Chapter 3: **Compliance Summary**

The Savannah River Site (SRS) implements programs to meet the requirements of applicable federal and state environmental laws and regulations, as well as 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 has a decades-long commitment to protect human health and the environment.

2020 Highlights

COVID-19 Pandemic

- Being cognizant of potential COVID-19 pandemic impacts, SRS took action to develop timely responses and maintain regulatory compliance.
- Environmental Compliance transmitted regulatory requirement extension and relief requests for SRS operations to the South Carolina Department of Health and Environmental Control (SCDHEC) or the Environmental Protection Agency (EPA), as applicable, while rapidly developing and implementing a compliance program to support essential on-site missions and personnel.
- SRS maintained full regulatory compliance during the 2020 COVID-19 pandemic.

Permitting

SRS managed 540 operating and construction permits. SRS received one Notice of Violation (NOV). More information on the NOV can be found below and in Section 3.3.7.1.1.

Remediation (Environmental Restoration and Cleanup)

As of December, SRS completed the cleanup of 411 of the 515 waste units containing or having contained solid or hazardous waste. An additional eight waste units are currently being remediated.

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 10 transuranic (TRU) waste shipments to the Waste Isolation Pilot Plant (WIPP) for deep geologic disposal.

2020 Highlights (continued)

Resource Conservation and Recovery Act (RCRA)

- In October, SRS submitted the Closure Certification Report for the Solvent Storage Tanks (SSTs) to SCDHEC. SCDHEC inspected the SSTs in November. SCDHEC response to the permit closure request is pending.
- SCDHEC conducted the unannounced RCRA Compliance Evaluation Inspection (CEI) at selected RCRA facilities on August 18. The inspection did not note deficiencies.
- SCDHEC performed a Comprehensive Groundwater Monitoring Evaluation on September 24, inspecting groundwater monitoring systems and corrective actions at the M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities, Sanitary Landfill, Mixed Waste Management Facility, and F- and H-Areas Hazardous Waste Management Facilities. The inspection did not note deficiencies.
- During the SCDHEC annual Underground Storage Tank (UST) inspection on December 8, all 17 of the USTs were in compliance. F Canyon successfully completed the closure of two USTs. The five USTs that support Emergency Generators for DWPF, H Canyon, and Utilities and Operating Services all completed necessary upgrades and testing to be compliant with the new SCDHEC UST Release Detection requirements.

Air Quality and Protection

SRS met all Clean Air Act requirements.

Water Quality and Protection

- All 41 SRS Industrial stormwater 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.
- In August, SRS received an NOV for failing to comply with a permit requirement of the National Pollutant Discharge Elimination System (NPDES) Permit. SRS identified and initiated corrective actions. SRS resolved all matters identified in the NOV.

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.)

2020 Highlights (continued)

Environmental Protection and Resource Management

- SRS conducted 731 National Environmental Policy Act (NEPA) reviews to identify potential environmental impacts from proposed federal activities. SRS identified 651 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 (EPCRA); the Superfund Amendments and Reauthorization Act (SARA), Title III; the Endangered Species Act (ESA); the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); the National Historic Preservation Act (NHPA); and the Migratory Bird Treaty Act (MBTA).

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

The 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 March.

Tank Closure (Radioactive Liquid Waste Processing and Dispositioning)

- The Tank Closure Cesium Removal (TCCR) system treated approximately 89,430 gallons of salt solution during 2020.
- The Defense Waste Processing Facility (DWPF) filled 16 canisters with 61,842 pounds of glass waste mixture, immobilizing 273,677 curies of high-level radioactive waste in 2020.

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 Savannah River Remediation (SRR) web pages.

3.2.1 Remediation (Environmental Restoration and Cleanup)

SRS has 515 waste units subject to the FFA, including RCRA and CERCLA units, Site Evaluation Areas, and facilities the SRS RCRA permit covers. At the end of fiscal year (FY) 2020, SRS had completed the surface and groundwater cleanup of 411 of these units and was in the process of remediating an additional eight units. Appendix C, *RCRA/CERCLA Units List*; Appendix G, *Site Evaluation List*; and Appendix H, *Solid Waste Management Units* of the FFA list all of SRS's 515 waste units. The *Federal Facility Agreement Annual Progress Report for Fiscal Year 2020* explains the status of FFA activities at SRS for FY 2020.

CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan require remedy 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 in place. Due to the rising number of SRS remedial decisions requiring five-year remedy reviews and new EPA guidance and format requirements, the DOE, EPA, and SCDHEC agreed in 2014 to submit future SRS Five-Year Remedy Review Reports in a phased approach rather than combining all operable unit (OU) reviews into a single document. The OUs are in groups of the following five remedy types: 1) native soil cover or land-use controls, or both; 2) groundwater; 3) engineered cover systems; 4) geosynthetic or stabilization and solidification cover systems; and 5) operating equipment. To ensure that SRS completes reviews of all remedy types within five years, it looks at a different remedy type each year. The Site evaluates remedies 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:

- *Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Groundwater Remedies:* SCDHEC and EPA approved on August 25 and September 3, respectively. SRS issued it to the public on December 9.
- *Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Engineered Cover Systems:* DOE submitted it to SCDHEC and EPA on December 17.

SRS conducted a removal action at the D-Area Coal Storage Area (484-17D) during 2020.

D-Area Coal Storage Area (484-17D)

The D-Area Coal Storage Area (DCSA) is an approximately 6-hectare area where the Site continuously stored coal before its use in the 484-D Powerhouse. The coal remained at the DCSA for 59 years, exposing it to

Top Photo, SRS Removal Action at D-Area Coal Storage Area (484-17D); Bottom, Aerial of End State of D Powerhouse Coal Pile Remediation

rainwater, which leads to sulfuric acid forming as the coal's iron sulfide (pyrite) degrades. SCDHEC and EPA developed and approved a Removal Site Evaluation Report/Engineering Evaluation/Cost Analysis. The document identified the objective of a non-time critical removal action to address the acidified vadose zone soils at the DCSA. The removal action will improve groundwater conditions by adding and mixing soil neutralization amendments within the former coal storage area, reducing the acidity in the upper portion of the vadose zone and, subsequently, the amount of acidic leachate reaching the groundwater.

3.2.2 Tank Closure (Radioactive Liquid Waste Processing and Dispositioning)

SRS generates liquid radioactive waste as a byproduct of processing nuclear materials. 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 3-1 depicts.

3.2.2.1 Tank Closure

SRR operates the F-Tank Farm and H-Tank Farm under the SCDHEC industrial wastewater regulations; however, the FFA Section IX, *High-Level Radioactive Waste Tank System(s)*, establishes requirements for preventing and mitigating releases from these tank systems. The FFA also contains enforceable closure schedules for the liquid waste tanks. 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 whether 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* (DOE 2012) and *Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site* (DOE 2014) 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 at a deep geologic repository.

During 2020, DOE supported the NRC in its 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 did not conduct any onsite observation visits for F- and H-Tank Farms during 2020. 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 steps are complete, DOE receives regulatory confirmation that the tanks are ready to be stabilized by grouting.

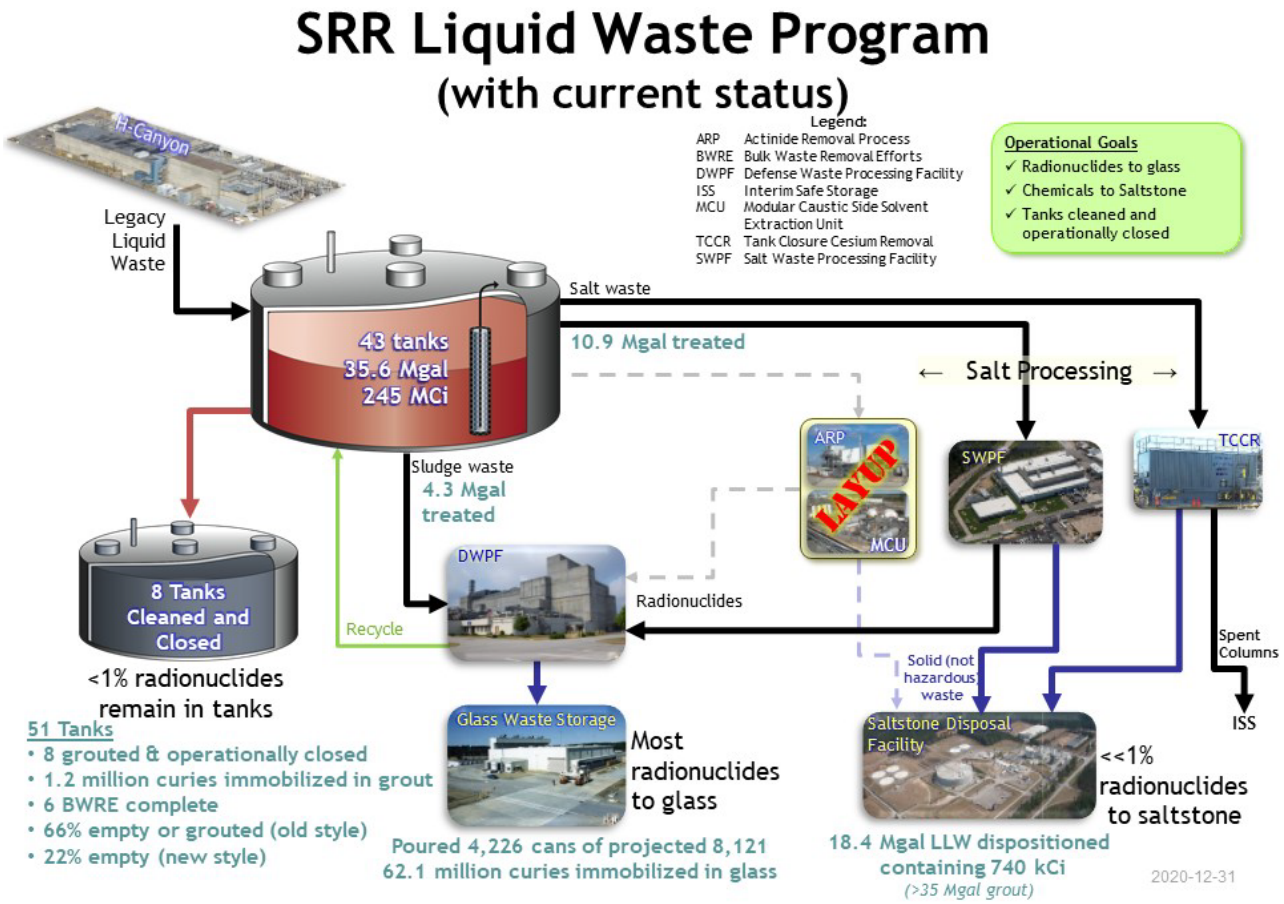


Figure 3-1 Pathway for Processing and Dispositioning Radioactive Liquid Waste at SRS

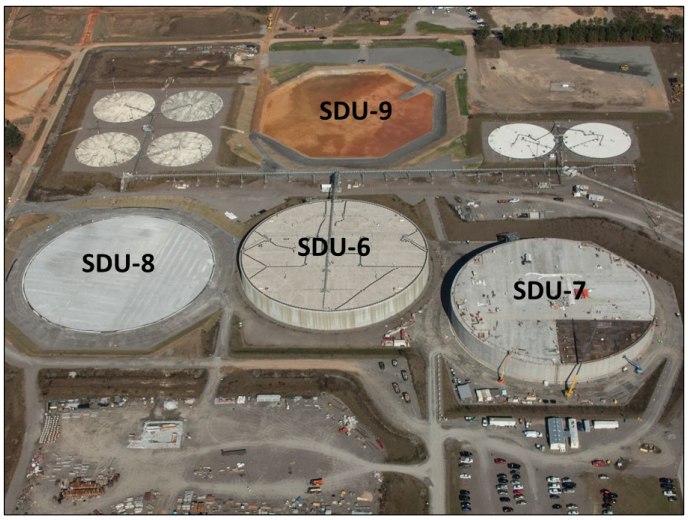
The first step in this process is Bulk Waste Removal Efforts (BWRE). Preparing for BWRE is typically a multiyear engineering and waste removal process that involves installing specialized equipment that meets strict nuclear safety standards. There were no BWRE or other FFA tank closure commitments required for 2020, and follow-up negotiations are scheduled to be completed in 2022 for additional BWRE and tank closure milestones. DOE completed two tank closure-related FFA milestones in 2020 by adding water to Tank 9 to begin salt dissolution in April 2020, and issuing a "F-Tank Farm Deactivation Plan" in June 2020. Both FFA milestones were competed ahead of their FFA deadlines.

3.2.2.2 Salt Processing

SRS is using several processes to dispose of the salt waste from the liquid waste tanks, as Figure 3-1 shows. The Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit (ARP/MCU) was an interim salt waste processing system. SCDHEC permitted ARP/MCU under South Carolina industrial wastewater regulations. The salt form of the liquid waste is 90% of the waste volume stored in the tanks and contains about half of the radioactivity. Prior to Salt Waste Processing Facility (SWPF), ARP/MCU process removed actinides, strontium, and cesium from the salt waste taken from the liquid waste tank farms. The facilities underwent lay-up activities to be placed in a safe, stable suspended operations state in 2019, which allowed SRS to complete final SWPF tie-ins. ARP/MCU remained in the suspended operations state in 2020.

With the construction phase of the SWPF project complete, SRS received approval to begin facility operation in 2020. Parsons Corporation, who designed and built the first-of-a-kind facility, will operate it for one year.

SRS procured the Tank Closure Cesium Removal (TCCR) system to treat salt waste, increase salt processing capability, and to expedite tank closure. The Site completed TCCR design and fabrication in 2017, and installation and readiness assessments in 2018. The TCCR started operating in January 2019 and processed 89,430 gallons of salt solution in 2020.



Saltstone Disposal Units Being Constructed Next to SDU-6

3.2.2.3 Salt Disposition

After ARP/MCU and TCCR interim processing, the decontaminated salt solution undergoes processing into grout waste at the Saltstone Production Facility and 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* (DOE 2006). NDAA Section 3116(b) requires the NRC, in coordination with SCDHEC, to monitor the disposal actions DOE takes to assess whether it is complying with the objectives of 10 CFR Part 61.

During 2020, DOE supported the NRC's monitoring of 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 did not conduct any onsite observation visit for salt waste disposal during 2020.

Ion Exchange Column Installed at TCCR

In 2020, SRS continued permanently disposing of waste, processing 638,759 gallons of waste into grout and disposing it in cylindrical concrete Saltstone Disposal Units (SDUs), including SDU-6, the 32.8 million-gallon, 375-foot in diameter rubber-lined mega vault. In 2020, SRS continued construction of SDU-7, another mega-vault, with an anticipated completion date of spring 2021. Site preparation and construction of the next two mega-vaults, SDU-8 and SDU-9 also continued in 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 makes up less than 10% of the waste volume stored in the tanks and contains about half of the radioactivity, as Figure 3-1 shows. At DWPF, SRS combines the high-activity portion of both the sludge and salt waste from the Tank Farms with frit before sending the mixture to the plant's melter. The melter heats the mixture to nearly 2,100 degrees Fahrenheit, until molten and pours the resulting glass-waste mixture 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.

DWPF produced 16 canisters of 61,842 pounds of glass, immobilizing 273,677 curies of radioactivity during 2020. Since DWPF began operating in March 1996, it has produced more than 4,200 canisters of 16.3 million pounds of glass, immobilizing 61.9 million curies of radioactivity.

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 6.3 million gallons of treated wastewater in 2020. 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 2020.

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 covers 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 SRS disposes of onsite, 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 not containing any Resource Conservation and Recovery Act (RCRA) hazardous waste.

DOE Manual 435.1-1, *Radioactive Waste Management Manual,* requires DOE to prepare 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 2020 annual reviews for the E-Area Solid Waste Management Facility, the Saltstone Disposal Facility, and the SRS 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 the *SRS Environmental Report.*

Packaging Waste for Shipment to WIPP

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, TRU waste consists of clothing, tools, rags, residues, debris, and other items contaminated 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 10 TRU shipments to WIPP for disposal in 2020.

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

Under RCRA, EPA establishes requirements for treating, storing, and disposing of hazardous waste. The EPA authorizes SCDHEC to regulate hazardous waste and the hazardous components of mixed waste, and issue permits to implement RCRA.

Through the SCDHEC-issued RCRA hazardous waste permit, SRS closed the referenced Solvent Storage Tanks (SSTs) and submitted the final certification of closure to SCDHEC in October 2019. SRS is waiting for SCDHEC response to the SST Permit Closure Request. Upon the acceptance of the closure certification, the

SSTs section of the permit will be terminated; all other sections of the permit remain applicable. Until final closure, the area surrounding the SSTs is a designated Underground Radioactive Material Area. In November 2020, SCDHEC performed a visual inspection of the SSTs.

SRS submitted the 2013 RCRA Permit Renewal Application, M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities (M-Area and Met Lab HWMFs) Postclosure (Volume III), to SCDHEC on January 14, 2020. SCDHEC completed its review of the Revision 0 Permit Renewal Application and provided comments on May 22, 2020. Subsequently, SRS submitted Revision 1 of the 2013 RCRA Permit Renewal Application, M-Area and Met Lab HWMFs Postclosure (Volume III), to SCDHEC on August 25, 2020. SCDHEC reviewed the application and submitted its completeness determination on October 2, 2020. SCDHEC is currently developing the Draft Permit Renewal for public comment.

SRS certified the 2013 RCRA Permit Renewal Applications for both the F-Area HWMF and the H-Area HWMF in December 2020. Changes for these renewal applications include revising the corrective action goals by adding management strategy specific to the goals and creating RCRA Permit Appendix 8. Appendix 8 retains relevant information regarding both facilities' histories for all subsequent permit renewal applications. The F-Area HWMF (Volume IV) and H-Area HWMF (Volume V) Permit Renewal Applications are scheduled for submittal in January 2021.

In addition, as part of the F-Area HWMF, the partial closure of F-Area Inactive Process Sewer Line (FIPSL) was completed with the decommissioning and stabilization of the F-Area Treblers (904-47G and 904-108G) in accordance with the FIPSL closure plan during calendar year 2020. The F-Area Treblers were sampling and monitoring structures intrinsic to the inactive F-Area process sewer system. Final closure will occur as part of the F-Area Operable Unit.

Partial Closure of the F-Area Inactive Process Sewer Line

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 in 2020, and SRS operated them in compliance with their permits. The SCDHEC quarterly landfill inspections in September 2020 found one issue with the 632-G landfill involving minor erosion on the south slope. SRS corrected the erosion, and SCDHEC indicated no further action was necessary.

3.3.2.3 Underground Storage Tank Permits

Subtitle I of RCRA regulates USTs containing usable petroleum products. On March 23, 2020 SRS submitted to SCDHEC a UST assessment report for the closure of two diesel tanks in F Canyon. On April 9, 2020

SCDHEC reached a decision that no further assessment was required and concurred with the closure of the tanks. This closure reduced the number of permitted USTs at SRS to 17.

SRS USTs require an annual compliance certificate from SCDHEC. On December 8, 2020 SCDHEC performed its annual inspection and found all tanks in compliance. This annual inspection also confirmed the USTs that support emergency power generators for DWPF, H Canyon, and Utilities and Operating Services successfully completed system testing and upgrades to meet the new SCDHEC UST Release Detection regulations.

F-Canyon Grouting during F-Canyon UST Closure

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. SRS obtained and implemented a Site Treatment Plan (STP) Consent Order (95-22-HW, as amended) 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. SCDHEC approved the *Site Treatment Plan, 2019 Update* on June 17, 2020. SRS submitted the *Site Treatment Plan, 2020 Update* to SCDHEC on November 12, 2020. SRS and SCDHEC held STP Cleanup Credit validation meetings in February, May, August, and November. SRS earned 375 validated Cleanup Credits during FY 2020.

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 two shipments of PCB waste to offsite hazardous waste facilities in 2020. 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 five shipments of PCB-containing waste to WIPP in 2020.

As required by the TSCA regulations, SRS must submit an annual report of onsite PCB disposal activities to EPA. The report is due before July 1 each year. The Site submitted the annual report for this reporting period in 2021; however, SRS submitted the 2019 annual report of onsite PCB disposal activities to EPA on May 11, 2020.

3.3.5 South Carolina Infectious Waste Management Regulation

SRS generates a large quantity of infectious waste registered under the SCDHEC Infectious Waste Management Program. SRS contracted a vendor to pick up infectious waste every four weeks. In 2020, the vendor picked up 13 shipments. Once offsite, the vendor treats and disposes of the waste in accordance with the SCDHEC regulations. In 2020, SRS managed all infectious wastes in compliance with the state regulations. SCDHEC conducted a virtual inspection of the SRS Infectious Waste Program in September 2020. SCDHEC issued a warning letter for two unsecured sharps containers and not documenting disinfection of portable bins used in the storage refrigerator. SRS corrected both issues and provided documentation to SCDHEC, which did not issue a violation and required no further action.

Infectious Waste is Treated and Disposed of in Accordance with SCDHEC Regulations.

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 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)
- Building 235-F D&D Construction Permit (TV-0080-0041-C1)
- N-Area Lead Melters Construction Permit (TV-0080-0041-C2)
- Saltstone Baghouse CD-B 0017 Construction Permit (TV-0080-0041-C3)
- Ameresco Federal Solutions, Inc. (“Ameresco”) Biomass Facilities Permit (TV-0080-0144)
- Surplus Plutonium Disposition Project Construction Permit (TV-0080-0041-C4)

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 2020, the Site continued to operate under the expired Part 70 Air Quality Permit.

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, the CAA does not require SRS to develop a risk management plan. Additionally, no reportable 112(r)-related hazardous or extremely hazardous chemical releases occurred at SRS in 2020.

3.3.6.3 Ozone-Depleting Substances

Section 608 of the CAA prohibits the knowing release of refrigerant during maintenance, service, repair, or disposal of air-conditioning and refrigeration equipment. Refrigerants include ozone-depleting substances 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 Part 82 in 2020 to ensure it did not knowingly or willfully release refrigerants into the atmosphere.

3.3.6.4 Air Emissions Inventory

SCDHEC Regulation 61-62.1, Section III (*Emissions Inventory*), requires SRS to compile an air emissions inventory in order 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 upon 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 rather than annually for permit TV-0080-0041. 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. Additionally, Subpart H of the NESHAP regulations requires SRS to determine and report annually the highest effective radiological dose from airborne emissions to any member of the public at an offsite point. The report is due by June 30 each year. For this reporting period the annual report will be submitted in June 2021; however, SRS transmitted the *SRS Radionuclide Air Emissions Annual Report for 2019* on June 18, 2020 to EPA, SCDHEC, and DOE Headquarters.

There were no unplanned radiological releases to the atmosphere during 2020.

During 2020, SRS estimated the maximally exposed individual 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, New Source Performance Standards (NSPS) under NESHAP were added (or became effective) for RICE equipment such as portable generators, emergency generators, and compressors. In 2020, SRS continued to operate in compliance with NSPS and NESHAP standards.

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 230 asbestos notifications and conducted 29 permitted renovations and demolitions involving asbestos in 2020. 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 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 (SRR) to operate as long-term, in-house asbestos abatement contractors for DOE-Savannah River.

Table 3-1 Summary of Quantities of Asbestos Materials Removed in 2020

Asbestos Type	Nonradiological, Friable	Nonradiological, Nonfriable	Radiologically Contaminated Asbestos
Linear Feet Disposed	162	206	265
Square Feet Disposed	28	14,743	11
Cubic Feet Disposed	30	93	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 2020:

- Land Application Permit (ND0072125)
- General Permit for Stormwater 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, SCG160118, and SCG160155)
- General Permit for Vehicle Wash Water Discharges (SCG750000)
- 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 the previous section explains, 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, SCDHEC requires SRS to prepare the following plans:

- Best Management Practices Plan to identify and control the discharge of hazardous and toxic substances
- Industrial 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 (SC0047431) and the other for the remainder of the Site (SC0000175). Throughout the year, SRS monitors 16 of 28 NPDES-permitted industrial wastewater outfalls across the Site on a frequency the permits specify. The remaining 12 industrial wastewater outfalls have no current flow and will be removed when the next permit is issued. 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 the permits require. Chapter 4, *Nonradiological Environmental Program,* provides additional information about NPDES permit required sampling at SRS to remain compliant.

The following are highlights of the NPDES program at SRS:

- SCDHEC conducted an NPDES Compliance Sampling Inspection in 2020. As a result of sample data collected at Outfall G-10, it determined that SRS was not meeting applicable permit limits and issued an NOV. SRS received the NOV in August 2020. It is discussed further below.
- The 2020 updates to the SRS SWPPP contain information on the 40 SRS industrial storm water outfalls and related facilities.
- SCDHEC did not require construction storm water monitoring on any of the active construction projects underway at SRS during 2020.

- SRS undertook construction, operating, and closure permitting of industrial wastewater treatment facilities pursuant to the CWA and the South Carolina Pollution Control Act. Facilities permitted are broad in scope and include those involved with groundwater remediation, radioactive liquid waste processing, and nuclear nonproliferation. In 2020, SCDHEC issued an Approval to Place into Operation for the addition of Recovery Well RWM019 to the M-1 Air Stripper Well Network. SCDHEC also approved closing a permit related to the Trade Waste Tank in A-Area. Due to travel restrictions related to the COVID-19 pandemic, SRS sent documentation (photographs with narratives) in lieu of site visits normally performed by SCDHEC in Aiken for the two projects discussed above.
- In August 2020, SRS received an NOV for exceeding a discharge permit limit of the NPDES Industrial Wastewater Permit. SCDHEC issued the NOV for an Ammonia-Nitrogen Permit limit exceedance at Outfall G-10. The exceedance occurred in March 2020. Because a written explanation for the violation had been submitted to SCDHEC, no additional response was required; however, SRS identified and completed corrective actions.
- In December 2020, SCDHEC notified SRS that a Discharge Monitoring Report was required annually for Industrial Storm Water Outfall H-07B, even if there was no discharge during the year. SRS subsequently prepared and submitted the requested report, which was originally due in April 2020.

Chapter 4 of this report summarizes the sampling results of both industrial and stormwater outfalls.

3.3.7.1.2 Section 404(e) Dredge and Fill Permits

Wetlands make up 25% of the total SRS area, or 48,973 acres. SRS wetlands account for more than 80% of the wetlands across the entire DOE complex nationwide. The Clean Water Act, under Section 404, requires SRS to obtain a permit when it will conduct work in a wetland area. The U.S. Army Corps of Engineers authorizes development in wetlands through a Nationwide Permit (NWP) program. The program is for projects that have minimal impact on the aquatic environment.

SRS wetlands staff reviewed 72 site-use applications for potential wetland impacts and helped review pertinent Environmental Evaluation Checklists (EECs) in 2020. During this time, SRS permitted the following actions under the NWP program:

- Installed Groundwater Monitoring Well DWP006A under NWP 5—Scientific Measurement Devices
- Installed multiple F- and H-Area groundwater monitoring wells under NWP 5—Scientific Measurement Devices
- Steel Creek stair installation under NWP 5—Scientific Measurement Devices

SRS Obtained Regulatory Approval to Close the Trade Waste Tank.

- Installed multiple groundwater monitoring wells near the sanitary landfill under NWP 5—Scientific Measurement Devices
- Installed aquatic sampling equipment in Pen Branch under NWP 5—Scientific Measurement Devices
- Repaired the FM-A7 sampling platform under NWP 5—Scientific Measurement Devices
- Made improvements to the PB-3 aquatic sampling location under NWP 5—Scientific Measurement Devices (permitted activities)
- Installed aquatic sampling equipment in Joyce's Branch under NWP 5—Scientific Measurement Devices
- Performed maintenance to D-Area culvert under NWP 3—Maintenance

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 2020 bacteriological samples for drinking water that SRS collected met 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. The Site exceeds this requirement by collecting and analyzing 15 samples each month throughout the system. The sample results consistently meet SCDHEC and EPA drinking water quality standards, confirming the absence of harmful bacteria.

The most recent lead and copper sampling event was in 2019; the results met all State and Federal drinking water standards. 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 in 2022.

SCDHEC conducted inspections of four of the SRS drinking water systems in 2020. The systems inspected provide water to the Advanced Tactical Training Academy (ATTA) Range, Central Sanitary Wastewater Treatment Facility, L-Area Fire Station, and the PAR Pond Lab. All systems received SCDHEC's highest rating of "Satisfactory." SCDHEC generally inspects the ATTA Range system on a three-year rotation and the smaller State-classified systems on a five-year rotation. The next inspection is scheduled for April 2021.

3.3.7.3 Groundwater Management

The South Carolina Groundwater Use and Reporting Act declares that the groundwater resources of the State be put to beneficial use and requires a Groundwater Management Plan for each capacity use area. The act requires that a groundwater withdrawal permit be in place to withdraw or use groundwater equal to or greater than 3 million gallons in any month in these areas. On November 8, 2018, the SCDHEC Board approved the Western Capacity Use Area. SRS is situated within the Western Capacity Use Area; therefore, SRS pursued and received groundwater withdrawal permits from the SCDHEC Bureau of Water for groundwater systems located in A, B, D, H, S, T, and Z Areas.

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 that support informed environmentally sound decision-making regarding designing and implementing the proposed activities.

The NEPA program complies with 10 CFR 1021, DOE regulations for compliance with NEPA. SRS initiates the required NEPA evaluation by completing an EEC for new projects or changes to existing ones. 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 731 NEPA reviews of proposed activities in 2020 (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 2020:

- *Final Environmental Assessment for the Commercial Disposal of Defense Waste Processing Facility Recycle Wastewater from the Savannah River Site (DOE/EA-2115).* On August 10, 2020, DOE published (85 Federal Register [FR] 48236) a Finding of No Significant Impact (FONSI) for the *Final Environmental Assessment for the Commercial Disposal of Defense Waste Processing Facility Recycle Wastewater from the Savannah River Site* (SRS DWPF Recycle Wastewater EA). This Final EA assessed whether the potential environmental impacts of the Proposed Action and alternatives would be significant to human health and the environment and determine whether to prepare an environmental impact statement (EIS) or a FONSI. The Proposed Action in the Final EA is the disposal of up to 10,000 gallons of stabilized (grouted) Defense Waste Processing Facility (DWPF) recycle wastewater from the Savannah River Site (SRS) at a commercial low-level radioactive waste (LLW) disposal facility located outside of South Carolina and licensed by either the Nuclear Regulatory Commission (NRC) or an Agreement State.
- *Draft Versatile Test Reactor Environmental Impact Statement (DOE/EIS-0524).* On December 21, 2020, DOE published a Notice of Availability for the *Draft Versatile Test Reactor Environmental Impact Statement (VTR EIS),* which evaluates the potential environmental impacts of proposed alternatives for constructing and operating a new test reactor, as well as associated facilities necessary to perform a postirradiation evaluation of test articles and managing spent nuclear fuel (SNF).
- *Final Environmental Impact Statement for Plutonium Pit Production at the Savannah River Site in South Carolina (SRS Pit Production EIS) (DOE/EIS-0541).* On September 30, 2020, DOE/National Nuclear Security Administration (NNSA) published the Notice of Availability (85 FR 61741) for the Final EIS. The Final EIS evaluates the potential environmental impacts of producing a minimum of 50 war reserve pits per year at SRS and developing the ability to implement a short-term surge capacity to enable NNSA to meet the requirements of producing pits at a rate of no fewer than 80 war reserve pits per year, beginning in 2030, for the nuclear weapons stockpile.
- *Record of Decision for the Final Environmental Impact Statement (EIS) for Plutonium Pit Production at the Savannah River Site (SRS) in South Carolina (DOE/EIS-0541).* On November 5, 2020,

DOE/NNSA published the Record of Decision (ROD) (85 FR 70601) that announced its decision to implement the Proposed Action to repurpose the Mixed-Oxide Fuel Fabrication Facility (MFFF) to produce a minimum of 50 war reserve pits per year at SRS and to develop the ability to implement a short-term surge capacity to enable NNSA to meet the requirements of producing pits at a rate of not less than 80 war reserve pits per year up to the analyzed limit as necessary, beginning in 2030, for the nuclear weapons stockpile.

- *Amended Record of Decision for the Final Surplus Plutonium Disposition Environmental Impact Statement (EIS) (DOE/EIS-0283).* DOE/NNSA prepared a *Supplement Analysis (SA) for Disposition of Additional Non-Pit Surplus Plutonium* (DOE/EIS-0283-SA-4, August 6, 2020) to inform this decision. On August 28, 2020, NNSA published this amendment (85 FR 55350) to the April 2003 Amended Record of Decision (AROD) for the *Final Surplus Plutonium Disposition EIS*. In this AROD, DOE/NNSA announced its decision to use the dilute and dispose method to disposition up to 7.1 MT of non-pit plutonium as contact-handled transuranic (CH-TRU) waste at the Waste Isolation Pilot Plant (WIPP). This AROD changed the disposition pathway for a portion of the 34 MT of surplus plutonium DOE/NNSA previously announced and decided in 2003 to fabricate into mixed oxide fuel.
- *Amended Record of Decision for Complex Transformation Supplemental Programmatic Environmental Impact Statement (EIS) (DOE/EIS-0236-S4).* On November 5, 2020, NNSA published in this AROD its programmatic decision (85 FR 70598) to implement elements of a Modified Distributed Centers of Excellence (DCE) Alternative, whereby NNSA would produce a minimum of 50 war reserve pits per year at a repurposed MFFF at SRS during 2030 for the national pit production mission and implement surge efforts to exceed 80 pits per year up to the analyzed limit as necessary beginning in 2030 for the nuclear weapons stockpile. This decision is supported at a programmatic level by the analysis in a Supplement Analysis (SA) to *the Complex Transformation SPEIS* (DOE/EIS-0236-S4-SA-02), which NNSA prepared in 2019.
- *Notice of Intent (NOI) to Prepare an Environmental Impact Statement for the Surplus Plutonium Disposition Program (DOE/EIS-0549).* On December 16, 2020, DOE/NNSA published its intent (85 FR 81460) to prepare a Surplus Plutonium Disposition Program (SPDP) EIS to evaluate alternatives for the safe and timely disposition of plutonium surplus to the defense needs of the United States. NNSA will prepare a SPDP EIS to evaluate the dilute and dispose alternative, also known as ‘‘plutonium downblending,’’ and any other identified reasonable alternatives for the disposition of surplus plutonium. The dilute and dispose approach would require new, modified, or existing capabilities at SRS, Los Alamos National Laboratory (LANL), Pantex Plant (Pantex), and WIPP.

The following drafts are in progress and not included in Table 3-2:

- The *Draft 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)*
- The *Draft Supplement Analysis for the Spent Nuclear Fuel Accelerated Basin Deinventory Mission for H-Canyon at the Savannah River Site (DOE/EIS-0279-SA-07*)

Table 3-2 Summary of 2020 NEPA Reviews

Type of National Environmental Policy Act (NEPA) Review	Number
CX Determinations[a]	651
"All No" Environmental Evaluation Checklist (EEC) Determinations[a]	57
Previous NEPA Review[a]	18
Environmental Impact Statement (EIS)	3
Supplement Analysis (SA)	1
Interim Action	0
Revised Finding of No Significant Impact	0
Environmental Assessment	1
Total	**731**

[a] 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. The inventory is due by March 1 each year. The 2020 report will be submitted in February 2021; however, SRS submitted the 2019 hazardous chemical storage information to state and local authorities on February 26, 2020. The report included 60 reportable chemical categories.

As required by Section 313, *Toxic Chemical Release Inventory*, of EPCRA, SRS must file an annual TRI facility 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. For this reporting period the annual report will be submitted in June 2021; however, SRS submitted the 2019 annual report on June 25, 2020 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 TRI 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 the NPDES general permit sets forth.

SRS procedures implement the FIFRA requirements for pesticide application, application recordkeeping, 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 southern hognose snake, as well as numerous other animals and plants considered species of conservation concern. The United States Forest Service-Savannah River (USFS-SR) considers these species sensitive (some listed as At-Risk species by the U. S. Fish and Wildlife Service) 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 2019 mid-winter bald eagle survey reported eight

USFS-SR Performs Red Cockaded Woodpecker Habitat Management.

bald eagles and four golden eagles on SRS. 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 2020, active red-cockaded woodpecker clusters increased from 3 to 145 due to successful habitat restoration. As of 2020, USFS-SR managed 175 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 of 12%. In addition to managing endangered wildlife species, the USFS-SR actively manages six endangered plant populations: four smooth coneflower and two pondberry.

During 2020, while implementing the United States Department of Energy Natural Resources Management Plan for SRS, USFS-SR developed two SRS project-specific management plans (a new dove field preparation site for the South Carolina Department of Natural Resources and a tornado event and salvage operation) resulting in two biological evaluations for timber and wildlife-related management. The biological evaluations determined that forest implementation plans are not likely to adversely affect federally listed endangered or threatened species due to beneficial, insignificant, or discountable effects.

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 the U.S. Department of the Interior authorizes under a valid permit. To support migratory bird monitoring, a one-day Christmas Bird Count is conducted annually in December. The 2020 SRS count found 84 species, which is down from the number of species normally observed. A one-day bald eagle survey is conducted every year in January; the 2020 bald eagle survey found seven eagles.

In 2020, SRS conducted walkdowns of 51 bird nests at 41 locations for MBTA compliance. The walkdowns identified 32 active nests with incubating eggs or chicks and 19 nests without eggs or chicks. The active nests were being used by Northern mockingbirds (*Mimus polyglottos*), barn swallows (*Hirundo rustica*), house finches (*Haemorhous mexicanus*), and common grackles (*Quiscalus quiscula*).

Purple Martin in Flight

SRS allowed active nests to complete the nesting cycle and barricaded them when deemed appropriate. The University of Georgia's Savannah River Ecology Laboratory (SREL) relocated six active nests in active work areas under permit authorization from the U.S. Fish and Wildlife Service (USFWS).

Also in 2020, USFS-SR found an osprey (*Pandion haliaetus*) nest on a platform staff built in 2014. This marked the sixth 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.

Wisteria (Wisteria sinensis)

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*), *w*isteria (*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 21st century. NNIPS contribute to long-term ecosystem degradation due to the loss of diversity and their direct competition with native species. They also provide unwanted ladder fuels that can increase fire intensity during prescribed burning or wildfire.

Before 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 to include in 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 40-50 species of plants considered to be non-native and invasive. USFS-SR chemically treats an average of 57 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 NNIPS populations discovered as part of the site preparation for replanting. In 2020, USFS did not treat any acres due to funding priorities.

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 2020, USFS-SR removed 1,049 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 SREL 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 organization 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 DOE is considering for activities, such as construction, to ensure that they do not affect archaeological or historic sites. In 2020, SRARP investigated 373 acres of land on SRS for cultural resource management, including conducting 21 field surveys and testing. It recorded 13 newly discovered sites and revisited seven previously recorded sites.

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, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Clean Water Act (CWA), and the Clean Air Act (CAA) require SRS to send a notice to the National Response Center and applicable state agencies.

Two 150-lb chlorine gas cylinders were discovered on July 8, 2020 near Highway 278. DOE owns the area in which the cylinders were discovered; however, this is a buffer area and not SRS proper. The chlorine gas cylinders were not used at SRS, and it is unknown who owned these cylinders or how the cylinders came to be located on federal property. One of the two cylinders, which had degraded, was observed to be off-gassing with the contents being released into the air and the rainwater surrounding the cylinders. SRS notified the National Response Center of a chlorine gas spill/release exceeding the 4.5-kg (10-lb) reportable quantity and also notified EPA, SCDHEC, and Local Emergency Planning Committee. SRS coordinated the removal and disposition of the cylinders. A subcontractor recovered, packaged, and transported the cylinders for final disposition on July 15, 2020. On July 16, 2020, DOE, EPA and SCDHEC Federal Facility personnel reviewed incident response and determined no further CERCLA actions were required.

3.3.10 Permits

SRS had 540 construction and operating permits in 2020 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	8 [a]
U.S. Army Corps of Engineers (USACE—Nationwide Permits)	9
Asbestos Demolition Licenses/Abatement Licenses/Temporary Storage of Asbestos Waste Notices	217
Asbestos Abatement Group License	1
Asbestos Temporary Storage of Waste License	1
Domestic Water	97
Industrial Wastewater Treatment	57
NPDES Permits	10
Construction Stormwater Grading Permit	8
RCRA Hazardous Waste	1
Solid Waste	3
Underground Storage Tank	7
Sanitary Wastewater	90
SCDHEC 401	0
SCDHEC Infectious Waste Registration	1
SCDHEC Bureau of Drug Control Controlled Substances Registration	5
Nondispensing Drug Outlet License	4
SCDHEC Navigable Waters	0
Underground Injection Control	10
U.S. Fish and Wildlife Service Scientific Collecting Permit	1
Groundwater Withdrawal	9
Surface Water Withdrawal	**1**
Total	**540**

[a] 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 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.
- DOE Order 231.1B, *Environment, Safety and Health Reporting*, requires the Site to prepare this *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 NNSA 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.
- DOE Order 414.1D, *Quality Assurance*. See Chapter 8, *Quality Assurance,* of this report.
- DOE Order 435.1, *Change 1, Radioactive Waste Management*. See Section 3.3.1 in 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.

3.5 REGULATORY SELF-DISCLOSURES

SRS made no regulatory self-disclosures in 2020.

3.6 ENVIRONMENTAL AUDITS

SCDHEC, EPA, the Nuclear Regulatory Commission (NRC), and the United States Army Corps of Engineers inspected and audited the SRS environmental program for regulatory compliance. Table 3-4 summarizes the results of the 2020 audits and inspections.

During 2020, the SRS Independent Evaluation Board evaluated field implementation of selected Environmental Protection requirements as part of the overall field execution reviews of several facilities. Each review identified several findings and opportunities for improvement. Also during 2020, the DOE performed comprehensive environmental assessments of H Canyon, DWPF, Ameresco, and Centerra. The assessments found the facilities to be in compliance with all applicable environmental laws and regulations, but some procedural findings were noted and communicated to the facilities. Corrective actions were developed and implemented.

Table 3-4 Summary of 2020 External Agency Audits/Inspections of the SRS Environmental Program and Results

Audit/Inspection	Action	Results
632-G C&D Landfill and 288-F Ash Landfill Inspections	South Carolina Department of Health and Environmental Control (SCDHEC) conducted two quarterly inspections of the 632-G and 288-F landfills. SCDHEC did not conduct two quarterly inspections due to COVID-19 pandemic restrictions.	During the September 2020 inspection, SCDHEC noted evidence of erosion on the south slope of the 632-G landfill. The issue was corrected the following week, and pictures of the corrective action were sent to the inspector. No violations resulted from this issue. One other inspection was conducted during 2020, and there were no issues.
Federal Energy Regulatory Commission (FERC) Inspection	FERC performed the annual inspection of PAR Pond Dam and Steel Creek Dam in February 2020. The 5-year independent consultant inspection coincided with the inspection of PAR Pond Dam.	FERC visually inspected the dams and found no conditions indicating a concern for the immediate safety and permanence of the structures. FERC noted SRS adequately operates and maintains the facility, and the dams were in satisfactory condition based on visual inspection. It also noted improvements in routine maintenance.
Comprehensive Groundwater Monitoring Evaluation	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 September 24. SCDHEC also completed a records review of groundwater-related files.	The inspection noted no problems or concerns.
Industrial Wastewater Construction Permit Inspections	Due to restrictions related to COVID-19, SRS sent documentation (photographs with narratives) in lieu of site visits normally performed by the local SCDHEC office.	SCDHEC issued the APO for RWM019 and approved the closure of the Trade Waste Tank permit.
SCDHEC Sanitary Survey of SRS Drinking Water Systems	SCDHEC inspects the wells, tanks, and treatment systems supporting the primary SRS A-Area Drinking Water system biannually. SCDHEC also conducts inspections of four of the smaller SRS Drinking Water systems (ATTA Range, Central Sanitary Wastewater Treatment Plant, PAR Pond Lab, and L-Area Fire Station) on either a three- or a five-year rotation, depending on the classification of the system. SCDHEC conducted Sanitary Surveys of the four smaller SRS Drinking Water systems in 2020.	Each Drinking Water system received a “Satisfactory” rating.

Table 3-4 Summary of 2020 External Agency Audits/Inspections of the SRS Environmental Program and Results (continued)

Audit/Inspection	Action	Results
Interim Sanitary Landfill and the F-Area Railroad Crosstie Pile Landfill Post-Closure Inspection	SCDHEC conducted an annual review of the landfills in September 2020.	SCDHEC identified no issues.
Air Compliance Inspection	SCDHEC conducted an onsite inspection in September 2020.	No issues were noted by SCDHEC.
Resource Conservation and Recovery Act (RCRA) Compliance Evaluation Inspection (CEI)	SCDHEC conducted the unannounced RCRA Compliance Evaluation Inspection (CEI) on August 18. Due to COVID-19 restrictions, copies of the required RCRA documentation (contingency plans, hazardous waste manifests, training records, inspection records, etc.) were submitted to SCDHEC for review prior to the onsite inspection.	SCDHEC did not observe any deficiencies during the inspection.
Underground Storage Tank (UST) CEI	SCDHEC inspected 17 USTs on December 8.	No issues were identified.
Z-Area Saltstone Solid Waste Landfill Inspections	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.
National Pollutant Discharge Elimination System (NPDES) Compliance Evaluation Inspection (3560)	SCDHEC conducted Compliance Sampling Inspection (3560) in March covering permits SC0000175, ND0072125, and SC0047431	The inspection did not identify any issues for Permit SC0047431. For Permit SC0000175, sample data collected at one outfall by inspectors indicated wastewater was not meeting applicable parameter limits. High rainfall amounts had contributed to the issue. Improvements to procedures and operations for the agitator system were also implemented. For Permit ND0072125, inspectors identified one monitoring well that did not have a permanent ID plate. SRS immediately replaced the ID plate.

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. Additional information is on the EPA website. Table 3-5 summarizes SRS's 2020 compliance status with applicable key federal environmental laws.

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

Regulatory Program Description	2020 Status
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.	The FY 2019 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.
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.	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.
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).	The SRS NPDES program received one NOV for NPDES Industrial Wastewater.
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.	SRS continues to comply with CERCLA and the requirements of the Federal Facility Agreement (FFA).
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.	SRS complied with all reporting and emergency planning requirements.
The Endangered Species Act (ESA) prevents the extinction of federally listed endangered or threatened species and conserves critical habitats.	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	2020 Status
The 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.	SRS met all the commitments contained within the FFA.
The Federal Facility Compliance Act (FFCA) requires federal agencies to comply with federal, state, and local solid and hazardous waste laws.	SRS continues to comply with the FFCA.
The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates restricted-use pesticides through a state-administered certification program.	SRS continues to comply with FIFRA requirements.
The Migratory Bird Treaty Act (MBTA) protects migratory birds, including their eggs and nests.	SRS continues to comply with the MBTA.
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.	SRS provided routine documents as requested by the NRC to support monitoring of SRS facilities in accordance with NDAA 3116(b). The NRC did not conduct any onsite monitoring observation visits to F-and H-Tank Farms and Saltstone in 2020.
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.	SRS is in compliance with NEPA.
The National Historic Preservation Act (NHPA) protects historical and archaeological sites.	The Savannah River Archaeological Research Program (SRARP) provides cultural resource management guidance to DOE to ensure continued compliance with the NHPA.
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.	SRS continues to manage hazardous waste, nonhazardous solid waste, and USTs in compliance with RCRA.

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

Regulatory Program Description	2020 Status
The Safe Drinking Water Act (SDWA) protects drinking water and public drinking water resources.	All drinking water samples taken in 2020 met drinking water quality standards.
The Toxic Substances Control Act (TSCA) regulates polychlorinated biphenyls (PCBs), radon, asbestos and lead, and requires users to evaluate and notify EPA when they use new chemicals and when significant new uses of existing chemicals occur.	SRS managed all regulated materials in compliance with TSCA requirements.

3.8 ENVIRONMENTAL COMPLIANCE SUMMARY

SRS was not involved in any environmental lawsuits during 2020. SRS received one NOV in 2020, which Section 3.3.7.1.1 discusses. Table 3-6 summarizes the NOVs/Notices of Alleged Violation (NOAVs) SRS received from 2016–2020.

Table 3-6 NOV/NOAV Summaries, 2016–2020

Program Area	Notice of Violation (NOV)/Notice of Alleged Violation (NOAV)				
	2016	2017	2018	2019	2020
Clean Air Act (CAA)	0	3	1[a]	0	0
Clean Water Act (CWA)	1	2	0	1	1
Resource Conservation and Recovery Act (RCRA)	0	0	1[b]	0	0
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	0	0	0	0	0
Others	0	0	0	0	0
Total	**1**	**5**	**2**	**1**	**1**

[a]This NOV was issued to Ameresco, a direct contractor to DOE.

[b]NOAV