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Public & Regulatory Acceptance of Covers over Low-Level Waste Disposal Trenches to
Ensure CERCLA Waste Acceptance during American Reinvestment and Recovery Act
Implementation

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ABSTRACT

This paper will describe how the Savannah River Site E-Area Low-Level Waste Facility (LLWF) was not part of the 1993 Federal Facilities Act (FFA) because the USDOE operates the facility under the authority of the Atomic Energy Act (AEA) and in accordance with US Department of Energy (DOE) Order 435.1, *Radioactive Waste Management*. The E-Area Slit Trench Disposal Units were approved to receive CERCLA waste per the CERCLA Off-Site Rule (OSR), 40 Code of Federal Regulations (CFR) § 300.440. However, in February 2007, the US Environmental Protection Agency (EPA) sent a Notice of Unacceptability (NOU) to the USDOE making the E-Area Slit Trench Disposal Units unacceptable for the receipt of CERCLA waste. The USEPA NOU stated that through reviews and communications, it was determined that tritium had migrated from the Slit Trench Disposal Units into the vadose zone beneath the disposal units. The USDOE, however, determined that the tritium migration was expected and consistent with predictions made by the Performance Assessment (PA), and no exceedences of the USDOE 435.1 performance measures had occurred. In July 2007, representatives from the USDOE, USEPA, and the SCDHEC met and resolved issues concerning the disposal of CERCLA waste in the E-Area LLWF Slit Trench Disposal Units. As part of this agreement, the USDOE placed the entire E-Area LLWF on the FFA Appendix C, *RCRA/CERCLA Units*. Placing the E-Area LLWF on Appendix C satisfies the OSR requirement for inclusion in an enforceable agreement. Consequently, the USEPA

restored the OSR Acceptability for the Slit Trench Disposal Units, allowing the disposal units to receive CERCLA waste.

Intense public involvement occurred during this period due to the claims and counter claims of the regulatory agencies and the DOE. Most of the public debate was in public meetings of the Citizens Advisory Board attended by members of the public and the parties to the FFA. The South Carolina Department of Health and Environmental Control (SCDHEC) also sent a letter of concern about the tritium measured in the vadose zone.

After much debate the decisions were made by the three parties to agree to install operational covers over the trenches as a remedial alternative to mitigate to flow of rainwater into the waste and Slit Trench's 1 and 2 were determined to be operationally closed so that the facility entered into the CERCLA process that included public involvement in the decision-making process. As part of the regulatory agreement for receipt of CERCLA waste, USDOE agreed to evaluate placement of operational stormwater runoff covers over Slit Trench Disposal Units that have reached operational design capacity as an interim remedial action to mitigate the tritium migration. This action will improve the protection of human health and the environment by adding additional barriers to water infiltration and will significantly reduce the migration of tritium in the vadose zone. As a result of this agreement, the CERCA Offsite Acceptability was restored and the Trenches were again able to receive LLW from CERCLA activities.

As a result of the American Reinvestment and Recovery (ARRA) funding, the cleanup of sites and generation of waste has accelerated, thus allowing the closure of additional trenches with operational covers. Adding covers to subsequent Slit Trench Disposal Units required additional discussion and negotiation among the DOE and regulatory agencies including public involvement. The results of these technical and regulatory communications and the techniques used will be described.

INTRODUCTION AND BACKGROUND

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

SRS is owned by the USDOE. Since August 2008, management and operating services are provided by Savannah River Nuclear Solutions, LLC (SRNS). SRS has historically produced tritium, plutonium, and other special nuclear materials for national defense. Chemical and radioactive wastes are byproducts of nuclear material production processes. As part of this mission, SRS operates Low-Level Radioactive Waste (LLW) disposal facilities onsite. One of the currently operating facilities is located in the center of SRS in E-Area and is named the E-Area LLW Facility (LLWF). This facility is located in the central region of the SRS known as the General Separations Area (GSA) in Aiken County, South Carolina. The E-Area LLWF contains various disposal unit types including Slit Trench Disposal Units. Slit Trench Disposal Units are below-grade earthen trenches used for disposal of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulated low-level radioactive waste and other DOE operational low-level radioactive waste. In 1996, the E-Area Slit Trench Disposal Units were approved to receive CERCLA waste per the CERCLA Off-Site Rule (OSR), 40 Code of Federal Regulations (CFR) § 300.440.

SRS was included on the National Priorities List (NPL) in 1989. The inclusion created a need to integrate the established Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) program with the CERCLA requirements to provide for a focused environmental program. In accordance with Section 120 of CERCLA 42 U.S.C. § 9620, USDOE has negotiated a Federal Facilities Agreement (FFA) (FFA 1993) with the USEPA and SCDHEC to coordinate remedial activities at SRS as one comprehensive strategy that fulfills these dual regulatory requirements.

THE ISSUE: EPA REMOVES CERCLA OFF SITE RULE AUTHORITY DUE TO ALLEDGED RELEASE

The E-Area LLWF was not part of the 1993 FFA because the USDOE operates the facility under the authority of the Atomic Energy Act (AEA) and in accordance with USDOE Order 435.1, *Radioactive Waste Management*. As stated above, in 1996 the E-Area Slit Trench Disposal Units were approved to receive CERCLA waste per the CERCLA Off-Site Rule (OSR), 40 Code of Federal Regulations (CFR) § 300.440. However, in February 2007, the USEPA sent a Notice of Unacceptability (NOU) to the USDOE making the E-Area Slit Trench Disposal Units unacceptable for the receipt of CERCLA waste. The USEPA NOU stated that through reviews and communications, it was determined that tritium had migrated from the Slit Trench Disposal Units into the vadose zone beneath the disposal units. The USDOE, however, determined that the tritium migration was expected and consistent with predictions made by the Performance Assessment (PA), and no exceedences of the USDOE 435.1 performance measures had occurred. The DOE Order 435.1 requires a PA that demonstrates that the disposal facility can operate within the performance measures established by the Order as a precursor to receiving a Disposal Authorization Statement (considered a Federal Permit) to operate the disposal facility. In July 2007, representatives from the USDOE, USEPA, and the SCDHEC met and resolved issues concerning the disposal of CERCLA waste in the E-Area LLWF Slit Trench Disposal Units. As part of an agreement negotiated at these meetings, the USDOE placed the entire E-Area LLWF on the FFA Appendix C, *RCRA/CERCLA Units*. Placing the E-Area LLWF on Appendix C satisfies the Off Site Rule requirement for inclusion of a facility in an enforceable agreement, thus allowing contaminate migration from a facility to no longer be considered a release under CERCLA regulations. Additionally, a Federally Permitted release is not considered a release under the CERCLA Off Site Rule definitions. Consequently, the USEPA restored the Off Site Rule Acceptability for the Slit Trench Disposal Units, allowing the disposal units to receive CERCLA waste.

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In accordance with USDOE Order 435.1, the E-Area LLWF is designed, operated and maintained in a manner that is protective of human health and the environment. As part of the negotiated regulatory agreement to restore the Off Site rule and allow for receipt of CERCLA waste in the ELLWF, USDOE agreed to evaluate placement of operational stormwater runoff covers over Slit Trench Disposal Units that have reached operational design capacity as an interim remedial action to mitigate the tritium migration. This action will improve the protection of human health and the environment by adding additional barriers to water infiltration and will significantly reduce the migration of tritium in the vadose zone. Design capacity is determined when the curie limit or volume capacity for each Slit Trench Disposal Unit is reached. The curie limit for a Slit Trench

Disposal Unit is specific for each radionuclide and is determined using a sum-of-fractions technique to ensure each radionuclide remains below the disposal limit established by the PA for that radionuclide. The interim remedial action would serve as an enhancement to the current protective measures under USDOE Order 435.1 and will be documented in an Interim Record of Decision (IROD) under the FFA. In addition, the agreement to place the E-Area LLWF in the FFA increases regulatory participation in the final closure decisions for the entire E-Area LLWF. In all other respects, the USDOE will continue to operate the E-Area LLWF under its AEA authority. The entire E-Area LLWF is currently in the operational phase.

WITHOUT PUBLIC PARTICIPATION THE AGREEMENT WAS NOT POSSIBLE

CERCLA requires the public to be given an opportunity to review and comment on the proposed remedial alternative(s). Public participation requirements are listed in Sections 113 and 117 of CERCLA 42 U.S.C. § 9613 and 9617. These requirements include establishment of an Administrative Record File that documents the investigation and selection of remedial alternatives and allows for review and comment by the public regarding those alternatives (See Section II). The Administrative Record File must be established at or near the facility at issue. The SRS FFA Community Involvement Plan (WSRC 2006) is designed to facilitate public involvement in the decision-making process for closure and the selection of remedial alternatives. Section 117(a) of CERCLA, as amended, requires notice of any proposed remedial action and provides the public an opportunity to participate in the selection of the remedial action.

Community involvement in consideration of the preferred interim remedial alternative for the E-Area LLWF Slit Trench Disposal Units 1 and 2 was and is strongly encouraged. All submitted comments were and will be reviewed and considered. Following the 30-day public comment period, a Responsiveness Summary will be prepared to address issues raised during the public comment period. The Responsiveness Summary will be made available with the IROD.

The interim remedial decision will be made only after the public comment period has ended and all the comments have been received and considered. The interim remedial alternative chosen will be protective of human health and the environment and comply with all federal and state laws.

All of this is well and good. It is the required Public Participation under CERCLA and the FFA. However, in order to come together with a negotiated agreement that DOE, EPA, and the South Carolina Department of Health and Environmental Control (SCDHEC) could participate, a vigorous Public Involvement program was needed to involve and educate the public, and to receive input from the public for all three agencies to consider. It was clear through the involvement with the SRS Citizens Advisory Board (CAB), that the public wanted to understand whether or not a negative environmental impact had occurred from the EPA and SCDHEC alleged CERCLA release and whether or not the SRS was in violation of environmental regulations. In addition, the further implication of removal of CERCLA Off Site Rule Authority meant that CERCLA radioactive waste would be shipped to a facility out of the state of South Carolina for disposal, probably in Nevada or Utah. This action would be extremely expensive compared to disposal at SRS in the E-Area LLWF.

A series of public meetings began with the CAB to begin to educate them on the issues involved. These meetings lasted several hours each and included many visual aids in addition to descriptions of fairly complex discussions of regulations, costs of operations, and technical concepts.

To begin discussions a grounding of the definitions and the problem was needed. The starting place for this type of understanding is as simple as, “What is the Off Site Rule and how is it applied at SRS?” The answer is that SRS generates Low-Level Radioactive Waste (LLW) when conducting remediation and cleanup of CERCLA sites. This LLW must be properly disposed and that the disposal activity will not itself create another cleanup site. Therefore, EPA must approve facilities that dispose of waste generated from CERCLA cleanup activities. Under the Offsite Rule, “offsite” means off of the site

undergoing cleanup. At SRS, the “site” is the CERCLA Operable Unit being cleaned up (such as a no longer operating facility). Waste generated during cleanup of the old facility (the site) had to go to another location (offsite). The offsite location must be approved for receipt of waste that was generated from some other site. It was also challenging to work together with EPA and SCDHEC to brief the CAB while conducting regulatory negotiations. The CAB did allow EPA, SCDHEC, and DOE to give separate presentations that aired the differences of opinion and allowed the public participation during the resolution of the issues. This became “real” public input when the CAB provided formal Recommendations to the three parties based on a very good understanding of the regulatory, cost, and technical issues.

ARRA FUNDING ACCELERATES THE OPERATIONAL COVERS

Due to additional funding through the American Recovery and Reinvestment Act (ARRA) more LLW is expected to be generated, thus filling more Slit Trenches requiring operational covers. Instead of providing covers for Slit Trench 1 and 2 in the next few years, SRS now needs to cover Slit Trench 1 through 5. This not only requires a redesign of the cover system, but a complete revamping of the CERCLA regulatory documentation along with the required and desired public involvement. Technical considerations include the design of rainwater runoff drainage systems and the Performance Assessment modeling required to ensure that changes to radionuclide limits are understood. The convention for changing the regulatory documents required additional negotiation with the EPA and SCDHEC. After several meetings, it was decided to provide “Explanations of Significant Differences (ESD’s)” to the regulators to explain the changes in the IROD’s.

RESULTS AND CONCLUSIONS

The addition under the FFA of Operational Covers over the E-Area LLWF Slit Trenches allowed the restoration of the Offsite Rule, thus allowing for continued disposal of CERCLA waste during the time when waste generation was accelerated due to ARRA funding. This agreement was openly debated with the stakeholders including the regulators and the public allowing for solid decisions that not only ensured protection of the environment and the public, but saved taxpayer dollars. The effect of saving taxpayer dollars in this case, allows DOE to cleanup more waste sites and buildings than would be possible if the waste had to be shipped off of the SRS for disposal in another State (since shipping the waste is very expensive).

