Regulatory Framework for Salt Waste Disposal and Tank Closure at the Savannah River Site – 13663

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ABSTRACT

The end of the Cold War has left a legacy of approximately 37 million gallons of radioactive waste in the aging waste tanks at the Department of Energy's Savannah River Site (SRS). A robust program is in place to remove waste from these tanks, treat the waste to separate into a relatively small volume of high-level waste and a large volume of low-level waste, and to actively dispose of the low-level waste on-site and close the waste tanks and associated ancillary structures. To support performance-based, risk-informed decision making and to ensure compliance with all regulatory requirements, the U.S. Department of Energy (DOE) and its current and past contractors have worked closely with the South Carolina Department of Health and Environmental Control (SCDHEC), the U.S. Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC) to develop and implement a framework for on-site low-level waste disposal and closure of the SRS waste tanks. The Atomic Energy Act of 1954, as amended, provides DOE the authority to manage defense-related radioactive waste. DOE Order 435.1 and its associated manual and guidance documents detail this radioactive waste management process. The DOE also has a requirement to consult with the NRC in determining that waste that formerly was classified as high-level waste can be safely managed as either low-level waste or transuranic waste. Once DOE makes a determination, NRC then has a responsibility to monitor DOE's actions in coordination with SCDHEC to ensure compliance with the Title 10 Code of Federal Regulations Part 61 (10CFR61), Subpart C performance objectives. The management of hazardous waste substances or components at SRS is regulated by SCDHEC and the EPA. The foundation for the interactions between DOE, SCDHEC and EPA is the SRS Federal Facility Agreement (FFA). Managing this array of requirements and successfully interacting with regulators, consultants and stakeholders is a challenging task but ensures thorough and thoughtful processes for disposing of the SRS low-level waste and the closure of the tank farm facilities.

Introduction

The Savannah River Site is a 310 square-mile, federally-owned facility located in south-central South Carolina on the banks of the Savannah River. (Figure 1) The site is managed by the U.S. Department of Energy and is operated today by a number of prime contractors including Savannah River Remediation LLC (SRR). Since the early

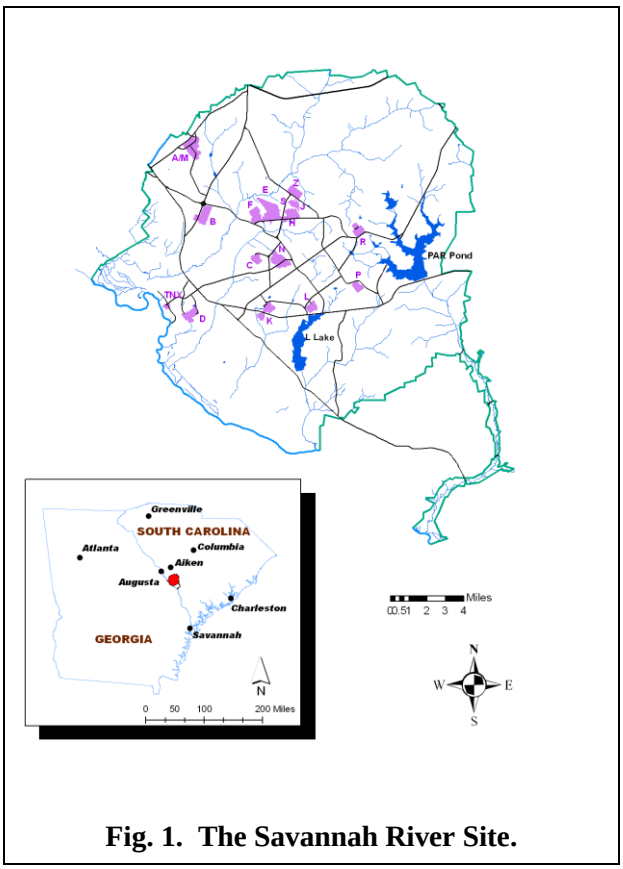

Fig. 1. The Savannah River Site.

1950's, the primary mission of SRS had been to produce nuclear materials for national defense and deep space missions. As many as five production reactors were operational at SRS from the mid-1950's through the late 1980's. Two large chemical separations facilities also began operations in the mid-1950's and one of these facilities, H Canyon, continues to operate today. These separation facilities were known as "canyons" due to their unique design; they have the appearance of two, four-story high, remote canyons where the highly radioactive materials were processed surrounded by habitable support spaces. The F-Canyon Facility primarily dissolved target assemblies to recover weapons grade plutonium. The H-Canyon Facility primarily reprocessed used reactor fuel to recover highly enriched uranium. Throughout the decades of operations of the SRS canyon facilities, large quantities of radioactive liquid waste were generated from these separations activities. These two tank farms, referred to as F-Tank Farm (FTF) and H-Tank Farm (HTF), consist of a total of 51 waste tanks ranging in storage capacities from 750,000 to 1,300,000 gallons. FTF contains 22 waste tanks (Figure 2) and HTF contains 29 waste tanks (Figure 3). All 51 of the SRS waste tanks are constructed of carbon steel. Since the separation processes in both F Canyon and H Canyon utilized nitric acid-based flowsheets to recover the nuclear materials, the waste generated from these operations had to be conditioned to a high alkaline solution prior to transfer to the tank farms. This conditioning was performed through the addition of sodium hydroxide to the waste. This addition resulted in the precipitation of insoluble solids (i.e., metal oxides and metal hydroxides) that ultimately settled to the bottom of the waste tanks that received this waste from the canyons. This layer of settled insoluble solids is typically referred to as "sludge."

Fig. 2. SRS F-Tank Farm.

Fig. 3. SRS H-Tank Farm.

The liquid salt solution sitting above this sludge layer, typically referred to as supernatant or "supernate," was then decanted out of these waste receiver tanks and processed through large evaporator systems. Through the use of these evaporator systems, this relatively dilute salt solution was concentrated into two additional waste types referred to as "saltcake" and "concentrated supernate." The saltcake forms as the concentrated solutions from the evaporator systems cool, resulting in the precipitation of salt crystals. The liquid portion that remains is then recycled through the evaporator system to maximize the quantity of water that can be driven from the solution. The concentrated supernate is a very viscous solution that primarily consists of sodium hydroxide. The breakdown of waste within the SRS Liquid Waste System, as of 9/30/2012, is reflected in Figure 4.

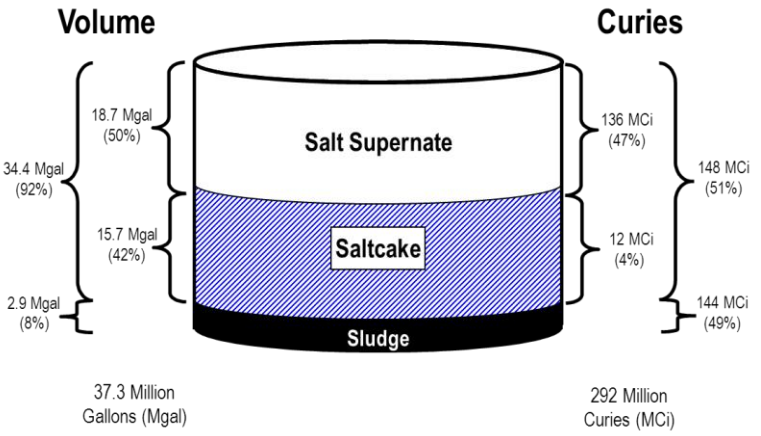

Fig. 4. Liquid Waste System Inventory as of 9/30/2012.

The ultimate goal of DOE and the SRS Liquid Waste contractor, Savannah River Remediation LLC, is to safely remove and pretreat the tank material to separate this waste into a high-volume, low-level waste fraction and a low-volume, high-level waste fraction. Once removed from the tank and treated, the low-level waste fraction is disposed of in the Saltstone Disposal Facility (SDF) at SRS (Figure 5), the high-level waste fraction is vitrified in preparation for eventual disposal in a deep geological repository, and the emptied waste tanks and associated ancillary structures are stabilized and closed. In support of this mission, waste treatment facilities for both sludge and salt waste have been designed, constructed and are actively treating SRS tank waste. The SRS Liquid Waste System flowsheet is shown in Figure 6.

Fig. 5. Saltstone Disposal Facility on 9/28/2012.

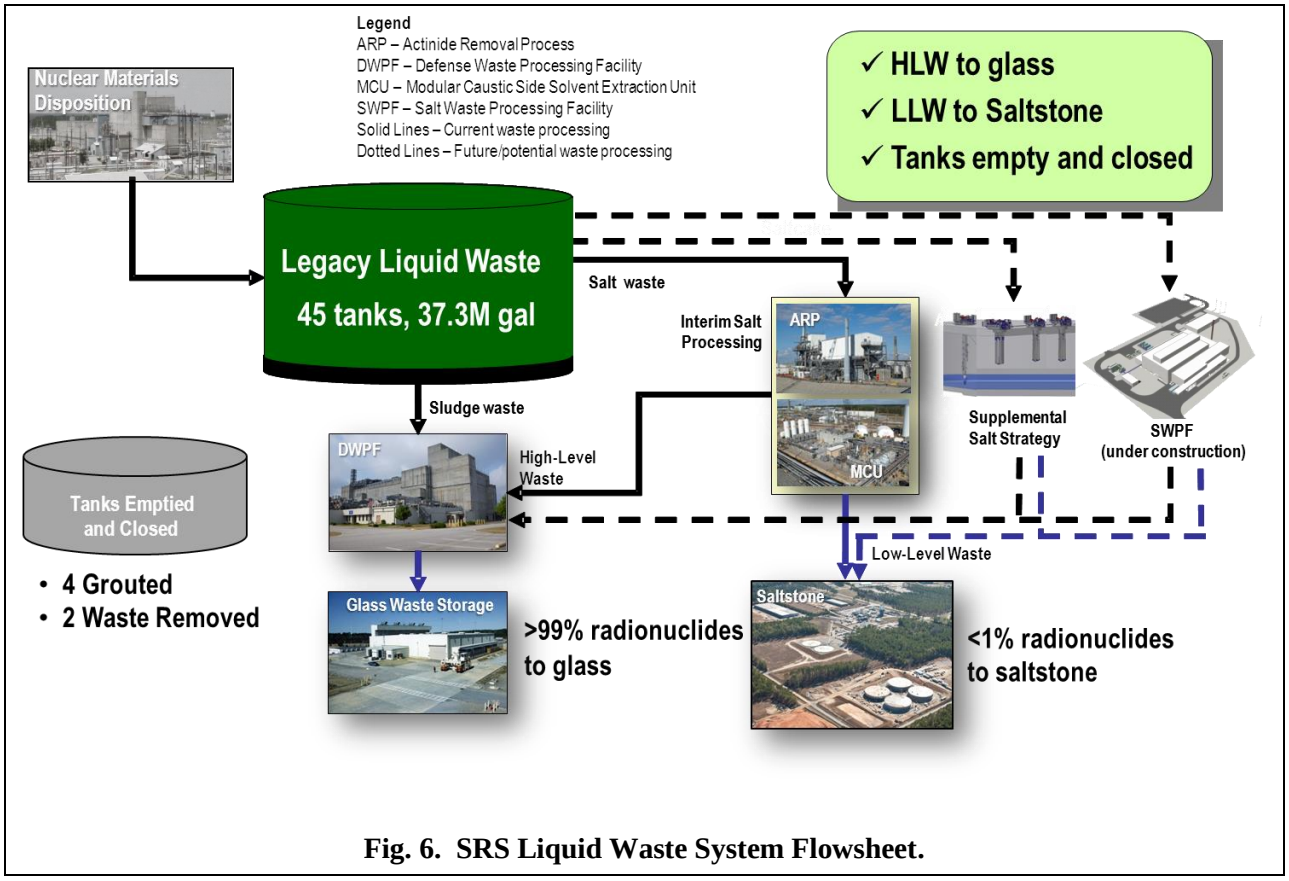

Fig. 6. SRS Liquid Waste System Flowsheet.

Regulatory Structure

Having a clear understanding of the requirements governing the treatment and disposal of low-level waste and the closure of structures that formerly stored high-level waste is essential in developing treatment and cleaning strategies, and in the design and operations of the treatment and disposal facilities. The closure and disposal activities associated with the SRS Liquid Waste System are regulated by a series of Federal and State requirements.

Per the Atomic Energy Act of 1954, as amended, DOE is responsible for managing defense-related radioactive waste including the tank waste at SRS. DOE oversees its operations through a series of Orders with associated Manual and Guidance documents. DOE Order 435.1, *Radioactive Waste Management*, and the associated DOE Manual 435.1-1, *Radioactive Waste Management Manual*, and DOE G 435.1-1, *Implementation Guide for use with DOE M 435.1-1*, specifically describe the requirements associated with the closure of high-level waste facilities and the design, operation and closure of low-level waste disposal facilities. DOE M 435.1-1, Chapter IV contains performance objectives that must be demonstrated for a low-level waste disposal facility. These performance objectives are directly applicable to the SDF at SRS (i.e., DOE must validate that the planned disposal actions for the life of the SDF will meet the performance objectives mandated in DOE M 435.1-1). DOE M 435.1-1, Chapter II describes the requirements for the management of high-level waste facilities including the closure of such facilities. The operation and closure of FTF and HTF at SRS are governed by these requirements. These requirements include processes for managing waste incidental to reprocessing, such as residuals remaining in the waste tanks at time of closure, as low-level waste. The requirements within Chapter II specifically direct that the performance objectives prescribed in Chapter

IV for low-level waste disposal facilities must be demonstrated for facilities that formerly handled high-level waste, such as FTF and HTF.

In 2004, the *Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005* (NDAA) included legislation, typically referred to as Section 3116 (reflective of its section within the law), that provided DOE the authority to determine that waste incidental to reprocessing can be managed as low-level waste. Through this legislation, Congress provided DOE the process by which they could make risk-informed decisions on the management, treatment and disposal of defense-related legacy liquid waste. The legislation is applicable to defense waste in the States of South Carolina and Idaho; the States of Washington and New York were specifically excluded.

The NDAA Section 3116 language establishes a two-phased process. Section 3116(a) describes the process that DOE, in "consultation" with the NRC, can use to determine that "radioactive waste resulting from the reprocessing of spent nuclear fuel" is not "high-level radioactive waste" if it meets prescribed criteria. The first criterion is that the waste does not have characteristics that would require "permanent isolation in a deep geologic repository for spent fuel or high-level radioactive waste." The second criterion is that the waste "has had highly radioactive radionuclides removed to the maximum extent practical." The last criterion has several aspects to it. Criterion (3)(A) of the legislation states that, for waste that "does not exceed the concentration limits for Class C low level waste," DOE must demonstrate that it is "in compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations." It further requires that the activities must be "pursuant to a State-approved closure plan or State-approved permit." Criterion (3)(B) establishes the same requirements for waste that exceeds the values listed in the concentration limits for Class C low-level waste but further adds the requirement that the activities must be pursuant to plans developed by DOE in consultation with the NRC.

For the four times that this process has been exercised to date - once for the Idaho tank closure activities, once for salt waste disposal at SRS, and once each for the two SRS tank farms - DOE has developed a targeted 3116 Basis Document that describes strategies, processes and activities by which each of the NDAA criteria are satisfied. These 3116 Basis Documents, along with the associated references (e.g., the associated performance assessment), have been provided to the NRC for consultation through a publicly transparent process. The documents are also provided to the covered states and associated stakeholders for their review and comment. In addition, publishing of these documents and a link to electronic versions are noted in the Federal Register.

The second phase of the process, Section 3116(b), *Monitoring by Nuclear Regulatory Commission*, describes NRC's role once DOE has determined that certain designated waste meets the criteria established in Section 3116(a). The NRC's long-term role is restricted by the legislation to "monitor disposal actions taken by the Department of Energy … for the purpose of assessing compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations." NRC is required to perform this monitoring "in coordination with the covered State." By exception in the legislation, the NRC does not have the authority to monitor DOE actions related criteria 3116(a)(1) – requires disposal in deep geologic repository – or 3116(a)(2) – removal of highly radioactive radionuclides to the maximum extent practical.

The NDAA Section 3116 legislation is careful not to impact authorities that have been granted to the covered States through previous legislation. It specifically states in Section 3116(e) "Nothing in this section shall impair, alter, or modify the full implementation of any Federal Facility Agreement and Consent Order or other applicable decree for a Department of Energy site."

The Federal Facility Agreement Act establishes the framework for interactions and authorities for DOE, EPA and the associated State. Since SRS is located entirely in the State of South Carolina, SCDHEC has

authority for state-related regulations. In 1993, a Federal Facility Agreement (FFA) was entered into by the three parties – DOE, EPA and SCDHEC. This FFA, in part, provides the regulatory framework that governs both the operation and closure of facilities within the SRS Liquid Waste System. Two key outcomes of the FFA were the establishment of permits for the activities associated with the SRS Liquid Waste System. The tank farms where the liquid waste is received, stored and concentrated, as well as facilities that have been constructed or modified to support treatment of the waste, are governed by SCDHEC under the South Carolina Pollution Control Act and permitted as Industrial Wastewater Treatment facilities. The SDF, a facility that disposes of decontaminated salt solution in a cementitious, non-hazardous waste form is permitted as a Solid Waste Landfill. In addition to establishing the regulatory schemes and specific operational requirements, the FFA also is the mechanism used to establish regulatory commitments. For example, the FFA contains the specific requirements related to the timing of the removal from service of the Type I, Type II and Type IV waste tanks at SRS. These tanks are the oldest tanks that were designed and constructed at SRS (all date back to the 1950s) and all of these tanks lack full secondary containment around the primary tanks.

Salt Waste Disposal Regulatory Structure

At SRS, the soluble fraction of the tank waste (i.e., the salt waste) undergoes treatment to segregate the waste into a higher activity, small volume stream that is sent to the Defense Waste Processing Facility to be vitrified with the other high-activity waste from the tanks. The remaining low-level, high volume stream (i.e., decontaminated salt solution) is sent to the Saltstone Production Facility (SPF) where it is mixed with dry cementitious materials and sent to the disposal cells in SDF. This mixture cures in the cells to a non-hazardous waste form known as saltstone.

The regulatory structure for the disposal of low-level radioactive waste at SRS involves three primary agencies. This structure is reflected in Figure 7. Consistent with the Atomic Energy Act of 1954, as amended, DOE maintains the authority to manage the disposal of defense-related low-level radioactive waste. As described in the previous section, DOE Manual 435.1-1 contains the requirements for operation of a DOE low-level waste disposal facility such as SDF. The key principle underlying these requirements is that the operations today must be performed in such a manner that it is possible to demonstrate that there exist "reasonable expectations" that the long-term performance objectives, typically described in terms of dose to a future hypothetical member of the public or intruder into the site, will be met. The cornerstone for such a demonstration is the development of a performance assessment. A performance assessment considers the design of the facility, the anticipated inventory that will be disposed of in the facility, and the geology and hydrogeology of the site for the purposes of projecting the long-term fate and transport of materials out of the disposal facility and into the environment over time. This information is then translated into potential dose at various points of compliance over long of thousands of years into the distant future, the performance objectives have been conservatively established (e.g., 25 millirem per year to a future member of the public) to minimize the chance that catastrophic doses (i.e., doses that would present a high risk to a future member of the public compared to similar environmental risks) could be realized if the assumptions comprising the analysis are significantly flawed. DOE has established a period of compliance for demonstrating that there is "reasonable expectations" that the performance objectives will be met of 1,000 years. Potential hazards beyond 1,000 years are considered as part of the establishing "reasonable expectations" within the 1,000-year period and in protecting against catastrophic doses in the distant future.

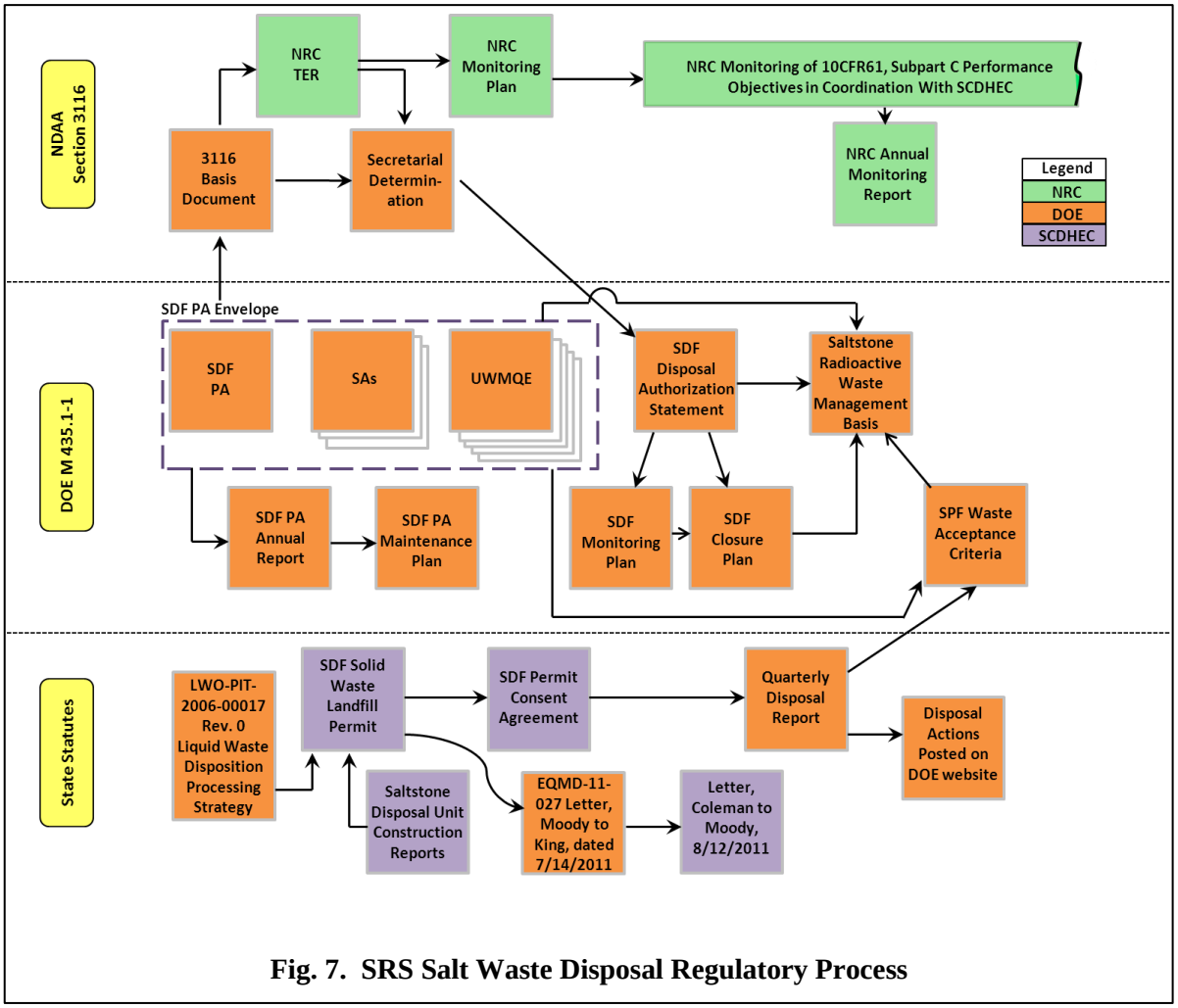

Fig. 7. SRS Salt Waste Disposal Regulatory Process

DOE performance assessments that are generated at the various sites undergo a thorough review process by the DOE Low-Level Waste Disposal Facility Federal Review Group (LFRG). Experts in various related fields from within the Federal government, as well as outside consultants and members of academia, review and challenge the performance assessment models and assumptions. Once satisfied, the individual review groups make recommendations to the LFRG regarding approval of the performance assessment. Activities with a low-level disposal facility such as SDF cannot commence or continue without a LFRG-approved performance assessment. Because new information emerges on such things as research results for key modeling parameters and proposed inventories, processes are in place to assess the impact of the new information on the conclusions originally reached based on the performance assessment. At SRS, these evaluations can take the form of a Special Analysis or an Unreviewed Waste Management Question (UWMQ). While both forms of documentation serve the same purpose, Special Analyses tend to be much larger documents that involve both deterministic and probabilistic modeling, including uncertainty and sensitivity analyses. For SDF, together these three types of documents form the performance assessment envelope. An annual report is issued to the LFRG that includes any new information or change in disposal conditions for the past year, and any new plans for the coming year. In addition, a Performance Assessment Maintenance Plan is issued annually describing plans to further reduce the uncertainties related to the performance assessments such as specific research and scientific studies that are planned to be performed in the coming years.

The DOE "Federal permit" that approves the operation of SDF is called a Disposal Authorization Statement (DAS). The DAS contains a listing of documents with associated requirements that must be satisfied during operation of SDF. The DAS also provides specific additional requirements that must be satisfied or maintained. The DAS further requires that the requirement documents referenced or their subsequent approved revisions be included in the DOE-approved Radioactive Waste Management Basis (RWMB) for the SDF. The current SDF DAS was issued by the Deputy Assistant Secretary for Site Restoration in May 2012. Included in the DAS is a requirement that a revision to the DOE M 435.1-1 Monitoring Plan and the DOE M 435.1-1 Closure Plan be updated to reflect current conditions in the facility and future plans.

The SPF Waste Acceptance Criteria (WAC) is the mechanism used to ensure that all salt solution that is transferred to SPF, and that ultimately will be disposed of in SDF, meets the requirements within the facility. The inventories that are evaluated within the performance assessment envelope are an important consideration in establishing the WAC values. They are certainly not the only properties considered, though. Processability of the salt solution within the SPF and the SDF is also a key factor in establishing the WAC values. Characteristics that impact the radiological conditions in the facility (e.g., shielding limitations), the Documented Safety Analysis requirements (e.g., concentrations of organic materials), and other chemical or physical characteristics that could impact the facility are also considered. The SPF WAC values selected for each individual radionuclide and chemical typically are a fraction of the most limiting factor.

As described in the previous section, the determination by DOE that the decontaminated salt solution can be managed and disposed of as low-level waste is performed under the authority of NDAA Section 3116. The processes and descriptions documented in the specific 3116 Basis Document for salt waste disposal are considered part of the SDF DAS process. SRR has established the UWMQ process to not only evaluate new information associated with the SDF Performance Assessment but also to evaluate new information relative to the applicable 3116 Basis Document. This process has been established to ensure that both the performance assessment and the 3116 Basis Document are carefully considered in evaluating new activities or modifying existing processes within SDF or within the upstream treatment processes that could ultimately impact the inventory of material being disposed of in the SDF.

Since the determination for salt waste disposal was signed in January 2006, the NRC has been monitoring the disposal activities at SDF per NDAA Section 3116(b). This monitoring has been conducted consistent with a NRC-issued monitoring plan. The NRC conducts on-site observation visits as well as document reviews. Both of these activities are documented in publicly available reports. A report that rolls up the NRC activities within a given calendar year is issued annually.

The hazardous constituents associated with the disposal of the salt solution are regulated by SCDHEC. SCDHEC has issued a Solid Waste Landfill Permit for SDF operations. The permit contains Special Conditions, General Conditions, and Environmental Monitoring Conditions that govern the operation of the SDF and expectations of SCDHEC. In addition, it contains tables of chemical and radiological characteristics for the saltstone waste form, both maximum expected and nominal concentrations. One Special Condition within the permit states that "DOE shall implement liquid waste disposition activities at the Savannah River Site (SRS) as specified in the Liquid Waste Disposition Processing Strategy, LWO-PIT-2006-00017, Rev. 0, dated September 21, 2006." This document provided the overall strategy for treatment and disposal of the tank wastes at SRS.

As new disposal cells are required, Construction Engineering Reports are generated and approved by SCDHEC to ensure that the saltstone disposal cells are designed and constructed consistent with the permit. These approved reports, as well as other letters and formal correspondence between DOE/SRR and SCDHEC, form the permit envelope for SDF. One such recent letter, from SCDHEC to the DOE Site

Manager, dated 8/12/2011, established additional agreements within this permit envelope. As shown in Figure 7 DOE has agreed to provide Quarterly Disposal Reports on a publicly assessable website. These reports provide details on the material that has been disposed of in SDF to date and, as the name implies, are updated on a quarterly basis. The genesis of these quarterly reports was a Consent Agreement that was generated as a result of a challenge by a set of citizen's groups on the SCDHEC approval of the SDF Solid Waste Landfill Permit. While most of the stipulations and requirements of the Consent Agreement are no longer applicable due to the predetermined conditions that would close the Consent Agreement being realized, the posting of the disposal actions on a routine basis will continue.

Waste Tank Operational Closure Regulatory Structure

While the regulatory structure for waste tank operational closure activities are very similar to those described above for salt waste disposal in the SDF, there are some notable differences associated with "closure" versus "disposal." Figure 8 below provides a roadmap for the regulatory activities associated with tank farm closure activities at SRS. The figure is divided into five "swim lanes" that are associated with the specific applicable regulatory regimes. The figure is further divided into three columns that represent "area-specific" documents, "tank-specific" documents that support tank grouting actions, and "tank-specific" documents that are required in the interim period following grouting but before "Operable Unit" closure per the Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation, and Liability Act (RCRA/CERCLA) requirements.

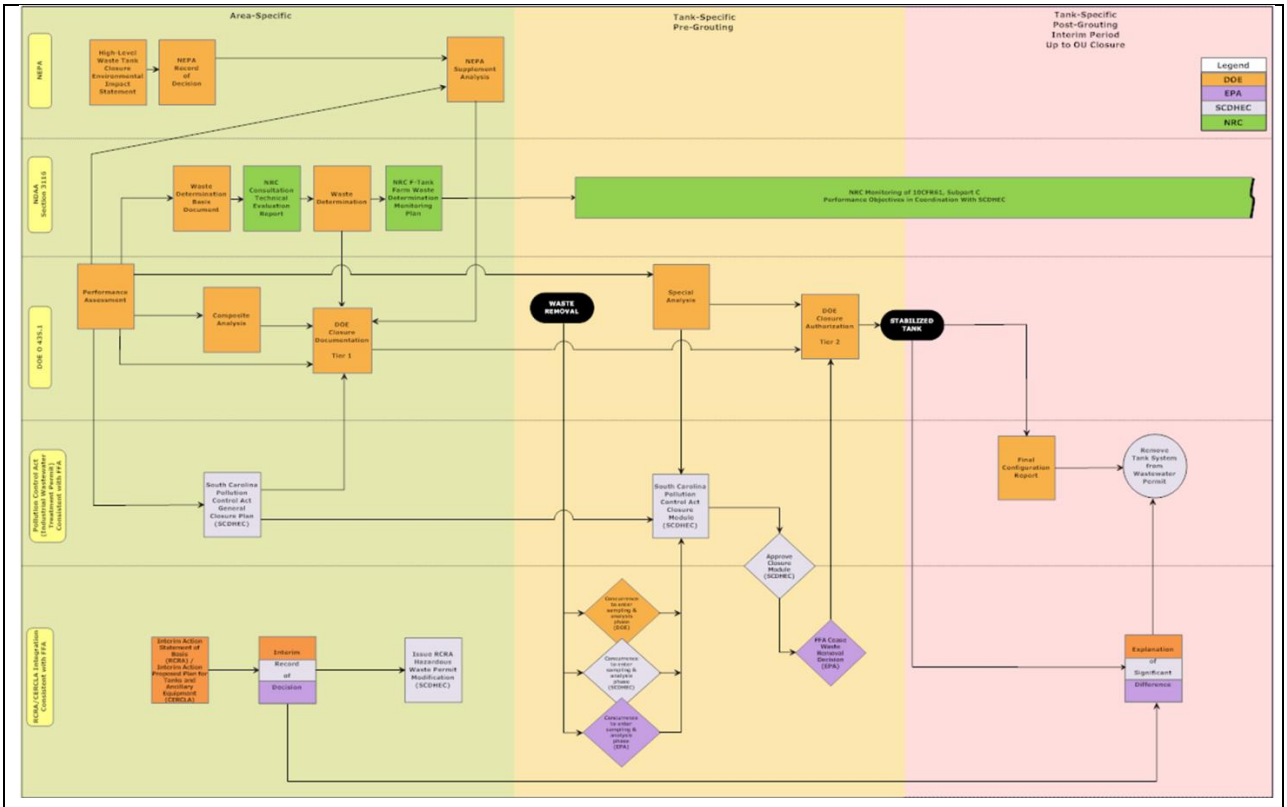

Fig. 8. Regulatory Framework for Operational Closure of SRS Waste Tanks.

As with the salt waste disposal process, the performance assessments for the tank farms are the nexus for risk-informed decision making. Although "high-level waste" facility closure activities are described in Chapter II of DOE M 435.1-1, the chapter points to the requirements for low-level waste disposal facilities relative to the development of performance assessments and the assignment of performance objectives contained in Chapter IV. An individual performance assessment has been developed for both the FTF and the HTF. As individual tanks or a grouping of tanks are cleaned within a given area, a tank-specific Special Analysis is developed to understand the impact of the final residual inventory within a tank. The performance assessment utilized informed projections of final tank residual inventories but actual inventories are developed through a comprehensive State-approved sampling and analysis process performed at the completion of cleaning activities. Although not depicted in Figure 8, the UWMQ process is also applicable to the tank farm performance assessments. Together, the area-specific performance assessment, Special Analyses and UWMQ Evaluations constitute the performance assessment envelope for the given area. As shown in Figure 8, the performance assessment feeds information to key decision documents related to the National Environmental Policy Act (NEPA) process, the site Composite Analysis (an evaluation to look at the impact from all sources of potential current and future closure activities), the NDAA Section 3116 process, the DOE Tier I Document and the State-approved General Closure Plan.

The NDAA Section 3116 activities for tank closure mirror those described above for salt waste disposal. An area-specific 3116 Basis Document is generated and provided to stakeholders for comment and to the NRC for NDAA Section 3116(a) Consultation. DOE considers all input including the NRC's Technical Evaluation Report in determining that the tank residuals can be managed as low-level waste and closed in-situ. The requirements of NDAA Section 3116(b), *Monitoring*, are also apply to tank closure activities. NRC has the responsibility to monitoring DOE's closure activities to ensure that the 10CFR61, Subpart C performance objectives will be met.

For the tank closure activities, DOE utilizes a "permitting" process entitled "Tier I Closure Plan." The Tier I Closure Plan is very similar in content to the DAS used in the DOE low-level waste disposal facilities and is described in DOE M 435.1-1. The Tier I Closure Plan defines and bounds the parameters of the proposed approach for closing an entire tank farm and provides the basis for the Assistant Secretary for Environmental Management to authorize proceeding with closure activities. As depicted in Figure 8, the documents that support the Tier I Closure Plan include the area-specific performance assessment, the SRS Composite Analysis, NEPA documentation, the NDAA 3116 Basis Document, and the General Closure Plan.

As individual tanks are cleaned, the final residual inventories determined, and the tanks are prepared for grouting, a DOE M 435.1-1 Tier II Closure Plan is developed. The Tier II Closure Plan is the document that demonstrates that closure actions that are being taken on a specific tank are within the bounds established by the approved area-specific Tier I Closure Plan. This document is approved by a DOE official at the site level and is the final authorization to the DOE contractor to proceed with grouting operations. Several of the key documents that support the Tier II Closure Plan and the decision to proceed with grouting include a Special Analysis using final tank inventories, demonstration that highly radioactive radionuclides have been removed to the maximum extent practical, the State-approved Closure Module, and SCDHEC and EPA concurrence that waste removal can cease.

Within the tank closure regulatory regime, in addition to the DOE requirements discussed above, there are swim lanes that address SCDHEC requirements per the South Carolina Pollution Control Act and the associated Industrial Wastewater (IWW) permit, and the requirements of the tri-party FFA. Consistent with the IWW process, an area-specific General Closure Plan is developed that outlines the requirements under which DOE can move forward with grouting the tanks. The General Closure Plan establishes the performance objectives that must be demonstrated, the documentation that must be produced, and the

process by which it will be approved. Once a tank has been cleaned and the sampling and analysis activities are complete, a tank-specific (or grouping of tanks) Closure Module is submitted to SCDHEC for review and approval. In this process, EPA acts in the role of consultant to SCDHEC, who has the final signatory approval. Figure 9 contains a graphic from the General Closure Plan detailing this review and approval process. As noted earlier, the approved Closure Module is a key prerequisite to the Tier II Closure Plan. Within this swim lane's regime is also the requirement to produce a Final Configuration Report that describes the "as-built" or "as-left" conditions in and around the tank(s).

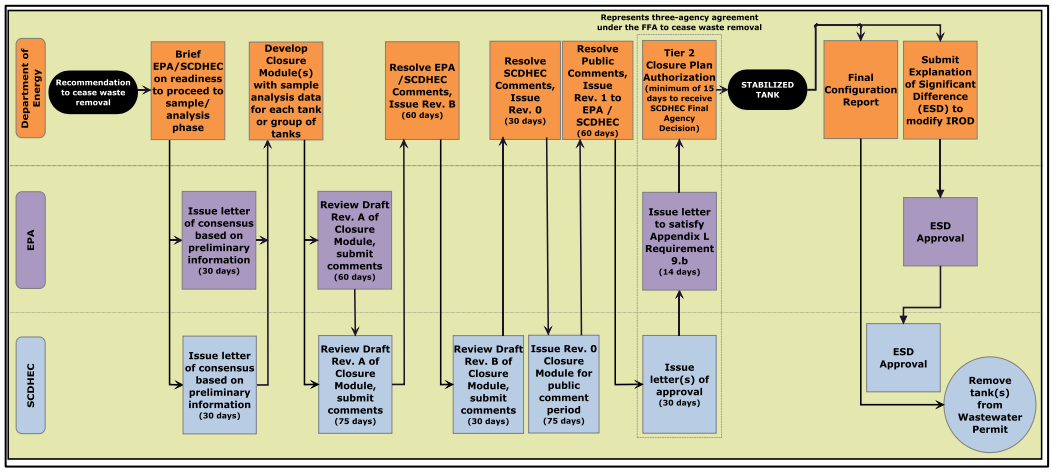

Fig. 9. State Approval Process For Removing a Tank from the Wastewater Permit

The final swim lane regime focuses on FFA activities related to the intermediate step of receiving a non-binding tri-party agreement that waste removal in a given tank can cease and the DOE contractor can proceed with performing final characterization of the tank residuals through sampling and analysis. This lane also describes actions that are associated with interim RCRA/CERCLA closure activities. The RCRA/CERCLA actions include preparing and receiving approval of documents supporting an Interim Record of Decision for the respective tank farm and then amending this decision document through the development and approval of Explanation of Significant Difference documents for each tank or grouping of tanks that have been grouted. It is the Final Configuration Report and the Explanation of Significant Difference documents that must be approved before the tank (or grouping of tanks) is removed from the IWW permit.

Conclusion

The SRS tank farms continue to store over 37 million gallons of highly radioactive and hazardous waste in aging waste tanks and associated infrastructure. Many of these carbon steel, underground waste tanks are approaching sixty years of service. SCDHEC has stated that the waste in these aging tanks poses the greatest single hazard in the State of South Carolina. Hundreds of millions of dollars are spent annually to safely manage this waste. Critical risk decisions are being made today to balance this current real hazard against the hypothetical scenarios associated with risks to future generations from the on-going closure and disposal activities.

Low-level waste disposal and closure of structures that once stored hundreds of thousands of gallons of highly radioactive and hazardous materials are appropriately governed by a myriad of regulations and requirements. As a result, jurisdictional authorities are not always immediately clear and the identification of the exact processes necessary to demonstrate full compliance with the regulations is very challenging. To this end, DOE and SRR have worked very closely with SCDHEC and EPA to develop

roadmaps that chart the course for these disposal and closure activities. Through the investment in these discussions and negotiations between the three parties – DOE, SCDHEC and EPA – a clear understanding of expectations has been established. The roadmaps described in this paper have established processes that will allow the efficient and safe disposal of the low-level salt waste at SRS and closure of the SRS tank farms.

DOE continues to work with the NRC in a similar manner to develop effective processes to optimize the NDAA Section 3116 consultation and monitoring activities to balance the operational risks to both occupational workers and the public today against the potential risk to future generations hundreds and thousands of years into the future.