Compliance Summary

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It is the policy of the U.S. Department of Energy (DOE) that all activities at the Savannah River Site (SRS) will fully comply with applicable federal, state, and local environmental laws and regulations, and with DOE orders, notices, directives, policies, and guidance. Compliance with environmental regulations and with DOE orders related to environmental protection is a critical part of safe operations at SRS.

The purpose of this chapter is to report the status of SRS compliance with applicable statutes and programmatic documents. Some key regulations with which SRS must comply are listed in table 3–1.

The chapter is divided into five separate sections: Compliance Status, Other Environmental Issues/Actions, Continuous Release Reporting, Unplanned Releases, and Permits.

The Compliance Status section identifies the various environmental laws, regulations, and DOE orders with which SRS must comply, and the status of the site's compliance programs.

The Other Environmental Issues/Actions section provides information on any Notices of Violation (NOVs) or Notices of Alleged Violation (NOAVs) issued to SRS in 2010 by the U.S. Environmental Protection Agency (EPA) or the South Carolina Department of Health and Environmental Control (SCDHEC). NOVs/NOAVs are the formal regulatory notices that allege violations of an organization's permits, or of environmental laws or regulations. SRS received one NOV and one NOAV in 2010.

No releases required reporting to local emergency planning committees, as noted in the Continuous Release Reporting and Unplanned Releases sections. A list of environmental permits held by SRS appears in data table 3–1 on the CD housed inside the back cover of this report.

Compliance Status

This section includes discussions of compliance with applicable environmental laws and regulations, DOE orders, and agreements with regulators. It addresses environmental remediation, waste management, radiation protection, air and water quality and protection, and other environmental statutes and DOE orders.

Environmental Restoration and Waste Management

Remediation/Cleanup

SRS was placed on the National Priority List (NPL) in December 1989, under the legislative authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The site was added to the NPL because there have been releases or threatened releases of hazardous substances, pollutants, or contaminants, which EPA evaluated through a hazard ranking system on the likelihood that a release occurred, on the characteristics of the waste, and on the environment affected by the releases. Placement on the NPL indicated SRS warranted further investigation to assess the nature and extent of the public health and environmental risks associated with the releases, and to determine the appropriate remedial action(s), if any. DOE, EPA Region 4, and SCDHEC—in accordance with Section 120 of CERCLA—entered into the Federal Facility Agreement (FFA), which became effective August 16, 1993, and which directs the comprehensive environmental remediation of the site. The FFA, which integrates CERCLA and RCRA requirements to achieve a comprehensive remediation of SRS, governs the corrective/remedial action process, sets annual work priorities, and establishes milestones for activities. The agreement also coordinates administrative and public participation requirements.

Table 3–1 Laws/Regulations Applicable to SRS

Legislation	What It Requires
RCRA Resource Conservation and Recovery Act (1976)	The management of hazardous and nonhazardous solid wastes and of underground storage tanks containing hazardous materials and wastes
FFCAct Federal Facility Compliance Act (1992)	The subjection of federal agencies to all substantive and procedural requirements of federal, state, and local solid/hazardous waste laws—in the same manner as any private party
CERCLA; SARA Comprehensive Environmental Response, Compensation, and Liability Act (1980); Superfund Amendments and Reauthorization Act (1986)	The establishment of liability, compensation, cleanup, and emergency response for hazardous substances released to the environment. The Federal Facility Agreement (FFA) (WSRC–OS–94–42) between EPA, DOE, and SCDHEC integrates CERCLA and RCRA requirements to achieve a comprehensive remediation of SRS. The FFA governs the corrective/remedial action process, sets annual work priorities, and establishes milestones for activities. The agreement also coordinates administrative and public participation requirements.
EPCRA Emergency Planning and Community Right-to-Know Act (1986)	The reporting of SRS hazardous substances (and their releases) to EPA, state emergency commissions, and local planning units
NEPA National Environmental Policy Act (1969)	The evaluation of the potential environmental impacts of proposed federal activities and alternatives
SDWA Safe Drinking Water Act (1974)	The protection of public drinking water resources
CWA Clean Water Act (1977)	The regulation of liquid discharges at outfalls (e.g., drains or pipes) that carry effluents to streams (NPDES, Section 402); regulation of dredge and fill of U.S. waters (Section 404) and associated water quality for those activities (WQC, Section 401)
RHA Rivers and Harbors Act of 1899, Section 10	The regulation of construction over and obstruction of navigable waters of the U.S.
FIFRA Federal Insecticide, Fungicide, and Rodenticide Act (1947)	The regulation of restricted-use pesticides through a state-administered certification program
CAA (NESHAP) Clean Air Act (1970), (National Emission Standards for Hazardous Air Pollutants)	The establishment of air quality standards for criteria pollutants, such as sulfur dioxide and particulate matter, and of hazardous air emissions, such as radionuclides and benzene
CAAA Clean Air Act Amendments of 1990	The establishment of a national permit program, and of provisions for addressing acid rain, ozone depletion, and toxic air pollution
TSCA Toxic Substances Control Act (1976)	The regulation of PCBs, radon, asbestos, and lead, as well as evaluation and notification to EPA of new chemicals and significant new uses of existing chemicals
ESA Endangered Species Act (1973)	The protection of critically imperiled species from extinction
NHPA National Historic Preservation Act (1966)	The preservation of historical and archaeological sites

SRS has 515 waste units in the Area Completion Projects program, including RCRA/CERCLA units, Site Evaluation Areas, and facilities covered under the SRS RCRA permit. At the beginning of FY10, surface and groundwater cleanup of 374 of these units were complete or in the remediation phase (368 complete and six in the remediation phase). At the end of FY10, 386 units were complete or in the remediation phase (373 complete and 13 in remediation). A summary of the FY10 FFA milestones follows.

RCRA Facility Investigation/Remedial Investigation (RFI/RI) field starts were initiated for the following units:

- B Area Operable Unit
- Lower Three Runs Integrator Operable Unit (Third Phase II)
- Steel Creek Integrator Operable Unit (Including L Lake, no building number, and L-Area Reactor Discharge Canal) (Fourth Phase II)

Remedial Actions were initiated at the following units:

- E Area Low Level Waste Facility, 643–26E (Slit Trench Disposal Units 1–5), Interim Action
- Early Construction and Operational Disposal Site (ECODS) L–1, N–2, P–2, and R–1A, –1B, –1C
- P Area Operable Unit Early Action

Remedial actions were completed and Post-Construction Reports (PCRs) or Post-Construction Reports/Corrective Measures Implementation Report/Remedial Action Completion Reports (PCR/CMIR/RACRs) were submitted to EPA and SCDHEC for the following unit:

- M Area Operable Unit

Records of Decision (RODs) were submitted to EPA and SCDHEC for the following units:

- D Area Operable Unit
- Gunsite 012 Rubble Pile, Rubble Pile Across from Gunsite 012, and ECODS G–3 Operable Unit
- Gunsite 218 Rubble Pile Operable Unit (631–23G)
- P Area Operable Unit
- R Area Operable Unit

RODs or Interim RODs were approved by EPA and SCDHEC for the following units:

- ECODS L–1, N–2, P–2, and R–1A, –1B, –1C
- Gunsite 218 Rubble Pile (631–23G)
- P Area Operable Unit
- E Area Low Level Waste Disposal Facility, 643–26E (Slit Trench Disposal Units 1 and 2)

RODs or Interim RODs were issued for the following units:

- P Area Operable Unit
- ECODS L–1, N–2, P–2, and R–1A, –1B, –1C
- E Area Low Level Waste Disposal Facility, 643–26E (Slit Trench Disposal Units 1 and 2)

An Explanation of Significant Difference (ESD) was submitted and approved by EPA and SCDHEC for the following unit:

- E-Area Low Level Waste Facility, 643–26E, Interim Action

ESDs were issued for the following units:

- P Area Operable Unit Early Action
- E Area Low Level Waste Facility, 643–26E (Slit Trench Disposal Units 1 and 2)

Section X (“Site Evaluations”) of the FFA requires SRS to submit Removal Site Evaluation reports to EPA and SCDHEC for (1) those areas with potential or known releases of hazardous substances not identified before the effective date of the agreement, and (2) those areas listed in appendix G.1 of the agreement.

SRS submitted six Revision 0 Removal Site Evaluation reports, as follows:

- C Area Reactor Area Cask Car Railroad Tracks as Abandoned
- ECODS B–3 (East of B Area, South of Road C) and ECODS B–5
- In Situ Decommissioning of the 105–C Disassembly Basin
- P Area Ash Basin (Including Outfall P–007) (188–P) and the R Area Ash Basin (188–R)
- R Area Process Sewer Line Combined Subunit for the R Area Operable Unit
- Small Arms Training Area

The FFA requires, by January 1 of each year, submittal of an annual removal action report describing all removal actions performed during the previous fiscal year. SRS submitted the report December 21, 2010, to EPA and SCDHEC. The FY10 report described 18 active removal action areas and 34 maintenance activities.

A listing of all 515 waste units at SRS can be found in appendices C (“RCRA/CERCLA Units List”) and G (“Site Evaluation List”) of the FFA (http://www.srs.gov/general/programs/soil/ffa/ffa.html).

Liquid Radioactive Waste Tank Closure

The primary regulatory goal of the waste tank closure program at SRS's F Area and H Area liquid radioactive waste tank farms is to operationally close the tank systems under the FFA and SCDHEC regulations, which establish requirements for tank system(s) being removed from service. Under these requirements, Tanks 17F and 20F in the F Area Tank Farm were closed in 1997.

During CY10, waste removal and tank closure activities continued in 15 of the 22 remaining old-style tanks. SCDHEC and EPA have preliminarily concurred that waste removal activities can cease regarding tanks 5F, 6F, 18F, and 19F, allowing for sampling and analysis of residual waste in the tanks. Waste treatment technology development continued in 2010, with the program exploring deployment of small-column ion exchange, rotary microfilters and next-generation solvents for the treatment of salt waste. The Defense Waste Processing Facility accelerated vitrification of sludge waste, due in part to the installation of additional bubblers in the melter and enhanced off-gas capability. DOE Order 435.1 draft Tier 1 closure documentation for F Area Tank Farm was submitted to DOE–HQ for review December 10, 2010, and the comments were being incorporated into the document at the end of the year. A revised F Area Tank Farm General Closure Plan is expected to be approved by SCDHEC in early 2011.

Resource Conservation and Recovery Act

Congress enacted the Resource Conservation and Recovery Act (RCRA) in 1976. RCRA established a system for managing hazardous and nonhazardous solid wastes in an environmentally sound manner. Specifically, it provides for the management of hazardous wastes from the point of origin to the point of final disposal ("cradle to grave"). RCRA also promotes resource recovery and waste minimization.

The Hazardous and Solid Waste Amendments (HSWA) of 1984 expanded the scope and increased the requirements of RCRA. HSWA addressed congressional concern about the adequacy of existing requirements to prevent uncontrolled releases of hazardous constituents or hazardous wastes from hazardous waste management units. Three of the HSWA initiatives were especially noteworthy in preventing or addressing hazardous waste/constituent releases:

- Congress directed EPA to develop what is now known as the Land Disposal Restrictions (LDR) Program—under which the land disposal of untreated wastes is prohibited.
- Facilities are required to satisfy minimum technology requirements (i.e., liners and leachate collection systems) for surface impoundments, waste piles, land treatment units, and landfills to prevent hazardous wastes and/or constituents from migrating into the groundwater and to allow releases to be detected when they occur.
- When a facility seeks a RCRA permit, EPA is granted the authority to require corrective action for releases of hazardous waste and hazardous constituents from any solid waste management unit, regardless of when the waste was placed in the unit.

The 19 underground storage tanks at SRS that contain petroleum products, as defined by CERCLA, are regulated under Subtitle I of RCRA. These tanks require a compliance certificate annually from SCDHEC to continue operations. SCDHEC conducts an annual compliance inspection and records audit prior to issuing the compliance certificate. SCDHEC's 2010 inspection and audit found all 19 tanks to be in compliance, marking eight straight years without a violation.

The 1984 RCRA amendments established LDRs to minimize the threat of hazardous constituents migrating to groundwater sources. The same restrictions apply to mixed (hazardous and radioactive) waste.

Mixed Waste Management

The Federal Facility Compliance Act (FFCAct) was signed into law in October 1992 as an amendment to the Solid Waste Disposal Act to add provisions concerning the application of certain requirements and sanctions to federal facilities. A Site Treatment Plan (STP) (WSRC–TR–94–0608) consent order (95–22–HW, as amended) was obtained and implemented in 1995, as required by the FFCAct. A Statement of Mutual Understanding for Cleanup Credits was executed by SCDHEC in October 2003, allowing SRS to earn credits for certain accelerated cleanup actions. Credits then can be applied to the STP commitment schedules. The 2009 annual update was approved by SCDHEC May 24, 2010. SRS submitted the 2010 annual update (SRNS–TR–2008–00101, Rev 2) of the approved STP to SCDHEC in November 2010. The update identifies changes in mixed waste treatment and inventory.

The STP 2010 update documents storage of 142,901.34 cubic meters of mixed waste as of July 31, 2010, versus 138,732.01 cubic meters in 2009 (table 11.1, volume II, chapter 11). Changes in this update also include consolidating transuranic (TRU) waste stream SR–W026, CH Mixed TRU/Thirds, with SR–W027, CH Mixed TRU, and implementing enhanced inventory controls.

Table 3–2 Summary of SRS-Related NEPA Reviews in 2010

Type of NEPA Review	Number
Categorical Exclusion Determinations	203
"All No" EEC Determinations[a]	158
Actions Tiered to Previous NEPA Reviews	14
Environmental Impact Statements[b]	4
Supplement Analysis[c]	1
Interim Action	0
Revised FONSI	1
Environmental Assessments[d]	1
Total SRS-Related NEPA Reviews	**382**

[a] Proposed actions that require no further NEPA review

[b] DOE/EIS–0283–S2 (in progress); DOE/EIS–0375 (in progress); DOE/EIS–0423 (in progress); DOE–EIS–0327 (schedule uncertain)

[c] SA for SRS Spent Nuclear Fuel Management FEIS DOE/EIS–0279 (in progress)

[d] DOE/EA–1606 (in progress)

Previously, volumes for waste stream SR–W009 (silver-coated packing material) were reported as volumes of the containment culvert rather than those of the primary waste container itself. A 2010 accounting practice refinement will result in reporting volumes of the primary waste containers. No SR–W009 waste was shipped in 2010.

SRS has successfully completed more than 80 STP mixed waste management commitments since its establishment.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) is the federal government's basic charter for ensuring the protection and wise use of the "human environment." NEPA procedures require that federal agencies identify and consider the potential environmental consequences of their proposed actions early in the planning process so they can make informed, environmentally sound decisions regarding project design and implementation. The NEPA process at SRS is initiated by completing an Environmental Evaluation Checklist (EEC). The EEC is used to characterize the proposed action, identify any potential environmental concerns, and determine which level of NEPA review (if any) will be required [i.e., categorical exclusion (CX) determination, environmental assessment (EA), or environmental impact statement (EIS)]. A total of 382 SRS-related NEPA reviews were conducted in 2010 (see table 3–2). In November 2009, SRS began to post CX determinations on the SRS external website (http://www.srs.gov/general/pubs/envbul/nepa1.htm) in support of DOE's effort to facilitate NEPA process transparency and openness. By the end of 2010, SRS had posted 203 CX determinations on the website. The following is a listing of major NEPA reviews conducted during 2010, some of which are scheduled to be completed in 2011:

- *Supplemental Analysis (SA) for the Savannah River Site High-Level Waste Tank Closure Environmental Impact Statement (DOE/EIS–0303–SA–02)* – In this SA, DOE is reviewing the use of current technologies and the waste determination process legislated by Congress to implement DOE's decision to stabilize tanks by filling them with grout. Publication of the SA is expected in late 2011.
- *Surplus Plutonium Disposition Supplemental EIS (DOE/EIS–0283–S2)* – DOE has announced its intent to modify the scope of this ongoing Supplemental EIS (SEIS) and to conduct additional public scoping. DOE issued its original Notice of Intent (NOI) March 28, 2007. The preferred alternative for the disposition of surplus plutonium was to construct and operate a vitrification facility at SRS. Since that time, DOE has continued to evaluate alternatives for plutonium disposition, and the department's Deputy Secretary has authorized preparation of a conceptual design for a project that would (1) combine the functions of the planned Pit Disassembly and Conversion Facility (PDCF) and the Plutonium Preparation Project (PuP) and (2) install and operate the required equipment to disassemble pits and convert plutonium metals to oxides in the K Area Complex at SRS. DOE also has determined that disposal of some of the surplus plutonium at its Waste Isolation Pilot Plant (WIPP) in New Mexico is a reasonable alternative. DOE issued a revised NOI July 19, 2010, and will evaluate alternatives for disposition of surplus nonpit plutonium and surplus clean metal and oxide plutonium materials. A summary of all the alternatives DOE will evaluate in the SEIS follows: (1) PDCF Baseline – DOE would construct and operate a stand-alone PDCF facility in F Area; (2) PuP Baseline – DOE would construct and operate the equipment required to prepare nonpit plutonium for either H-Canyon processing or as feed material for the MOX Fuel Fabrication Facility (MFFF); (3) Combination Project in K Area – DOE would construct and operate a facility with combined PDCF and PuP capabilities in K Area; (4) H-Canyon – DOE would use the H-Canyon to

process surplus plutonium for disposal; (5) Vitrification – DOE would install a vitrification facility with can-in-canister capability in K Area; (6) WIPP – DOE would prepare nonpit plutonium that could not be utilized as MFFF feed material for disposal at WIPP; (7) MFFF feed – PuP capabilities would be used to prepare some additional surplus nonpit plutonium as feed for the MFFF; and (8) DOE will evaluate the impacts of using MOX fuel in reactors operated by the Tennessee Valley Authority at the Sequoyah and Brown's Ferry Nuclear Stations. Additional scoping meetings were conducted in August 2010.

- *EIS for the Disposal of Greater-Than-Class-C Low-Level Radioactive Waste (GTCC LLW) (DOE/EIS–0375)* – In this EIS, DOE will evaluate the impacts of disposing GTCC LLW in a geologic repository, in intermediate-depth boreholes, or in enhanced near-surface disposal facilities. Candidate DOE sites still being considered at the end of 2010 for these disposal facilities included SRS, Idaho National Laboratory, Los Alamos National Laboratory, WIPP, Nevada Test Site, Oak Ridge, Hanford, and Yucca Mountain. DOE also will consider generic commercial disposal of GTCC LLW at arid and humid locations. Disposal alternatives being considered for SRS include an intermediate-depth borehole facility and an enhanced near-surface facility. Publication of the draft and final EISs is expected in early 2011 and March 2012, respectively. The ROD schedule is uncertain.
- *Supplement Analysis (SA): SRS Spent Nuclear Fuel Management FEIS (DOE/EIS–0279)* – In this SA, DOE is reviewing the continued use of H-Canyon to process spent nuclear fuel that the department had decided to manage using the melt-and-dilute process. Using this technology, spent nuclear fuel would be melted along with other materials to ensure formulation of a low enriched uranium-aluminum product. No projected approval dates had been established for the SA or amended ROD by the end of 2010.
- *Environmental Assessment for the Proposed Use of SRS Lands for Military Training (DOE/EA–1606)* – In this EA, DOE will evaluate the potential impacts associated with the proposed use of SRS lands for military training by the U.S. Department of Defense. The purpose of the proposed action is to provide the U.S. Army with greater flexibility in developing training missions and strategies in response to rapidly changing world conditions. Publication of the draft and final EAs is expected in mid and late 2011, respectively.
- *Revised Finding of No Significant Impact (FONSI): EA for the Safeguards and Security Upgrades for Storage of Plutonium Materials at the SRS (DOE/EA–1538)* – This revised FONSI, based on previous information and analysis presented in DOE/EA–1538, as well as on descriptions of the Container Surveillance and Storage Capability project (CSSC) and the Stabilization and Packaging (S&P) project in K Area, determined that replacement of CSSC with the S&P project does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. Expected environmental impacts of construction and operation of the proposed S&P project are less than or equal to those of the CSSC, or are otherwise bounded by the CSSC NEPA analysis. DOE approved the revised FONSI July 30, 2010.
- *EIS for the Storage and Management of Elemental Mercury (DOE/EIS–0423)* – As directed by the Mercury Export Ban Act of 2008, DOE will evaluate seven sites (including SRS) for the long-term storage of elemental mercury. DOE issued the draft EIS in January 2010, with the public comment period ending March 30. The draft EIS is available at http://www.mercurystorageeis.com. A public hearing was held March 4 in North Augusta, South Carolina. The final EIS is scheduled to be issued in early 2011. The Waste Control Specialists facility near Andrews, Texas, is the preferred alternative site listed in the draft EIS.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) gives EPA comprehensive authority to identify and control chemical substances manufactured, imported, processed, used, or distributed in commerce in the United States. Reporting and record keeping are mandated for new chemicals and for any chemical that may present a substantial risk of injury to human health or the environment.

Polychlorinated biphenyls (PCBs) have been used in various SRS processes. The use, storage, and disposal of these organic chemicals are specifically regulated under 40 CFR 761, which is administered by EPA. SRS has a well-structured PCB program that complies with this TSCA regulation, with DOE orders, and with site policies.

The site's 2009 PCB document log was completed in full compliance with 40 CFR 761, and the 2009 annual report of onsite PCB disposal activities was submitted to EPA Region 4 in July 2010, meeting applicable requirements. The disposal of nonradioactive PCBs routinely generated at SRS is conducted at EPA-approved facilities within

the regulatory period. For some forms of radioactive PCB wastes, specifically those contaminated with TRU radionuclides, disposal capacity is not immediately available. Such wastes must remain in long-term storage pending necessary processing and packaging that will allow them to be shipped to WIPP for disposal. These wastes are held in TSCA-compliant storage facilities in accordance with 40 CFR 761.

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act regulates the application of restricted-use pesticides (RUPs) at SRS through a state-administered certification program. The site complies with these requirements through a written procedure. Extensive revisions of the procedure have been incorporated in recent years to improve the efficient management of the site pesticide application process. In 2010, a sitewide assessment of the pesticide program was conducted to determine if opportunities for pesticide management enhancements exist (such as reductions in toxicity or quantities of pesticides used). The assessment covered pesticide management practices by Savannah River Nuclear Solutions (SRNS) technicians as well as by third-party service providers working at SRS.

All pesticides applied on site are approved by the SRS Pesticide Use Task Group and the SRNS Chemical Management Center (CMC). Usage is documented in the Pesticide Activity Report database, which allows Regulatory Integration and Environmental Services (RI&ES) personnel to monitor application practices as well as to report total annual chemical inventories or usage to meet Emergency Planning and Community Right-to-Know Act (EPCRA) reporting responsibilities.

Radiation Protection

DOE Order 5400.5

DOE Order 5400.5, "Radiation Protection of the Public and the Environment," specifies radiation dose standards for individual members of the public. The dose standard of 100 mrem per year includes doses a person receives from routine DOE operations through all exposure pathways. To demonstrate compliance with the all-pathway dose standard, SRS conservatively combines the airborne pathway and liquid pathway dose estimates, even though the two doses are calculated for hypothetical individuals residing at different geographic locations.

The highest potential dose to the maximally exposed individual from all pathways (liquid and atmospheric) in 2010 was 0.11 mrem (0.0011 mSv). This dose is 0.11 percent of the DOE dose standard. The 2010 all-pathway dose is about 8 percent less than the 2009 dose of 0.12 mrem (0.0012 mSv).

Nontypical exposure pathways—not included in the standard calculations of the doses to the maximally exposed individual—are considered and quantified separately because they apply to low-probability scenarios, such as consumption of fish caught exclusively from the mouths of SRS streams, or to unique scenarios, such as volunteer deer hunters. During 2010, the maximum dose that could have been received by an actual onsite hunter was estimated at 12.4 mrem (0.0124 mSv), or 12.4 percent of DOE's 100-mrem all-pathway dose standard.

A detailed discussion of this subject may be found in chapter 6, "Potential Radiation Doses."

DOE Order 435.1

SRS manages low-level, high-level and TRU waste in compliance with DOE Order 435.1, "Radioactive Waste Management," within a number of storage and disposal units. The 2010 annual review of the Performance Assessment (PA) and Composite Analysis (CA) (Reference: *Composite Analysis for E-Area Vaults and Saltstone Disposal Facilities*, WSRC–RP–97–311, Rev 0, September 1997; *Addendum to the Composite Analysis for the E-Area Vaults and Saltstone Disposal Facilities*, WSRC–RP–99–00844, September 1999; *Performance Assessment and Composite Analysis Maintenance Program FY2008 Implementation Plan*, WSRC–RP–2008–00534, Rev. 0, May 2008) showed that LLW operations in FY10 were well within the performance envelope analyzed in the PA, CA, and Special Analyses (SA).

Additional details regarding radiological environmental monitoring and surveillance, and potential radiation doses resulting from SRS activities, can be found in chapters 4 ("Effluent Monitoring"), 5 ("Environmental Surveillance"), and 6 of this document.

Air Quality and Protection

Clean Air Act

The Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments (CAAA) of 1990 provide the basis for protecting and maintaining air quality. Though EPA still maintains overall authority for the control of air pollution, regulatory authority for all types of emission sources has been delegated to SCDHEC. Therefore, SCDHEC must ensure that its air pollution regulations are at least as stringent as the federal requirements. This is accomplished through SCDHEC Regulation 61–62,

"Air Pollution Control Regulations and Standards." The various CAAA titles covered by these SCDHEC regulations are discussed below.

Title V Operating Permit Program

Under the CAA, and as defined in federal regulations, SRS is classified as a "major source" and, as such, falls under the CAAA Part 70 Operating Permit Program. SCDHEC's Bureau of Air Quality issued SRS its Part 70 Air Quality Permit (TV–0080–0041), February 19, 2003, with an effective date of April 1, 2003. The Title V Operating Permit, which initially expired March 31, 2008, was extended with the September 18, 2007, submittal of an application for renewal, as required by SC R61–62.70. The site expects to receive the new Part 70 Air Permit in 2011. Until SCDHEC renews the permit, SRS will continue to operate in accordance with requirements of the extended permit.

The Part 70 Air Quality Permit regulates both radioactive and nonradioactive toxic and criteria pollutant emissions from approximately 22 nonexempt emission units, with each emission unit having specific emission limits, operating conditions, and monitoring and reporting requirements. The permit also contains a listing, known as the Insignificant-Activities List, identifying approximately 500 SRS sources that are exempt based on insignificant emission levels, or on equipment size or type.

The renewed Title V permit for the D Area Powerhouse (TV–0300–0036) was issued to SRS May 15, 2007, with an effective date of July 1, 2007, and an expiration date of June 30, 2012. In 2007, DOE–SR proposed replacement of the existing D Area Powerhouse boilers with two new biomass-fired cogeneration boilers more closely aligned with current and future steam demands. This proposed action would allow for decommissioning of the existing D Area Powerhouse prior to its current Title V permit expiring June 30, 2012. SCDHEC issued construction permit No. 0080–0144CA November 12, 2008, for the new biomass cogeneration plant, to be located near F Area. Construction of the plant, which officially got under way with a groundbreaking ceremony November 30, 2009, continued through 2010. SCDHEC issued no revisions to the SRS Part 70 Air Quality Permit (TV–0080–0041) or the 484–D Powerhouse Part 70 Air Quality Permit (TV–0300–0036) in 2010. Three revisions to the 484–D Powerhouse Part 70 Air Quality Permit (TV–0300–0036) were issued by SCDHEC in 2009 to incorporate two administrative changes and one minor modification to remove insignificant activities.

MFFF—a part of the SRS Nuclear Nonproliferation Program—was issued an air construction permit (0080–0139CA) August 22, 2006. Construction of the MFFF, which began August 1, 2007, continued throughout 2010. Compliance with the SRS Part 70 Air Quality Permit conditions last was evaluated by SCDHEC March 15, 2010, as part of an Air Compliance Inspection. For results of the evaluation, refer to the "Environmental Audits" section of this chapter, beginning on page 3-16.

Notices of Violation

SRS received an NOV and an NOAV in 2010 for failure to fully comply with requirements in South Carolina Regulation 61–86.1 ("Standards of Performance for Asbestos Projects"). Additional information about these actions can be found in the "Notice of Violation/Notice of Alleged Violation" section of this chapter (page 3-16).

Accidental Release Prevention Program

Under Title III of the CAAA, EPA established a program for the prevention of accidental releases of large quantities of hazardous chemicals. As outlined in Section 112(r), any facility that maintains specific hazardous or extremely hazardous chemicals in quantities above specified threshold values must develop a risk management program (RMP). The RMP establishes methods that will be used for the containment and mitigation of large chemical spills.

SRS maintains hazardous and extremely hazardous chemical inventories below the threshold value. This cost-effective approach minimizes the regulatory burden of 112(r) but does not eliminate any liability associated with the general duty clause, as stated in 112(r)(1). No reportable 112(r)-related hazardous or extremely hazardous chemical releases occurred at SRS in 2010.

Ozone-Depleting Substances

The CAAA mandated significant new air quality standards for the protection of stratospheric ozone. These initiatives directly impacted operations, maintenance, and recordkeeping activities related to ozone depleting substances (ODS) at SRS. First, the CAAA Title V operating permit program (TV–0080–0041, Condition 4.B.6) requires that SRS comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82. The permit specifies compliance with the requirements of Subpart B ("Servicing of Motor Vehicle Air Conditioners"), Subpart E ("The Labeling of Products Using Ozone-Depleting Substances"), and Subpart G ("Significant New Alternatives Policy Program"). Accordingly, all large (greater than or equal to 50-pound charge) heating, ventilation, and

air conditioning/chiller systems leak repair data are reported monthly. Incidental discharges from refrigerant sources at SRS during 2010 totaled 470 pounds.

Additionally, the Title V operating permit also specifies that SRS comply with the requirements of halon emissions reduction and recycling found in 40 CFR 82, Subpart H ("Halon Emissions Reduction"). Halon is used as a fire suppression agent; therefore, the SRS Fire Department (SRSFD) is responsible for providing halon fire suppression equipment at the site. SRSFD personnel maintain and recharge halon-containing equipment, and manage the national halon repository (Savannah River Halon Repository). Halon is maintained at this repository to support existing missions at SRS for the life of the missions. The repository also maintains halon supplies for other sites in the DOE complex.

According to the SRS Halon Management Plan (F–ESR–G–00120, November 16, 2005), all halon systems in service at SRS are scheduled to remain in service for the life of SRS's existing missions. As missions cease, halon will be recovered, recycled, and stored at the SRS repository in support of continuing missions. When stored halon exceeds the amount needed for support of SRS and other DOE sites, the excess is shipped to the U.S. Department of Defense (DOD), or offered to the General Services Administration as excess. SRS continues to phase out its use of halon as part of an overall goal to eliminate halon use in the United States.

The SRSFD details the total halon inventory at SRS in its annual "Halon Report" to DOE. A successful audit of the halon inventory was conducted during 2010. As of December 31, there were approximately 52,422 pounds in the SRS inventory, including 19,704 pounds in 85 installed fire suppression systems, and 7,030 pounds of unprocessed Halon stored in original containers. The balance, 25,688 pounds of Halon, has been processed and is stored on site in 1-ton bulk containers. In addition to the SRS inventory, halon totaling 32,718 pounds was maintained in the national halon repository at SRS.

Air Emissions Inventory

SCDHEC Regulation 61–62.1, Section III ("Emissions Inventory"), requires compilation of an air emissions inventory to locate all sources of air pollution and to define and characterize the various types and amounts of pollutants. To demonstrate compliance, SRS personnel in 1993 conducted the initial comprehensive air emissions inventory, which identified approximately 5,300 radiological and nonradiological air emission sources. Source operating data and calculated emissions from 1990 were used initially to establish the SRS baseline emissions and to provide data for air dispersion modeling.

Regulation 61–62.1, Section III, was revised in 2010. The revision will require the site to begin annual submittal of its air inventories for both operating permits, TV–0080–0041 and TV–0080–0044, beginning with CY10 emissions. The site submitted CY09 emissions for the D Area Powerhouse (TV–0080–0044) to SCDHEC on March 24, 2010. The site was not required to submit 2009 emissions under its other operating permit (TV–0090–0041); however, due to the change in regulations it will begin annual submittals of air emissions beginning with CY10 emissions.

During 2010, the site collected CY09 operating data for permitted and other sources in accordance with SRS procedures and guidelines. Because data collection for all SRS sources begins in January for the preceding year, and requires up to 6 months to complete, the 2010 site environmental report contains emissions data for CY09. These data were used to generate the site's Title V Permit renewal application. Compilation of 2010 data will be completed in 2011 and documented in the *SRS Environmental Report for 2011.*

National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants (NESHAP) is a CAA-implementing regulation that sets air quality standards for air emissions containing hazardous air pollutants, such as radionuclides, benzene, and asbestos.

NESHAP Radionuclide Program

The current list of 187 hazardous air pollutants includes all radionuclides as a single item. Regulation of these pollutants has been delegated to SCDHEC; however, EPA Region 4 continues to regulate some aspects of NESHAP radionuclides.

NESHAP Radionuclide Program Subpart H of 40 CFR 61 was issued December 15, 1989, after which an evaluation of all air emission sources was performed to determine compliance status. DOE–SR and EPA Region 4 signed a Federal Facility Compliance Agreement (FFCA) October 31, 1991, providing a schedule to bring SRS's emissions monitoring into compliance with regulatory requirements. The FFCA was officially closed—and the site declared compliant—by EPA Region 4 May 10, 1995. Subpart H was revised by EPA

September 9, 2002, with an effective date of January 1, 2003. This revision added inspection requirements for existing SRS sources and allowed the use of ANSI N13.1–1999 for establishing monitoring requirements. SRS is performing all required inspections, has monitoring systems compliant with the regulation, and remains in compliance with Subpart H of 40 CFR 61.

During 2010, the maximally exposed individual effective dose equivalent, calculated using the NESHAP-required CAP88 computer code, was estimated to be 0.05 mrem (0.005 mSv), which is 0.5 percent of the 10 mrem per year (0.10 mSv per year) EPA standard (chapter 6).

SRS compliance with 40 CFR 61, Subpart H ("National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities") last was evaluated by SCDHEC in June 2008 as part of a Title V radiological NESHAP inspection. SCDHEC did not conduct a Subpart H inspection at SRS in 2010.

NESHAP Nonradionuclide Program

SRS uses many chemicals identified as toxic or hazardous air pollutants, but most of them are not regulated under the CAA or under federal NESHAP regulations. Except for asbestos, SRS facilities and operations do not fall into any of the "categories" listed in the original subparts. Under Title III of the CAAA, EPA in December 1993 issued a final list of hazardous air pollutant-emitting source categories potentially subject to maximum achievable control technology (MACT) standards; SRS currently is not impacted by any promulgated MACT standards for source categories.

NESHAP Asbestos Abatement Program

SRS began its asbestos abatement program in 1988 and continues to manage asbestos-containing material (ACM) by "best management practices." Site compliance in asbestos abatement, as well as in renovations and demolitions, falls under SCDHEC and federal regulations, including South Carolina Regulation 61–86.1 ("Standards of Performance for Asbestos Projects") and 40 CFR 61, Subpart M ("National Emission Standards for Hazardous Air Pollutants – Asbestos"). An SRS procedure (3Q, 4.14, "Asbestos Management Program") provides site personnel and contractors applicable guidelines to ensure compliance with state and federal requirements.

SCDHEC finalized extensive revisions to Regulation 61–86.1 during 2008. The change that most affected SRS was a requirement that mandated a follow-up analysis of suspect ACM using transmission electron microscopy (TEM) of at least one of three bulk samples should all three samples test negative for the presence of asbestos when using customary polarized light microscopy. RI&ES personnel secured a laboratory to perform the TEM analyses, thus enabling the site to comply with the new requirement. The site asbestos procedure was revised in 2010 to include considerably more information on how to properly dispose of ACM. Also, the SRS Asbestos Working Group (AWG) was formed to develop and share best asbestos management practices across the site. The AWG includes asbestos planners, supervisors, and workers from a number of site organizations.

In addition to numerous project reviews, site walkdowns, and instructional class meetings to inform site personnel of current asbestos management regulations, SCDHEC Asbestos Section management presented two "Asbestos 101" classes at SRS. The classes were attended by approximately 75 site employees.

SRS personnel removed and disposed of 764 linear feet and 470 square feet of friable (regulated) ACM, and 581 linear feet, 144,238 square feet, and 6 cubic feet of nonfriable (unregulated) ACM during 2010. Approximately 240 SRS asbestos specialists are certified by SCDHEC in various disciplines (planners, supervisors, inspectors, workers, etc.).

Radiologically-contaminated asbestos waste was disposed of in 2010 at the SRS E-Area low-level vaults, engineered trenches, and slit trenches, which are authorized by SCDHEC as asbestos waste disposal sites. Nonradiological asbestos waste was disposed of at the Three Rivers Solid Waste Authority Landfill and the Construction and Demolition (C&D) Landfill (632–G), both of which also are SCDHEC-approved asbestos waste landfills.

Water Quality and Protection

Clean Water Act

National Pollutant Discharge Elimination System The Clean Water Act (CWA) of 1972 created the National Pollutant Discharge Elimination System (NPDES) program, which is administered by SCDHEC under EPA authority. The program is designed to protect surface waters by limiting releases of effluents into streams, reservoirs, and wetlands.

SRS had four NPDES permits in 2010:

- Two permits for industrial wastewater discharges (SC0047431, which covered the D-Area Powerhouse, and SC0000175, which covered the remainder of the site).
- Two general permits for stormwater discharges (SCR000000 for industrial and SCR100000 for construction).[1] Permit SCR000000 expired December 31, 2010; renewal of the permit became effective January 1, 2011.

The site also had one no-discharge permit for land application of biosolids (ND0072125). This permit was renewed in 2010 and is applicable for another 10 years. More information about SRS's NPDES permits can be found in chapter 4.

The results of monitoring for compliance with the industrial wastewater discharge permit at SRS were reported to SCDHEC in the site's monthly discharge monitoring reports, as required by the permit. SRS had zero permit limit exceptions during 2010, a compliance record that has been attained only one other time (2007).

SCDHEC generally conducts an unscheduled "NPDES 3560 Compliance Sampling Inspection" of the site's permitted outfalls annually. The 2010 inspection, conducted in March, resulted in a "Satisfactory" rating—the highest achievable.

Outfalls covered by the industrial stormwater permit (SCR000000) were reevaluated in 2009. This resulted in the development of a new sampling plan implemented in 2010. No new issues were identified in 2010. Stormwater outfall sampling results appear in an effluent monitoring data table (4–9) in the "Environmental Data/Maps – 2010" section of the CD housed inside the back cover of this report.

Dredge and Fill; Rivers and Harbors The CWA, Section 404, "Dredge and Fill Permitting," as amended, and the Rivers and Harbors Act (RHA) of 1899, Sections 9 and 10, "Construction Over and Obstruction of Navigable Waters of the United States," protect U.S. waters from dredging/filling and construction activities by the permitting of such projects. Dredge-and-fill operations in U.S. waters are defined, permitted, and controlled through implementation of federal regulations in 33 CFR and 40 CFR.

In 2010, SRS had five open permits under the Nationwide Permits (NWPs) program (general permits under Section 404), and one open permit under the RHA of 1899, Section 10, as follows:

- Dam construction on an unnamed tributary to Fourmile Branch for the Mixed Waste Management Facility Groundwater Interim Measures project was completed in 2000 under NWP 38, "Hazardous Waste Cleanup." However, mitigation for the impact to wetlands was still pending in 2010 and must be addressed before the permit can be considered closed. SRNS has requested approval from DOE to use wetland mitigation bank credits to satisfy the mitigation issue and close the permit.
- A minor discharge of material for research purposes was authorized in May 2008 under NWP 18, "Minor Discharges. The material was placed in Steel Creek below the S.C. Highway 125 bridge and used by the Savannah River National Laboratory (SRNL) as part of a remediation research project evaluating active caps in streams to remediate contaminants. An active cap is one that actively binds or sequesters contaminants—as opposed to a passive cap, which simply covers contaminants. The cap in this research project consisted of combinations of apatite, sand, organoclay, and a sugar-based polymer. The research was concluded in 2010, and the research site is being restored to its original condition.
- SRS initiated a project during 2009 to dredge sediments out of the 681–3G and 681–5G pumphouse canals to allow for better flow to the water intake of each pumphouse. An RHA of 1899 Section 10 permit, (SAC–2008–1156) was obtained from the U.S. Army Corps of Engineers (COE) March 24, 2009, to allow the dredging work to begin. Both canals were successfully dredged and returned to their original design. Maintenance dredging of accumulated sediments in the 681–5G canal was required in December 2010. The Section 10 permit will remain open until March 31, 2014, to allow for additional maintenance dredging as required.
- SRNL initiated a remediation experiment project in March 2010 in Tims Branch. The installation of lysimeters in the wetlands near Tims Branch was covered by NWP 5, "Scientific Measurement Device." The lysimeters were used in an experiment to evaluate the effect of a mixture of amendments (apatite, organoclay, and cross-linked biopolymers) for the remediation of metals in Tims Branch soils.
- ACP initiated a well installation—covered by NWP 5—in a wetland near Upper Three Runs in December 2010 to investigate groundwater near the Nonradioactive Waste Disposal Facility (Sanitary

[1] SRS and SCDHEC personnel worked together on an agreement letter dated October 31, 2005, that helped ensure SRS compliance with the 2005 Industrial Stormwater General Permit by requiring implementation of best management practices at certain stormwater outfalls.

Landfill, 740–G). The well was required to investigate a potential plume coming from the landfill.

- A road realignment project—funded by American Reinvestment and Recovery Act (ARRA) monies—was determined in February to have impacted a wetland in the ditch on the east side of Highway 125. The project, initiated to realign Highway 125 at its Road 2 intersection, was covered under NWP 14, "Linear Transportation Projects." Because of the wetland impact, it also required a Section 404 permit. Mitigation for the impact was achieved by using credits from the SRS wetland mitigation bank. The realignment project was completed in April 2010.

Water Quality Certification Section 401, "Water Quality Certification," of the CWA is administered by SCDHEC to ensure the maintenance of water quality during dredge-and-fill projects. On December 4, 2008, a water quality certification (WQC), P/N 2008–1156–6IJ, was issued to Washington Savannah River Company for the sediment dredging project of the 681–3G and 681–5G pumphouse canals. This certification was transferred to SRNS January 14, 2009. The WQC—a prerequisite for the Section 10 permit required by the COE for this project—remains in effect for this project until December 4, 2011.

Construction in Navigable Waters SCDHEC Regulation 19–450, "Permit for Construction in Navigable Waters," protects South Carolina's navigable waters. The only state navigable waters at SRS are Upper Three Runs Creek (through the entire site), Lower Three Runs Creek (upstream to the base of the PAR Pond Dam), and the Savannah River (along the site's southwestern border).

A navigable waters permit (P/N 2008–1156–6IJ) was issued to Washington Savannah River Company December 4, 2008, for the sediment dredging project of the 681–3G and 681–5G pumphouse canals. The permit—transferred to SRNS January 14, 2009—was issued by SCDHEC simultaneously with the WQC, and remains in effect for this project until December 4, 2011.

NPDES Permit Exceedances

In 5,059 sample analyses (including flow measurements and no-flow designations) performed during 2010, no permit exceedance was observed.

Safe Drinking Water Act

The federal Safe Drinking Water Act (SDWA) was enacted in 1974 to protect public drinking water supplies. SRS domestic water is supplied by groundwater sources. The A Area and D Area drinking water facilities are actively regulated by SCDHEC, while the remaining smaller water systems receive a reduced level of regulatory oversight. The K Area System was incorporated into the A Area system in 2010, and removed from SCDHEC's water system inventory.

Samples are collected and analyzed periodically by SRS and SCDHEC to ensure that all site domestic water systems meet SCDHEC and EPA bacteriological and chemical drinking water quality standards. All samples collected in 2010 met these standards.

The water system in A Area was sampled under the state Lead and Copper Rule in 2010, and was found to be in compliance with SCDHEC action levels for lead and copper in the 90th percentile.

Other Environmental Statutes

EPCRA/SARA Title III

EPCRA (enacted in 1986) 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 Chemical Release Inventory—i.e., Toxics Release Inventory (TRI)—report to include source reduction and recycling activities.

Executive Order 12856

Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements," requires that all federal facilities comply with right-to-know laws and pollution prevention requirements. SRS complies with the appropriate reporting requirements for EPCRA, and incorporates the applicable TRI chemicals into its pollution prevention efforts (table 3–3).

Chemical Inventory Report (Tier II)

Under Section 312 of EPCRA, SRS completes an annual Tier II Chemical Inventory Report for all hazardous chemicals present at the site in excess of specified quantities during the calendar year. Hazardous chemical storage information is submitted to state and local authorities by March 1 for the previous calendar year.

Toxics Release Inventory Report (Form R)

Under Section 313 ("Toxic Chemical Release Inventory") of EPCRA, SRS must file an annual TRI report by July 1 for the previous year. SRS calculates

Table 3–3 SRS Reporting Requirements under "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements" (Executive Order 12856)

EPCRA CITATION	Activity Regulated	Reported In 2010
302–303	Planning Notification	NA[a]
304	Extremely Hazardous Substances Release Notification	NA[a]
311–312	Material Safety Data Sheet / Chemical Inventory	Yes
313	Toxic Release Inventory Reporting	Yes

[a] Did not exceed reporting threshold

chemical releases to the environment for each regulated chemical that exceeds its established threshold value and (in addition to other inventory data sets) reports the release values to EPA on Form R of EPCRA Section 313. Threshold values are those quantities of regulated chemicals (as defined by EPCRA Section 313) above which additional reporting is required using Form R.

Form R for 2009 was submitted electronically to EPA July 1, 2010. SRS reported the following chemicals that exceeded their thresholds: barium, chlorine, chromium, copper, fluorine, formic acid, hydrochloric acid, lead, mercury, nickel, nitrate, nitric acid, sodium nitrite, sulfuric acid, asbestos, and zinc. (NOTE: The term "exceeded" in an EPCRA context does not indicate a violation. Per EPA regulations, SARA chemical limits are established, and reporting requirements are based on these threshold values.) Specific details, including release amounts and detailed information about toxic release inventory reporting, can be viewed on the EPA website at http://www.epa.gov/tri/tridata.

SRS exceeded the 2009 reporting threshold for friable (regulated) asbestos due to extensive demolition and deactivation activities performed under the ARRA scope; this triggered Form R reporting requirements.

Endangered Species Act

The Endangered Species Act of 1973, as amended, provides for the designation and protection of wildlife, fish, and plants in danger of becoming extinct. The act also protects and conserves the critical habitats on which such species depend.

Several threatened and endangered species exist at SRS, including the wood stork, the red-cockaded woodpecker, the shortnose sturgeon, the pondberry, and the smooth purple coneflower. Although the bald eagle no longer is on the endangered species list, it still is protected under the Bald and Golden Eagle Protection Act. Programs are in place on site to enhance the habitat and survival of such species.

During 2010, as part of the U.S. Department of Agriculture Forest Service–Savannah River (USFS–SR) Natural Resource Management Plan, USFS–SR personnel developed four biological evaluations for timber-related activities, reviewed the evaluations and determined that associated management actions would not adversely impact threatened or endangered species.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, Section 106, governs archaeological and historical resources. SRS ensures that it is in compliance with the NHPA through several processes. The Cold War Programmatic Agreement and "SRS's Cold War Built Environment Cultural Resource Management Plan" are being implemented. The site's artifact selection team—which includes DOE, SRNS, and the University of South Carolina's Savannah River Archaeological Research Program (SRARP)—meets monthly and is responsible for overseeing the selection, collection, and curation of Cold War-era artifacts from buildings prior to decommissioning and demolition activities.

SRS also helps ensure that it remains in compliance with NHPA through its Site Use Program. All locations being considered for activities such as construction are evaluated by SRARP personnel to ensure that archaeological or historic sites are not impacted. Reviews of timber compartment prescriptions include surveying for archaeological resources and documenting areas of importance with regard to historic and prehistoric significance.

The following information is summarized from the "Annual Review of Cultural Resources Investigations by the Savannah River Archaeological Research Program, Fiscal Year 2010" [SRARP, 2010].

SRARP personnel reviewed 57 site-use permit application packages during FY10, of which 26 proposed land modifications resulted in the need to survey 756 acres (46 percent) of the total survey coverage for FY10.

The remaining site-use packages were found to have no activities of significant impact in terms of the NHPA. SRARP personnel also surveyed 871 acres (54 percent) of the total survey area coverage in 2010 to support onsite forestry activities.

Forty-one surveys were conducted in FY10, totaling 1,627 acres and consisting of 26 Site-Use Application Surveys and 15 Timber Compartment Prescription Surveys. During these surveys, a total of 3,866 shovel test pits were dug. These investigations identified eight new archaeological sites—and resulted in revisits to 119 previously recorded sites for cultural resources management within the 1,627 acres.

In compliance with the NHPA, artifacts recovered through daily compliance activities and the analyses of these artifacts must be curated. SRARP curated 21,279 artifacts during FY10 from Flamingo Bay, Frierson Bay, and Johns Bay excavations. Of these curated artifacts, 1,648 were from compliance-related excavations; 15,213 from Flamingo Bay; 1,009 from Frierson Bay, and 3,409 from Johns Bay.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that governs the protection of migratory birds, including eggs and nests. The MBTA prohibits the taking, possession, import, export, transport, selling, purchase, or barter of—or offering for sale, purchase or barter—any migratory bird or its eggs, parts, and nests, except as authorized under a valid permit.

In 2010, several nests protected under the MTBA were found in large mobile equipment located at the Portable Equipment Commodity Center (PECMC). The equipment was barricaded until the hatchlings fledged or the nests were determined by SRNS, with concurrence by the U.S. Fish and Wildlife Service to no longer be viable.

DOE Orders 450.1A, 430.2B / Executive Order 13514

Summary of EMS Programs

DOE Orders 450.1A, "Environmental Protection Program," and 430.2B, "Departmental Energy, Renewable Energy and Transportation Management," describe DOE's requirements and responsibilities for implementing Executive Order (EO) 13423, "Strengthening Federal Environmental, Energy and Transportation Management." EO 13423 directs each federal agency to use an Environmental Management System (EMS) as the framework to implement, manage, measure, and continually improve upon sustainable environmental, energy, and transportation practices. The EMS program at SRS is described in the *EMS Description Manual* (G–TM–G–00001, Rev. 6).

Performance

EMS goals are established annually, and SRS made significant progress toward energy, transportation, and sustainability performance goals in 2010. Highlights of the year's progress include

- the achievement of a 20.6-percent energy reduction in FY10 compared with FY03, against a goal of 30-percent reduction from 2003 to 2015
- a reduction in potable water consumption by 11 percent between FY09 and FY10 (despite increases in staffing and projects associated with ARRA activities), against a goal of 16-percent reduction from FY07 to FY15.
- an increase of 26 percent in ethanol use versus gasoline in FY10 compared with FY05, versus a goal of a 10-percent annual increase in fleet alternative fuel consumption (SRS experienced a 350-percent increase in such usage between FY00 and FY10.)
- the achievement of LEED-Gold certification for the MOX Services Administration Building

Additional information on these and other sustainability programs may be found in chapter 2 ("Environmental Management System") and in the SRS FY11 Site Sustainability Plan, issued in December 2010.

EO13514 Greenhouse Gas Reductions

Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance," established greenhouse gas (GHG) reduction goals of 28 percent for Scope 1 and 2 items (power generation facilities) and 13 percent for Scope 3 items (business and employee travel) by 2020 from the 2008 baseline. Reducing energy intensity, continuing construction of a Biomass Cogeneration Facility and several satellite biomass plants, and increasing the use of alternative fuels and alternative-fuel vehicles are some of the ways SRS made progress toward this goal in 2010. Details of this progress against sustainability goals are provided in chapter 2.

Sustainability and Pollution Prevention

The SRS Pollution Prevention/Waste Minimization (P2/WMin) Program continued to achieve significant results in 2010. All required site waste generators demonstrated active participation in the program through documented pollution avoidance and/or direct mission support

activities for site recycling.

The P2/WMin Program met all DOE and regulatory agency reporting requirements. Program accomplishments during 2010 included the following:

- The documentation of 23 P2 projects resulting in a DOE–SR-approved annualized avoidance of 838 cubic meters of hazardous and radioactive waste (Site contractors exceeded their FY10 waste avoidance performance goal of 399 cubic meters by about 110 percent; annual cost avoidance resulting from the documented P2 projects was $1.5 million.)
- The announcement by DOE–EM (in FY10) that SRS won a 2009 Environmental Sustainability Best in Class award for the *Constructed Wetlands Reduce Environmental Impacts* project and 2009 Best in Class Honorable Mention Award for the *Detoxification of Outfall Water Using Natural Organic Matter* project, with the latter also winning a DOE *E*Star Honorable Mention Award (SRS was represented at the awards ceremony, which also was attended by DOE Secretary Dr. Steven Chu.)
- The redistribution by CMC of 84,773 pounds of excess chemicals (avoiding $1.2 million in waste and acquisition costs)
- The shredding/recycling of 594 metric tons of wood waste, and the diversion from the C&D Landfill (632–G) of 1,335 metric tons of scrap metal and 114 metric tons of scrap furniture
  SRS participates in EPA voluntary P2 Programs by maintaining its EPA Waste Wise and EPA National Partnership for Environmental Priorities (NPEP) memberships. SRS exceeded its NPEP goal for the recycle of DOE-suspension lead by over 500 percent. In FY10, 225,000 lbs of DOE moratorium and radioactive contaminated lead was shipped to a vendor for recycling into products approved by the DOE metals moratorium. Recycling provides a cost-effective and environmentally preferable option for this stream, versus disposal as RCRA hazardous and radioactive waste.

SRS continued its participation in the Federal Electronic Reuse and Recycle Campaign in 2010, reporting 139,078 pounds of electronics recycled and reused for the contest period.

The site's sanitary municipal solid waste program managed more than 150,000 metric tons of materials in FY10. Thirty-nine percent (1,022 metric tons) of the routine (office-type) sanitary waste stream was recycled via the North Augusta Material Recovery Facility, exceeding the 35-percent performance objective for this waste stream. Also recycled was 19 percent (3,188 metric tons) of the total routine and industrial streams, excluding C&D waste.

The SRS pollution prevention team supported P2 awareness in 2010 on site and in the local community, as follows:

- Onsite awareness was increased through online articles and general employee and job-specific training.
- SRNS provided a financial donation and voluntary support for the North Augusta Kids Earth Day, which hosted more than 25 separate exhibits to educate and share with the 1,200-plus attendees.
- The P2 Program provided volunteer support and student handouts for the Central Savannah River Area (CSRA) Environmental Science Education Cooperative's (ESEC) ECOMEET event at Thurmond Lake. The event included 29 middle school teams from Georgia and South Carolina competing in a day-long, hands-on environmental education challenge.
- The P2 Program supported the ESEC CSRA Environmental Teacher of the Year Award ceremony in Augusta, Georgia.
- SRNS submitted an award nomination to the NPEP for the recycling of DOE-suspension lead. SRS exceeded its NPEP goal by more than 500 percent.
- SRNS submitted a nomination on behalf of DOE–SR to the 2009 South Carolina Recycle Guys Awards Program in the federal facilities category.
- SRS Earth Day support included (1) providing photos with captions for posters that DOE–HQ used to highlight winning Environmental Sustainability projects displayed during Earth Day week, (2) providing four articles to the *InSite OnLine* publication to increase employees' environmental awareness, and (3) presenting a breakout session describing SRS Solid Waste Management facilities and pollution prevention at the Health/Safety/Environmental Blitz at SRS.

EO 11988/11990 Floodplain Management/ Wetlands

Under 10 CFR 1022 ("Compliance with Floodplains and Wetlands Environmental Review Requirements"), DOE establishes policies and procedures for implementing its responsibilities in terms of compliance with Executive Orders 11988 ("Floodplain Management") and 11990 ("Protection of Wetlands"). Part 1022 includes DOE policies regarding the consideration of floodplains/ wetlands factors in planning and decision making. It

also includes DOE procedures for identifying proposed actions involving floodplains/wetlands, providing early public reviews of such proposed actions, preparing floodplains/wetlands assessments, and issuing statements of findings for actions in floodplains. A floodplains/wetlands assessment was developed in 2010 to support a NEPA evaluation for the installation of a temporary road for access to the toe of the earthen cap over the waste unit on the west side of T Area. The road also was to provide access for cap maintenance and to a monitoring well in the area. The scope of the project was changed to make the road permanent, and the floodplains/wetlands assessment is being revised to support this change.

Other Environmental Issues/ Actions

Lawsuits

SRS was not involved in any active environmental lawsuits during 2010.

SRS as Potentially Responsible Party in Superfund Cleanup

Alternate Energy Resources, Inc., operated a commercial hazardous waste storage and treatment facility in Augusta, Georgia, until 2000, when the facility was abandoned and the owners declared bankruptcy. The facility was placed on the National Priorities List (NPL) in 2006. Nonradioactive SRS and DOE waste was processed at this facility; as a result, EPA named SRS one of 50 potentially responsible parties in the cleanup of this location.

Notice of Violation / Notice of Alleged Violation

SRS received an NOV and an NOAV in 2010 under the Clean Air Act for asbestos management issues. The two regulatory actions were issued as follows:

- On January 14, SCDHEC issued an NOV to SRNS for dismantling a carport outside the permitted time period for the activity. The demolition license was valid from May 26 to June 29, 2009; the demolition activity occurred July 6, 2009.
- On November 19, SCDHEC issued an NOAV to SRNS for demolishing a utility shed without (1) completing an asbestos building inspection, (2) notifying SCDHEC within 10 days of the demolition, (3) obtaining a demolition license prior to the demolition activity, and (4) removing ACM prior to conducting the demolition activities.

Because SRNS voluntarily implemented extensive corrective actions to address the violations, no penalties or findings were assessed for either the NOV or NOAV.

NOVs/NOAVs received in 2010 and the four preceding years (with dates included for 2010) are summarized in table 3–4.

Environmental Occurrences

The Site Item Reportability and Issues Management (SIRIM) program, mandated by DOE Order 232.1A ("Occurrence Reporting and Processing of Operations Information"), is designed to ". . . establish a system for reporting of operations information related to DOE-owned or -operated facilities and processing of that information to provide for appropriate corrective action . . . ." It is the intent of the order that DOE be ". . . kept fully and currently informed of all events which could (1) affect the health and safety of the public; (2) seriously impact the intended purpose of DOE facilities; (3) have a noticeable adverse effect on the environment; or (4) endanger the health and safety of workers."

Of the 107 SIRIM-reportable events at SRS in 2010, four involved allegations of violations, all of which were categorized as environmental. Two of these were an NOV and an NOAV related to asbestos management (see previous section). Another involved 200–300 gallons of fuel oil that leaked from a faulty valve on a tank, and a fourth was for the discharge of less than 5 gallons of oil into a river water canal via a sump pump following a small spill.

Environmental Audits

The SRS environmental program is overseen by a number of organizations, both outside and within the DOE complex. In 2010, the site's environmental appraisal program again consisted of self and independent assessments. The program ensures the recognition of noteworthy practices, the identification of performance deficiencies, and the initiation and tracking of associated corrective actions until they are satisfactorily completed. The primary objectives of the assessment program are to ensure compliance with regulatory requirements and to foster continuous improvement. The program—an integral part of the site's Integrated Safety Management System—supports the SRS EMS, which continues to meet the guidelines of International Organization for Standardization Standard 14001. (ISO 14000 is a family of voluntary environmental management standards and guidelines.) The Site Tracking, Analysis, and Reporting (STAR) system is a database used for scheduling self-assessments, as well as for (1) documenting their

Table 3–4 NOV/NOAV Summary, 2006–2010

Program Area	NOV/NOAV				
	2010	2009	2008	2007	2006
CAA	2	0	1	0	0
CWA	0	0	2	0	2
RCRA	0	0	0	0	0
CERCLA	0	0	0	0	0
Others	0	0	0	0	0
Total Violations	**2**	**0**	**3**	**0**	**2**

results and any issues or concerns identified, (2) tracking corrective actions to closure, and (3) trending accumulated data for process improvement. DOE–SR conducted 305 environmental protection functional area assessments in 2010.

SRNS also conducted several environmental program-level assessments in 2010. The self-assessment titles, the environmental topical areas (in parentheses), and brief summaries of these assessments follow.

- *Surface Water Quality-Facility Permitting (Industrial Wastewater Treatment)* – This self assessment was conducted from August 11–September 30. The purpose was to evaluate the SRS industrial wastewater treatment program against the SCDHEC Industrial Wastewater Permitting Program, including wastewater treatment plant (and associated collection system) design, operation, maintenance, permitting and closeout. The assessment, which included document/procedure reviews and interviews with engineering and environmental compliance personnel, resulted in three findings and five opportunities for improvement (OFIs). Corrective actions, including revisions to site- and facility-level procedures, were identified and initiated—and are in progress or completed.
- *Toxic and Chemical Materials - Pesticides* – This self-assessment was conducted May 8 through September 30. The objective was to determine if current pesticide storage, application, and disposal practices adhered to the SRS pesticide procedure (3Q, 8.1, "Federal Insecticide, Fungicide and Rodenticide Act Compliance for Use of Pesticides"). Pesticide application practices were reviewed to evaluate conformance to SRS CMC requirements. SCD–4 Environmental Protection Functional Area 4, 2.5.3 ("Management and Control of Pesticides"), Criteria 2.5.3.1 (manufacturer's labeling), 2.5.3.2 (pesticide registration), and 2.5.3.3 (pesticide storage) provided the performance objectives that were considered. The assessment identified 13 OFIs and three findings. Corrective actions for the observations were identified and initiated, and are in progress or completed.
- *Domestic Water Systems* – SRS domestic water systems are in "good condition" overall, and "operating in compliance with the State Primary Drinking Water Regulations," according to a September 1 inspection of the systems by RI&ES and Infrastructure Services personnel. The inspection covered the site's A Area, D Area, PAR Pond Lab, L Area Fire Station, and Central Sanitary Waste Treatment Facility water systems. The wells, treatment systems, and storage tanks supporting each of the systems were examined—as were logbooks and round sheets. Recommendations from the inspectors focused primarily on housekeeping matters, including tank refinishing/repainting and grass cutting. The final inspection report indicated that the "overall housekeeping at the treatment plants is good, and efforts should remain to keep it this way."

SCDHEC and EPA personnel conducted external inspections and audits of the SRS environmental program for regulatory compliance. Routine audits and the resulting noncompliances for the past five years are summarized in table 3–5. Agency representatives performed several comprehensive compliance inspections and audits in 2010, as follows:

- *RCRA Compliance Evaluation Inspection* – The RCRA compliance evaluation inspection was conducted by SCDHEC August 2–6. The November 3 SCDHEC inspection report letter noted that no violations were found.
- *Annual Underground Storage Tank Inspection* – SCDHEC inspected 12 of the site's 19 underground storage tanks (USTs) September 28. All were found to be in compliance with applicable regulations for the eighth straight year.

Table 3–5 Routine Environmental External Audit and Inspection Summary

Audit	Frequency	Noncompliances				
		2010	2009	2008	2007	2006
RCRA CEI	Annually	0	0	0	0	0
UST Inspection	Annually	0	0	0	0	0
Landfill Inspection	At least bimonthly	0	0	0	0	0
Saltstone Inspection	Weekly	0	0	0	0	0
Interim Sanitary Landfill (postclosure)	Annually	0	0	0	0	0
Air Programs Compliance Inspection	Annually	0	0	0	*	0
NPDES CSI Inspection	Annually	0	0	0	*	0
CME Inspection of Groundwater Facilities	Annually	0	0	0	0	0
Small Domestic Water Systems Inspection	Triennially	0	NA	NA	0	NA

*No inspections of these programs conducted in 2007

- *632–G C&D Landfill, 288–F Ash Landfill, and 488–4D Ash Landfill Inspections* – SCDHEC conducted eight routine (at least every other month) inspections—each of which covered the 632–G C&D, the 288–F Ash, and the 488–4D Ash landfills; the facilities were found to be satisfactory, with no observed deficiencies.
- *Z-Area Saltstone Solid Waste Landfill Inspections* – Saltstone Disposal Facility inspections by SCDHEC continued to be completed weekly. Moisture areas again were observed on the walls of the facility's Vault 4, and were reported to SCDHEC in accordance with the facility's contingency plan. (NOTE: "Moisture areas" are areas on the external walls of the facility's cells that appear damp due to a combination of saltstone shrinkage from curing, bleeding, and process water accumulation at the inner cell walls, and from hydrostatic pressure that causes the water to weep through preexisting construction cracks. For any new cracks, facility personnel conduct an evaluation to determine if repair is necessary. Such moisture areas do not represent free-flowing liquid. Moisture areas on vault walls may indicate the presence of radiological contamination.) Savannah River Remediation (SRS's Liquid Waste Operations contractor) personnel inspected the vault areas in operation daily and communicated the discovery of any new moisture areas to SCDHEC, per the facility contingency plan. SCDHEC performed weekly onsite inspections of Vault 4 to observe existing and potentially new moisture areas. The inspectors detailed the results of their inspections in the Saltstone Disposal Facility Vault 4 Inspection Checklist. SCDHEC has not mandated any additional actions other than continuous monitoring of Vault 4 via the aforementioned inspections. No additional actions are pending.
- *Interim Sanitary Landfill* – SCDHEC personnel conducted an annual post-closure inspection of the Interim Sanitary Landfill September 29. The landfill was found to be satisfactory (the highest possible rating), with no observed deficiencies.
- *On-Site Laboratory Evaluation of the D Area Powerhouse Lab* – In support of renewing the laboratory certification, an SCDHEC Office of Environmental Laboratory Certification representative conducted an onsite audit of SRS's D Area Powerhouse laboratory December 9. SCDHEC's report of the audit, issued December 30, noted minor deficiencies related to standard operating procedures for laboratory methods. The D Area Powerhouse laboratory is expected to be certified in early 2011.
- *Compliance Sampling Inspection (CSI) of NPDES Facilities* – A SCDHEC representative inspected NPDES facilities March 1–4. SRS earned the highest ratings possible in all nine categories evaluated.
- *Compliance Sampling Inspection (CSI) of D Area NPDES Facilities* – SCDHEC representatives inspected NPDES wastewater outfalls at the D Area Powerhouse August 16. No findings or other concerns were noted.
- *Compliance Air Inspection* – SCDHEC representatives inspected site air emission points March 15–17. The April 19 inspection report stated that "No violations of permit requirements or applicable regulations were observed during this evaluation."

- *Comprehensive Monitoring Evaluation* – SCDHEC representatives inspected SRS' groundwater facilities—including monitoring networks at the F Area and H Area Seepage Basins, M Area Settling Basin, Metallurgical Lab Basin, and Sanitary Landfill—April 27. The inspection resulted in no findings.
- *Small Domestic Water Systems Inspection* – SCDHEC representatives inspected SRS's four small domestic water systems February 18. SCDHEC found all four systems to be operating in compliance with the State Primary Drinking Water Regulations.

Continuous-Release Reporting

EPCRA (40 CFR 355.40) requires that reportable releases of extremely hazardous substances or CERCLA hazardous substances be reported to any local emergency planning committees and state emergency response commissions likely to be affected by the release. SRS had no EPCRA-reportable releases in 2010.

Unplanned Releases

Federally permitted releases comply with legally enforceable licenses, permits, regulations, or orders. If an unpermitted release to the environment of a reportable (or greater) quantity of a hazardous substance (including radionuclides) occurs, CERCLA requires notification of the National Response Center. Reportable quantities—not to be confused with threshold values, as defined by EPCRA Section 313—are those quantities of a hazardous substance greater than or equal to values specified in table 302.4 ("Designation of Hazardous Substances") of 40 CFR 302 ("Designation, Reportable Quantities, and Notification"). SRS had no CERCLA-reportable releases in 2010.

The CWA requires that the National Response Center be notified if an oil spill causes a sheen on navigable waters, such as rivers, lakes, or streams. A May 3 oil spill at the 681–3G pump house caused a sheen that triggered a call to the National Response Center. The spill, estimated at less than 5 gallons, was contained to the canal; no oil reached the river. Oil spill reporting has been reinforced with liability provisions in the CERCLA National Contingency Plan.

Two SCDHEC-required notifications were made in response to (1) a March 3 spill of 45 gallons of diesel fuel at SRS's MOX project and (2) a March 7 spill of 200 gallons of diesel fuel at building 717–9N. The site recorded and cleaned up the following spills that did not require reporting under CERCLA or to SCDHEC: 17 chemical, three radioactive wastewater, four sewage, and 73 petroleum product spills.

No unplanned environmental releases (radioactive and nonradioactive) occurred at SRS in 2010 that required sampling and analytical services.

Permits

SRS had 506 construction and operating permits in 2010 that specified operating levels for each permitted source. Table 3–6 identifies these permits. These numbers, which reflect permits for all primary contractors and tenant organizations at SRS, include some permits

Table 3–6 SRS Construction and Operating Permits, 2010

Type of Permit	Number of Permits
Air	9
U.S. Army Corps of Engineers – Section 10, Rivers & Harbors Act of 1899	1
U.S. Army Corps of Engineers Nationwide Permit	5
U.S. Army Corps of Engineers – 404 Permit (Dredge and Fill)	1
Asbestos Demolition/Abatement	20
Domestic Water	221
Industrial Wastewater	73
NPDES Discharge	2
NPDES No Discharge	1
NPDES General Utility Water Permit	1
Stormwater Discharge	1
Construction Stormwater Grading Permit	24
RCRA Hazardous Waste	1
RCRA Solid Waste	5
RCRA Underground Storage Tank	7
Sanitary Wastewater	119
SCDHEC 401	1
SCDHEC Navigable Waters	1
Underground Injection Control	13
Total	**506**

that were voided or closed during 2010. Additional information on major SRS environmental permits can be found in data table 3–1 (see "Environmental Data/Maps – 2010"section of CD accompanying this report).

Editor's note: The "Environmental Compliance" chapter is unique in that its number of contributing authors is far greater than the number for any other chapter in this report. Space/layout constraints prevent us from listing all of them and their organizations on the chapter's first page, so we list them here instead. Their contributions, along with those of the report's other authors, continue to play a critical role in helping us produce a quality document—and are very much appreciated.

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