Summary Notes, July 8, 2008
SRS Citizens Advisory Board
Facility Disposition & Site Remediation Committee Meeting

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Facility Disposition & Site Remediation (FD&SR) Committee met on Tuesday, July 8, 2008, 5:30-7:30 p.m., at the Aiken Municipal Conference Center, in Aiken SC.

The purpose of the meeting was to receive presentations and discuss: 1) P-Reactor Disassembly Basin Waste Removal Engineering Evaluation/Cost Analysis (EE/CA), 2) FY 2008 Federal Facilities Agreement (FFA), Appendix E, and an opportunity for public comments on CAB related issues.

ATTENDEES:

CAB Members	**Stakeholders**	**DOE/Contractors/Others**
- Mary Drye, Chair	Lee Poe, Public	Sheron Smith, DOE-SR
- K. Jayaraman, Vice Chair	Heather Cartwright, SCDHEC	Helen Belencan, DOE-SR
Manuel Bettencourt	Van Keisler, SCDHEC	Ray Hannah, DOE-SR
Ed Burke	Jim Barksdale, SCDHEC	Brian Hennessey, DOE-SR
Donna Antonucci	Jeannette Hyatt, Fluor	Wade Whitaker, DOE-SR
- Leon Chavous	Sonny Goldston, WSRC	Paul Daugherty, DOE-SR
- Judy Greene-McLeod	Murray Riley, Public	
	Jim Hussey, Senator Chambliss	
Alex Williams	Office	
Stan Howard	Bob Adams, SCDHEC	
	Nancy Bobbitt, Senator	
Beverly Skinner	Isakson's Office	
Don Bridges	F. Miller, SRNL	
Kathe Golden	Chris Bergren, WSRC	
- Mercredi Giles	Eric Owens, SCDHEC	
	Shelia McFalls, WSRC	
	John Pickett, Public	
	Jesse Roach, WSRC	

- FD&SR Committee Members

Welcome and Introduction:
Ms. Mary Drye, Chair, FD&SR, opened the meeting with a welcome to all; a review of the agenda topics; provided information on the upcoming Emergency Operations Center tour and the Performance Assessment educational forum being offered to the CAB members.

Ms. Drye, FD&SR Chair, referenced the meeting ground rules and encouraged participation of all attendees. Then, the attendees introduced themselves.

Committee Update:
Ms. Drye stated that the one FD&SR open recommendation #236, Soil Vapor Extraction with Soil Fracturing, is expected to be addressed by DOE-SR in January 2009.

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Committee Meeting Summary:
Members of the Facilities Disposition and Site Remediation Committee and the public met on July 8, 2008, 5:30-7:30 p.m., at the Aiken Municipal Conference Center, in Aiken, SC. DOE-SR hosted the meeting.

The purpose of the meeting was to receive presentations and discuss: 1) P-Reactor Disassembly Basin Waste Removal Engineering Evaluation/Cost Analysis (EE/CA) presented by Ray Hannah, DOE-SR; and 2) FY 2008 Federal Facilities Agreement (FFA), Appendix E, presented by Brian Hennessey, DOE-SR. An opportunity for the public to comment on CAB related issues was provided. The meeting was well attended with open discussions and participation from the SRS CAB members and the public. No draft motions were proposed based on the discussions.

DOE-SR has provided three workshops on the P-Reactor End State Options. Based on SRS CAB questions at the last workshop, the SRS CAB has an interest in the disposition of the large volume of water in the P-Reactor Disassembly Basin.

Based on the SRS CAB questions, DOE-SR provided an overview of the Removal Site Evaluation Report EE/CA that was completed to evaluate various alternatives, a cost comparison, and to obtain stakeholder input in a disciplined process.

Ray Hannah, DOE-SR, provided the presentation to include the Basin statistical background, a description of the basin; the history of operations and nature of the contamination which are predominately tritium, cesium, and strontium.

Open discussions indicated interest in the alternative selection objectives, why the alternative was selected, and the process. Manuel Bettencourt asked the significance of biased term used in sample testing. Mr. Hannah explained that biased sample testing is a term used for selective sampling based on operations process knowledge of where contamination would occur.

The SRS CAB members had a particular interest in the amount of grout that will be needed to fill the Basin, and why Alternative 3 to evaporate water using commercial evaporators was selected although the EE/CA identified a different alternative. Manuel Bettencourt, CAB member, asked how many evaporators would be needed to evaporate such a large volume of water. Mr. Hannah stated that two commercial evaporators would be operated with one evaporator in a spare capacity in case needed. Mr. Hannah stated that the amount of grout to fill the basin would depend on the mix, probably 2X to 5X the water required. The engineering analysis would indicate water to ratio to dry mix for volume. Mr. Hannah committed to providing information regarding the volume of grout required for filling the lower levels of the reactor.

Dr. Jayaraman, CAB member, asked why SRS is now placing the disassembly basin of the reactor final closure and filling with grout, why not keep as is. Mr. Hannah stated that our mission is to close and leave in a safe state. Mr. Hannah stated that Alternative 3 meets the threshold criteria of overall protection of human health, and the environment, and meets the objectives with less technical uncertainty and worker risk. Kathe Golden, CAB member, asked how much Tritium concentration would be detected at the site boundaries based on the evaporation alternative. Mr. Hannah stated that SRNL has done the analysis and that the detection of tritium at the site boundaries is almost immeasurable. Lee Poe, public, stated that SRS should publish the risk assessment for public comment. Donna Antonucci, CAB member, asked if Alternative 3 has an air quality standard and stated that some people do not agree that tritium is not dangerous. Ed Burke stated that the DOE-SR decision to spend an additional $1M to evaporate is a concern as well as the concern of releasing tritium in the atmosphere.

Committee Meeting Summary: ***(continued)***

Mr. Hannah stated that pouring concrete in large spaces is common but there are some technical uncertainty and technical risks with using contaminated water that made option 5B less desirable.

Mr. Hannah summarized that Alternative 3 meets the threshold criteria of overall protection of human health, and the environment, and meets the objectives with less technical uncertainty and worker risk.

The FY 2008 FFA Appendix E overview was presented by Brian Hennessey, DOE-SR. The SRS CAB appreciated the annual update. Mr. Hennessey provided a recap of the major changes and how these changes are determined to have the least impacts to current and ongoing site missions. The CAB asked if anyone has analyzed the changes to identify significant slippages and cost increases. Mr. Hennessey stated yes, analysis is completed and agreement with the regulators is required prior to approval and implementation of the FFA Appendix E. Ms. Drye requested that the FY 2008 FFA Appendix E information be presented at the full board meeting on July 29th.

The FD&SR meeting discussions were very informative and positive.

Public Comment:

None

Adjourn:

Ms. Drye adjourned the meeting at 7:00 p.m.

Follow-Up Actions:

Ray Hannah to provide an answer to Manuel Bettencourt question "How much grout will be needed to fill to grade?" (Completed 07/16/08)

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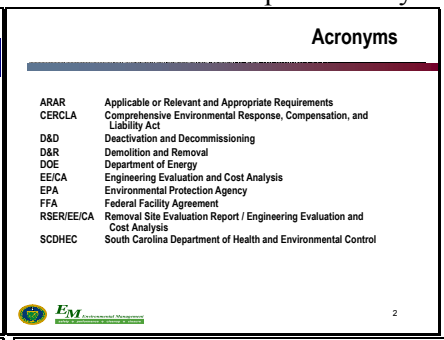
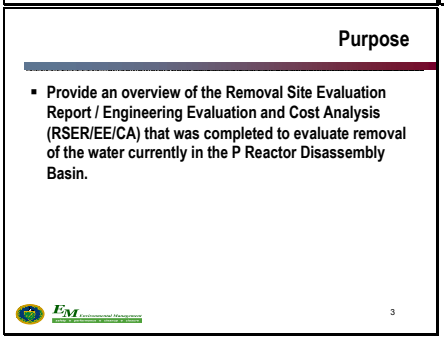
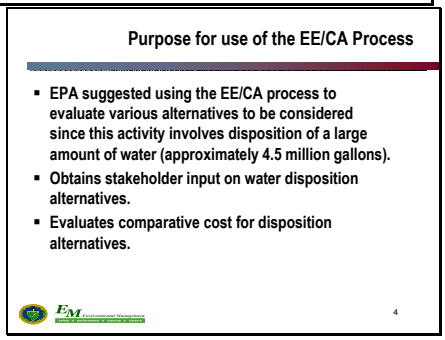
PRESENTATIONS:

P-Reactor Disassembly Basin Waste Removal EE/CA – presented by Ray Hannah, DOE-SR

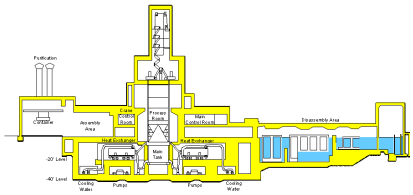






5

Reactor Cross Section



6

Background: Disassembly Basin Description

- Seven primary areas totaling 28,070 square feet
- Total capacity of basin 4.5 million gallons
- Wall and floor thickness varies from 2.5 to 7 feet
- Depth of basin ranges from 17 to 30 feet deep

7

Background: Disassembly Basin History of Operations

- P Reactor operated from 1954 to 1988.
- Disassembly Basin provided cooling for irradiated assemblies stored in the basin water while short-lived radionuclides decayed.
- Between 1988 and 1993 reactor was placed in a standby condition.
- In 1993 Reactor was shutdown and was placed in a surveillance and maintenance mode until 2006.
- In late 2006, the Reactor began deactivation status.

8

Background: Nature of Contamination

- Biased sampling used to identify contaminant levels.
  - Samples were collected from each basin section.
- Analytical results from sampling campaigns conducted in 1994, 2001, 2004 and 2005 were used to determine contamination levels.
  - predominant radionuclides are tritium, cesium, and strontium.

9

Alternative Objectives

- Provide for water disposal that will complement P-Area Completion Schedule.
- Must permit disposition of the water in an environmentally safe and cost effective manner.

10

Alternatives for Disposition of Water in P Reactor Disassembly Basin

Alternative 1 - No action – the Disassembly Basin would remain in the current state with periodic surveillance and maintenance.

Alternative 2 - Treat the water with a filtration and ion exchange system and then send the treated water to Par Pond either by: (2a) trucking to Par Pond or (2b) open channel flow to Par Pond.

Alternative 3 - Evaporate the water by using commercially available evaporators.

Alternative 4 - Use tanker trucks to transport the water to Effluent Treatment Project (ETP), a permitted water treatment plant located at SRS.

Alternative 5 - Use the basin water to make grout to fill the -40 ft. up to the grade elevation and disposition any remaining water either by: (5a) using alternative 2a, (5b) using alternative 2b,(5c) using alternative 3 or (5d) using alternative 4.

11

Criteria for Analysis and Comparison of Water Disposition Alternatives

- Alternatives evaluated against three broad criteria of effectiveness, implementability, and cost.
- Two components of the broad criteria of effectiveness are considered "threshold criteria".
  - Compliance with ARARs
  - Overall Protection of Human Health and the Environment
- Other components of effectiveness, along with all of the components of implementability and cost make up the "balancing criteria".
  - Reduction of Toxicity, Mobility, or Volume Through Treatment
  - Long-Term Effectiveness and Permanence
  - Short-Term Effectiveness
  - Implementability
  - Cost
- The remaining components of effectiveness are considered "modifying criteria"*
  - Regulatory acceptance
  - Community acceptance

* Modifying criteria usually are known after the receipt of regulatory and public comments. During the alternative analysis, a judgment as to acceptance may be included based on previous regulatory decisions or on public comments regarding previous documents. The final impact of modifying criteria can be assessed only after the public comment period and after subsequent responses are developed.

12

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Streamlined Risk Assessment

- Identifies the risk and potential groundwater impacts associated with the Disassembly Basin.
- Human health risk is estimated in terms of potential:
  - Lifetime cancer risk is based on a hypothetical scenario involving an adult industrial worker who spends 2000 hours per year at the facility over the next 25 years.
    - An industrial worker risk of 1.0E-04 means that one additional person in 10,000 may contract cancer
  - Non-Cancer (toxicity) health risk is expressed in terms of Hazard Quotients and Hazard Index.
    - Hazard Quotient is a comparison of an estimated chemical intake (dose) with a US EPA reference dose level below which adverse health effects are unlikely
    - The value is used to evaluate the potential for non-cancer health effects, such as organ damage, from chemical exposures
    - Hazard Index is the sum of the individual hazard quotients
- None of the contaminants of concern were projected to have an impact on groundwater.

13

Streamlined Risk Assessment

- Maximum radiological risk meets acceptable CERCLA risk range of 1E-04 to 1E-06.
  - Maximum radiological risk estimated at 1.1E-07 for alternatives 2 and 4.
- Maximum chemical non-cancer Hazard Index meets the acceptable CERCLA threshold of 1.0.
  - Maximum Hazard Index estimated at 6.0E-06 for alternatives 2 and 4.
- Chemical cancer risk is not applicable because there is no pathway for constituent (Cr) in sludge.

14

Comparison of Alternatives

good | moderate | bad

Alt	Effectiveness					Implementability			
	Overall Protect.	Compliance	Reduction Toxicity	Short	Long	Admin	Tech	Sch. Weeks	Cost $000
1				N/A	N/A		N/A	N/A	500
2a								140	3880
2b								120	2060
Selected Alternative → 3								150	3120
4								360	1820
5a								75	4090
5b								60	3100
5c								70	3420
5d								120	2310

15

SCDHEC and EPA Comments

- DOE-SR discussed with SCDHEC and EPA water removal from the Disassembly Basin and formally transmitted the EE/CA for review in November 2007.
- Regulator's comments were received during December 2007.
  - SCDHEC identified their primary concern was with the preferred alternative selected regarding the possible transportation of contaminated water to ETP and subsequent discharge after treatment to the Savannah River.
  - EPA did not communicate concerns with the alternatives, their comments pertained to providing additional technical details.

16

Preferred Alternative

- EE/CA identified Alternative 5d as the preferred alternative, In-situ Grout, and transport to ETP.
- Upon further consideration DOE-SR selected Alternative 3 (evaporate water using commercially available evaporators).
  - Meets the threshold criteria of overall protection of human health and the environment and complies with ARARs
    - Maximum risk is 7.5E-09
  - Satisfies objectives with less technical uncertainty and worker risk.

17

Implementation Schedule

Issue EE/CA for Regulator Comment	November 2007
Issue EE/CA for Public Comment	March 2008
No public Comments	April 2008
Issue Action Memorandum	June 2008
Complete Evaporation	August 2011

18

Summary

- The EE/CA approach was used to evaluate disposition of water in the Disassembly Basin.
- The RSER/EE/CA has been reviewed by EPA and SCDHEC.
- Five alternatives were analyzed, and the alternative for mechanical evaporation has been selected.

19

FY 2008 Appendix E Area Completion Plan – presented by Brian Hennessey, DOE-SR

FY 2008 Appendix E Area Completion Plan

A Presentation to the SRS Citizens Advisory Board Facility Disposition & Site Remediation Committee

July 8, 2008

Presentation By
Brian Hennessey, SRS Remedial Project Manager
Department of Energy Savannah River Operations Office

EM Environmental Management — safety • performance • cleanup • closure

SRS 1

Acronyms

CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CMI/RAIP	Corrective Measures Implementation / Remedial Action Implementation Plan
D&D	Deactivation and Decommissioning
DOE	Department of Energy
EPA	Environmental Protection Agency Region 4
FFA	Federal Facility Agreement
FY	Fiscal Year
HLW	High Level Waste
IOU	Integrator Operable Unit
LUCIP	Land Use Control Implementation Plan
NA	Not Applicable
NBN	No Building Number
OU	Operable Unit
PCR	Post Construction Report
RA	Remedial Action
RCRA/CERCLA	Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation, and Liability Act
ROD	Record of Decision
SCDHEC	South Carolina Department of Health and Environmental Control
SRS	Savannah River Site

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SRS 2

FFA Appendix E

- Provides a lifecycle list of cleanup milestones for SRS waste units.
  - Made up of Appendices E.1, E.2 and E.3
    - Appendices E.1 and E.2 contain enforceable milestones
    - Appendix E.1 milestones are for the next fiscal year; E.2 milestones are for FY+2
    - Appendix E.3 contains planning milestones for FY+3 and beyond
- DOE updates Appendix E annually and submits to SCDHEC and EPA in November for approval.
- Annual update starts with current approved milestones, with adjustments to reflect:
  - Site mission schedules and Area Completion project schedules
  - Regulator approved schedule changes

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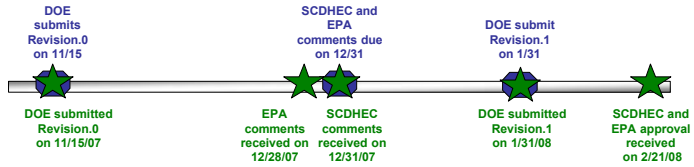
SRS 3

FFA Appendix E Schedule



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4

FY 2008 FFA Appendix E Major Changes

- Extended Area Completion activities through 2031 (previously 2025) to:
  - Align with SRS mission schedules
  - Ensure logical execution of Area Completion
- Levelized project execution work in order to even out resource needs.
- Added closure dates for E-Area Low Level Waste Facility slit trenches.
- Added High Level Radioactive Waste Tanks bulk waste removal, operational closure, and Tank Farm Performance Assessments dates.
  - Consistent with DOE, EPA, and SCDHEC agreement resolving Tank 18 and 19 dispute on closure dates

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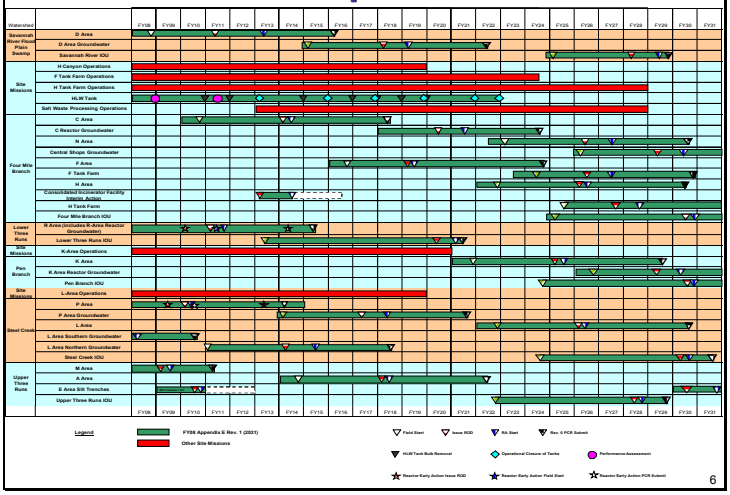
5

Area Completion Plan



6

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Appendix E.1 (excerpt)

Revision.1 Appendix E: Fiscal Year 2008 Long-Term Projections
E.1: Deliverable Commitment Dates and Milestone Commitment Dates for FY 2009

Deliverable or Milestone:	Milestone/ Submittal Date (MM/DD/YYYY)
Revision.0 Appendix C, RCRA/CERCLA Unit List for Fiscal Year 2009 Submittal SRS Unit Index Number(s): NA CERCLIS OU Number(s): NA	10/01/2008
C-Area Burning/Rubble Pit (131-C) and Old C-Area Burning/Rubble Pit (NBN) Revision.0 Corrective Measures Implementation/Remedial Action Implementation Plan (CMI/RAIP) Submittal SRS Unit Index Number(s): 51 566 CERCLIS OU Number(s): 31	10/23/2008
C-Area Burning/Rubble Pit (131-C) and Old C-Area Burning/Rubble Pit (NBN) Revision.0 Land Use Control Implementation Plan (LUCIP) Submittal SRS Unit Index Number(s): 51 566 CERCLIS OU Number(s): 31	10/23/2008
Revision.0 Appendix E for Fiscal Year 2009 (Commitments for Fiscal Years 2010 & 2011 and Projected ROD Issuance Dates for Fiscal Year 2012+) Submittal SRS Unit Index Number(s): NA CERCLIS OU Number(s): NA	11/15/2008
R-Area Reactor Seepage Basins (904-57G, -58G), -59G), -60G), -103G, -104G) and 108-4R Overflow Basin (108-4R) Revision.0 Post Construction Report (PCR) Submittal SRS Unit Index Number(s): 121 122 123 124 119 120 CERCLIS OU Number(s): 25	11/21/2008
Administrative Record File Indices Annual Update for Fiscal Year 2008 Submittal SRS Unit Index Number(s): NA CERCLIS OU Number(s): NA	12/01/2008
FFA Annual Progress Report for Fiscal Year 2008 Submittal (Including annual certification of Institutional Control Units) SRS Unit Index Number(s): NA CERCLIS OU Number(s): NA	12/01/2008
Fourmile Branch Branch Integrator Operable Unit (Including the Un-Named Tributary of Fourmile Branch South of C Area) Third Phase II Field Start SRS Unit Index Number(s): 504 511 CERCLIS OU Number(s): 84	12/01/2008

SRS Unit Index Number is a unique identifier assigned to each individual RCRA/CERCLA Unit. This number is used by SRS for tracking and is not meant to imply a ranking or priority.
CERCLIS: The EPA's Comprehensive Environmental Response, Compensation, and Liability Information System

SLM:E1_R1_2008.fp5 E.1- 1 Print Date: 01/30/2008

7

Appendix E.2 (excerpt)

Revision.1 Appendix E: Fiscal Year 2008 Long-Term Projections
E.2: Deliverable Commitment Dates and Milestone Commitment Dates for FY 2010

Deliverable or Milestone:	Milestone/ Submittal Date (MM/DD/YYYY)
Revision.0 Appendix C, RCRA/CERCLA Unit List for Fiscal Year 2010 Submittal SRS Unit Index Number(s): NA CERCLIS OU Number(s): NA	10/01/2009
P-Area Ash Basin, 188-P Issue ROD in Support of the P Area Operable Unit SRS Unit Index Number(s): 313 CERCLIS OU Number(s): 94	10/31/2009
P-Area Process Sewer Lines as Abandoned, NBN and Spill on 3/15/79 of 5500 Gallons of Contaminated Water Issue ROD in Support of the P Area Operable Unit SRS Unit Index Number(s): 557 126 CERCLIS OU Number(s): 94	10/31/2009
P-Area Reactor Cask Car Railroad Tracks as Abandoned, NBN Issue ROD in Support of the P Area Operable Unit SRS Unit Index Number(s): 477 CERCLIS OU Number(s): 94	10/31/2009
Potential Release from P-Area Disassembly Basin, 105-P Issue ROD in Support of the P Area Operable Unit SRS Unit Index Number(s): 314 CERCLIS OU Number(s): 94	10/31/2009
Potential Release from P-Area Reactor Cooling Water System, 186/190-P Issue ROD in Support of the P Area Operable Unit SRS Unit Index Number(s): 316 CERCLIS OU Number(s): 94	10/31/2009
Building 183-4P, Clarification Plant (Misc. Services), Issue ROD in Support of the P Area Operable Unit SRS Unit Index Number(s): 1910 CERCLIS OU Number(s): 94	10/31/2009

SRS Unit Index Number is a unique identifier assigned to each individual RCRA/CERCLA Unit. This number is used by SRS for tracking and is not meant to imply a ranking or priority.
CERCLIS: The EPA's Comprehensive Environmental Response, Compensation, and Liability Information System

SLM:E2_R1_2008.fp3 E.2 - 1 Print Date: 01/30/2008

8

Appendix E.3 (excerpt)

Revision.1 Appendix E: Fiscal Year 2008 Long-Term Projections
E.3: Field Start, ROD Issuance and RA Start Dates (including Fiscal Year 2011+)
Sorted in order of Watershed, Category, and Unit Name

Watershed Category (Integrator Operable Unit, Units and D&D Facilities (or Remnants) Assigned to an Area Operable Unit, RCRA/CERCLA Units or FFA Facility Closures, or Site Evaluation Areas) Area Operable Unit or Integrator Operable Unit Name Unit Name	Site Evaluation Report Submittal Date or Field Start	ROD Issuance	RA Start or Tank Dates
Fourmile Branch Watershed			
High Level Radioactive Waste Tanks			
Complete Bulk Waste Removal Efforts for One (1) Tank SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2011
Complete Bulk Waste Removal Efforts for Two (2) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2014
Complete Bulk Waste Removal Efforts for Two (2) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2016
Complete Bulk Waste Removal Efforts for Three (3) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2017
Complete Bulk Waste Removal Efforts for Six (6) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2018
Complete Bulk Waste Removal Efforts for One (1) Tank SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2019
Complete Operational Closure of Tanks 19 and 18 SRS Index Number(s): NA CERCLIS OU Number(s): NA			DEC 2012
Complete Operational Closure of Four (4) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2015
Complete Operational Closure of Two (2) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2017
Complete Operational Closure of Two (2) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2019
Complete Operational Closure of Five (5) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2021
Complete Operational Closure of Seven (7) Tanks SRS Index Number(s): NA CERCLIS OU Number(s): NA			SEP 2022
H Area Tank Farm Revision.0 Performance Assessment Submittal SRS Index Number(s): NA CERCLIS OU Number(s): NA			MAR 2011

Footnotes and Explanatory Notes appear on last page of E.3 E.3 - 1 Print Date: 01/30/2008

9

Summary

- The FY 2008 FFA Appendix E is available online at:

http://www.srs.gov/general/programs/soil/ffa/ffa.html
Accesses the Savannah River Site Soil and Groundwater Closure Projects Federal Facility Agreement and Supporting Documentation page –click on Federal Facility Agreement for the pdf version of the document

http://www.srs.gov/general/programs/soil/ffa/ffa.pdf
Accesses the pdf version of the Federal Facility Agreement

EM Environmental Management
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SRS

10