

# Chapter 3: Compliance Summary

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**T**he Savannah River Site (SRS) implements programs to meet the requirements of applicable federal and state environmental laws and regulations, and U.S. Department of Energy (DOE) Orders, notices, directives, policies, and guidance. The Site's goal is to comply with regulatory requirements and eliminate or minimize any environmental impacts. SRS continues its commitment to protect human health and the environment.

## 2018 Highlights

### Permitting

SRS managed more than 560 operating and construction permits. SRS received one Notice of Alleged Violation (NOAV), and Ameresco received one Notice of Violation (NOV). More information on the NOAV and NOV can be found below and in Sections 3.3.2.3, 3.3.6.1, and 3.8.

### Remediation (Environmental Restoration and Cleanup)

To date, SRS has completed the cleanup of 408 of the 515 waste units containing or having contained solid or hazardous waste. An additional 10 waste units are currently being remediated.

### Tank Closure (Radioactive Liquid Waste Processing and Dispositioning)

- SRS installed the Tank Closure Cesium Removal (TCCR) system and performed a readiness assessment to prepare for a January 2019 start date.
- The Defense Waste Processing Facility (DWPF) filled 15 canisters with approximately 61,000 pounds of glass waste mixture, immobilizing 257,000 curies of high-level radioactive waste.
- The Saltstone facilities processed 384,000 gallons of low-activity waste.

### Radioactive Waste Management

- The annual reviews for the E-Area Low-Level Waste Facility Performance Assessment (PA) and the Saltstone Disposal Facility PA showed that SRS continued to operate these facilities in a safe and protective manner.
- SRS sent one transuranic waste (TRU) shipment to the Waste Isolation Pilot Plant (WIPP) for deep geologic disposal in 2018.

### Resource Conservation and Recovery Act (RCRA)

- SRS received TRU Pad 2 Closure Certification Approval from the South Carolina Department of Health and Environmental Control (SCDHEC) in December.
- SRS received approval for the revised Solvent Storage Tanks (SSTs) S33-S36 Closure Plan in November.

### ***2018 Highlights (continued)***

- SCDHEC and the U.S. Environmental Protection Agency (EPA) conducted a compliance evaluation inspection at selected RCRA facilities in May 2018. SCDHEC noted two labeling deficiencies in E Area during the inspection, which SRS corrected before the inspection close-out. It found no other deficiencies.
- During the SCDHEC annual Underground Storage Tank (UST) inspection on October 23, 18 of 19 USTs were in compliance. However, SCDHEC gave SRS an NOAV for UST 715-H on Permit 10838 because the spill bucket integrity was not maintained, identifying a suspected release. SRS addressed the corrective actions as directed by SCDHEC and received notification from SCDHEC that “No Further Action” is required.

#### **Air Quality and Protection**

- On August 21, SCDHEC inspected SRS to determine if the Site was complying with state and federal air quality regulations, and with one of the air quality permits issued to the facility. SCDHEC found no violations of TV-0080-0041 permit requirements or applicable regulations during the evaluation.
- Ameresco received an NOV associated with Air Quality Permit TV-0080-0144 for failing to meet carbon monoxide (CO) emission limits. All matters concerning SCDHEC have been resolved with no further enforcement actions.

#### **Water Quality and Protection**

All 39 SRS Industrial storm water outfalls in the General Permit covered under a Stormwater Pollution Prevention Plan (SWPPP) complied with plan requirements. The SWPPP describes how SRS prevents contamination and controls sedimentation and erosion.

#### **Radiation Protection of the Public and the Environment**

SRS air and water discharges containing radionuclides were well below the DOE public dose limit of 100 mrem per year. (Chapter 6, *Radiological Dose Assessment*, explains the public dose.)

#### **Environmental Protection and Resource Management**

- SRS conducted 669 National Environmental Policy Act (NEPA) reviews to identify potential environmental impacts from proposed federal activities. SRS identified 621 of these as categorical exclusions that did not require action from the Site under NEPA.
- SRS continued to comply with many other federal laws, including the Emergency Planning and Community Right-to-Know Act, the Superfund Amendments and Reauthorization Act (SARA) Title III, the Endangered Species Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the National Historic Preservation Act, and the Migratory Bird Treaty Act.

## 2018 Highlights (continued)

### Release Reporting

SRS did not have any releases exceeding the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Reportable Quantity.

### External Environmental Audits and Inspections

EPA and SCDHEC conducted audits, inspections, and site visits of various SRS environmental programs to ensure regulatory compliance. The Federal Energy Regulatory Commission (FERC) performed a dam safety inspection in October.

## 3.1 INTRODUCTION

Complying with environmental regulations and DOE Orders is integral to SRS operations. This chapter summarizes how SRS complies with applicable environmental regulations and programmatic requirements.

## 3.2 FEDERAL FACILITY AGREEMENT

The 1993 [Federal Facility Agreement \(FFA\) for the Savannah River Site](#), a tri-party agreement between DOE, EPA, and SCDHEC, integrates CERCLA and RCRA requirements to achieve a comprehensive remediation strategy and to coordinate administrative and public participation requirements. The FFA governs remedial actions, sets annual work priorities, and establishes milestones for cleanup and tank closure. SRS conducts remediation and closure activities identified in the FFA in accordance with applicable regulations, whether they are from the state, the federal government, or both. Additional information regarding the FFA commitments discussed in this section can be found on the SRS and SRR web pages.

### 3.2.1 Remediation (Environmental Restoration and Cleanup)

SRS has 515 waste units subject to the FFA, including RCRA/CERCLA units, Site Evaluation Areas, and facilities covered by the SRS RCRA permit. At the end of FY 2018, SRS had completed the surface and groundwater cleanup of 408 of these units and was in the process of remediating an additional 10 units. Appendix C, *RCRA/CERCLA Units List*; Appendix G, *Site Evaluation List*; and Appendix H, *Solid Waste Management Units Evaluation* of the FFA list all of SRS's 515 waste units. The [Federal Facility Agreement Annual Progress Report for Fiscal Year 2018](#) explains the status of FFA activities at SRS for FY 2018.

CERCLA requires reviews every five years for sites that have hazardous substances remaining at levels that do not allow for unrestricted use of the area after a remedy is completed. Remedies are evaluated to determine if they are functioning as designed and are still protecting human health and the environment.

SRS prepared the following reports to satisfy the CERCLA requirements:

- *Fifth Five-Year Remedy Review Report for Savannah River Site Operable Units with Engineered Cover Systems*: SCDHEC and EPA approved in December 2017 and January 2018, respectively. SRS issued to the public on February 21, 2018.

- *Fifth Five-Year Remedy Review Report for Savannah River Site Operable Units with Geosynthetic or Stabilization/Solidification Cover Systems:* SCDHEC and EPA approved in January and February 2018, respectively. SRS issued to the public on March 27, 2018.
- *Fifth Five-Year Remedy Review Report for Savannah River Site Operable Units with Operating Equipment:* SCDHEC and EPA approved in August 2018 and September 2018, respectively. SRS issued to the public on December 5, 2018.
- *Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Native Soil Covers and/or Land Use Controls:* DOE submitted to SCDHEC and EPA in December 2018.

The FFA also governs how the Site closes the ash basins associated with the D-Area coal-fired powerhouse closure. The ash basins, adjacent to the inactive D-Area powerhouse, hold ash, a byproduct of past power generating operations at SRS.

SRS closed the 488-1D basin and 489-D coal pile runoff basin in November 2018. Construction on these two basins began in July 2016. Previously, SRS completed both the 488-2D basin and the 488-4D landfill closures in November 2016 (Figure 3-1).

For decades, pipes carried a hazardous watery ash-laden solution from the powerhouse to the basins. Now, consolidating the ash into two large mounds (approximately 1.56 million cubic yards) underneath a protective cap and grassy cover is eliminating the risk to human health, ecology, and groundwater in the area.

The *Removal Action Report for the 488-2D Ash Basin and the 488-4D Ash Landfill* (Revision 1) was approved by the regulators in March 2018. SRS drafted the *Removal Action Report for the 488-1D Ash Basin and 489-D Coal Pile Runoff Basin* (Revision 0) and submitted it to EPA and SCDHEC in March 2019.



Figure 3-1 D-Area Ash Project Completion

### 3.2.2 Tank Closure (Radioactive Liquid Waste Processing and Dispositioning)

SRS generates liquid radioactive waste as a byproduct of processing nuclear materials (legacy liquid waste). The Site stores the waste in underground waste tanks grouped into two tank farms (F-Tank Farm and H-Tank Farm). While in the tanks, a sludge settles on the bottom of the tank, and a liquid salt waste rises to the top. The waste removed from the tanks feeds the sludge and salt waste processing programs, as Figure 3-2 depicts.

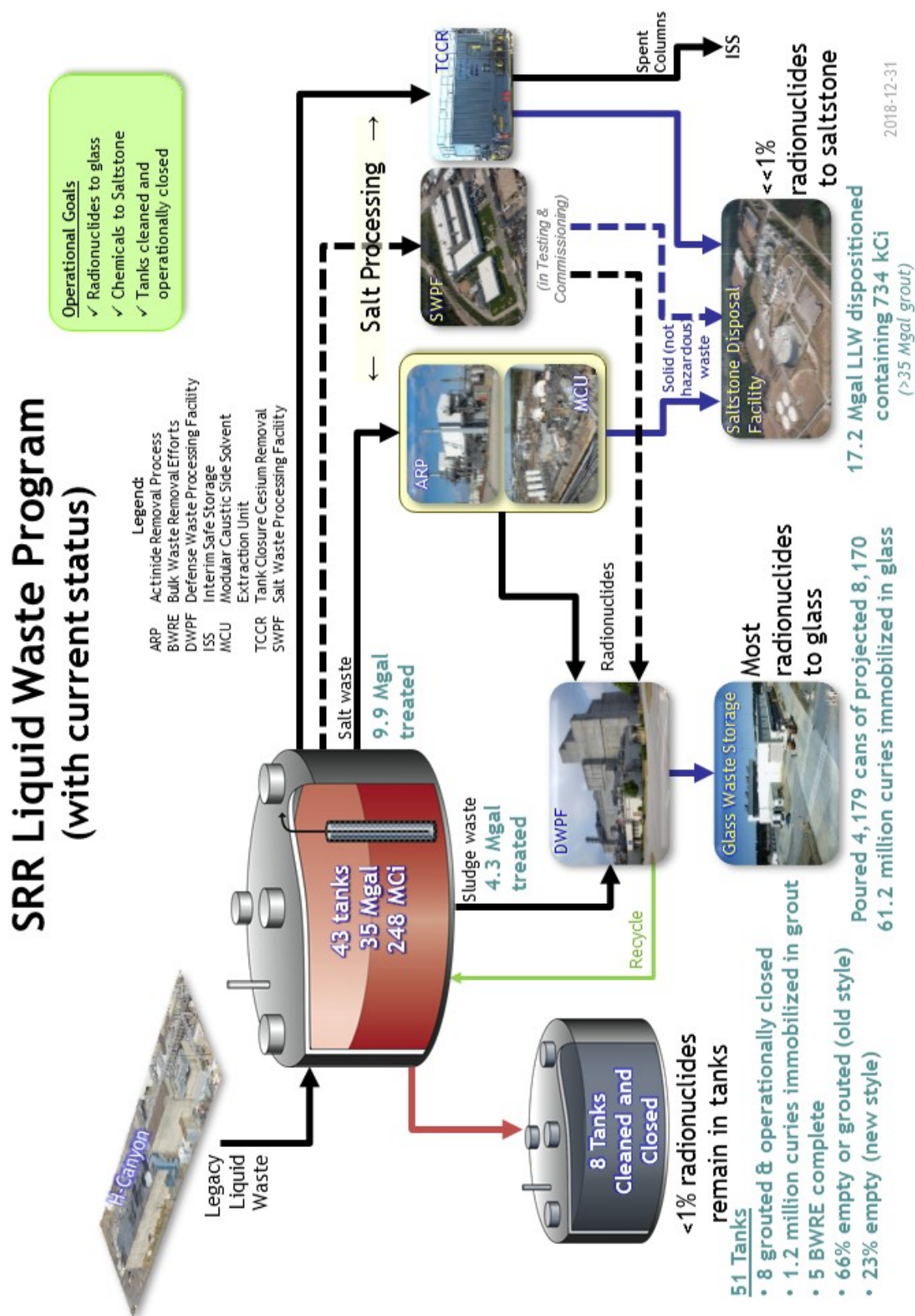


Figure 3-2 Pathway for Processing and Dispositioning Radioactive Liquid Waste at SRS



### 3.2.2.1 Tank Closure

SCDHEC permits the F-Tank Farm and H-Tank Farm under the industrial wastewater regulations through the provisions of the FFA, Section IX, *High-Level Radioactive Waste Tank System(s)*. The FFA contains enforceable closure schedules for the liquid waste tanks. In addition, tank closures are subject to DOE Order 435.1, *Radioactive Waste Management*; federal regulations; and Section 3116 of the *Ronald W. Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005*.

NDAA Section 3116(a) is legislation that allows the Secretary of Energy to consult with the Nuclear Regulatory Commission (NRC) to determine that certain waste from spent fuel reprocessing is not high-level radioactive waste and does not need to be disposed of in a deep geologic repository. The NRC coordinates with SCDHEC to monitor the steps DOE takes to dispose of the waste to assess if it is complying with the performance objectives of 10 Code of Federal Regulations (CFR) Part 61, Subpart C. Additionally, the EPA may participate in the NRC monitoring. [Section 3116 Determination for Closure of F-Tank Farm at the Savannah River Site](#) and [Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site](#) demonstrate that the stabilized tanks and ancillary structures in the F-Tank Farm and H-Tank Farm meet the necessary criteria and will not need to be permanently isolated in a deep geologic repository.

During 2018, DOE supported the NRC in NRC's F- and H-Tank Farm monitoring role under Section 3116 of the NDAA by providing routine documentation (for example, groundwater monitoring reports, performance assessment [PA] maintenance plan) as the NRC requested. The NRC conducted one on-site observation visit for F- and H-Tank Farms during 2018 and did not identify any issues. Prior to SRS closing the tanks, they undergo an extensive waste removal process that includes specialized mechanical cleaning and isolation from the waste transfer and chemical systems. Once these activities are complete, DOE receives regulatory confirmation that the tanks are ready to be stabilized by grouting.

The first step in this process is Bulk Waste Removal Efforts (BWRE). Preparing for BWRE is typically a multiyear engineering and modification process to install specialized equipment that meets strict nuclear safety standards.

In November 2018, DOE restarted BWRE in Tank 10 by adding water to dissolve the salt. This activity was completed more than two months ahead of the FFA deadline to restart BWRE activities in the tank. Salt dissolution in Tank 10 will continue in 2019. There were no other FFA tank closure commitments required for FY 2018 as the Tank 10 BWRE commitment was extended into 2019, and other commitments were suspended pending follow-up negotiations that are planned to be held in 2019.

### 3.2.2.2 Salt Processing

SRS is using several processes to dispose of the salt waste from the liquid waste tanks, as Figure 3-2 shows. The Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit (ARP/MCU) is an interim salt waste processing system. SCDHEC permitted ARP/MCU under South Carolina industrial wastewater regulations. The salt form of the liquid waste comprises more than 90% of the volume and contains about half of the radioactivity in the tank farms. The ARP/MCU process removes actinides, strontium, and cesium from the salt waste taken from the liquid waste tank farms. In FY 2018, the MCU processed about 149,000 gallons of salt solution. The higher activity portion of the salt waste—a very small stream—is sent to the

Defense Waste Processing Facility (DWPF). The remaining portion, a low-activity salt solution, is sent to the Saltstone facilities.

SRS procured the Tank Closure Cesium Removal (TCCR) system to treat salt waste, increase salt processing capability, and to expedite tank closure. TCCR design and fabrication were completed in 2017, and installation and readiness assessments were completed in 2018. The TCCR is projected to start operating in January 2019.

### 3.2.2.3 Salt Disposition

After ARP/MCU interim processing, the low-activity salt solution is sent to the Saltstone Production Facility for processing into grout waste, which is disposed of in the Saltstone Disposal Facility (SDF). SCDHEC permits the SDF to operate under South Carolina solid waste industrial landfill regulations. SRS disposes of treated low-level salt waste in the SDF based on the Secretary of Energy's determination pursuant to [Section 3116 Determination for Salt Waste Disposal at the Savannah River Site](#). NDAA Section 3116(b) requires that the NRC, in coordination with SCDHEC, monitor the disposal actions DOE takes to assess if it is complying with the objectives of 10 CFR Part 61.

During 2018, DOE supported the NRC's monitoring SDF under Section 3116 of the NDAA by providing routine documentation (for example, groundwater monitoring reports, PA maintenance plan) as the NRC requested. The NRC made one NRC on-site observation visit for salt waste disposal during 2018.

In FY 2018, Saltstone facilities processed and disposed of 384,000 gallons of waste. In 2018, SRS continued to use cylindrical Saltstone Disposal Units (SDUs) for disposal. SRS began operating the mega-vault SDU-6, a 32.8 million-gallon concrete rubber-lined tank, in August 2018. SRS began preparing the site for the second mega-vault, SDU-7, in January 2018 and is anticipating completing it in mid-2020.

### 3.2.2.4 Sludge Waste Processing—Vitrification of High-Activity Waste

SCDHEC permits DWPF to operate under South Carolina industrial wastewater regulations. The sludge waste is less than 10% of the waste volume stored in the tanks and contains about half of the radioactivity, as Figure 3-2 shows. DWPF receives the high-activity portion of both the sludge and salt wastes, where it is



**Ion Exchange Column Installed at TCCR**



**Saltstone Disposal Unit (SDU) 7 Being Constructed Next to SDU 6**

combined with frit and sent to the plant's melter. The melter heats the waste/frit mixture to nearly 2,100 degrees Fahrenheit, until molten. The resulting glass-waste mixture is poured into stainless steel canisters to cool and harden. This process, called "vitrification," immobilizes the radioactive waste into a solid glass form suitable for long-term storage and disposal. SRS stores these canisters temporarily in the Glass Waste Storage Buildings, in preparation for final disposal in a federal repository.

SRS uses DWPF to process high-activity waste from the Tank Farms. Since DWPF began operating in March 1996, it has produced more than 16 million pounds of glass, immobilizing 61.2 million curies of radioactivity and pouring more than 4,100 canisters. Canister pouring began in June 2018 when replacement Melter 3 was put into service. This resulted in DWPF producing 15 canisters with more than 61,000 pounds of glass, immobilizing approximately 257,000 curies of radioactivity during FY 2018.

#### 3.2.2.5 Low-Level Liquid Waste Treatment

The F- and H-Area Effluent Treatment Project (ETP) treats low-level radioactive wastewater from the tank farms. ETP removes chemical and radioactive contaminants from the water before releasing it into Upper Three Runs Creek, an onsite stream that flows to the Savannah River. The point of discharge is a South Carolina National Pollutant Discharge Elimination System (NPDES)-permitted outfall. ETP processed more than 3.9 million gallons of treated wastewater in FY 2018. SCDHEC permitted the ETP under the South Carolina industrial wastewater regulations. ETP remained in compliance with the industrial wastewater permit and the NPDES permit throughout 2018.

### 3.3 REGULATORY COMPLIANCE

This section summarizes how SRS complies with the applicable federal and state environmental laws and regulations.

#### 3.3.1 **Atomic Energy Act/DOE Order 435.1, *Radioactive Waste Management***

SRS waste and materials management is complex and includes numerous facilities that DOE Orders and federal and state regulations govern. DOE Order 435.1 governs all radioactive waste management (low-level waste [LLW], high-level waste [HLW], and transuranic [TRU] waste) to protect the public, workers, and the environment. LLW is the only one of these waste types disposed of at SRS, at the E-Area Low-Level Waste Facility and the Saltstone Disposal Facility. LLW is radioactive waste not classified as HLW or TRU waste and that does not contain any RCRA hazardous waste.

As DOE Manual 435.1-1, *Radioactive Waste Management Manual* requires, DOE prepares performance assessments (PAs) to evaluate the potential impacts of low-level radioactive waste disposal and closure activities (for example, Tank Farms) to the workers, the public, and the environment. The PAs provide the technical basis and evaluation needed to demonstrate compliance with DOE Order 435.1. The Order also requires a composite analysis (CA) to assess the combined impact of multiple LLW disposal facilities and other interacting sources of radioactive material after closure.

SRS performs a comprehensive annual PA review for disposal facilities. This review ensures any developing information does not alter the original PA conclusions, and that there is a reasonable expectation the facility will continue to meet the performance objectives of the DOE Order. In addition, SRS performs an annual CA review to evaluate the adequacy of the 2010 SRS CA and verify that SRS conducted activities



within the bounds of the 2010 analysis. The FY 2017 annual reviews for the disposal facilities and the CA determined that SRS continues to comply with the performance objectives of DOE Order 435.1. Based on the reporting and approval cycle for the PA and CA annual reviews, there is a one-year lag in reporting this information in this document.

TRU waste is another category of radioactive waste that SRS generates. DOE Orders define TRU waste as waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes (elements with atomic numbers greater than uranium) per gram of waste with radiological half-lives greater than 20 years. At

SRS, examples of TRU waste include clothing,

tools, rags, residues, debris, and other items associated with trace amounts of plutonium. SRS TRU waste is sent to the Waste Isolation Pilot Plant (WIPP), a deep geologic repository located near Carlsbad, New Mexico for permanent disposal. Many different federal and state agencies (EPA, NRC, DOE, and the State of New Mexico), along with multiple regulations, govern TRU waste management and disposal. SRS manages TRU waste under DOE Orders and federal and state hazardous waste regulations. SRS sent one TRU shipment to WIPP for disposal in 2018.



**Packaging Waste for Shipment to WIPP**

### **3.3.2 Resource Conservation and Recovery Act (RCRA)**

RCRA establishes regulatory standards for generating, transporting, storing, treating, and disposing of solid waste, hazardous waste (such as flammable or corrosive liquids), and underground storage tanks. SRS has a RCRA hazardous waste permit, multiple solid waste permits, and multiple underground storage tank permits as identified in Section 3.3.10.

#### **3.3.2.1 Hazardous Waste Permit Activities**

The EPA authorizes SCDHEC to regulate hazardous waste and the hazardous components of mixed waste. SCDHEC issued a RCRA hazardous waste permit to SRS.

SRS began closing the Solvent Storage Tanks (SSTs), as described in the approved closure plan, in 2018, by inspecting the tanks' contents. SRS used a guided camera system specifically designed to remotely inspect inside the tanks. Camera inspections determined that the tanks contained no waste. Soil and concrete sampling around the perimeter of the SSTs followed the inspection. The next step was to stabilize the tanks with an inert fill material such as concrete or grout. SST closure, including removing the above-ground equipment and piping, will continue into 2019. When the area has been capped, it will remain an underground radioactive material area (URMA). Even though the tanks have been verified as empty, there is a history of radiological material being stored in them. Consequently, the URMA designation will provide adequate land-use controls until a final closure action is accomplished for the entire area surrounding the SST location.

SCDHEC approved SRS's RCRA Closure Certification Report for Interim Status TRU Pad 2 on December 18.

In November, a revision to the sitewide SRS RCRA Permit went into effect, approving changes to several volumes of the Site's permit. The updates, which affect several different facilities' or units' permit modules, included the following:

- Added a condition allowing a TRU shipment to be staged outside of a regulated pad (within certain parameters),
- Approved revision to the closure plan for solvent storage tanks,
- Added clarification to the remedy for Gunsite 012 Operable Unit, and
- Added the remedy for the wetland area at Dunbarton Bay.



**Soil Sampling at the Solvent Storage Tanks**

#### **3.3.2.2 Solid Waste Permit Activities**

SRS has solid waste permits for the 632-G Construction and Demolition Debris Landfill, the 288-F Industrial Solid Waste Landfill, and the Z-Area Saltstone Industrial Solid Waste Landfill (see section 3.2.2.3). All the solid waste landfills were active and operated in compliance with their permits in 2018. SCDHEC terminated the 488-4D Industrial Solid Waste Landfill in February 2018. The 488-4D facility was capped in 2016, and closure was completed under the FFA (see section 3.2.1). To ensure the effectiveness of the remedy and to continue to monitor it, groundwater monitoring wells were permitted and installed at the 488-4D facility as part of the closure.

#### **3.3.2.3 Underground Storage Tank Permits**

Subtitle I of RCRA regulates 19 USTs containing usable petroleum products. These tanks require an annual compliance certificate from SCDHEC. A SCDHEC inspection and audit on October 23 found that 18 of 19 were in compliance.

SCDHEC issued SRS a Notice of Alleged Violation (NOAV) for UST 715-H on Permit 10838 that listed violations for not maintaining spill bucket integrity and a suspected release the inspector found. In response to the NOAV, SRS addressed the corrective actions as directed by SCDHEC including repairing the spill bucket on November 9, conducting a hydrostatic test to confirm spill bucket integrity on November 12, and conducting soil sampling on October 29 and December 17. Upon completion of the corrective actions, SRS received notification from SCDHEC that "No Further Action" is required.

### **3.3.3 Federal Facility Compliance Act (FFCA)**

The FFCA was signed into law in October 1992 as an amendment to the Solid Waste Disposal Act. It adds provisions to apply certain requirements and sanctions to federal facilities. A Site Treatment Plan (STP) Consent Order (95-22-HW, as amended) was obtained and implemented in 1995, as required by the FFCA.

The consent order required annual updates to the STP. SCDHEC executed *A Statement of Mutual Understanding for Cleanup Credits in October 2003*, allowing SRS to earn credits for certain accelerated cleanup actions. Credits can then be applied to the STP commitment schedules. Following a revision to the STP in 2011, SRS now prepares and submits the STP update to SCDHEC every five years.

In November 2017, SRS received comments on the *Savannah River Site Treatment Plan, 2016 Update* from SCDHEC. The Update was finalized and approved by SCDHEC in October 2018.

SRS and SCDHEC held STP Cleanup Credit validation meetings in January, May, August, and November. A total of 761 Cleanup Credits were earned and validated during FY 2018.

### **3.3.4 Toxic Substances Control Act (TSCA)**

SRS complies with TSCA regulations when storing and disposing of lead, asbestos, and organic chemicals, including polychlorinated biphenyl compounds (PCBs). SRS disposes of routinely generated nonradioactive PCBs at an offsite EPA-approved disposal facility within the regulatory defined period of one year from the date of generation. SRS made three shipments of PCB waste to off-site hazardous waste facilities in 2018. SRS also generates radioactive waste contaminated with PCBs. Low-level radioactive PCB bulk product waste is disposed of onsite. PCB waste that is contaminated with TRU requires disposal at WIPP. SRS made one shipment to WIPP containing PCB waste in 2018.

SRS completed the 2018 annual PCB document log on May 23, 2019 and submitted the 2018 annual report of onsite PCB disposal activities to EPA on June 25, 2019, meeting applicable requirements.

### **3.3.5 South Carolina Infectious Waste Management Regulation**

SRS is a large-quantity generator of infectious waste registered under the SCDHEC Infectious Waste Management Program. SRS has a vendor contracted to pick up infectious waste every four weeks. In 2018, SRS sent 13 shipments with the vendor. Once offsite, the waste is treated and disposed of in accordance with the SCDHEC regulations. In 2018, SRS managed all infectious wastes in compliance with the state regulations. SCDHEC did not inspect the SRS Infectious Waste Management Program.

### **3.3.6 Air Quality and Protection**

#### **3.3.6.1 Clean Air Act (CAA)**

EPA has delegated regulatory authority for all types of air emissions to SCDHEC. SRS is required to comply with SCDHEC Regulation 61-62, *Air Pollution Control Regulations and Standards*. SRS facilities currently have the following six air permits regulating activities on the Site:

- Part 70 Air Quality Permit (TV-0080-0041)
- 784-7A Biomass Boiler Construction Permit (TV-0080-0041a-CG-R1)
- 784-7A Oil Boiler Construction Permit (TV-0080-0041a-CF-R1)
- Mixed Oxide Fuel Fabrication Facility (MFFF) (TV-0080-0139-CA-R1)
- Building 235-F D&D Construction Permit (TV-0080-0041-C1)
- Ameresco Federal Solutions, Inc. (“Ameresco”) Biomass Facilities Permit (TV-0080-0144)

Under the CAA, SRS is considered a “major source” of nonradiological air emissions and, therefore, falls under the CAA Part 70 Operating Permit Program. The Part 70 Operating Permit regulates stationary

sources with the potential to emit five tons or more per year of any criteria pollutant (six of the most common air pollutants: ozone precursors, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead). These major stationary sources are subject to operating and emission limits, as well as emissions monitoring and record-keeping requirements.

The EPA sets the National Ambient Air Quality Standards air pollution control standards, and SCDHEC regulates them. The Air Quality Permit requires SRS to demonstrate compliance through air dispersion modeling and by submitting an emissions inventory of air pollutant emissions every three years.

The current CAA Air Quality Permit (TV-0080-0041) expired on March 31, 2008. SRS submitted a complete renewal application of the current permit prior to the expiration date. SCDHEC granted an application shield, effective on September 21, 2007, allowing the Site to continue operating under the expired permit. In 2018, the Site continued to operate under the expired Part 70 Air Quality Permit.

SCDHEC issued a Notice of Violation (NOV) to Ameresco (TV-0080-0144) for failing to meet carbon monoxide (CO) emission limits. Ameresco, a direct contractor to DOE, operates biomass-fueled steam cogeneration plants onsite. During a stack test for CO on one of the Ameresco Biomass Boilers (BCB-3), there were some difficulties in the performance to meet the required CO emission limit. The results of the initial stack test were noncompliant, and a re-test was scheduled. Ameresco performed an internal inspection of the combustor and identified that poor air distribution through the floor grates was causing the elevated CO emissions. Repairs to replace nearly half of the floor grates were completed, and the boiler was re-tested. BCB-3 passed the re-test for CO emissions with significantly improved performance. Corrective actions have been implemented, and routine inspections occur to prevent further noncompliance issues. All matters concerning SCDHEC have been resolved with no further enforcement actions.

#### 3.3.6.2 Accidental Release Prevention Program

The CAA Amendments of 1990, Section 112(r) requires any facility that maintains specific hazardous or extremely hazardous chemicals in quantities above specified threshold values to develop a risk management plan. SRS has maintained hazardous and extremely hazardous chemical inventories below each threshold value; therefore, SRS has not been required to develop a risk management plan. Additionally, no reportable 112(r)-related hazardous or extremely hazardous chemical releases occurred at SRS in 2018.

#### 3.3.6.3 Ozone-Depleting Substance (ODS)

Section 608 of the CAA prohibits the knowing release of refrigerant during the maintenance, service, repair, or disposal of air-conditioning and refrigeration equipment. Refrigerants include ODSs and substitute refrigerants such as hydrofluorocarbons. Releases of chemical gases widely used as refrigerants, insulating foams, solvents, and fire extinguishers cause ozone depletion or contribute to greenhouse gas emissions. SRS complies with 40 CFR 82 to ensure no refrigerants are knowingly or willfully released into the atmosphere. SRS did not experience any noncompliances associated with 40 CFR 82 during 2018.

#### 3.3.6.4 Air Emissions Inventory

SCDHEC Regulation 61-62.1, Section III (*Emissions Inventory*), requires compiling an air emissions inventory to locate all sources of air pollution and to define and characterize the various types and amounts of

pollutants. The schedule for submitting the inventory is either every year or every three years, depending on the emission thresholds in the regulations.

SRS emissions have dropped below the threshold that requires an annual air emissions inventory; therefore, SRS reports on a three-year cycle for permit TV-0080-0041.

SRS was not required to submit an air emissions inventory for 2018. The most recent information on the EPA National Emission Inventories is available on the website. SRS will submit the next required inventory for 2020 before March 31, 2021.

### 3.3.6.5 National Emission Standard for Hazardous Air Pollutants (NESHAP)

NESHAP is a CAA-implementing program that sets air quality standards for hazardous air pollutants, such as radionuclides, benzene, Reciprocating Internal Combustion Engines (RICE) emissions, and asbestos.

#### 3.3.6.5.1 NESHAP Radionuclide Program

SRS complies with the NESHAP Radionuclide Program by performing all required inspections and maintaining monitoring systems. Subpart H of the NESHAP regulations requires SRS to determine and report annually (by June 30) the highest effective dose from airborne emissions to any member of the public at an offsite point. SRS transmitted the *SRS Radionuclide Air Emissions Annual Report for 2018* on June 24, 2019 to EPA, SCDHEC, and DOE Headquarters.

During 2018, SRS estimated the maximally exposed individual (MEI) effective dose equivalent to be less than 1% of the EPA standard of 10 millirem (mrem) per year. Chapter 6, *Radiological Dose Assessment*, contains details on this dose calculation.

#### 3.3.6.5.2 NESHAP Nonradionuclide Program

In 2013, NESHAP emission standards applicable to stationary RICE equipment—such as portable generators, emergency generators, and compressors—became effective. These regulations impact numerous pieces of SRS's RICE equipment. RICE equipment must also comply with the New Source Performance Standards. In January and July 2018, SRS submitted the semiannual compliance reports, demonstrating it was complying with the regulations.

#### 3.3.6.5.3 NESHAP Asbestos Abatement Program

Work involving asbestos at SRS falls under SCDHEC and federal regulations. These activities—operation and maintenance repairs, removing asbestos, and demolishing buildings—require an asbestos notification, a renovation permit, or a demolition permit.

SRS issued 210 asbestos notifications and conducted 42 permitted renovations and demolitions involving asbestos in 2018. Table 3-1 summarizes these removals. Certified personnel removed and disposed of friable (easily crumbled or pulverized) and nonfriable asbestos. Both disposal sites for nonradiological asbestos waste are SCDHEC-approved landfills for disposing of regulated and nonregulated asbestos.

SRS maintains a SCDHEC Temporary Storage Containment Area License that facilitates removing and disposing of waste generated from nonradiological operations and maintenance activities and minor and small projects. Additionally, SRS maintains a SCDHEC Asbestos Group License that allows Savannah River Nuclear Solutions, LLC (SRNS) and Savannah River Remediation LLC (SRR) to operate as a long-term, in-house asbestos abatement contractor for DOE-Savannah River.



**Table 3-1 Summary of Quantities of Asbestos Materials Removed in 2018**

<b>Asbestos Type</b>	<b>Nonradiological, Friable</b>	<b>Nonradiological, Nonfriable</b>	<b>Radiologically Contaminated Asbestos</b>
Linear Feet Disposed	170	921	85
Square Feet Disposed	93	15,561	6
Cubic Feet Disposed	72	1,287	0
Disposal Site	Three Rivers Solid Waste Authority Landfill	SRS Construction and Demolition Landfill	SRS E-Area Low-Level Waste Facility

### 3.3.7 Water Quality and Protection

#### 3.3.7.1 Clean Water Act (CWA)

Except for Ameresco, which has its own CWA National Pollutant Discharge Elimination System (NPDES) permit, SRS operated pursuant to the following CWA permits in 2018:

- Land Application Permit (ND0072125)
- General Permit for Storm Water Discharges Associated with Industrial Activities (Except Construction) (SCR000000)
- Permit for Discharge to Surface Waters (SC0000175)
- Permit for Discharge to Surface Waters (SC0047431)
- General Permit for Stormwater Discharges from Construction Activities (SCR100000)
- General Permit for Utility Water Discharges (SCG250000)
- General Permit for Discharges from Application of Pesticides (SCG160000)
- General Permit for Vehicle Wash Water Discharges (SCG750000)
- General Wastewater Construction Permit (SCG580000)
- General Construction Permit for Water Supply Distribution Systems (151218)
- General Permit for Land Disturbing Activities at SRS

Information on these permits is available at the EPA's Enforcement and Compliance History Online (ECHO) database.

##### 3.3.7.1.1 National Pollutant Discharge Elimination System (NPDES)

SCDHEC administers the NPDES program, which protects surface waters by limiting releases of pollutants into streams, reservoirs, and wetlands. As explained in the previous section, SCDHEC issued multiple NPDES permits to SRS to govern different types of discharges to surface water. A major goal of the NPDES program is to control or eliminate discharges of toxic pollutants, oil, hazardous substances, sediment, and contaminated storm water to protect the quality of our nation's water. To achieve this goal, SRS is required to prepare the following plans:

- Best Management Practices Plan to identify and control the discharge of hazardous and toxic substances;

- Storm Water Pollution Prevention Plan (SWPPP) to address the potential discharge of pollutants in storm water;
- Spill Prevention, Control, and Countermeasures plan to minimize the potential for discharges of oil, including petroleum, fuel oil, sludge, and oily wastewater.

SRS has two NPDES permits for industrial activities that discharge to surface water: one covering D Area (Permit No. SC0047431) and the other for the remainder of the Site (Permit No. SC0000175). Throughout the year, SRS monitors 28 NPDES-permitted industrial wastewater outfalls across the Site on a frequency the permits specify. Monitoring requirements vary from as much as once a day at some locations to once a quarter at others, although typically they are conducted once a month. For each outfall, SRS measures physical, chemical, and biological parameters and reports them to SCDHEC in SRS monthly discharge monitoring reports, as required by the permits. Chapter 4, *Nonradiological Environmental Program*, provides additional information about sampling required to remain compliant with SRS's NPDES permits.



**Outfall H-02 Access Location**

The following are highlights under the NPDES program:

- In September 2018, SCDHEC conducted the annual compliance evaluation inspection (CEI) and issued a satisfactory rating, the highest grade possible.
- The 2018 update to the SRS SWPPP contains information on the 39 SRS industrial storm water outfalls and outfall facilities.
- SCDHEC did not require construction storm water monitoring on any of the active construction projects underway at SRS during 2018.
- Constructing, operating, and closing industrial wastewater treatment facilities are permitted under the NPDES program. Facilities permitted are broad in scope and include those involved with groundwater remediation, radioactive liquid waste processing, and nuclear nonproliferation. In 2018, SCDHEC issued a construction permit for the tank closure cesium removal system and improvements related to an NPDES Outfall in F Area. SCDHEC also approved placing the additional recovery well for the M-1 Air Stripper remediation system permitted in 2017 into operation.

The results from sampling of both industrial and storm water outfalls are summarized in Chapter 4 of this report.

#### 3.3.7.1.2 Section 404(e) Dredge and Fill Permits

Wetlands make up 48,973 acres, or 25%, of the total SRS area. SRS wetlands account for more than 80% of the wetlands across the entire DOE complex. Permits under Section 404 are required when work will be conducted in a wetland area. The Nationwide Permits (NWP) program (general permits under

Section 404[e]) are within the jurisdiction of the U.S. Army Corps of Engineers. Permits issued under the NWP program are for projects that have minimal impact on the aquatic environment.

SRS wetlands staff reviewed 669 Environmental Evaluation Checklists (EECs) and 71 Site Use applications for potential wetland impacts in 2018. During this time, SRS had eight open permits under the NWP program, as follows:

- Submitted a request to the U.S. Army Corps of Engineers for authorization under NWP 38, Cleanup of Hazardous and Toxic Waste, for the Mixed Waste Management Facility phytoremediation pond that was constructed on an intermittent tributary to Four Mile Branch,
- Installed a stormwater sampling device in an ephemeral tributary to Crouch Branch under NWP 5, Scientific Measurement Devices,
- Installed a piezometer in wetlands adjacent to Castor Creek under NWP 5,
- Installed a stormwater sampling device in an ephemeral tributary to McQueen Branch under NWP 5,
- Stabilized the bank on Crouch Branch under NWP 13, Bank Stabilization,
- Installed a wooden platform and aluminum dock ladder at a sampling station on Steel Creek under NWP 5,
- Installed a monitoring well in wetlands adjacent to Castor Creek under NWP 5, and
- Installed a monitoring well in Savannah River floodplain wetlands at the TNX Outfall Delta under NWP 5.

#### 3.3.7.2 Safe Drinking Water Act (SDWA)

SCDHEC regulates drinking water facilities under the SDWA. SRS uses groundwater sources to supply drinking water to onsite facilities. The A-Area drinking water system supplies most Site areas. Remote facilities, such as field laboratories, barricades, and pump houses, use small drinking water systems or bottled water. All 2018 bacteriological samples for drinking water were collected and met the state and federal drinking water quality standards.

SCDHEC requires SRS to collect 10 bacteriological samples each month from the domestic water system that supplies drinking water to most areas at SRS. SRS usually exceeds this requirement by collecting 15 samples each month from various areas. Bacteriological analyses are performed on all samples. The sample results consistently meet SCDHEC and EPA drinking water quality standards, confirming the absence of harmful bacteria.

SRS samples domestic water systems for lead and copper on a three-year, rotating cycle. Based on this cycle, SRS will sample 30 locations across the Site for lead and copper in 2019.

### **3.3.8 Environmental Protection and Resource Management**

#### 3.3.8.1 National Environmental Policy Act (NEPA)

The NEPA process identifies the potential environmental consequences of proposed federal activities and the alternatives to support informed environmentally sound decision-making regarding the design and implementation of the proposed activities.

The NEPA program complies with DOE Order 451.1B. SRS initiates the required NEPA evaluation by completing an EEC for new projects or changes to existing projects. SRS uses the EEC to review the proposed action, identify any potential environmental concerns, and determine the appropriate level of NEPA review required for the proposed activity.

SRS conducted 669 NEPA reviews of proposed activities in 2018 (Table 3-2). Categorical exclusion (CX) determinations accounted for more than 90% of completed reviews. Additional information on SRS NEPA activities may be found on the [SRS NEPA](#) web page.

The following major NEPA reviews were either completed or in progress in 2018:

- *Final Environmental Impact Statement for the Disposal of Greater-than-Class-C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste (DOE/EIS-0375)* (In progress). DOE is evaluating disposal of GTCC low-level radioactive waste (LLRW) and GTCC-like LLRW in a geologic repository, in intermediate-depth boreholes, and in enhanced near-surface disposal facilities. SRS is an alternative location for these disposal facilities.
- *Supplement Analysis of the Mark-18A Target Material Recovery Program at the Savannah River Site (DOE/EIS-0220-SA-02, DOE/EIS-0279-SA-06)*. This supplement analysis (SA) evaluates whether the proposed action requires supplementing the existing *Final Environmental Impact Statement: Interim Management of Nuclear Materials at the Savannah River Site (IMNM EIS)* (DOE/EIS-0220) and the *Savannah River Site Spent Nuclear Fuel Management Environmental Impact Statement (SRS SNF EIS)* (DOE/EIS-0279). Based on the analysis prepared for the IMNM EIS and SRS SNF EIS, the impacts of this action are very small. The proposed action would therefore not constitute a substantial change relevant to environmental concerns reported in the IMNM EIS and SRS SNF EIS. Therefore, neither a supplement to the IMNM EIS, a supplement to the SRS SNF EIS, nor a new EIS is required. DOE issued an amended record of decision for the proposed activity on February 27, 2018.
- *Supplement Analysis for the Removal of One Metric Ton of Plutonium from the State of South Carolina to Nevada, Texas, and New Mexico (DOE/EIS-0236-S4-SA-01)*. <https://www.energy.gov/nepa/listings/supplement-analyses-sa/>. On August 6, 2018, the National Nuclear Security Administration (NNSA) signed its *Supplement Analysis for Removal of One Metric Ton of Plutonium from the State of South Carolina to Nevada, Texas, and New Mexico* (SA for Removal of 1 MT of Pu from SC). Removal of 1 metric ton (MT) of plutonium (Pu), mandated by a U.S. District Court pursuant to a December 20, 2017 Order, must be completed within 2 years (or by January 1, 2020, at the latest). NNSA proposes to repackage 1 MT of Pu at SRS and transport the repackaged Pu to and from the Pantex Plant or Nevada National Security Site or both for staging until it is transported to Los Alamos National Laboratory for pit production use. The proposed action is perceived as having minimal impacts and risks to other Environmental Management actions at SRS. Based on the results of this SA, DOE has determined the proposed action does not constitute a substantial change from actions previously analyzed in existing DOE/NNSA NEPA documents, and there are no significant new circumstances or information relevant to environmental concerns. Therefore, DOE/NNSA determined in August 2018 that no further NEPA documentation is required.

The *Environmental Assessment for the South Carolina Army National Guard Proposal to Construct and Operate Training Facilities and Infrastructure on 750 Acres at the Department of Energy Savannah River Site* (DOE/EA-1999) is in progress and is not counted in the Table 3-2 total.

**Table 3-2 Summary of 2018 NEPA Reviews**

Type of NEPA Review	Number
<b>CX Determinations<sup>a</sup></b>	621
<b>“All No” Environmental Evaluation Checklist (EEC) Determinations<sup>a</sup></b>	33
<b>Previous NEPA Review <sup>a</sup></b>	10
<b>Environmental Impact Statement (EIS)</b>	2
<b>Supplement Analysis (SA)</b>	2
<b>Interim Action</b>	0
<b>Revised Finding of No Significant Impact</b>	0
<b>Environmental Assessment (EA)</b>	1
<b>Total</b>	<b>669</b>

<sup>a</sup> Proposed action that requires no further NEPA action

### 3.3.8.2 Emergency Planning and Community Right-to-Know (EPCRA)/Superfund Amendment Reauthorization Act (SARA) Title III

EPCRA requires facilities to notify state and local emergency planning entities about their hazardous chemical inventories and to report releases of hazardous chemicals. The Pollution Prevention Act of 1990 expanded the EPCRA-mandated Toxic Release Inventory (TRI) report to include waste management. SRS complies with the applicable EPCRA reporting requirements and incorporates the applicable TRI chemicals into its pollution prevention programs.

As required by Section 312, *Chemical Inventory Reporting*, of EPCRA, SRS completes an annual Tier II Chemical Inventory Report for all hazardous chemicals exceeding specified quantities present at SRS during the calendar year. SRS submitted the 2018 hazardous chemical storage information to state and local authorities on February 14, 2019. The report included 60 reportable chemical categories, the same as the previous year.

As required by Section 313, *Toxic Chemical Release Inventory*, of EPCRA, SRS must file an annual TRI report each year by July 1 for the previous year. SRS calculates chemical releases to the environment for each regulated chemical and reports those above each threshold value to EPA. SRS submitted the 2018 TRI report on June 19, 2019 for each of the following regulated chemicals: ammonia, chromium compounds, lead compounds, mercury compounds, naphthalene, nitrate compounds, nitric acid, and sodium nitrite. Details are on the EPA Toxic Release Inventory Program website.

### 3.3.8.3 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

The objective of FIFRA is to provide federal control of pesticide distribution, sale, and use. The EPA must register all pesticides used in the United States. Use of each registered pesticide must be consistent with



use directions contained on the package's label. SRS must comply with FIFRA and, on a state level, the South Carolina Pesticide Control Act.

SRS must also comply with the South Carolina NPDES General Permit for discharges from the application of pesticides. This permit authorizes applying pesticides to surface water according to limitations set forth in the NPDES general permit.

SRS procedures implement the FIFRA requirements for pesticide application, application record keeping, storage, and disposing of empty containers and excess pesticides. General use pesticides (ready-to-use products that are available for public use) are applied at SRS per the label instructions. SRS applies restricted-use pesticides on a very limited basis, following label requirements and using state-certified pesticide applicators. SRS generates and maintains application records for general use and restricted use pesticides for each application.

#### 3.3.8.4 Endangered Species Act (ESA)

The ESA designates and protects wildlife, fish, and plants in danger of becoming extinct. This federal law also protects and conserves their critical habitats. Several federally listed animal species exist at SRS, including the wood stork, the red-cockaded woodpecker, the shortnose sturgeon, and the Atlantic sturgeon, as well as plant species, including the pondberry and the smooth coneflower.

In addition, SRS is home to the gopher tortoise, a candidate for protection under the ESA. SRS is the only DOE site to conduct experimental translocations of gopher tortoises, where they are captured, transported, and released to another location. Conservation organizations use protocols developed during these SRS translocation studies to establish viable populations elsewhere in the species' range.

South Carolina's State Wildlife Action Plan of 2015 recognizes additional plants and animals not on the federal list to encourage conservation of these species. Those found on SRS include the Carolina gopher frog and the swallow-tailed kite, as well as numerous other animals and plants considered species of conservation concern. The United States Forestry Service-Savannah River (USFS-SR) considers these species sensitive and takes that into consideration when developing forest management plans. While the bald eagle is no longer on the federally listed endangered or threatened species list, the Bald and Golden Eagle Protection Act protects nesting bald eagles and wintering golden eagles. Bald eagles nest on SRS and are considered year-round residents; golden eagles use SRS as a wintering habitat. The 2018 mid-winter bald eagle survey reported seven bald eagles on SRS; nine golden eagles were recorded.

The USFS-SR actively manages more than 65,000 acres in the red-cockaded woodpecker habitat management areas by using prescribed fire or by mechanical or chemical treatments to control vegetation. These methods create and improve habitat by restoring the natural fire regime, improving native plant diversity in the understory, and enhancing the native longleaf pine and wiregrass communities. Additionally, the USFS-SR inserts artificial cavities into living pine trees to supplement the available cavities for roosting and nesting. From 1985 through FY 2018, active red-cockaded woodpecker clusters increased

from 3 to 133 due to successful habitat restoration. As of 2018, the USFS-SR managed 133 cluster sites for the red-cockaded woodpecker, with an average expected population growth rate of 5% each year. The growth rate over the past five years at SRS has been an outstanding average growth rate of 9.5%. In addition to managing for endangered wildlife species, the USFS-SR actively manages for six endangered plant populations: four smooth coneflower and two pondberry.

During FY 2018, while implementing the *United States Department of Energy Natural Resources Management Plan for SRS*, USFS-SR developed one SRS watershed management plan for standard USFS-SR project plans, resulting in one biological evaluation for timber, research, and wildlife-related management. The biological evaluation determined that forest implementation plans are not likely to adversely affect federally listed endangered or threatened species due to beneficial, insignificant, or discountable effects.



**U. S. Forest Service Biologist Installing an Artificial Nest Box Insert for Red-cockaded Woodpeckers**

#### **3.3.8.5 Migratory Bird Treaty Act (MBTA)**

The MBTA prohibits taking, possessing, importing, exporting, transporting, selling, purchasing, bartering, or offering for sale any migratory bird or its eggs, parts, and nests, except as authorized by the U.S. Department of the Interior under a valid permit. To support migratory bird monitoring, a one-day Christmas Bird Count is conducted annually in December. The 2018 count found 103 species. A one-day bald eagle survey is conducted every year in January. The 2018 eagle survey found seven eagles.

In 2018, 13 active bird nests were discovered on large mobile equipment or in areas SRS personnel actively used. Bird species consisted of Northern Mockingbird (*Mimus polyglottos*), nine nests; Eastern Bluebird (*Sialia sialis*), one nest; Carolina Wren (*Thryothorus ludovicianus*), one nest; Barn Swallow (*Hirundo rustica*), one nest; and House Finch (*Haemorrhous mexicanus*), one nest.

SRS determined five nests (three Northern Mockingbird, one Carolina Wren, one Eastern Bluebird) to be abandoned and removed them. and SRS determined seven nests (five Northern Mockingbird, one House Finch, one Barn Swallow) to be active and barricaded them to allow the birds to complete the nesting cycle.

USFS-SR coordinated with the U.S. Fish and Wildlife Service to remove one active Northern Mockingbird nest due to radiological concerns.

Also in 2018, USFS-SR staff found an osprey (*Pandion haliaetus*) nest on a platform they built in 2014. This marked the fourth year that ospreys nested on the platform after their nest had been moved from a power pole at the L-Lake Dam.

### 3.3.8.6 Invasive Species Management

The purpose of Executive Order 13751, *Safeguarding the Nation from the Impacts of Invasive Species*, is to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control established invasive species. The Site is surveying invasive plant and animal species and taking steps to control their populations.

Many of the former home and community sites that area residents left nearly 70 years ago to allow for the government to construct the Savannah River Site have since become primary sources of non-native invasive plant species (NNIPS). Escaping cultivation and containment for decades, aggressive plant species such as Chinese privet, (*Ligustrum sinensis*), wisteria (*Wisteria sinensis*), chinaberry (*Melia azedarach*), and kudzu (*Pueraria montana*) now threaten native species onsite. Invasive species such as these are a major threat to National Forests in the 21<sup>st</sup> century. These NNIPS contribute to long-term ecosystem degradation due to the loss of diversity and their directly competing with native species. They also provide unwanted ladder fuels that can increase fire intensity during prescribed burning or wildfire.

Prior to 2012, there had been no sitewide effort to document NNIPS as part of the watershed prescription process. However, recently conducted plant surveys include recording observations and locations for NNIPS; this information is now being captured geospatially for inclusion into compartment stand maps and geographic information system layers for management planning. Historical records and image interpretations from photos and maps, compartment folders, and stand exam data helped to identify developed openings, old home sites, and community places (churches, schools, cemeteries) that may contain robust sources of introduced NNIPS communities.

The USFS-SR annually contracts botanical surveys of 5,000 to 7,000 acres, which include 44 species of plants considered to be non-native and invasive. USFS-SR chemically treats an average of 50 acres each year to control across target areas that either contain former homesites and community areas or that are in proximity to red-cockaded woodpecker colony sites. When a forest stand is cut and regenerated, the USFS treats any NNIPS populations discovered as part of the site preparation for replanting.

Wild pigs are considered an invasive species in the United States and abroad. As of 2016, the U.S. Department of Agriculture estimated that in the United States alone, these animals cost \$1.5 billion each year in damages and control costs. On SRS, wild pigs present safety hazards due to vehicle collisions and disease transmission and ecological impacts by negatively affecting water quality, disturbing soil, and constantly threatening rare and endangered plant populations. The USFS-SR has two dedicated wildlife technicians who oversee two wildlife contractors who trap and remove wild pigs on SRS. In 2018, USFS-SR removed more than 2,000 pigs primarily through baiting and trapping. Additionally, USFS-SR and the Southern Research Station, part of the U.S. Forest Service Research and Development organization, are collaborating with the Savannah River Ecology Laboratory to research ways to control the wild pig population.

### 3.3.8.7 National Historic Preservation Act (NHPA)

The NHPA requires all federal agencies to consider the impacts to historic properties in all their undertakings. SRS ensures it complies with the NHPA through several processes. For example, SRS uses the Site Use Program, the *Cold War Programmatic Agreement*, and *SRS's Cold War Built Environment Cultural*

*Resource Management Plan* to ensure it is complying with NHPA. The Savannah River Archaeological Research Program (SRARP) guides DOE in managing its cultural resources to ensure it fulfills its compliance commitments. SRARP also serves as a primary facility to investigate archaeological research problems associated with cultural development within the Savannah River valley. DOE uses the results to help manage more than 2,000 known archaeological sites at SRS.

SRARP evaluates and documents all locations being considered for activities, such as construction, to ensure that archaeological or historic sites are not impacted. In FY 2018, SRARP investigated 388 acres of land on SRS for cultural resource management, including conducting 23 field surveys and testing. It recorded 17 newly discovered sites and revisited 11 previously recorded sites.

The 2018 SRARP annual report is available on SRARP's website.

### 3.3.9 Release Reporting

Federally permitted releases to the air, water, and land must comply with legally enforceable licenses, permits, regulations, or orders. If an unpermitted release to the environment of an amount greater than or equal to a reportable quantity of a hazardous substance (including radionuclides) occurs, EPCRA, CERCLA, CWA, and the CAA require a notice be sent to the National Response Center and applicable state agencies.

SRS did not have any reportable releases in 2018.

### 3.3.10 Permits

SRS had 560 construction and operating permits in 2018 that specified operating levels to each permitted source. Table 3-3 identifies the number of permits by the permit type.

**Table 3-3 SRS Permits**

Type of Permit	Number of Permits
Air	6 <sup>a</sup>
U.S. Army Corps of Engineers (USACE—Nationwide Permits)	9
Asbestos Demolition Licenses/Abatement Licenses/Temporary Storage of Asbestos Waste Notices	252
Asbestos Abatement Group License	1
Asbestos Temporary Storage of Waste License	1
Domestic Water	96
Industrial Wastewater Treatment	66
NPDES Permits	11
Construction Storm Water Grading Permit	7
RCRA Hazardous Waste	1
RCRA Solid Waste	3
RCRA Underground Storage Tank	7
Sanitary Wastewater	89
SCDHEC 401	0
SCDHEC Navigable Waters	0
Underground Injection Control	11
<b>Total</b>	<b>560</b>

<sup>a</sup> This count includes the CAA permit (TV-0080-0144) for Ameresco.

### 3.4 MAJOR DOE ORDERS FOR ENVIRONMENTAL COMPLIANCE

SRS complies with the following major DOE Orders in addition to state and federal regulations for environmental compliance:

- DOE Order 451.1B, *Administrative Change 3, National Environmental Policy Act Compliance Program*. See the NEPA section of this chapter.
- DOE Order 436.1, *Departmental Sustainability*. See Chapter 2, *Environmental Management Systems*, of this report
- DOE Order 458.1, *Administrative Change 3, Radiation Protection of the Public and the Environment*. See Chapter 5, *Radiological Environmental Monitoring Program*; and Chapter 6, *Radiological Dose Assessment*, of this report.
- DOE Order 435.1, *Change 1, Radioactive Waste Management*. See Radioactive Waste Management section in this chapter.
- DOE Order 231.1B, *Environment, Safety and Health Reporting*, requires the Site to prepare this Annual SRS Environmental Report.
- DOE Order 232.2, *Administrative Change 1, Occurrence Reporting and Processing of Operations Information*. This order requires DOE to use the designated system called Occurrence Reporting and Processing System (ORPS). The ORPS ensures that the DOE complex and the National Nuclear Security Administration are informed of events that could adversely affect the health and safety of the public and workers, the environment, DOE missions, or DOE's credibility.
- Of the 71 ORPS-reportable events at SRS in FY 2018, none was within ORPS Group 5 (Environmental), and two were within ORPS Group 9 (Noncompliance Notification). (DOE ORPS reports are compiled on a fiscal year basis, and this annual report is for the calendar year [CY] 2018. SRS received one NOAV or Noncompliance Notification in CY 2018, as previously discussed in this chapter.)
- DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*. This order requires DOE to provide oversight related to protecting the public, workers, environment, and national security assets effectively through continuous improvement.

### 3.5 REGULATORY SELF-DISCLOSURES

SRS made no regulatory self-disclosures in 2018.



### 3.6 ENVIRONMENTAL AUDITS

SCDHEC, EPA, NRC, and the United States Army Corps of Engineers (USACE) inspected and audited the SRS environmental program for regulatory compliance. Table 3-4 summarizes the results of the 2018 audits and inspections.

During 2018, the SRS Independent Evaluation Board conducted two assessments of environmental programs: 1) the Asbestos Management Program in January and February and 2) the Environmental Protection Program in August. Each assessment identified several findings and opportunities for improvement.

**Table 3-4 Summary of 2018 External Agency Audits/Inspections  
of the SRS Environmental Program and Results**

<b>Audit/Inspection</b>	<b>Action</b>	<b>Results</b>
<b>632-G C&amp;D Landfill and 288-F Ash Landfill Inspections</b>	South Carolina Department of Health and Environmental Control (SCDHEC) conducted four quarterly inspections of the 632-G and 288-F landfills.	No issues were identified.
<b>Federal Energy Regulatory Commission (FERC) Inspection</b>	Savannah River Nuclear Solutions (SRNS) completed Potential Failure Mode Analyses for Par Pond Dam and Steel Creek Dam. FERC also performed its annual inspections in October but has not issued the reports.	A list of Potential Failure Modes has been generated and an action plan is being developed. There were no immediate failure modes threatening the dams.
<b>Comprehensive Groundwater Monitoring Evaluation</b>	SCDHEC inspected groundwater facilities associated with the F- and H-Area Seepage Basins, M-Area Settling Basin, Metallurgical Laboratory Basin, Mixed Waste Management Facility, and Sanitary Landfill on March 26 and 27. SCDHEC also completed a records review of groundwater-related files.	The inspection identified no deficiencies or permit violations.
<b>Industrial Wastewater Construction Permit Inspections</b>	<ul style="list-style-type: none"> <li>SCDHEC inspected the Tank Closure Cesium Removal (TCCR) system on December 12 and provided the Approval to Place into Operation on December 13.</li> <li>SCDHEC inspected the RWM018 recovery well, associated with the M-1 Air Stripper, on March 16 to support placing it into operation.</li> <li>SCDHEC toured the Waste Solidification Building (WSB) on September 25 as part of the biennial WSB meeting.</li> <li>The Integrated Independent Evaluations Board conducted an environmental review of Defense Waste Processing Facility (DWPF) during the fall.</li> </ul>	No issues were identified.

**Table 3-4 Summary of 2018 External Agency Audits/Inspections  
of the SRS Environmental Program and Results (continued)**

<b>Audit/Inspection</b>	<b>Action</b>	<b>Results</b>
<b>Environmental Laboratory Certification On-site Evaluations</b>	SCDHEC performed recertification inspections on the Domestic Water Lab, Environmental Analysis Lab, and the Environmental Bioassay Lab on March 8.	All inspected laboratories were recertified for three years.
<b>SCDHEC Sanitary Survey of SRS Drinking Water Systems</b>	SCDHEC inspects the wells, tanks, and treatment systems supporting the A-Area drinking water system biannually.	SCDHEC did not conduct a Sanitary Survey of SRS Drinking Water System in 2018. The next expected year for the survey is 2019.
<b>Interim Sanitary Landfill and the F-Area Railroad Crosstie Pile Landfill Post-Closure Inspection</b>	SCDHEC conducted an annual review of the landfills.	No issues were identified.
<b>Air Compliance Inspection</b>	SCDHEC conducted an inspection on August 21, 2018 for conditions in permit TV-0080-0041.	SCDHEC observed no violations of permit requirements or applicable regulations during the evaluation.
<b>Resource Conservation and Recovery Act (RCRA) Compliance Evaluation Inspection (CEI)</b>	U.S. Environmental Protection Agency (EPA) and SCDHEC inspected seven facilities and reviewed hazardous waste program requirements (i.e., notifications and reports to SCDHEC, plans, training records, internal inspections, and waste documentation) during its May 22-24 CEI.	SCDHEC and EPA noted incomplete labels on five containers stored on TRU Pad 26. SRS corrected these deficiencies before the end of the inspection.
<b>Underground Storage Tank (UST) CEI</b>	SCDHEC inspected 19 USTs.	UST 715-H on Permit 10838 was found to have two violations on October 23. SCDHEC issued a Notice of Alleged Violation (NOAV) for not maintaining spill bucket integrity and a suspected release.
<b>Z-Area Saltstone Solid Waste Landfill Inspections</b>	SCDHEC performed monthly inspections of the Saltstone Disposal Facility (SDF). This included reviewing facility procedures and performing walk downs of the SDF.	No issues were noted.
<b>N-Area Heating Oil Plume Field Visit</b>	SCDHEC performed a field visit on October 17 to become familiar with the Site and observe groundwater sampling required for reporting on this project.	No issues were identified.
<b>National Pollutant Discharge Elimination System (NPDES) Compliance Evaluation Inspection (3560)</b>	SCDHEC performed monthly inspections of the SDF. This included reviewing facility procedures and performing walk downs of the SDF.	No issues were noted.

### 3.7 KEY FEDERAL LAWS COMPLIANCE SUMMARY

The Code of Federal Regulations implements Federal laws and state regulations that a federal agency has delegated to the state. You can find additional information online at [epa.gov](http://epa.gov). Table 3-5 summarizes SRS's 2018 compliance status with applicable key federal environmental laws.

**Table 3-5 Status of Key Federal Environmental Laws Applicable to SRS**

Regulatory Program Description	2018 Status
<b>The Atomic Energy Act/DOE Order 435.1 grants DOE the authority to develop applicable standards (documented in DOE Orders) to protect the public, workers, and environment from radioactive materials.</b>	The FY 2017 annual reviews for the SRS performance assessments showed that radioactive low-level waste operations were within the required performance envelope, and the facilities continued to comply with performance objectives.
<b>The Clean Air Act (CAA) establishes air quality standards for criteria pollutants, such as sulfur dioxide and particulate matter, and for hazardous air emissions, such as radionuclides and benzene.</b>	SRS continues to operate under a CAA Permit (TV-0080-0041) that expired on March 31, 2008 and was administratively extended; the Ameresco permit (TV-0080-0144); and other applicable CAA regulatory requirements. Ameresco received a Notice of Violation (NOV) for failing to meet carbon monoxide emission limits. The violation was resolved with South Carolina Department of Health and Environmental Control (SCDHEC) following corrective actions.
<b>The Clean Water Act regulates liquid discharges at outfalls (for example, drains or pipes) that carry effluent to streams (National Pollutant Discharge Elimination System [NPDES], Section 402). It also regulates dredge and fill operations in waters of the United States (Section 404) and water quality for those activities (Water Quality Criteria, Section 401).</b>	The SRS NPDES program maintained a 100% compliance rate for NPDES Industrial Wastewater.
<b>The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) establishes criteria for liability and compensation, cleanup, and emergency response requirements for hazardous substances released to the environment.</b>	SRS continues to comply with CERCLA and the requirements of the Federal Facility Agreement (FFA).
<b>The Emergency Planning and Community Right-to-Know Act (EPCRA), also referred to as Superfund Amendments and Reauthorization Act (SARA), Title III, requires SRS to report hazardous substances and their releases to U.S. Environmental Protection Agency, state emergency response commissions, and local planning units.</b>	SRS complied with all reporting and emergency planning requirements.
<b>The Endangered Species Act (ESA) prevents the extinction of federally listed endangered or threatened species and conserves critical habitats.</b>	SRS continued to protect these species and their habitats as outlined in the Natural Resource Management Plan for SRS.

Table 3-5 Status of Key Federal Environmental Laws Applicable to SRS (continued)

Regulatory Program Description	2018 Status
<b>The Federal Facility Agreement (FFA) for the Savannah River Site between the EPA, DOE, and SCDHEC integrates CERCLA and Resource Conservation and Recovery Act (RCRA) requirements to achieve a comprehensive remediation strategy and sets annual work priorities and establishes milestones to clean up and close the high-level radioactive waste tanks at SRS.</b>	SRS met all the commitments contained within the FFA.
<b>The Federal Facility Compliance Act (FFCA) requires federal agencies to comply with federal, state, and local solid and hazardous waste laws.</b>	SRS continues to comply with the FFCA.
<b>The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates restricted-use pesticides through a state-administered certification program.</b>	SRS continues to comply with FIFRA requirements.
<b>The Migratory Bird Treaty Act (MBTA) protects migratory birds, including their eggs and nests.</b>	SRS continues to comply with the MBTA.
<b>National Defense Authorization Act, Section 3116(a) (NDAA) allows the Secretary of Energy, in consultation with the Nuclear Regulatory Commission (NRC), to determine that certain waste from reprocessing is not high-level radioactive waste requiring deep geologic disposal if it meets the criteria set forth in Section 3116. Section 3116(b) addresses monitoring by NRC and SCDHEC.</b>	SRS provided routine documents as requested by the NRC to support monitoring SRS facilities in accordance with NDAA 3116(a). NRC conducted one on-site monitoring observation visit to F- and H-Tank Farms and Saltstone in 2018.
<b>The National Environmental Policy Act (NEPA) requires federal agencies to identify potential environmental consequences of proposed federal actions and alternatives to ensure informed, environmentally sound decision-making regarding design and implementing programs and projects.</b>	SRS is in compliance with NEPA.
<b>The National Historic Preservation Act (NHPA) protects historical and archaeological sites.</b>	The Savannah River Archaeological Research Program (SRARP) provides cultural resource management guidance to DOE to ensure continued compliance with the NHPA.
<b>RCRA governs hazardous and nonhazardous solid waste management and underground storage tanks (USTs) containing petroleum products, hazardous materials, and wastes. RCRA also regulates universal waste and recyclable used oil.</b>	SRS continues to manage hazardous waste, nonhazardous solid waste, and USTs in compliance with RCRA. One UST received a Notice of Alleged Violation (NOAV) in 2018. Corrective actions were taken, and SRS received notification from SCDHEC that "No Further Action" is required.

Table 3-5 Status of Key Federal Environmental Laws Applicable to SRS (continued)

Regulatory Program Description	2018 Status
<b>The Safe Drinking Water Act (SDWA) protects drinking water and public drinking water resources.</b>	All drinking water samples taken in 2018 met drinking water quality standards.
<b>The Toxic Substances Control Act (TSCA) regulates polychlorinated biphenyls (PCBs), radon, asbestos, and lead and requires users to evaluate and notify EPA when new chemicals are used and significant new uses of existing chemicals occur.</b>	SRS managed all TSCA-regulated materials in compliance with all requirements. The 2018 annual PCB report was submitted on June 25, 2019.

### 3.8 ENVIRONMENTAL COMPLIANCE SUMMARY

SRS was not involved in any environmental lawsuits during 2018. SRS received no NOV's and one NOAV in 2018, which is discussed in Section 3.3.2.3. Ameresco received one NOV, which is discussed in Section 3.3.6.1. Table 3-6 summarizes the NOV's/NOAV's SRS received from 2014–2018.

Table 3-6 NOV/NOAV Summaries, 2014–2018

Program Area	Notice of Violation (NOV)/Notice of Alleged Violation (NOAV)				
	2014	2015	2016	2017	2018
Clean Air Act (CAA)	0	1	0	3	1 <sup>a</sup>
Clean Water Act (CWA)	0	0	1	2	0
Resource Conservation and Recovery Act (RCRA)	0	0	0	0	1 <sup>b</sup>
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	0	0	0	0	0
Others	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>2</b>

<sup>a</sup> This NOV was issued to Ameresco, a direct contractor to DOE.

<sup>b</sup> NOAV