CHAPTER 6. RESOURCE COMMITMENTS

This chapter describes unavoidable adverse impacts, short-term uses of environmental resources versus long-term productivity, and irreversible and irretrievable commitments of resources associated with the construction and operation of a salt processing technology at the Savannah River Site (SRS). This chapter also includes discussions about U.S. Department of Energy Savannah River Operations Office (DOE-SR) waste minimization, pollution prevention, and energy conservation programs in relation to implementation of the proposed action.

For purposes of this Supplemental Environmental Impact Statement (SEIS), the analysis presented in this chapter has been divided between short-term and long-term impacts, where applicable. Short-term impacts cover the period from construction and implementation through completion of salt processing (from 2001 to 2023). The long-term performance evaluation for the saltstone generated by the Direct Disposal in Grout alternative involves the period of time beginning at the end of 100 years of post-closure institutional control and continuing through an extended period, during which it is assumed that residential and/or agricultural uses could occur.

6.1 Unavoidable Adverse Impacts

6.1.1 OPERATING-LIFE IMPACTS

Implementing any of the alternatives (including No Action) considered in this SEIS for replacement of the ITP process for management of the high-level waste (HLW) salt solutions would result in unavoidable adverse impacts to the human environment. Implementation of the Small Tank Precipitation alternative, the Ion Exchange alternative, or the Solvent Extraction alternative, in association with the continued operation of the existing saltstone manufacturing and disposal facility in Z Area, would result in minimal short-term adverse impacts. These impacts would be primarily to geologic and water resources, air quality, waste generation, worker and public health, traffic and transportation, and utility and energy consumption, as presented in Chapter 4. Likewise, the construction and operation of a Direct Disposal in Grout facility in Z Area would result in minimal adverse impacts to the same resources during the operating-life of the facility as discussed in Chapter 4.

All construction activities for any of the alternatives would occur in previously disturbed areas. S Area encompasses 270 total acres, and the implementation of Small Tank Precipitation, Ion Exchange, or Solvent Extraction alternative within S Area would require approximately 23 of these acres. Z Area encompasses 180 total acres, and the implementation of the Direct Disposal in Grout alternative within Z Area would require approximately 15 acres. In addition, construction of any alternative in either S or Z Area would require the temporary use of approximately 20 acres to accommodate construction materials, equipment, and a concrete batch plant. Once construction was completed, these areas would be revegetated and available for other uses.

Because the Small Tank Precipitation, Ion Exchange, or Solvent Extraction alternative would be constructed in S Area partly below grade (to a maximum depth of 45 feet), extensive soil excavations (77,000 to 82,000 cubic meters) could result in potential adverse impacts to geologic, groundwater, and surface water resources. The base of the facility might be in the water table aquifer, potentially requiring dewatering during construction. Construction of the Direct Disposal in Grout alternative in Z Area would result in the removal of approximately 23,000 cubic yards of soil. The aquifer is at a depth of 60 feet or more below Z Area and would therefore not require dewatering. Final grading would be required for all alternatives, to prevent surface water runoff from collecting in surface depressions and impacting facility operations or vaults. As part of the required sediment and erosion control plan, storm water management and sediment control measures would be required to mitigate runoff and any potential discharges of silts, solids, and other contaminants to surface water streams. Best management practices, such as the development of retention basins, would be utilized. Any storm water collected in the retention basins would be diverted to current drainage control systems and discharged to McQueen Branch. In addition, use of best management practices would mitigate any short-term adverse impacts to geologic resources.

Implementation of the No Action alternative options identified in Chapter 2 could result in adverse impacts to the geologic and water resources. This is especially true if the option of constructing new wastewater treatment tanks is implemented. Each new tank would require the excavation of approximately 43,000 cubic meters of soil, of which approximately 28,000 cubic meters would be used for backfill. Implementation of this option could potentially result in adverse impacts to the geologic and water resources. However, DOE would mitigate these adverse impacts by utilizing best management practices to stabilize the soil and control erosion. Additional adverse impacts could result from construction of additional new tanks.

Air resources could be adversely impacted by any of the alternatives. These impacts would occur both during the construction (4 years) and during operation of the facilities (13 years). Adverse impacts during construction would be associated with heavy equipment (primarily diesel-powered) emissions and the dust created by their operation. In addition, the operation of a temporary concrete batch plant would produce adverse air quality impacts. Potential adverse impacts from fugitive dust would be mitigated by implementing best management practices. In addition, particulate emission limits for the operation of the concrete batch plant would be established in a construction permit from South Carolina Department of Health and Environmental Control (SCDHEC). Based on a review of expected sources of emissions and emission rates, the emissions would increase background levels by 1 to 2 percent. Therefore, these increases and any impacts associated with construction would be considered negligible and, in addition, would cease once construction was completed.

During operation of the facilities, regulated air pollutants would be released and could have adverse impacts to the surrounding environment. A review of the expected emissions, compared to the regulatory limits, indicated that all emission rates (with the exception of volatile organic compounds [VOCs]) would be below SCDHEC, Clean Air Act, or Occupational Safety and Health Administration (OSHA) limits and should not have any adverse impacts.

The estimated VOC emissions rate for the Small Tank Precipitation alternative would exceed the threshold value established by SCDHEC for additional permit review, whereas estimated emissions from the other alternatives are either covered by existing air permit levels or below the threshold value. Implementation of the Small Tank Precipitation alternative would result in small increases in offsite concentrations of benzene and ozone, with minimal impacts to public health. The other alternatives would have lower impacts.

Implementation of any of the alternatives would result in the generation of wastes as an unavoidable result of normal operations. Each of the alternatives, excluding the No Action alternative, would produce a salt waste stream as a primary waste that would be grouted for disposal in vaults in Z Area. A total of 13 to 16 vaults would be needed, depending on the alternative selected. Any of the alternatives would also produce a high-level radioactive waste stream that would be vitrified in the Defense Waste Processing Facility (DWPF).

The types of secondary waste generated include low-level, hazardous, mixed, industrial, and sanitary. Table 6-1 lists the total estimated waste generation by each action alternative. Although DOE has implemented a number of pollution prevention measures (see Section 6.4), generation of wastes would be unavoidable.

Table 6-1. Total estimated waste generation for the salt processing action alternatives.[a]

	Small Tank Precipitation	Ion Exchange	Solvent Extraction	Direct Disposal in Grout
Radioactive liquid waste (gallons)	3.9×10^6	3.3×10^6	1.2×10^7	2.0×10^6
Nonradioactive liquid waste (gallons)	negligible	4.9×10^5	negligible	negligible
Transuranic waste (m^3)	negligible	negligible	negligible	negligible
Low-level waste (m^3)	920	920	920	920
Hazardous waste (m^3)	Startup – 30[b] Operations – 13	Startup – 30[b] Operations – 13	Startup – 30[b] Operations – 13	Startup – 30[b] Operations – 13
Mixed low-level waste (m^3)	13	13	13	13
Mixed low-level liquid waste (gallons)	780,000	None	13,000	None
Industrial waste (metric tons)	Startup – 39 Operations – 260	Startup – 39 Operations – 260	Startup – 39 Operations – 260	Startup – 39 Operations – 260
Sanitary waste (metric tons)	Startup – 81 Operations – 530	Startup – 81 Operations – 530	Startup – 81 Operations – 530	Startup – 81 Operations – 530

a. Under the No Action alternative, waste generation rates would be similar to those at the existing HLW Tank Farms. Therefore, waste generation rates would not be expected to increase from current levels.
b. Assumes a 1.3-year duration for startup activities and 13 years of operation for each of the action alternatives.

DOE would comply with all regulatory requirements related to the proper disposal of these wastes.

During operation of any of the proposed alternatives, a minimal amount of radioactive material and activation products would be released to the environment and could result in unavoidable adverse impacts. As presented in Section 4.2.4.2, the highest radiation dose received by a noninvolved worker would be 4.8 millirem per year, well below the SRS administrative limit of 500 millirem/per year for the maximum individual exposure goal. The greatest collective dose to the surrounding population would be 18.1 person-rem/per year, resulting in an estimated 0.12 latent cancer fatality to the public within 50 miles of SRS. Doses would vary among the alternatives; the Solvent Extraction alternative would produce the highest dose.

SRS workers routinely handle hazardous and toxic chemicals; exposure to these materials would be unavoidable. In order to reduce impacts, occupational health codes and standards would be used to regulate worker exposure to these materials. Analysis has shown that chemical pollutant emissions to offsite areas would be minimal and below the applicable standards, and would not pose a danger to the public. See Section 4.2.4.2 for more details.

Construction and operation of any of the alternatives would result in injuries to workers and lost workdays, which are unavoidable adverse impacts. As discussed in Section 4.2.4.3, 1.7 to 2.7 recordable cases (which include death, illness, or injury) could occur annually, resulting in 0.72 to 1.2 lost workdays each year. The incidences of injury and illness reported for SRS are lower than those that occur in the general industry and manufacturing workforces. DOE continues to work to reduce these levels and SRS has shown continuous improvement over the years; therefore, the numbers presented in this SEIS are considered conservatively high.

Implementation of any of the alternatives would require transportation of many different materials, and such transport could have unavoidable adverse consequences. Transporting materials along public highways could impose unavoidable adverse effects on the environment through vehicle emissions, spills, and accidents resulting in injuries or fatalities. As presented in Table 4-17, a total of just over 19,000 shipments (340,000 miles) to almost 26,400 shipments (470,000 miles) would be made during construction and operation, depending on the alternative selected. Using Federal Highway Administration statistics for South Carolina, these shipments and the associated miles driven would result in less than one accident, no fatalities, and less than 0.3 injuries. However, during construction, workers would commute approximately 26 million miles (see Table 4-18). U.S. Department of Transportation statistics predict that 98 accidents would occur, resulting in 0.4 fatalities and 43 injuries.

Adverse impacts to the ecological resources would be minimal and of short duration. Most activities would occur within previously disturbed areas. Although noise levels would be relatively low outside the immediate areas of construction, the combination of construction noise and human activity probably would displace small numbers of animals within a 400-foot radius of the construction site. No threatened or endangered species or critical habitats occur in or near S or Z Areas. In addition, no construction or operational activities would affect any wetlands in S or Z Areas. DOE has committed to monitoring the areas for threatened and endangered species and would initiate consultation with the U.S. Fish and Wildlife Service if DOE determined that the potential for adverse impact to the species or its habitat existed.

6.1.2 LONG-TERM IMPACTS

Long-term impacts are those that would continue or commence after the completion of all salt processing (i.e., 2023). DOE believes that the major source of these long-term impacts would be from the saltstone that would result from each of the four action alternatives and tanks filled with salt under No Action. The saltstone vaults would be located in Z Area, regardless of the alternative selected.

For National Environmental Policy Act (NEPA) analysis of long-term impacts, DOE assumed that institutional control would be maintained for 100 years post-closure, during which time the land encompassing the saltstone vaults would be managed to prevent erosion or other conditions that would lead to early degradation of the vaults. DOE also assumed that the public would not have access to Z Area during this time to set up residence.

As discussed in Chapter 2, the No Action alternative does not provide for permanent salt processing. DOE believes that, although the No-Action alternative could be selected, it would not be implemented indefinitely. DOE would have to manage the salt portion of the HLW. However, if one of the action alternatives were not implemented, it is speculative at this time to determine how the salt wastes would be managed. DOE assumes a 100-year period of institutional control of the salt-filled tanks, then tank failure, for which a qualitative analysis was performed.

Unavoidable adverse long-term impacts to geologic resources would be minimal, based on a performance evaluation that included fate and transport modeling. Results indicate no detrimental effect on surface soils or topography, or to the structural or load-bearing properties of the geologic deposits.

Construction and operation of grout disposal facilities for any of the four action alternatives in Z Area would result in unavoidable adverse impacts to future land use of the area. The 15 acres that would be committed to the vaults and grout production facility would not be available for other productive uses.

Unavoidable long-term adverse impacts to groundwater resources could result from any of the alternatives. The fate and transport modeling results indicate that movement of radiological contaminants from failed vaults to nearby surface waters via groundwater discharge would be minimal and below regulatory standards for drinking water (4 millirem per year). Therefore, there would be no unavoidable adverse impacts to groundwater resources. However, long-term impacts to groundwater could occur as the saltstone ages.

Based on modeling results, the long-term movement of nonradiological residual contaminants (primarily nitrate) from the Z-Area vaults to nearby streams would be extremely small and, in all cases, would be below applicable standards. However, modeling results indicate that there would be little difference in impacts among the alternatives. None of the four action alternatives would result in an exceedance of the drinking water criteria for nitrate (i.e., 44 milligrams per liter). There would be no exceedances or any other constituent in groundwater discharge at the seeplines of McQueen Branch or Upper Three Runs. Therefore, there would be no unavoidable adverse impacts to surface water resources.

As a result of radioactive material being released many years after vault closure and the long half-lives of some of the radionuclides, there could be unavoidable adverse impacts to human receptors. Therefore, DOE described and modeled several future-use scenarios to determine the potential impacts to humans (see Section 4.2.5). Results indicate that doses for all scenarios, except the 100-year residential scenario for Direct Disposal in Grout, would be below or very near the 100-millirem-per-year dose limit. The 1,000-year residential scenario doses for all four action alternatives are similar and would be below the 100-millirem-per-year public dose limit. They range from as low as approximately 10 millirem per year to as high as 85 millirem per year. Doses for the agricultural scenario are similar, but could exceed the 100-millirem-per-year public dose limit. Doses for the agricultural scenario would range from 49 to 140 millirem per year. For the 100-year residential scenario, the dose would be highest for the Direct Disposal in Grout alternative (150 to 1,200 millirem per year) and would exceed the 100-millirem-per-year public dose limit. The 100-year residential scenario doses for the other three action alternatives would be much smaller and would not exceed 0.13 millirem per year.

6.2 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Under any of the alternatives, the proposed locations for any new facilities would be within previously disturbed and developed industrial landscapes. The existing infrastructure (e.g., roads, utilities.) within S and Z Areas would be sufficient to support the proposed facilities.

After the end of the operational life of the facilities associated with salt processing, DOE could decontaminate and decommission the facilities in accordance with applicable regulatory requirements and restore the areas to brownfield sites that would be available for other industrial use. Appropriate NEPA review would be conducted prior to the initiation of any decontamination and decommissioning activities. In all likelihood, none of the sites would be restored to a natural habitat (DOE 1998).

The project-related uses of environmental resources for the implementation of any of the proposed alternatives are characterized in the following paragraphs.

- Groundwater from Site wells would be used during both construction and operations, regardless of the alternative selected. Water would be used for process additions, cooling and flushing, product washes, and grout production. During construction, water consumption would represent just over 2 percent of water used in H-, S-, and Z-Area facilities in 1998 and 0.2 percent of the lowest estimated production capacity of the aquifer (see Section 4.2.12.1). Groundwater use during operations would represent about 23 percent of the water used in H-, S-, and Z-Area facilities in 1998 and 1.5 percent of the lowest estimated production capacity of the aquifer (see Section 4.2.12.1). After use and treatment in the F- and H-Area Effluent Treatment Facility, this water would be released through permitted discharges into surface water streams. Therefore, the withdrawal, use, and treatment of groundwater would not affect the long-term productivity of this resource.

- Air emissions associated with any of the alternatives would add small amounts of radiological and nonradiological constituents to the air of the region. These emissions would be well below air quality or radiation exposure standards, and below applicable SRS permit limits. All concentrations would be below OSHA limits and all concentrations, with the exception of nitrogen dioxide (which could reach 78 percent of the limit), would be less than 5 percent of their respective regulatory limits. Nitrogen dioxide emissions would result from operation of diesel generators during construction and operations. Therefore, there would be no significant effects to the long-term quality of air resources.

- Radiological and nonradiological constituents could contaminate the groundwater below and adjacent to the Z-Area disposal vaults in the distant future. Some contaminants from the vaults could be transported by groundwater to the seepline of nearby streams. Beta-gamma dose, alpha concentrations, and nonradiological constituent concentrations would all be below the regulatory limit at the seepline of McQueen Branch or Upper Three Runs. Therefore, any radiological or nonradiological releases from the disposal vaults should have no impact on the long-term productivity of the ecosystems in the receiving streams.

- The management and disposal of wastes (low-level, hazardous, mixed, industrial, and sanitary) over the project's life would require energy and space at SRS treatment, storage, and disposal facilities (e.g., Z-Area Vaults, E-Area Vaults, or Three Rivers Sanitary Landfill). The land to meet these solid waste needs would require a long-term commitment of terrestrial resources. DOE established a future use policy for the SRS for the next 50 years in the 1998 *Savannah River Site Future Use Plan* (DOE 1998). This report sets forth guidance that established appropriate land uses for SRS areas and established policies to prevent non-conforming land uses.

6.3 Irreversible and Irretrievable Resource Commitments

Resources that would be irreversibly and irretrievably committed during the construction and operation of any salt processing alternative include those that cannot be recovered or recycled and those that are consumed or reduced to unrecoverable forms. The commitment of capital, energy, labor, and material during this time would generally be irreversible.

A maximum of 180 acres would be set aside for the vaults under any action alternative, and from 15 acres (Direct Disposal in Grout alternative) to 23 acres (all other action alternatives) would be utilized for salt processing facilities. Each tank would have a footprint of approximately 5,000 square feet. The total land required for any new tanks built under the No Action alternative has not been determined, however, impacts to all of this land could be irreversible and irretrievable once it is committed to the selected alternative and would thus be unavailable for other productive uses. However, (as stated in Section 6.2) at the end of the operational life of the facilities, DOE could decontaminate and decommission the facilities in accordance with applicable regulatory requirements. Implementation of decontamination and decommissioning would require significant commitment of resources and the impacts of implementation would undergo appropriate NEPA review. Regardless, the land committed to vaults under the action alternatives and tanks under No Action would not be retrievable.

Energy expended would be in the form of fuel for equipment and vehicles, electricity and steam for facility operations, and labor. Construction would generate nonrecyclable materials, such as sanitary solid waste and construction debris. Implementation of any of the alternatives would generate nonrecyclable radiological and nonradiological waste streams. However, certain materials (e.g., steel, copper, stainless steel) used during construction and operation of any proposed facility could be recycled when the facility has been decontaminated and decommissioned. Some construction materials would not be salvageable, due to radioactive contamination.

The implementation of the any of the salt processing alternatives considered in this SEIS, including the No Action alternative, would require water, electricity, diesel fuel, and other energy and materials. Table 6-2 lists estimated total amounts of energy, utilities, and materials required for the construction and operation of each alternative.

Water would be obtained from onsite groundwater wells. Steam would be obtained from the D-Area Power Plant. Electricity, diesel fuel, concrete pre-mix, steel, saltstone pre-mix, sodium hydroxide, oxalic acid, tetraphenylborate (TPB), monosodium titanate (MST), crystalline silicotitanate (CST) resins, and other chemicals would be purchased from commercial vendors. The amounts required would not have an appreciable impact on available supplies or the ability to supply other industries.

6.4 Waste Minimization, Pollution Prevention, and Energy Conservation

6.4.1 WASTE MINIMIZATION AND POLLUTION PREVENTION

DOE-SR has developed and implemented an aggressive waste minimization and pollution prevention program that promotes source reduction and recycling practices that reduce the use of hazardous materials, energy, water, and other resources, while protecting resources through conservation or more efficient use. This Pollution Prevention Program also reduces the costs of the management of pollutants. As a result of this program, DOE has reduced the volumes of wastes discharged into the environment or sent to landfills and has saved money by recycling or selling usable materials.

Pollutant reduction is first accomplished by eliminating or minimizing the generation of pollutants at the source. All materials used at SRS are recycled or reused, when practical. The remaining wastes are managed to comply with Federal and state environmental regulations to reduce volume, toxicity, and/or mobility before storage or disposal.

DOE-SR, in conjunction with the Site's management and operations contractor, Westinghouse Savannah River Company and its partners, establishes SRS's pollution prevention goals and program objectives through a Solid Waste Management Council. A Pollution Prevention Group provides overall program leadership, coordination, and guidance in the development and implementation of pollution prevention systems. A Waste Minimization Subcommittee, comprised of representatives from across the Site, assists with development and implementation of waste minimization strategies and dissemination of information.

The Pollution Prevention Program is made up of the following seven elements:

1. Solid Waste Minimization
2. Toxic Chemicals Reduction
3. Energy Conservation
4. Environmental Emissions Reduction
5. Recycle and Reuse
6. Affirmative Procurement
7. Remediation

1. Solid Waste Minimization: Between 1991 and 1999, waste generators achieved approximately an 80 percent volume reduction (760,000

Table 6-2. Estimated project total energy, utilities, and material use for the salt processing alternatives.

Phase[a]	SRS Baseline[b]	Small Tank Precipitation	Ion Exchange	Solvent Extraction	Direct Disposal in Grout
Peak electrical power demand (megawatts)					
Construction	NA	1.66	1.66	1.66	1.66
Operation	130[c]	24	24	32	18
Electricity use (gigawatt-hours)					
Construction	NA	76	79	76	73
Operation	410[c]	243	286	315	172
Project total use	NA	319	365	391	245
Fuel use (million gallons)					
Construction	NA	8.4	9	8.4	8
Operation	8.75[d]	0.3	0.3	0.3	0.2
Project total use	NA	8.7	9.3	8.7	8.2
Steam use (million pounds)					
Construction	NA	0	0	0	0
Operation	NA	2,548	2,300	1,915	1,536
Project total use	NA	2,548	2,300	1,915	1,536
Potable water use (million gallons)					
Construction	NA	19	20	19	18
Operation	NA	99	95	120	75
Project subtotal use	NA	118	115	139	93
Process water use (million gallons)					
Construction	NA	16	17	16	15
Operation	23,000[c]	301	271	225	181
Project subtotal use	NA	317	288	241	196
Project total water use (million gallons)		435	403	380	289
Material use					
Concrete pre-mix (cubic yards)[e]	NA	30,029	38,481	38,522	42,756
Saltstone pre-mix (pounds)	None	1.277 billion	1.057 billion	1.192 billion	950 million
Sodium hydroxide (pounds)	None	253,000	2,800,000	20,800,000	202,000
Oxalic Acid (pounds)	None	27,200	27,200	27,200	27,200
Sodium TPB (gallons)	None	2.84 million	None	None	None
MST (pounds)	None	47,000	47,000	47,000	47,000
CST Resin (pounds)	None	None	538,000	None	None
Stainless steel for canisters (pounds)	6,600,000	6,555,000	6,555,000	6,555,000	6,555,000

Adapted from WSRC (1999a).

a. The construction and operation durations for each alternative are as follows: Small Tank Precipitation – 45 months and 15 years; Ion Exchange – 50 months and 13 years; and Direct Disposal in Grout – 46 months and 13 years (adapted from Attachments 14.5, 14.3, and 14.4 of WSRC (1998a). The total project duration includes a startup time of 1.3 years for each alternative (WSRC 1999b).
b. Under the No Action alternative, utility and energy use would be included in the current site baseline.
c. Halverson (1999)
d. DOE (1995)
e. Adapted from WSRC 1998b.

NA = Not Available.

cubic feet per year) of solid, hazardous, and radioactive waste. The Pollution Prevention Program has implemented over 508 pollution prevention projects since 1995 (beginning of formal pollution prevention tracking), eliminating over 490,000 cubic feet of radioactive and hazardous waste, and saving approximately $130 million in costs for waste disposal. This reduction was primarily due to improved waste generator work practices including: improved employee awareness, substitution of reusable for consumable goods in radiological areas, enhanced work planning, non-hazardous solvent substitution, recovery of radiological areas, and use of new pollution prevention technologies.

2. Toxic Chemicals Reduction: SRS has met the Executive Order 12856 goal to reduce chemical releases by 50 percent by 1999. Reportable toxic chemical releases have been reduced by approximately 2 million pounds since 1987, when the SRS filed its first Toxic Chemical Release Inventory Report to the U.S. Environmental Protection Agency (EPA). The Site's Chemical Commodity Management Center will continue to strive to reduce chemical releases by substituting less hazardous chemicals and integrating chemical use, excess, and procurement activities.

3. Energy Conservation: SRS has adapted a plan to enhance energy efficiency and conservation in all buildings by establishing an Energy Management Council and implementing a new Energy Services Company contract. SRS's Energy Management Program has achieved the conservation goals mandated by Executive Order 12902, *Energy Efficiency and Water Conservation at Federal Facilities*.

4. Environmental Emissions Reduction: The SRS Air and Water Programs ensure that all emissions to the environment meet regulatory requirements. Strategies are continually identified to meet compliance and environmental As Low As Reasonably Achievable (ALARA) guidelines.

5. Recycle and Reuse: SRS has an ongoing comprehensive recycling program. Since 1994, SRS has recycled more than 17,000 tons of materials through its Salvage Operations and Office Recycle Programs. Examples of materials recycled and their amounts from 1994 to 1999 include:

- Scrap metal 10,762 tons
- Office paper and cardboard 5,332 tons
- Scrap aluminum 287 tons
- Aluminum cans 99 tons
- Lead-acid batteries 210 tons
- Laser printer toner cartridges 55,809 each

6. Affirmative Procurement: This program promotes the purchase and use of products made from recovered and recycled materials. SRS met the DOE Secretarial goal to procure 100 percent of RCRA-specified products, when it was technically and economically feasible, in both 1998 and 1999. SRS has purchased more than $6.6 million worth of products containing recovered or recycled materials.

7. Remediation: A large part of the Site's current mission is remediation of legacy waste sites. The Pollution Prevention Program identifies techniques to reduce the environmental impacts of existing waste at these sites and the means to minimize the generation of new waste during Site closure and corrective action activities. SRS strives to reduce cleanup and stabilization waste by 10 percent per year.

The Site has an approved Pollution Prevention in Design Procedure that provides the process, responsibilities, and requirements for inclusion of pollution prevention into the design phase of new facilities or modification to existing facilities. Pollution prevention in design is applied using a value-added, quality-driven, graded approach to project management. When properly applied, the expense of implementing pollution prevention changes during design is offset by the resulting cost savings over the life of the facility. Pollution prevention design activities are generally implemented at the Preliminary Design phase and not during the Preconceptual

Design. The alternatives under consideration in this SEIS are at the Preconceptual Design phase. However, a number of early planning efforts have identified specific activities that could be implemented. Examples include the following:

- Benzene abatement: It is anticipated that some type of benzene abatement would be added to the Small Tank Precipitation alternative.
- Recycled solvent: The solvent used in the Solvent Extraction alternative has been identified for recycling.
- Process design: Changes would be implemented to eliminate the potential for spills.
- Recycling of construction material: Stainless steel, paint, and other construction material would be recycled, if possible.

As the design moves from Preconceptual into the Conceptual Design, Preliminary Design, and finally the Detailed Design phase, considerable effort would be expended to identify opportunities for pollution prevention. A series of worksheets would be developed when the design reaches the Conceptual phase. Anticipated waste streams would be identified, quantified (including costs), and prioritized within a set of established criteria. These worksheets would be generated for all activities during construction, operations, and closure of the facility. Finally, the construction contractor would be selected, based in part on prior pollution prevention practices.

6.4.2 ENERGY CONSERVATION

SRS has an active energy conservation and management program. As stated in Section 6.4.1, SRS has adopted a plan to enhance energy efficiency and conservation in all buildings by establishing an Energy Management Council and implementing a new Energy Services Company contract.

Since the mid-1990s, more than 50 onsite administrative buildings have undergone energy efficiency upgrades. Representative actions include the installation of energy-efficient light fixtures, the use of occupancy sensors in rooms, the use of diode light sticks in exit signs, and the installation of insulating blankets around hot water heaters.

As stated in Section 6.4.1, pollution prevention and energy conservation measures are not specifically identified until DOE reaches the Conceptual Design phase of the project. Currently, SRS is in the Preconceptual Design phase. Regardless of the alternative selected, the incorporation of these types of energy-efficient technologies into facility Conceptual Design, along with the implementation of process efficiencies and waste minimization concepts, will facilitate energy conservation at SRS.

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