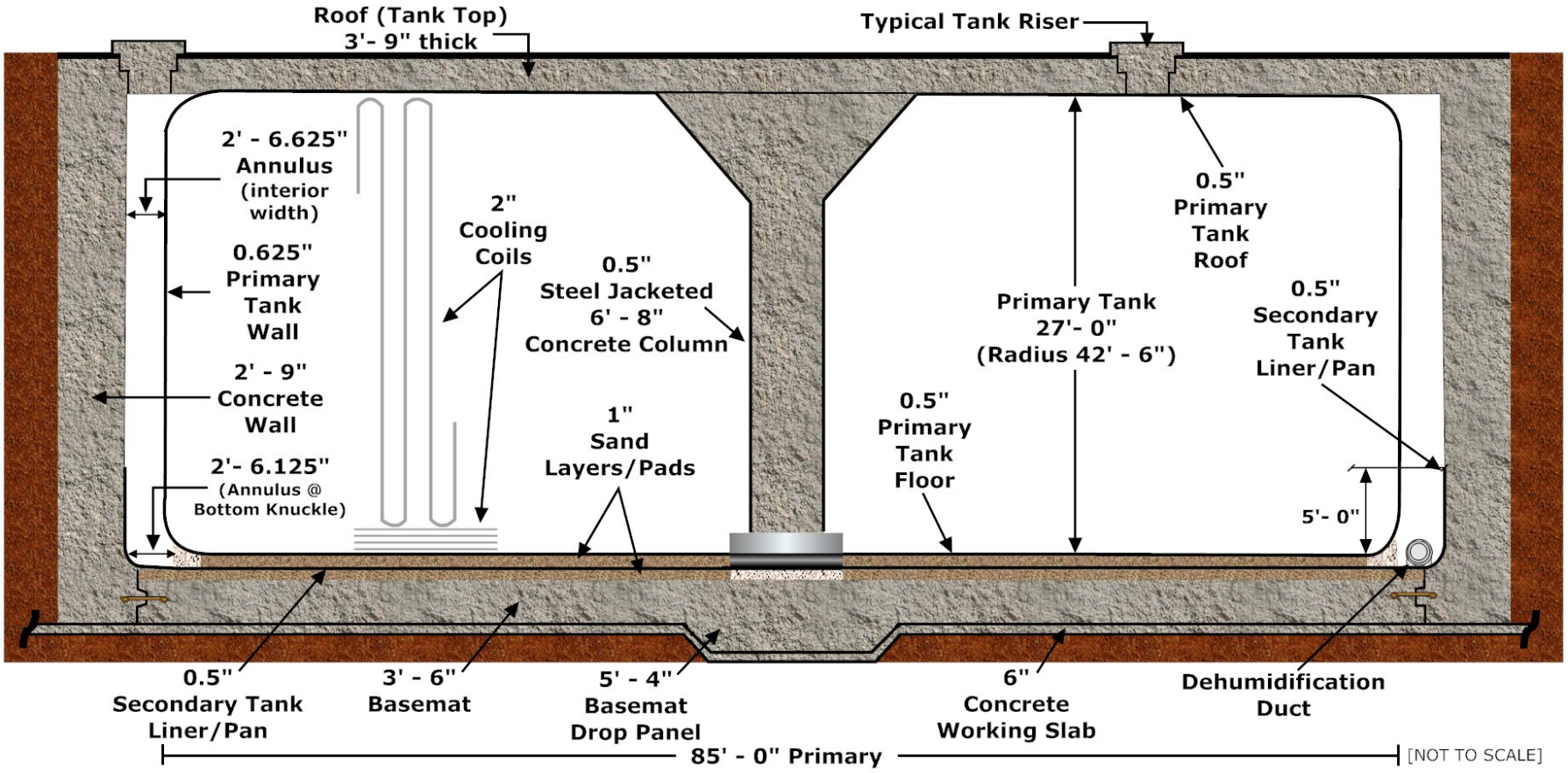

Figure 4. Typical Type II Tank Cross-Section

Figure 5. Aerial View of Waste Tank 16

Accelerated: HTF IASB/PP IROD IRAIP Schedule Logic	Duration (calendar days)	START DATE (calendar days)	FINISH DATE (calendar days)
Interim Action Statement of Basis/Proposed Plan (IASB/PP)			
Develop Rev. 0 IASB/PP	30	9/21/2015	10/20/2015
Submit Rev. 0 IASB/PP	1	10/21/2015	10/21/2015
EPA/SCDHEC Review Rev. 0 IASB/PP	30	10/22/2015	11/20/2015
Incorporate EPA/SCDHEC Comments into the Rev. 1 IASB/PP	30	11/21/2015	12/20/2015
Submit Rev. 1 IASB/PP	1	12/21/2015	12/21/2015
EPA/SCDHEC Final Review/Approval Rev. 1 IASB/PP	20	12/21/2015	1/19/2016
Receive EPA/SCDHEC Approval of Rev. 1 IASB/PP	1	1/20/2016	1/20/2016
Prepare & Transmit Clean Copy of Rev. 1 IASB/PP	15	1/21/2016	2/2/2016
Notification of Public Comment Period	14	2/4/2016	2/15/2016
Public Comment Period	45	2/16/2016	3/31/2016
Interim Record of Decision (ROD)			
Develop Rev. 0 IROD	30	4/4/2016	5/3/2016
Responsiveness Summary and Approvals (IASB/PP)	14	5/4/2016	5/17/2016
Submit Rev. 0 IROD	1	5/18/2016	5/18/2016
EPA/SCDHEC Review Rev. 0 IROD	30	5/19/2016	6/17/2016
Incorporate EPA/SCDHEC Comments into the Rev. 1 IROD	30	6/18/2016	7/18/2016
Submit Rev. 1 IROD	1	7/19/2016	7/19/2016
EPA/SCDHEC Final Review/Approval Rev. 1 IROD	21	7/20/2016	8/9/2016
Receive EPA/SCDHEC Approval of Rev. 1 IROD	1	8/10/2016	8/10/2016
DOE Obtain Signature on IROD	21	8/11/2016	8/31/2016
EPA Obtain Signature on IROD	21	9/1/2016	9/21/2016
SCDHEC Obtain Signature on IROD	21	9/22/2016	10/12/2016
Prepare for Public Notice	14	10/13/2016	10/26/2016
Issue IROD	1	10/27/2016	10/27/2016
Interim Remedial Action Implementation Plan (IRAIP)			
Develop Rev. 0 IRAIP	30	10/28/2016	11/21/2016
Submit Rev. 0 IRAIP	1	11/22/2016	11/22/2016
EPA/SCDHEC Review Rev. 0 IRAIP	30	11/23/2016	1/6/2016
Incorporate EPA/SCDHEC Comments into the Rev. 1 IRAIP	30	1/9/2017	2/7/2017
Submit Rev. 1 IRAIP	1	2/8/2017	2/8/2017
EPA/SCDHEC Final Review/Approval Rev. 1 IRAIP	21	2/9/2017	3/1/2017
Receive EPA/SCDHEC Approval of Rev. 1 IRAIP	1	3/2/2017	3/2/2017

Figure 6. Post-ROD Document Description and Schedule

Table 1. Description of CERCLA Evaluation Criteria

Threshold Criteria:
• *Overall Protectiveness of Human Health and the Environment* determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. • *Compliance with ARARs* evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site. ARARs may be waived under certain circumstances. ARARs are divided into chemical-specific, location-specific, and action-specific criteria.
Primary Balancing Criteria:
• *Long-Term Effectiveness and Permanence* considers the ability of an alternative to maintain protection of human health and the environment over time. It evaluates magnitude of residual risk and adequacy of reliability of controls. • *Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment* evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present. • *Short-Term Effectiveness* considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation. • *Implementability* considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services. • *Cost* includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
Modifying Criteria:
• *State Support/Agency Acceptance* considers whether EPA and SCDHEC agree with the analyses and recommendations by the DOE. • *Community Acceptance* considers whether the local community agrees with the Preferred Alternative. Comments received on the Proposed Plan during the public comment period are an important indicator of community acceptance.

Table 2. Comparison of Interim Remedial Alternatives Against the Nine CERCLA Evaluation Criteria

Criteria	Alternative A-1 No Action	Alternative A-2 Triennial Visible Engineered Barriers Inspection and Maintenance	Alternative A-3 Annual Visible Engineered Barriers Inspection and Maintenance
Overall protection of human health and the environment	Controls in place are adequate and protective.	Maintenance of area provides additional protection.	Maintenance of area provides additional protection
Compliance with ARARs	Not applicable	DOE Order 435.1 - To Be Considered	DOE Order 435.1 - To Be Considered
Long-term effectiveness and permanence	Not applicable	This is an interim remedy and long term effectiveness does not apply. Long term remedies will be evaluated following removal from service of all tanks and ancillary structures	This is an interim remedy and long term effectiveness does not apply. Long term remedies will be evaluated following removal from service of all tanks and ancillary structures
Reduction of toxicity, mobility, or volume through treatment	No treatment	No treatment	No treatment
Short-term effectiveness	Not applicable	Visual inspections meet remedial action objective	Visual inspections meet remedial action objective
Implementability	No implementation	Readily implemented	Readily implemented
Cost	$0	$88,579	$265,737
State acceptance	This criterion will be completed following state review	This criterion will be completed following state review	This criterion will be completed following state review
Community acceptance	This criterion will be completed following public review	This criterion will be completed following public review	This criterion will be completed following public review

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APPENDIX A –

RESPONSIVENESS SUMMARY

Responsiveness Summary

The 45-day public comment period for the IASB/PP for the HTF Waste Tank 16 began on February 16, 2016 and ended on March 31, 2016.

During that period, two comments were received from the public on the IASB/PP. The first asked for contact information to submit comments because that information was not apparently contained in the Aiken Standard newspaper article. The contact information was provided in an email from the Savannah River Remediation (SRR) Director of Public Affairs & Project Communication to the commenter.

The second comment remarked that a once a year survey of the tanks was not sufficient and added that the closed tanks should also be checked following any unusual weather event or after an earthquake. The examples cited by the reviewer as evidence for the need of increased monitoring are not directly applicable to the closed tanks. Closed waste tanks do not contain any operating equipment, or have outside surface contamination releasable by abnormal weather events. The SRR Emergency Operating Procedure implemented after seismic events requires a visual inspection of the facility for unsafe conditions such as leaks/spills, sink holes or physical depressions and other potential safety concerns. Similarly, an SRS Administrative Operating Procedure calls for inspections and reporting of any damage, flooding, or safety concerns following severe weather events. There are no current plans to increase the frequency of the closed waste tank inspections at this time.

No changes were made to the selected remedy in response to these comments.

Comment Number 1

From: Rose Hayes <roseohayes@aol.com>
To: amy.joslin@srs.gov
Date: 02/22/2016 07:55 PM
Subject: Comment/Public Meeting on Tank 16

Amy, The Aiken Standard article does not tell the public how to comment or call for a public meeting. Could you provide a link for that. Thanks, Dr. Rose O. Hayes

Response to Comment Number 1

From: Amy Joslin/SRR/Srs
To: Rose Hayes <roseohayes@aol.com>
Date: 02/23/2016 06:42 AM
Subject: Re: Comment/Public Meeting on Tank 16

Rose,

The public has until March 31 to comment on the action plan. Comments or requests for a public meeting can be sent to me at the address, phone, or e-mail below or to the S.C. Department of Health and Environmental Control, Attn: David Scaturo, Director, Division of Waste Management, Bureau of Land and Waste Management, 2600 Bull Street Columbia, South Carolina 29201. Scaturo can be reached at 803-898-2000.

Amy K. Joslin
Director, Public Affairs & Project Communications
Savannah River Remediation, Savannah River Site Building 766-H
Aiken, SC 29808
803-208-1956 (office)
803-522-2527 (mobile)
amy.joslin@srs.gov

Comment Number 2

From: Virginia Jones <jonesvbj@yahoo.com>
To: amy.joslin@srs.gov
Cc: Shelly Wilson <wilsonmd@dhec.sc.gov>
Date: 02/22/2016 09:46 AM
Subject: Tank 16 closure

Comment on Tank 16 closure.

Once a year survey is not enough.
Tank 16 and other closed tanks should be checked once a year and in addition, after any UNUSUAL WEATHER EVENT such as earthquake, abnormal rain event, abnormal freeze event, and abnormal heat event.

You will remember that after an unusual freeze event a year ago, one of the rotors stopped that was mixing nuclear waste and a broken computer monitor did not show the stopped rotor, thus negatively affecting the proportions of the mixture. The damage wasn't found until a week or so later. Also, several years ago, an unusually long rain event resulted in radioactive rain runoff from one of the storage tank units.

Submitted by
Dr. Virginia Jones, Ed.D.
Jonesvbj@yahoo.com

Response to Comment Number 2

The response to comment number 2 is provided in the introductory text to the Responsiveness Summary.

APPENDIX B –

COST ESTIMATES OF ALTERNATIVES

Alternative A-1
No Action
Savannah River Site

Item	Quantity	Units	Unit Cost	Total Cost	
Direct Capital Costs					
No Action					
Subtotal - Direct Capital Cost				$0	*
Mobilization/Demobilization	20%	of subtotal direct capital		$0	*
Site Preparation/Site Restoration	20%	of subtotal direct capital		$0	*
Total Direct Capital Cost		(sum of * items)		**$0**	
Indirect Capital Costs					
Engineering & Design	18%	of direct capital		$0	
Project/Construction Management	25%	of direct capital		$0	
Health & Safety	5%	of direct capital		$0	
Overhead	30%	of direct capital		$0	
Contingency	20%	of direct capital		$0	
Total Indirect Capital Cost				**$0**	
Total Estimated Capital Cost				**$0**	
Direct O&M Costs	1.02%	discount rate for costs > 200 years duration[1]			
Annual Costs	26	years O&M		*Years 2016 - 2041*	
Subtotal - Annual Costs				$0	
Present Worth Annual Costs (2.7% Discount Rate)				$0	
Five Year Costs	0				
Remedy Review	0	ea	$15,000	$0	
Subtotal - Five Year O&M Costs				$0	
Present Worth Five Year Costs				$0	
Total Present Worth Direct O&M Cost				**$0**	
Indirect O&M Costs					
Project/Admin Management	100%	of direct O&M		$0	
Health & Safety	30%	of direct O&M		$0	
Overhead	30%	of direct O&M		$0	
Contingency	15%	of direct O&M		$0	
Total Present Worth Indirect O&M Cost				**$0**	
Total Estimated Present Worth O&M Cost				**$0**	
TOTAL ESTIMATED COST				**$0**	

1. Interest rate for costs with duration < 30 years (i.e., before 2045) is based on OMB Circular No. A-94 Appenndix C revised Dec 2014

Alternative A-2
Triennial Visible Engineered Barriers Inspection and Maintenance
Savannah River Site

Item	Quantity	Units	Unit Cost	Total Cost	
Direct Capital Costs					
No Action					
Subtotal - Direct Capital Cost				$0	*
Mobilization/Demobilization	20%	of subtotal direct capital		$0	*
Site Preparation/Site Restoration	20%	of subtotal direct capital		$0	*
Total Direct Capital Cost	(sum of * items)			**$0**	
Indirect Capital Costs					
Engineering & Design	18%	of direct capital		$0	
Project/Construction Management	25%	of direct capital		$0	
Health & Safety	5%	of direct capital		$0	
Overhead	30%	of direct capital		$0	
Contingency	20%	of direct capital		$0	
Total Indirect Capital Cost				**$0**	
Total Estimated Capital Cost				**$0**	
Direct O&M Costs	1.02%	discount rate for costs > 200 years duration[1]			
Annual Costs	26	years O&M		*Years 2016 - 2041*	
Tri-annual Inspections / Maintenance	26	1	1,417	*1,417*	
Subtotal - Annual Costs				$1,417	
Present Worth Annual Costs (2.1% Discount Rate)				$32,211	
Five Year Costs	0				
Remedy Review	0	ea	$15,000	$0	
Subtotal - Five Year O&M Costs				$0	
Present Worth Five Year Costs				$0	
Total Present Worth Direct O&M Cost				**$32,211**	
Indirect O&M Costs					
Project/Admin Management	100%	of direct O&M		$32,211	
Health & Safety	30%	of direct O&M		$9,663	
Overhead	30%	of direct O&M		$9,663	
Contingency	15%	of direct O&M		$4,832	
Total Present Worth Indirect O&M Cost				**$56,369**	
Total Estimated Present Worth O&M Cost				**$88,579**	
TOTAL ESTIMATED COST				**$88,579**	

1. Interest rate for costs with duration < 30 years (i.e., before 2045) is based on OMB Circular No. A-94 Appenndix C revised Dec 2014

Alternative A-3
Annual Visible Engineered Barriers Inspection and Maintenance
Savannah River Site

Item	Quantity	Units	Unit Cost	Total Cost	
Direct Capital Costs					
No Action					
Subtotal - Direct Capital Cost				$0	*
Mobilization/Demobilization	20%	of subtotal direct capital		$0	*
Site Preparation/Site Restoration	20%	of subtotal direct capital		$0	*
Total Direct Capital Cost		(sum of * items)		**$0**	
Indirect Capital Costs					
Engineering & Design	18%	of direct capital		$0	
Project/Construction Management	25%	of direct capital		$0	
Health & Safety	5%	of direct capital		$0	
Overhead	30%	of direct capital		$0	
Contingency	20%	of direct capital		$0	
Total Indirect Capital Cost				**$0**	
Total Estimated Capital Cost				**$0**	
Direct O&M Costs	1.02%	discount rate for costs > 200 years duration[1]			
Annual Costs	26	years O&M		*Years 2016 - 2041*	
Annual Inspections / Maintenance	26	1	4250	*4250*	
Subtotal - Annual Costs				$4,250	
Present Worth Annual Costs (2.1% Discount Rate)				$96,632	
Five Year Costs	0				
Remedy Review	0	ea	$15,000	$0	
Subtotal - Five Year O&M Costs				$0	
Present Worth Five Year Costs				$0	
Total Present Worth Direct O&M Cost				**$96,632**	
Indirect O&M Costs					
Project/Admin Management	100%	of direct O&M		$96,632	
Health & Safety	30%	of direct O&M		$28,990	
Overhead	30%	of direct O&M		$28,990	
Contingency	15%	of direct O&M		$14,495	
Total Present Worth Indirect O&M Cost				**$169,106**	
Total Estimated Present Worth O&M Cost				**$265,737**	
TOTAL ESTIMATED COST				**$265,737**	

1. Interest rate for costs with duration < 30 years (i.e., before 2045) is based on OMB Circular No. A-94 Appenndix C revised Dec 2014