WSRC-RP-94-532
Rev 0

Thirty-Year Solid Waste Generation Forecast for Facilities at SRS(U)

DISCLAIMER

Westinghouse Savannah River Company
Savannah River Site
Aiken, SC 29808

Prepared for the U.S. Department of Energy under Contract No. DE-AC09-89SR18035

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Solid Waste Environmental Impact Statement Team

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Executive Summary

The information supplied by this 30-year solid waste forecast has been compiled as a source document to the Waste Management Environmental Impact Statement (WMEIS). The WMEIS will help to select a sitewide strategic approach to managing present and future Savannah River Site (SRS) waste generated from ongoing operations, environmental restoration (ER) activities, transition from nuclear production to other missions, and decontamination and decommissioning (D&D) programs. The EIS will support project-level decisions on the operation of specific treatment, storage, and disposal facilities within the near term (10 years or less). In addition, the EIS will provide a baseline for analysis of future waste management activities and a basis for the evaluation of the specific waste management alternatives. This 30-year solid waste forecast will be used as the initial basis for the EIS decision-making process.

The Site generates and manages many types and categories of waste. With a few exceptions, waste types are divided into two broad groups–high-level waste and solid waste. High-level waste consists primarily of liquid radioactive waste, which is addressed in a separate forecast and is not discussed further in this document. The waste types discussed in this solid waste forecast are sanitary waste, hazardous waste, low-level mixed waste, low-level radioactive waste, and transuranic waste.

As activities at SRS change from primarily production to primarily decontamination and decommissioning and environmental restoration, the volume of each waste stream being managed will change significantly. Although large-scale D&D activities have not yet begun, transition activities (those focused on preparing a facility for D&D) have. The volumes of almost all solid waste streams generated by ER and D&D activities will be significantly different from the waste stream volumes generated by former production activities (more debris and rubble, equipment, vessels, construction waste, and nuclear materials), hence a simple extrapolation of historical waste generation would not create a credible estimate. This report acknowledges the changes in Site Missions when developing the 30-year solid waste forecast.

Terms and Definitions

Acronyms

AEA	Atomic Energy Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIF	Consolidated Incineration Facility
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DSTP	Draft Site Treatment Plan
DWPF	Defense Waste Processing Facility
EAV	E-Area Vaults
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ER	Environmental Restoration
ETF	Effluent Treatment Facility
FPTUR	Filter Paper Take-Up Rolls
FB	F-Area Button
HEPA	High Efficiency Particulate Air
HB	H-Area Button
HW	Hazardous Waste
ILW	Intermediate-Level Waste
IDW	Investigation-Derived Waste
ITP	In-Tank Precipitation
LAW	Low Activity Waste
LDR	Land Disposal Restrictions
LHLW	Liquid High-Level Waste
LLW	Low-Level Waste
MW	Mixed Waste
MWIR	Mixed Waste Inventory Report
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated Biphenyls
PuFF	Plutonium Fuel Fabrication
RBOF	Receiving Basin for Offsite Fuel
RCA	Radiologically Controlled Area
RCRA	Resource Conservation and Recovery Act
RH	Remote Handled
RRF	Resin Regeneration Facility
SCDHEC	South Carolina Department of Health and Environmental Control
SCHWMR	South Carolina Hazardous Waste Management Regulations
SED	Separations Equipment Demonstration
SRS	Savannah River Site
SRTC	Savannah River Technology Center
SWMD	Solid Waste Management Department
TC	Toxicity Characteristic
TCM	Toxic Cleanup Material
TRU	Transuranic
TSCA	Toxic Substance Controls Act
TTA	Thenoyl Trifluoroacetone
WIPP	Waste Isolation Pilot Plant
WIPPWAC	Waste Isolation Pilot Plant Waste Acceptance Criteria
WMEIS	Waste Management Environmental Impact Statement
WSRC	Westinghouse Savannah River Company

foundation - as it applies to decontamination and decommissioning, a term indicating that all structures have been removed down to the foundation of the facility.

greenfield - as it applies to decontamination and decommissioning, a term indicating that all structures, systems, and components associated with a facility or area have been removed and the land is left in a condition representative of natural outdoor surroundings (Reference 6)

hazardous waste - waste designated hazardous by South Carolina Hazardous Waste Management Regulations, (SCHWMR) R.61-79.260 through R.61-79.266 (WSRC 1S Manual)

intermediate-level waste (ILW) - a term specific to SRS for the higher activity fraction of low-level waste that contains beta-gamma emitters that produce a radiation dose rate equal to or greater than 200 mR/hr (or 200 mrad/hr or 200 mrem/hr) at 5 cm from an unshielded container (WSRC 1S Manual)

low-level waste (LLW) - waste that contains radioactivity and is not classified as high-level waste, transuranic waste, spent nuclear fuel, or AEA 11e(2) byproduct material as defined in DOE Order 5820.2A. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as LLW, provided the concentration of TRU radionuclides is less than or equal to 100 nCi/g of the waste (WSRC 1S Manual) (Note: SRS currently manages wastes with concentrations of TRU radionuclides between 10 and 100 nCi/g as TRU waste.)

mixed waste (MW) - waste containing both radioactive and RCRA (SCHWMR R.61-79.261) hazardous components (WSRC 1S Manual)

sanitary waste - (also termed municipal waste) any household, residential, and commercial solid waste (WSRC 1S Manual)

transuranic waste (TRU) - without regard to source or form, waste that is contaminated with alpha-emitting transuranic radionuclides with half-lives greater that 20 years, and at concentration greater than 100 nCi/g of the waste matrix at the time of assay (The mass of the waste container and shielding shall not be used in determining the TRU concentration). (Note: SRS used 10 nCi/g as a minimum value for packaging waste to meet TRU waste criteria) (WSRC 1S Manual)

Background

In this section, each waste type is further defined in accordance with current SRS definitions. Current handling methods and treatment/disposal methods are described for each waste type.

Sanitary Waste

Description

The term "sanitary waste" refers to waste that is neither radioactive nor Resource Conservation and Recovery Act (RCRA) hazardous waste. It consists of the following types of material:

- waste paper
- discarded office material
- glass construction debris
- cafeteria garbage
- scrap cloth products
- scrap plastic
- rubble and salvageable material (e.g., scrap metal and used tires)

Sanitary waste does not include material from a radiologically controlled area (RCA) or from any potentially hazardous materials.

Treatment/Disposal Methods

The South Carolina Solid Waste Policy and Management Act of 1991 established the policy for the disposal of sanitary waste in the State of South Carolina. The South Carolina Department of Health and Environmental Control (SCDHEC) Code of State Regulations, Chapter 61, establishes the specific regulations that must be followed in managing sanitary waste.

The SCDHEC regulations identify three different types of landfills–municipal, inert material, and industrial. The major differences are that municipal landfills are allowed to contain putrescible waste (cafeteria/food waste) while an industrial landfill cannot, and inert material landfills can contain only inert substances such as demolition material and construction rubble. In most cases, no distinction is made between municipal and industrial waste at SRS and the term "sanitary waste" is usually used generically.

Low-Level Radioactive Waste

Description

Low-level radioactive waste is further classified as low activity waste (LAW) and intermediate-level waste (ILW) (see the following section). Low-level waste is defined at SRS as solid beta-gamma emitting waste that radiates less than 200 mrad/hr or 200 mrem/hr at 5 cm from the unshielded container. Examples of LAW are protective clothing, small equipment, plastic sheeting, gloves, soil, and suspect contaminated materials that were used within an RCA and cannot be proven to be non-contaminated.

Treatment/Disposal Methods

Low activity beta-gamma wastes are typically handled by the following categories:

- compactible LLW
- noncompactable LLW
- noncompactable, containerized LLW
- noncompactable, uncontainerized LLW
- suspect soil

The first category employs brown, 21-inch square cardboard boxes to containerize the compactible waste before it is sent to an H-Area compactor. H Area has a B-25 box compactor and generally receives waste from Separations, Waste Management, Facilities and Services, Reactors, Tritium, Defense Waste Processing Facility (DWPF), and laboratories. Volume reductions of 4:1 are being achieved at the H-Area compactor, compacting waste into purple B-25 (90 ft^3) boxes.

In the second category, noncompactable waste is containerized in yellow B-25 boxes (with a waste volume of 90 ft^3) and is sent directly to the Solid Waste Disposal Facility (SWDF) in E Area. Contaminated soil is containerized in B-12 boxes (with a volume of 45 ft^3). In the past, soil suspected by Radiological Control Operations (RCO) to be contaminated but not verified as contaminated (known as suspect soil) was shipped to E Area in skip pans and trucks and disposed of in an uncontainerized form. Contaminated building debris and other bulky material could also be transported in skip pans and trucks. Currently, only containerized waste including soil, building debris, and other bulky material is accepted at the SWDF.

The LLW that is eventually containerized in B-25 boxes (yellow and purple) and B-12 boxes is currently being disposed of in engineered low-level trenches (ELLTs) in E Area. A typical ELLT is about 22 feet deep, with the other dimensions adjusted to maximize burial space utilization. A ramp into the trench provides vehicle access. The B-25 and B-12 boxes are stacked, using space more efficiently. The trench floor is slightly sloped so that rainwater can be collected in a sump to monitor and confirm that no contamination is present before the rainwater is released to surface drainage.

The first ELLT started operation in April 1985. To date, three ELLTs have been filled. The fourth ELLT (ELLT 4) is currently receiving waste and has a total capacity for approximately 25,000 B-25 boxes. ELLT 4 is 91% filled as of the date of this report.

Low-level waste received in skip pans and trucks was disposed in earthen trenches in E Area. The skip pans were emptied of their contents and reused. The size of the trenches, called slit trenches, varies greatly and depends on the amount of space available and the type and condition of the soil. Suspect soil was used as fill material in ELLT 4.

To provide disposal space that complies with DOE Order 5820.2A, Solid Waste Management has constructed the E-Area Vaults (EAVs). LAW will be disposed in these above-grade concrete vaults, each measuring 643 ft long by 145 ft wide by 25 ft high. Each vault will contain twelve 54-foot wide cells. Vaults will be constructed on poured-in-place concrete pads with sidewalls. Precast concrete girders and roof panels will support a 16-inch-thick, poured-in-place concrete roof over each vault. All waste disposed of in a LAW vault will be containerized. Operation is similar to the current ELLT operation for LAW. Each vault can hold approximately 12,000 B-25 boxes, or 1.2 million m^3. The majority of the packages that will be disposed in these vaults will be B-25 and B-12 boxes, although other types of boxes may be accepted. A phased approach will be used to incorporate generators' waste into the vaults so that waste characterization can be performed. No decision has been made as to the construction of future disposal capacity. Additional ELLTs, vaults, or other techniques and facilities will be required.

Intermediate-level Waste

Description

The Site defines intermediate-level waste (ILW) as beta-gamma emitting waste that radiates greater than 200 mrad/hr or 200 mrem/hr at 5 cm from the unshielded container. Intermediate-level waste at SRS can also contain less than 10 nCi/g of transuranics. Any waste with greater amounts of transuranics (10–100 nCi/g) is managed as TRU wastes at SRS. The forecasted generation rates are, therefore, included in the section on TRU waste in this forecast. Intermediate-level beta-gamma waste is typically contaminated equipment from the canyons or from Waste Management facilities, spent lithium-aluminum targets from Tritium operations, jumpers from F-Area and H-Area Tank Farm operations, reactor scrap, and irradiated reactor hardware that does not contain fuel. Beginning in FY 96, a major contributor to the ILW stream will be contaminated equipment from operation of the Defense Waste Processing Facility.

Treatment/Disposal Methods

Intermediate-level waste is transported to E Area in steel boxes that vary according to the size of the waste. Many times the boxes are much larger than the actual waste because of the amount of shielding needed or the physical features of the waste. Some boxes are reusable because the waste contained in the boxes is removed for disposal.

The primary disposal mode that is currently used for ILW is shallow land burial trenches, called slit trenches. These trenches are normally excavated 6–9 m wide, 6.7 m deep, and up to 300 m long. These slit trenches are similar in design to the ELLTs. The intermediate-level slit trenches were established in geologically favorable areas of E Area to minimize contamination, exposure, and leaching into the groundwater, and to maximize the efficiency of operations of the facility. Wasteforms placed in the slit trenches from the boxes are covered with soil immediately after emplacement–if exposure rates dictate–to maintain radiation exposure control and to reduce the potential for fire and spread of contamination.

Improved disposal methods for ILW have been developed using demonstration projects. The demonstrations, entitled greater confinement disposal (GCD), provide methods for encapsulating the waste in concrete/grout and monitoring the encapsulated wasteforms for radionuclides leaching in the water.

The greater confinement disposal facilities consist of GCD-boreholes and the GCD-engineered trench (GCD-ET). The GCD-boreholes became operational in September 1984. The boreholes are approximately 2 m in diameter, 9.1 m deep with fiberglass liners, and encased in a 26-cm thick concrete annulus. All 20 of the boreholes have received waste. The GCD-ET became operational on April 6, 1987. The GCD-ET is constructed of 40-cm reinforced concrete walls and consists of four cells, each approxi-

mately 7.6 m long by 15 m wide by 7.6 m high. The GCD-ET is used to dispose of bulky materials that cannot be placed in boreholes. The GCD-ET will be used for disposal of all intermediate-level waste that is compatible with vault disposal once the boreholes are full. This forecast does not consider impacts on the GCD-ET. As of the date of this report, 95% of the boreholes have been filled and 50% of the GCD-ET has been filled.

The ILW vaults will be designated for intermediate-level nontritiated waste and for intermediate-level tritiated waste. The ILNT vault is further divided into seven cells, each measuring 7.6 m long by 14 m wide by 8.5 m high. Each cell will be protected by a removable metal rain cover. Wastes will be grouted in place to reduce the potential for contamination, to minimize sky shine, and to provide a working surface for the next layer of wastes. This operation is essentially the same as the current GCD-ET operation.

For intermediate-level tritium waste, the initial vault area will be approximately 1800 m^3 and will accommodate a number of different tritium wasteforms. All wastes will be packaged in metal containers before receipt at the disposal facility and emplaced using a mobile gantry crane. The primary wasteform will be a crucible used in tritium recovery. These crucibles will be placed inside silos within the vault to provide shielding and contamination control. An open portion of the vault, covered with shielding tees, will be used to store nonstandard-size containers and wasteforms containing intermediate-level tritium waste.

The Long-Lived Waste Storage Building in E Area will store process water deionizers from the Reactor Division. These deionizers contain carbon-14, which has a half-life of 5600 years.

Transuranic Waste

Description

TRU waste is waste that contains greater than 100 nCi of transuranics (isotopes with an atomic number greater than uranium and greater than a 20-year half-life) per gram of waste. The limit was changed from 10 nCi/g to 100 nCi/g with DOE Order 5820.1 (dated September 30,1982, and implemented by SR Order 5820.1, dated March 24, 1983). SRS continues to manage waste containing between 10 and 100 nCi/g of transuranics as TRU waste until site-specific radiological performance assessments can be completed that will provide disposal limits for transuranic isotopes. TRU waste is primarily job-control waste but may also include materials such as HEPA filters, resins, and sludges.

Storage Methods

TRU waste is packaged in several different types of containers: drums, Savannah River Technology Center (SRTC) casks, HEPA boxes, and carbon steel boxes. Most drums are comprised of a 52-gallon rigid polyethylene container with a filter-vented lid. The vent prevents the buildup of hydrogen gas within the container while confining radioactive particulate.

The polyethylene container is placed in a 55-gallon carbon steel drum. This outer drum also contains a filter-vented lid. The design of the drum is currently being reviewed to improve in the drum performance. The waste is normally packaged out as a small "waste cut". A waste cut is typically placed in a 4-12-mil-thick plastic bag. These plastic bags are then typically placed into an additional 4-12-mil-thick plastic bag before being placed into the polyethylene liner.

The TRU drums and boxes are stored on concrete pads or in mounded storage in E Area. Drums that are less than 0.5 Ci are placed directly on the pads. Drums that are not in a mounded storage configuration greater than 0.5 Ci are placed in concrete culverts on the pads to reduce exposure of operating personnel. TRU waste was originally buried in plastic bags and cardboard boxes in earthen trenches designated specifically for this waste. Beginning in 1965, TRU waste was segregated according to content–retrievable and nonretrievable–and additional containment was added for retrievable waste. Waste containing $\geq$0.1 Ci per package was placed in prefabricated concrete containers and then buried. These retrievable containers were 6 ft in diameter by 6-1/2 ft high. Waste that did not fit into the prefabricated concrete containers (culverts) was encapsulated in concrete. TRU waste from SRTC was buried in cubical concrete containers. Waste containing <0.1 Ci per package was buried unencapsulated in trenches designed for alpha waste.

In 1974, the storage procedures were modified to reflect new DOE criteria (DOE Manual Chapter 0511, "Radioactive Waste Management") governing retrievable storage of solid TRU waste. TRU wastes contaminated to greater than 10 nCi/g are now stored in containers (55-gallon drums and boxes) as protection from contact with water-saturated soil and can be retrieved intact and free of external contamination for at least 20 years from the time of storage.

Pads 1-5 have been covered with a minimum of 4 ft of soil while pad 6 is partially covered with soil. The waste on these pads is to be retrieved. Pads 7–13 are above ground and are almost completely full. Each of these pads is des-

ignated for a particular wasteform. Additional pads have recently been constructed. Pads 14–17 have an overhead cover to protect the vented containers from precipitation, and pads 18–22 are uncovered.

Nonradioactive Hazardous Waste

Description

Harzardous waste is that type of solid waste regulated by the Resource Conservation and Recovery Act (Public Law 94-580) of 1976. Several Environmental Protection Agency (EPA) regulations (40 CFR 260–268 and others) implement RCRA. SCDHEC is authorized by EPA to administer RCRA, with the exception of the land disposal restrictions (LDRs), via the South Carolina Hazardous Waste Management Regulations (SCHWMR).

In this document, hazardous wastes refer only to those wastes regulated under RCRA Subtitle C. Hazardous wastes are either "characteristic" or "listed". Waste that is hazardous by characteristic is either ignitable, corrosive, reactive, or toxic.

Treatment/Disposal Methods

Generators collect hazardous waste in 55-gallon Department of Transportation (DOT)-approved drums. These drums are held in permitted staging areas until the drums are full. Containers that are not completely utilized are typically not accepted in the storage areas in Solid Waste Management. Once the drums are full, the staging area custodian has 90 days to transport the containers to a SCDHEC-permitted storage facility.

Hazardous wastes generated at various site facilities are stored at Buildings 645-N, 645-4N, 710-B, and the solid waste storage pads (SWSP) located adjacent to Building 645-N. These locations are collectively referred to as the hazardous waste storage facilities (HWSF; also called "permitted storage"). Wastes are stored in these facilities until acceptable treatment and disposal methods can be implemented. The buildings are constructed with sloped floors, dikes, and sumps to provide adequate containment in the event of a spill. Effective separation of incompatible waste is provided. The waste storage containers are primarily 5-gallon and 55-gallon, DOT-approved containers (facilities are also permitted to store boxes). Many of these containers are inside 83-gallon overpacks that serve as a secondary container for containers of questionable integrity. Five-gallon containers are no longer accepted by these facilities.

To ensure that HW contains no DOE-added radioactivity, DOE instituted a moratorium that prohibited offsite treatment, storage, or disposal until approved screening procedures had been instituted. At SRS, screening procedures have been approved for liquids and solids with completely accessible surfaces originating outside of an RCA. After screening, these wastes are shipped to vendors for treatment (primarily incineration) and disposal.

High-level waste originating inside of an RCA cannot be shipped offsite until screening procedures are approved. When procedures are approved, offsite shipments will begin. Wastes that fail the screening process must be managed as mixed waste. At the forecasted generation rate, available storage space will be at full capacity in FY 95. If the moratorium on offsite shipments of waste from an RCA is lifted, then hazardous waste may be shipped offsite for treatment and disposal. If this occurs, additional hazardous waste storage may not be required. The Consolidated Incineration Facility (CIF) will be available to process much of the incinerable hazardous waste. Also, the Hazardous Waste/Mixed Waste Treatment Facility and the Hazardous Waste/Mixed Waste Disposal Facility may be available, in the future, to treat and dispose of hazardous waste.

Mixed Waste

Description

Mixed waste is waste that is both hazardous (as described by SCHWMRs Subtitle C waste only) and considered radioactive under the Atomic Energy Act (AEA). On May 1, 1987, DOE issued a final interpretive byproduct material rule to clarify DOE's obligations under RCRA. The effect of the rule is that all DOE radioactive waste that is hazardous under the RCRA definition will be subject to regulation under both RCRA and AEA, with the hazardous components of the waste under the jurisdiction of EPA.

In the past, MW consisted primarily of tritiated mercury, tritiated oil, and scintillation fluids. Typical mixed waste at SRS now includes contaminated lead, mercury, and cadmium.

Mixed waste evaluated in this forecast is waste expected to be stored in the Mixed Waste Storage Buildings on TRU pads and in permitted tank storage. Mixed waste does not include concrete matrix forms (Saltstone).

Storage Methods

Mixed waste is primarily containerized in 55-gallon drums or B-25 boxes. The containers are primarily stored in

Building 643-29E in the SWDF and Building 645-2N in the Central Shops area. Building 643-29E has an interim status permit and Building 645-2N has a Part B permit. Building 643-29E has been in operation since March 1987, and Building 645-2N has been in operation since June 1987. The TRU MW is stored on concrete TRU pads in Building 643-7E. TRU mixed waste is included in this forecast as TRU waste.

A third storage facility, Building 643-43E, has been constructed to store MW. The building will only accept low-hazard material and waste regulated by LDRs.

Polychlorinated Biphenyls (PCBs)

Description

These materials are contaminated with PCBs. PCB wastes consist of rags, wipes, mops, cleanup materials, spill response cleanup materials, protective clothing, plastic, wood, glass, small pieces of metal equipment, soils, and construction debris contaminated with greater than 50 ppm PCBs. Waste generated as a result of cleanup of PCB decontamination activities will be handled as PCB wastes.

Treatment/Disposal Method

PCB wastes are currently stored onsite in PCB storage buildings: non-radiological PCB wastes, or waste storage buildings: radiological PCB wastes.

Uncertainties and Assumptions

Uncertainties

- The effect future waste certification and treatment requirements will have on waste generation
- The effect of higher waste generation because of more rigid compliance, disciplines, and operation than in the past
- The effect of delays in funding facility shutdowns, transition, D&D, and remediation
- The effect of unspecified requirements for shutdowns, transitions, D&D, and remediation
- The effect of using contractors rather than SRS forces
- The effect of SRS experience based on expansion on outyear ER & D&D
- The effect of new technology development for D&D and ER
- The effect of future changes to the Site mission
- The effect of changing or new regulatory and legal requirements

Assumptions

Waste Forecasts

All waste forecasts assume an effective facility waste minimization program in accordance with the Site Waste Minimization Plan during the next 30 years (Reference 9). There will not be any radical technological developments that will result in a significant decrease of waste generated.

Waste Generation Rates

Projected waste generation rates for the expected case are based on current regulatory and DOE requirements, available technologies, and waste certification requirements.

Radioactive Materials Disposition

Key guidance assumptions for the radioactive materials dispositions are as follows:

- SRS will continue to be government-owned and contractor-operated and will provide land for DOE-related activities with adequate isolation from population centers.
- Surplus DP facilities will be deactivated, and undergo D&D.
- The Site will continue to support environmental ecological research, balanced forest management, and historical and archeological programs.

Land Use (Long Term)

For long-range planning of land use, it is assumed that the central site area is to be used for continued Defense Program activities and for the disposal and monitoring of waste materials that remain onsite. This will exclude the use of the surface, subsurface, and groundwater in the central industrial area from unrestricted use in the future. The central industrial area is centered on the Separations and Solid Waste Complex Areas and extends to the reactor areas. The remaining site boundary surface and subsurface soil regions (Savannah River Technology Center, 300 Area, 400 Area, TNX, and other miscellaneous areas) will be remediated as necessary to allow unrestricted use. The specific level of cleanup of the surface, subsurface, and groundwater in these perimeter areas will be determined through processes established through RCRA.

Low Activity Waste Generation

Low activity waste generation figures do not reflect compaction prior to disposal.

Decontamination and Decommissioning

In the 30-year period, the following facilities will not undergo D&D:

- Defense Waste Processing Facility (DWPF)
- Z-Area Saltstone Facility
- Effluent Treatment Facility
- In-Tank Precipitation Facility
- Savannah River Technology Center (except for Separations Equipment Demonstration facility)
- Replacement Tritium Facility
- Type III Waste Tanks
- New Special Recovery Facility of 221 FB-Line
- 484-D Powerhouse Facility, 483-1D Water Treatment Facility and support buildings
- Consolidated Incineration Facility
- Analytical Labs (excluding 772-D)
- Burial Ground Facility

Startup/Shutdown

It is assumed that the following facilities will start up or shut down in the following years:

Startup

FY 96 - DWPF
CIF

Shutdown

FY 97 - Reactors
D Area

FY 98 - Reactor Materials
772-D Lab

FY 99 - TNX

FY 03 - HB Line
F Canyon
FB Line

FY 05 - H Canyon
RBOF/RRF

FY 13 - 235-F PuFF
Thoria Line

Remediation

It is assumed that for all sites, facilities, or spills identified in Appendix C (and Appendix H of Reference 7) some form of remediation will occur. Remediation may consist of in situ treatment, waste removal, or capping and site stabilization. For all ER remediation activities, the site or facilities undergoing remediation will be cleaned up to the Applicable, Relevant, and Appropriate Requirements (ARARs).

Remediation (Unknown)

Upon further investigation, some of the sites, facilities, or spills identified in Appendix G of the FFA will require some form of remediation.

Environmental Restoration Waste-Generating Activities

Environmental restoration activities have been separated into two categories: those that are generated as a result of continuing operations, and those that are generated from project/remediation activities.

Environmental restoration wastes generated from continuing operations include waters and soils from air strippers, monitoring wells, and other routine monitoring activities and are included in the following section and Tables 1, 2, 3, and 4. Environmental restoration wastes generated from projects include a wide variety of streams including soils, debris, liquids, and solid materials. These are abbreviated in the Environmental Restoration section and Tables 9, 10, 11, and 12.

Operations 30-Year Waste Generation Forecast

Introduction

This section presents a 30-year waste generation summation for waste from routine SRS operations. Raw data was obtained by sending a questionnaire to individual waste generators. Each generator submitted a detailed best estimate of waste generation for the next three years. Each generator also estimated waste generation forecasts for the subsequent 27 years and included a discussion of situations that could impact the estimates. These numbers are considered representative of the waste generation but are based heavily on assumptions, historical data, and anticipated operations of each facility. (For facility specifics and details, see Appendix A.) Waste generation from D&D activities and ER projects are excluded from this portion of the forecast; however, ER wastes from continuing operations are included in this section. These wastes are generated from routine monitoring and air stripping activities.

Sanitary Waste

About 30 trucks per work day arrive at the landfill carrying sanitary waste. The landfill receives approximately 20 tons of waste per work day which, after compacting, equals approximately 113 m^3 of landfill space.

Low-Level Waste

Low-level waste generation, prior to compacting, is anticipated to average approximately 11,427 m^3/yr for the forecast window. Major D&D and ER project (remediation) waste generating activities to be performed in the future are not included in this estimation.

Mixed Waste

Excluding the mixed waste generated from D&D and from ER project (remediation) activities, mixed waste generation is expected to average approximately 1509 m^3 per year for the forecast period. Startup of CIF and DWPF and increased ER operational activities are responsible for approximately 90% of the mixed waste generation during the forecast period.

Hazardous Waste

The hazardous waste stream content from the various facilities includes chromate cooling water, fluorescent light bulbs, miscellaneous batteries, paint, solvent rags, toner, lead TLD, etc. Excluding ER projects (remediation) and D&D activities, hazardous waste generation is expected to average approximately 1,162 m^3 per year for the forecast period. The majority of the hazardous waste is from investigation-derived waste (IDW) resulting from environmental restoration activities.

Transuranic Waste

Based on present TRU waste-generating activities (including TRU-mixed), TRU waste generation is expected to average approximately 698 m^3 per year for the next 10 years. The TRU generation rate starts to decrease in FY 2004 and continues to decrease because of the discontinued operation of the SRS plutonium processing facilities. Some TRU-contaminated equipment may result from DWPF operations. The amount generated, if any, would depend on the ability to decontaminate equipment. This information will not be known until radioactive operations begin, thus no TRU waste generation numbers have been included for DWPF.

Assumptions

- Generation rates provided by individual waste generators are correct and encompass all the waste generated from operational activities at SRS.
- Where generators indicated percentage increases or decreases to their stated baselines, these increases or decreases apply to all waste categories.

Data Manipulation

- Detailed information provided by the generators for the first three-year period was totaled for each waste category (Appendix B).
- Information provided in response to the questionnaires was used to create 30-year generation rates for each generator.

Operation 30-Year Summary Table

See Table 1 for a summary of operational waste generation over the next 30 years.

Table 1. Operations 30-year Summary (volume in cubic meters)

Year	LLW	Mixed	Hazardous	TRU	Total
1995	15866	1192	1317	650	19025
1996	16537	1689	953	649	19828
1997	16574	1135	938	780	19427
1998	15252	1175	996	720	18143
1999	15048	1187	969	720	17924
2000	16339	1233	964	850	19386
2001	16125	1244	1027	931	19327
2002	15810	1289	1000	931	19030
2003	13280	1298	1019	583	16180
2004	10755	1340	1081	142	13318
2005	10817	1352	1054	142	13365
2006	9507	1393	1073	15	11988
2007	9507	1405	1135	15	12062
2008	9507	1449	1109	15	12080
2009	9507	1461	1126	15	12109
2010	9507	1505	1189	15	12216
2011	9507	1518	1162	15	12202
2012	9507	1562	1180	15	12264
2013	9507	1574	1243	15	12339
2014	9487	1618	1216	14	12335
2015	9487	1630	1234	14	12365
2016	9487	1675	1298	14	12474
2017	9487	1687	1269	14	12457
2018	9487	1731	1303	14	12535
2019	9487	1743	1305	14	12549
2020	9487	1787	1324	14	12612
2021	9487	1800	1357	14	12658
2022	9487	1844	1360	14	12705
2023	9487	1859	1377	14	12737
2024	9487	1900	1407	14	12808
Total	342816	45275	34985	7374	430450

Decontamination and Decommissioning

Decontamination and decommissioning (D&D) activities will normally be large waste-generating, long-term projects. Waste generated from D&D activities may include equipment, rubble, soil, sludges, aqueous and organic liquids, contaminated clothing, and tools.

Reference: WSRC-RP-94-496, "Thirty-Year D&D Waste Generation Forecast for Facilities at SRS", May 9, 1994, Revision 0.

Assumptions

The D&D assumptions, (WSRC-RP-94-496) used to manipulate the data to generate the 30-year forecast, are listed below.

Surplus Facility Inventory and Assessment Database

The *Surplus Facility Inventory and Assessment Database* (SFIA) is accurate. Facility floor area and general characterization information were used from this database to arrive at the waste estimates presented.

FY 95–FY 99

For the period of FY 95–FY 99, facilities will undergo D&D to greenfield.

Safe Storage Condition

All facilities will be in a safe storage condition prior to D&D (i.e., all nuclear fuel or liquid waste will have been removed, and systems flushed and drained).

Surplus Chemicals

All surplus chemicals (including fuel and lubricants) stored in facilities will be drained and removed before to D&D; therefore are not included in the D&D forecast.

Volume Reduction

Volume reduction (compaction and treatment) and recycling are not considered in the D&D estimate.

Non-radiologically Contaminated (clean) Administrative Facilities

Non-radiologically contaminated (clean) administrative facilities (offices and guardshacks) are empty facilities (i.e., all furniture, partitions, computers, and office supplies have been removed).

Storage Warehouses

Storage warehouses will be deinventoried before D&D.

Reactors

No reactors will be completely decontaminated and decommissioned during this period. The thick, reinforced concrete center sections of Reactors R, P, L, K, and C will remain in place along with the stack and support structure, the reactor and shielding, and the disassembly basins. The heat exchangers, main process pumps, and most of the stainless steel piping will be removed for the metal recycling program.

Transition Activities

All transition activities generating waste by facility operations are included in the operation forecast and therefore are not included in the D&D waste estimate.

Funding Amounts

The D&D work will be driven by available funding. The D&D assumes funding will be available in the year a facility is projected for D&D.

High-Level Waste Tanks

High-level waste tanks to be decontaminated and decommissioned, (i.e., Type I, II, and IV) will be closed in place. These tanks will be deinventoried before turnover to D&D. D&D will remove and stabilize residual wastes. Associated equipment and small buildings will be removed. Underground transfer piping and diversion boxes will remain in place.

Canyon Building

Canyon Buildings 221-F and 221-H will be deinventoried and cleaned up with the building structures to remain.

Radioactively Contaminated Asbestos Waste

Radioactively contaminated asbestos waste is included in the LLW generation forecast volumes.

Polychlorinated Biphenyls Generation

- Polychlorinated biphenyls (PCBs) generated during the first five-year period will be 5% of the Toxic Substance Control Act waste from facilities known or suspected to have PCB contamination. For this forecast, PCB waste is included as HW if not radiologically contaminated, and is included as MW if radiologically contaminated. The remaining TSCA waste (asbestos) is considered LLW if radiologically contaminated and sanitary waste if not radiological contaminated.
- If no PCB contamination was known or suspected, the TSCA waste (all asbestos) is considered LLW if radiologically contaminated, and sanitary waste if not radiologically contaminated.
- The average quantity of PCBs generated by the D&D of a facility is based upon the estimated quantity from the D&D of the 53 facilities in the first five years. Only a fraction of the facilities will actually generate PCB waste. However, when PCBs are encountered, waste volumes will be significant. The total PCB generation will be accurate when summed over the 30-year period.

Data Manipulation

Total Decontaminated and Decommissioned Waste Generation

For the period of FY 95–FY 99 (inclusive), total D&D waste generation for 53 SRS facilities by waste category (LLW, MW, HW, TRU waste, and sanitary waste) were obtained from Scallon (1994) (Reference 4).

Polychlorinated Biphenyl Generation

- PCB generation for the first five-year period was estimated as 5% of the TSCA waste from facilities known or suspected to have PCB contamination. The PCB waste was added to the hazardous waste stream (if not radiologically contaminated) or to the mixed waste stream (if radiologically contaminated). The remaining TSCA waste (asbestos) was added to the LLW stream (if radiologically contaminated) or added to the non-radiologically contaminated stream (if non-radiologically contaminated). The division of TSCA waste into radiologically contaminated and sanitary waste streams was done by applying the footnotes in the tables of WSRC-TR-94-496 (Reference 4).
- For the first five-year period, if a facility was not known or suspected of being PCB contaminated, all the TSCA waste was assumed to be asbestos and was added to the LLW stream (if radiologically contaminated) or to the sanitary stream (if non-radiologically contaminated). The division of TSCA waste into radiologically contaminated and non-radiologically contaminated waste streams was done by applying the footnotes in the tables of WSRC-TR-94-496 (Reference 4).
- The average PCB waste generated by a facility D&D is estimated to be 3.51 m^3 (total PCB generation in the first five years / 53 D&D facilities). To determine the PCB generation in the outyears 2000–2024, the total number of candidate D&D facilities in a given year was multiplied by 3.51.

Decontaminated and Decommissioned Candidate Facilities

According to *Savannah River Site Decontamination and Decommissioning Program Facilities Plan (U)* (Reference 2), there are 658 D&D candidate facilities onsite having some form or combination of radiological, chemical, and/or asbestos contamination. These facilities are candidates for D&D over the next 30 years. Fifty-three facilities are scheduled to be decontaminated and decommissioned in the first five years. This indicates that 605 facilities (658-53) will be decontaminated and decommissioned in the years 2000-2024.

Facility Walkdowns

Facility walkdowns were completed for the 53 facilities identified for D&D activities in the next five years. Waste volumes generated from the D&D of these 53 facilities were estimated, and these estimates were then used for the remaining 605 facilities identified for D&D in the following 25-year period.

Average Total Waste Volume Generation per Facility

The objective of this effort is to estimate the total volume of waste generated by the D&D program at SRS, not to estimate the waste generated by the D&D of a individual facility.

The first 53 facilities to undergo D&D are estimated to generate 75896 m^3 of waste and encompass 48662 m^2 of combined floor space, or 1.6 m^3 waste is generated for each square meter of floor space. In addition, it is assumed that the average floor space of the remaining facilities is 918 m^2. Therefore, it is assumed that the average total waste volume generated during D&D activities taking a facility to greenfield is 1433.67 m^3, based on information extrapolated from estimates of the first 53 facilities to undergo D&D in 1995-1999. This volume includes the quantity of sanitary waste generated as a result of the

D&D. Greenfield involves removal of the facility, the foundation, and contaminated soil under the foundation.

Facility specific waste generation volumes could be estimated by using the square footage data reported in the SFIA database. However, there is no D&D schedule for the remaining 605 facilities and therefore no basis to allocate waste volumes to individual years.

Facilities: Location-specific

- Facilities located in outlying areas—SRTC, 300 Area, 400 Area, TNX, and the reactor areas—will be taken to foundation. Facilities/buildings located within E, F, G, and H Areas will only be gutted (i.e., all materials, equipment, ductwork, etc. will be removed but the building structure will remain for expected case).
- For the 53 facilities identified for D&D activities in the first five years, these facilities are assumed to be in the outlying areas and will be taken to foundation. In this scenario, the building is removed; however, the building foundation and underlying soil are not removed.
- For the remaining 605 facilities, 423 (70%) are assumed to be within SRTC, 300 Area, 400 Area, TNX, and the reactor areas, and the remaining facilities (182) are assumed to be located within E, F, G, and H Areas.
- From the D&D report, 175 (29%) of the 605 facilities are non-radioactive facilities: the remaining facilities are radioactive facilities.
- Ten percent of the radiologically contaminated facilities within SRTC, 300 Area, 400 Area, TNX, and the reactor areas will generate TRU waste. Twenty percent of the radiologically contaminated facilities within E, F, G, and H Areas will generate TRU waste.
- For the 423 facilities within SRTC, 300 Area, 400 Area, TNX, and the reactor areas, 123 (29%) of the facilities are assumed to be non-radiologically contaminated. The remaining facilities are assumed to be radiologically contaminated. Of the 300 radiological facilities, 30 (10%) of the facilities are TRU facilities or contain TRU radionuclides.
- For the 182 within E, F, G, and H Areas, 53 (29%) of the facilities are assumed to be non-radiological. The remaining facilities are assumed to be radiologically contaminated. Of the 129 radiological facilities 26 (20%) of the facilities are TRU facilities or contain TRU radionuclides.

Decontamination and Decommissioning Waste Breakdown

When a LLW facility undergoes D&D, it was assumed that waste generation will be 45% LLW, 40% mixed, 4.5% hazardous, 0.5% TRU, and 10% sanitary. When a TRU facility undergoes D&D, it was assumed that waste generation will be 40% LLW, 35% MW, 5% HW, 10% TRU, and 10% sanitary. When a non-radiological facility undergoes D&D, it was assumed that waste generation would be 0% LLW, 0% MW, 15% HW, 0% TRU, and 85% sanitary. The sanitary waste volumes are not reflected in this report.

To estimate the amount of each type of waste generated in a given outyear (except PCBs), the number of each facility type was multiplied by the average total waste generated by D&D times the fraction assumed to be that type (see the preceding paragraph). For example, obtaining the total D&D LLW generation in the year 2000 would be as follows: 11 (LLW facilities) × 716.84 m^3 (average total waste generation from a facility D&D to foundation) × (0.45) + 1 (TRU Facilities) × 716.84 m^3 (average total waste generation from a facility D&D to foundation) × (0.40) + 5 (non-radiological facilities) × 716.84 m^3 (average total waste generation from a facility D&D to foundation) × (0.0) + 4 (LLW Facilities) × 179.21 m^3 (average total waste generation from a facility that is gutted for D&D) × (0.45) + 1 (TRU facilities) × 179.21 m^3 (average total waste generation from a facility that is gutted for D&D) × (0.40) + 2 (non-radiological facilities) × 179.21 m^3 (average total waste generation from a facility that is gutted for D&D) × (0.0) = 4229.35 m^3 of LLW in the year 2000.

Decontamination and Decommissioning 30-year Summary Table

See Table 2 for a summary of D&D waste generation over the next 30 years.

Table 2. Decontamination and Decommissioning 30-year Summary (volume in cubic meters)

Year	LLW	Mixed	Hazardous	TRU	Total
1995	2050	757	1051	0	3858
1996	1284	652	525	552	3013
1997	0	0	1694	0	1694
1998	206	26	216	37	485
1999	33	0	973	0	1006
2000	4229	3755	1107	133	9224
2001	4229	3755	1107	133	9224
2002	4229	3755	1107	133	9224
2003	4229	3755	1107	133	9224
2004	4516	4006	1146	204	9873
2005	3987	3540	1082	130	8740
2006	4229	3755	1107	133	9224
2007	4229	3755	1137	133	9254
2008	4229	3755	1107	133	9224
2009	4229	3755	1107	133	9224
2010	4516	4006	1035	204	9762
2011	3907	3469	1071	129	8575
2012	4310	3827	1118	134	9389
2013	4229	3755	1107	133	9224
2014	4229	3755	1137	133	9254
2015	4516	4006	1146	204	9873
2016	4229	3755	1107	133	9224
2017	3907	3469	1071	129	8575
2018	4229	3755	1107	133	9224
2019	4310	3827	1118	134	9389
2020	4229	3755	996	133	9113
2021	4516	4006	1176	204	9903
2022	4229	3755	1107	133	9224
2023	3907	3469	1071	129	8575
2024	4265	3782	1123	219	9389
Total	109,441	95,416	32,060	4,266	241183

Environmental Restoration

The Environmental Restoration organization's responsibilities are comprised of investigating potential waste sites, restoring identified waste sites to their original condition, and closing waste sites. The waste generated by waste site activities range from, but are not limited to, vegetation, contaminated clothing, contaminated soils, and equipment.

Assumptions

- The facilities identified in Appendices C and H of the FFA and located within SRTC, 300 Area, 400 Area, TNX, and the reactor areas (93 facilities) will generate waste, that will need to be removed from the cleanup site. Twenty percent of the facilities identified in Appendices C and H and located within E, F, and H Areas (seven of 36 facilities) will generate waste that will need to be removed from the cleanup site. The remaining facilities located within E, F, and H Areas (29 facilities) may undergo some form of in situ remediation and be isolated. Accordingly, waste generated from the clean up of these facilities will not be removed from the site.
- Thirty percent of the facilities located within SRTC, 300 Area, 400 Area, TNX, and reactor areas and identified in Appendix G (43 of 143 facilities) will generate waste that will be required to be removed from the cleanup site.
- Fifty percent of the spills identified in Appendix G (or 67 spills) will generate waste that will need to be removed from the cleanup site.
- For spills, approximately 10 m^3 of waste would be generated by the cleanup.
- For the first nine years, specific facilities, volumes, and assumptions were obtained from the *ER Thirty-Year Soil Waste Forecast* (Socha, April 4, 1994) and the *Waste Management Activities for Groundwater Protection, Savannah River Plant, Aiken, South Carolina, Final Environmental Impact Statement* (Reference 8).
- Based on the number of facilities and volumes provided by ER (Reference 8), the average volume of waste generated per facility (3292.1 m^3 per facility) requiring removal from the site was estimated. This estimate was used for facilities undergoing ER reannexation for the years 2004 through 2024.
- Based on engineering assessment, 33% of the outyear facilities, units, or spills were assumed to be radioactively contaminated, while the remaining facilities/units/spills were assumed not to be radioactively contaminated.
- When a radiological facility or unit undergoes remediation, the waste generated will be 24% LLW, 60% MW, 15% HW, and 1% TRU.
- When a non-radiological facility or unit undergoes remediation, the waste generated will be 0% LLW, 0% MW, 100% HW, and 0% TRU.

Environmental Restoration 30-Year Summary Table

See Table 3 for a summary of ER waste generation for the next 30 years.

Table 3. Environmental Restoration 30-year Summary (volume in cubic meters)

Year	LLW	Mixed	Hazardous	TRU	Total
1995	0	0	50	0	50
1996	0	0	0	0	0
1997	0	0	6306	0	6306
1998	0	200	38840	0	39040
1999	0	1011	31433	0	32444
2000	0	1230	4050	0	5280
2001	0	0	72538	0	72538
2002	0	0	5900	0	5900
2003	0	24000	5384	0	29384
2004	1585	3963	14189	66	19803
2005	1583	3957	14188	66	19793
2006	1583	3957	14188	66	19793
2007	1583	3957	14178	66	19793
2008	1583	3957	14178	66	19783
2009	1583	3957	14178	66	19783
2010	1583	3957	14178	66	19783
2011	1583	3957	10885	66	16491
2012	1583	3957	7593	66	13198
2013	1583	3957	7593	66	13198
2014	1583	3957	7593	66	13198
2015	1583	3957	7593	66	13198
2016	1583	3957	7593	66	13198
2017	1583	3957	7593	66	13198
2018	2	6	6606	0	6614
2019	2	6	6606	0	6614
2020	2	6	6606	0	6614
2021	2	6	6606	0	6614
2022	2	6	6606	0	6614
2023	2	6	6606	0	6614
2024	2	6	6606	0	6614
Total	22176	81880	366461	924	471441

Operations, Decontamination and Decommissioning, and Environmental Restoration 30-Year Summary

See Table 4 for a summary of Operations, D&D, and ER waste generation for the next 30 years.

Table 4. Operations, Decontamination and Decommissioning, and Environmental Restoration 30-year Summary (volume in cubic meters)

Year	LLW	Mixed	Hazardous	TRU	Total
1995	17916	1949	2418	650	22933
1996	17821	2341	1478	1201	22841
1997	16574	1135	8938	780	27427
1998	15458	1401	40052	757	57668
1999	15081	2198	33375	720	51374
2000	20568	6218	6121	983	33890
2001	20354	4999	74672	1064	101089
2002	20039	5044	8007	1064	34154
2003	17509	29053	7510	716	54788
2004	16856	9309	16416	412	42993
2005	16387	8849	16324	338	41898
2006	15319	9105	16367	213	41004
2007	15319	9117	16450	213	41099
2008	15319	9161	16393	213	41086
2009	15319	9173	16410	213	41115
2010	15606	9468	16402	285	41760
2011	14996	8943	13118	210	37268
2012	15400	9346	9892	215	34851
2013	15319	9286	9943	214	34762
2014	15299	9330	9946	213	34788
2015	15586	9593	9973	284	35436
2016	15299	9387	9998	213	34897
2017	14976	9112	9933	209	34231
2018	13719	5492	9015	147	28373
2019	13799	5576	9029	148	28552
2020	13719	5548	8925	147	28339
2021	14005	5812	9139	219	29175
2022	13719	5605	9072	147	28543
2023	13396	5334	9054	143	27927
2024	13755	5688	9135	233	28811
Total	474433	222571	433506	12564	1143074

References

1. *Surplus Facility Inventory and Assessment (SFIA) Database,*. Revision 03/04/94.
2. *Savannah River Site Decontamination and Decommissioning Program Facilities Plan*, WSRC-IM-93-10, Revision 0, Westinghouse Savannah River Company, Aiken SC, 29808, February 25, 1993.
3. *Savannah River Site Waste Acceptance Criteria Manual.*, Procedure Manual 1S, Revision 2, Westinghouse Savannah River Company Aiken, SC 29808, May 21, 1994.
4. *Thirty-Year D&D Waste Generation Forecast for Facilities at SRS*, WSRC-RP-94-496, Revision 0, Westinghouse Savannah River Company Aiken, SC 29808, May 9, 1994.
5. *Savannah River Site FY1994 Predecisional Draft Solid Waste Management Plan,*. WSRC-RP-93-1448, Revision 2, Westinghouse Savannah River Company Aiken, SC 29808.
6. *Mission Need and Design Capacity Review*, Westinghouse Savannah River Company, August 7, 1993.
7. *Federal Facility Agreement Under Section 120 of CERCLA and Sections 3008(h) and 6001 of RCRA*, Administrative Docket No: 89-05-FF, 1992.
8. *Waste Management Activities for Groundwater Protection Savannah River Plant Aiken South Carolina Final Environmental Impact Statement*, DOE/EIS-0120, December 1987.
9. *Waste Minimization and Pollution Prevention Awareness Plan*, Department of Energy, Savannah River Site, December 22, 1993.

A.1 Construction

Contact: B. Jones

Construction generates only nonradioactive hazardous waste. Responsibility for radioactive waste is assumed by the appropriate Westinghouse organization. Construction expects to generate approximately 16 m^3/yr for the next three years. The amount of waste generated is expected to decrease to 12 m^3/yr of non-radioactive hazardous waste during a normal year of operation after FY 97. The generation of spent freon-113 will eventually be eliminated by phasing out ozone-depleting substances. It is possible that used fluorescent light bulbs will not be handled as a hazardous waste in the future. Construction's mission coincides with the future mission of the Site and waste generation is expected to continue at current levels.

A.2 DWPF/Z Area (Saltstone)

Contact: C. Stanford

With the startup of ITP, Saltstone is expected to reach its full operating potential. In doing so, Saltstone is expected to generate about 90 m^3 of low-level waste as clean waste boxes and yellow B-25 boxes in FY 95. Upon startup of DWPF in FY 96, it is anticipated that approximately 756 m^3/yr of low-level waste will be generated by DWPF and Z Area.

One drum per year of nonradioactive hazardous waste will be generated as a result of the analytical process. This waste is comprised of laboratory ware and solvent rags. Hazardous constituents include methylene chloride, acetonitrile, and acetone.

Approximately 202 m^3/yr of mixed waste will be generated upon operations of DWPF.

TRU waste will be generated, but at the present there is no way to fully determine the amount that will be produced. Previously generated five-year forecasts are being used to extrapolate the 30-year forecast information. All stated assumptions and estimates apply to expected waste generation in the forecast. For the purposes of this forecast, once radioactive operations are achieved, the OWST benzene will be a mixed waste. Report volumes are based on the related F/H canyon operations. Actual S-Area data will not be available until radioactive operations commence.

Assumptions

- The rates are the combined S-Area and Z-Area waste generation rates and are estimates made prior to normal operation, which are scheduled to begin in FY 96.
- These estimates are based on extrapolated data from the F-Canyon and H-Canyon operations for S Area.
- The ability to decontaminate equipment to acceptable levels will be determined after radioactive operations commence.
- TRU waste generation cannot be predicted with current information.

A.3 Environmental Restoration (Operations)

Contact: W. M. Smith

The Environmental Restoration organizations's responsibilities are comprised of investigating potential waste sites, restoring identified waste sites to their original condition, and closing waste sites. The waste generated by ER activities range from, but is not limited to, purge water, vegetation, contaminated clothing, and equipment.

Low-level waste generation resulting from normal operations is normally comprised of vegetation, soil, tools and contaminated clothing. Low-level waste generation is expected to be 15, 8, and 22 m^3, respectively, for the next three years. The ER operations waste generation is expected to be an average of approximately 52 m^3 for the remaining forecast period.

Mixed waste generation is comprised mainly of purge water, soil, and personal protective equipment. Mixed waste generation is expected to average approximately 1043 m^3 for the forecast window.

Hazardous waste generation is also comprised of purge water, soil, and personal protective equipment. Hazardous waste generation is expected to average approximately 1130 m^3 for the forecast window.

A.4 Analytical Labs

Contact: J. Satkowski

Low-activity waste is the only waste type generated by Building 772-D. The generation of low-activity waste will be approximately 113 m^3/yr until 1996 when the 772-D laboratory is scheduled for shutdown and decommissioning. The waste will be containerized in B-25s and compactor boxes and consist mainly of lab ware, protective clothing, equipment, and noncompactable items from the lab. Low-activity waste from Building 772-D will probably increase by 25% because of transition activities. It is anticipated that the 772-D facility will be scheduled for D&D after 1998.

The amount of LLW and TRU waste generated in the 772-F laboratories is directly dependent upon the number of radioactive samples and the types of analysis requested by customers for various site operations and projects. This forecast shows a slight increase because of assuming resumption of F and H canyon processing, PU-238 program, etc., that are presently planned. The information also reflects the waste minimization efforts being expended by the 772-F laboratories on these waste streams. The increase from sitewide operations is somewhat offset by Building 772-F waste minimization. The analytical requirements for waste characterization will probably increase the generation of mixed waste. As the mission of the Site moves away from nuclear materials production, the analytical support required will also change to meet the needs of the site customers in analyzing radioactive materials for hazardous constituents. Direction for the existing canyon production and/or decommissioning is not known at this time. Any changes in the site operation will decrease the volume of waste types presently being generated and increase other kinds (especially mixed) waste streams. If the canyons produce a more normal operation of existing materials, the analytical waste volume can be expected to increase two to three fold. Changes in the Site mission (like weapon Pu material storage and/or proposed building projects (i.e., new reactor) will cause an unknown change in the analytical business needs. Directions for Complex 21 proposals are not clear at this time, which will also cause a change in mission and analytical requirements that will determine the amount and kind of waste produced.

The low-activity non-routine waste stream is expected to decrease beyond 1996 because of the completion of construction projects, decommissioning activities, and room renovations. This is expected to reduce the number of B-25 boxes generated by 50% but the resumption of the 772-F laboratory modules for full analytical operation could result in a substantial increase in the low-level waste production as more analytical procedures are utilized. Low-activity waste generation is projected to be 804 m^3 in FY 95 and 844 m^3 in FY 96.

Twenty-two drums of TRU waste (including TRU mixed waste) are projected to be generated in FY 95 and FY 96, increasing to 23 drums in FY 97. TRU waste generation is mainly dependent upon the resumption of production and separation activities in the canyons. TRU waste primarily consists of vials, caps, pipette tips, and other laboratory waste generated by plutonium sample measurements. The one drum of TRU mixed waste generated each year consists primarily of lead-lined gloves from gloveboxes that must be changed annually.

Three drums of mixed waste, comprised of lead shielding, are anticipated to be generated in FY 95 and FY 96 increasing to four drums in FY 97. One drum of mixed waste generated from unused chemicals is forecasted in FY 97. Because of analytical methods expected to be established in the facility for analyzing RCRA hazardous waste, additional volume (110-220 gallons) of mixed waste may initially be generated. This volume will grow as additional analytical requests for this service increase.

The changing scope of site operations will enormously affect the type and amount of waste generated in the 772-F laboratories because of changes in sample requests and analyses. It is anticipated that additional lab capability to analyze highly radioactive samples will be required of the 772-F laboratories for waste characterization. Waste generated from this new activity will increase low-level and mixed waste generated by an unknown amount because of the unknown sample load.

A.5 Liquid Waste Management

F-Area Tank Farm

Contact: E. L. Dunbar

F Tank Farm will generate approximately 1719 m^3 of low-level waste in FY 95. Compactor boxes, yellow B-25 boxes, yellow B-12 boxes, skip pans, and purple B-25 boxes will be generated from Operations and will contain rubber gloves, shoe covers, swipes, stepoff pads, paper, plastic, soil, asphalt, used oil, and relief valves.

Burial boxes for jumpers and related equipment will be generated for waste considered intermediate-level nontritiated waste. The boxes are assumed to be 2.4 m^3 X 2.4 m^3 X 2.4 m^3. B-25 boxes generated will be filled with HEPA filters in the near term. Intermediate nontritiated waste in the form of jumpers, riser plugs, thermowell, transfer jets, dip tubes, slurry pumps, spray chamber, backflush valves, telescopes, transfer jet, downcomer, etc., will be buried in nonstandard burial tubes, B-50 boxes, and specialty tubes. Each container is assumed to be 5 m^3. Twelve drums of hazardous waste and three drums of mixed waste are expected to be generated annually.

Assumptions

- There is no "normal" year of waste generation within this facility. Generation rates fluctuate. Therefore, actual 1993 generation data will be used as a baseline and will be modified in accordance with the following. Hazardous and mixed generation numbers are forecasted for this section and not based on actual 1993 data due to waste stream variability.
- F-Area Tank Farm generates low-level, intermediate-level non tritiated, non-radioactive hazardous, and mixed waste only.

Baseline (in cubic feet)	
Low-level	1217 m^3
Intermediate-level non tritiated	28 m^3
Non-radioactive hazardous	2.3 m^3
Mixed	.62 m^3

- Waste removal activities will cause generation rates to change as follows:

Year	Change
1998	increase by 5% of 1993 baseline
1999	no change from baseline
2000	no change from baseline
2001	increase by 5% of 1993 baseline
2002	increase by 5% of 1993 baseline
2003	no change from baseline
2004	decrease by 5% of 1993 baseline

- Assumed in this estimate is that the waste removal equipment being added to these tanks will remain in place and be disposed of along with the tank itself. If the mix is mixed/intermediate low-level waste, the amount could triple for every year.
- Within the scope of work for the waste removal projects, there will be five tanks from the F-Area Tank Farm that will require waste removal in the future. These tanks are currently only planned for storage and may undergo waste removal beyond the 30-year window.

F/H Effluent Treatment Facility

Contact: C. L. Todaro

Low-activity waste generation will average 330 m^3/yr for the forecast period. Most waste is packaged in yellow and purple B-25 boxes, although compactor boxes will also be generated. Purple B-25 boxes tend to contain waste generated from repairing line breaks and performing routine jobs. Yellow B-25 boxes contain various spent filters that are used in the ETF process, rubber line from the cooling water basins, and routine job control waste. One-hundred B-12 boxes will be generated each year from mud and dirt from the F Area and H Area retention basins. One stainless steel box will be generated each year that contains spent carbon.

The only nonradioactive hazardous waste to be generated are oily rags at a rate of one drum per year. No major projects in the outyears or changes in operating practices are projected to change waste generation rates.

H Tank Farm

Contact: R. Palmer

Low-activity waste is handled by several means in H-Area Tank Farm. Clean waste boxes and compactor boxes are used for compactible material. Yellow B-25 boxes are used for larger, noncompactable material. B-12 boxes are generated in quantity to dispose of radiologically contaminated soil and rubble. Skip pans and dump trucks are generated by construction activities to dispose of contaminated and suspect-contaminated soil and rubble. For 1995, 1996, and 1997, LLW generation is expected to be 2080 m^3, 2106 m^3, and 2111 m^3/yr, respectively.

Intermediate-level waste generation in the tank farm is because of jumper changes. Based upon scheduled jumper changes in the diversion boxes, hut removal at the tank 37 CTS loop, and the disposal of a cell cover 1995, 1996, and 1997, intermediate-level waste generation is expected to be 188, 230, and 323 m^3, respectively. An expected decrease was offset by jumper changes and waste removal activities that have created a waste stream content of jumpers, riser plugs, thermocouples, reel tapes, purge inlets, annulus vent jumpers, annulus jet out, access risers, hp samplers, etc. Many items will be containerized in nonstandard containers, which were assumed to be 6.5 m^3 each.

Six drums per year of chromate-contaminated, nonradioactive material will be generated. As for mixed waste, three B-12s per year of lead shielding will be generated. Hazardous and mixed waste generation has decreased over the last several years because of product substitution (i.e,. solvents) and eliminating freon as a decontamination agent.

Beginning in 1996, ITP activities will generate a box of a failed filters every other year. This will be approximately 16.3 m^3.

Assumptions

- H-Area Tank Farm Facility includes H-Tank Farm, ITP/ESP, 299-H, RHLWE, and NWTF.
- There is no "normal" year of waste generation within this facility. Generation rates fluctuate. Therefore, actual 1993 generation data will be used as a baseline and will be modified in accordance within the WMEIS questions (hazardous and mixed generation numbers are forecasted for this section and not based on actual 1993 data because of waste stream variability).

Baseline (in cubic feet)

Low-level	3,160 m^3
Intermediate-level non tritiated	14 m^3
Non-radioactive hazardous	2 m^3
Mixed	2 m^3

- Waste removal activities will cause generation rates to change as follows:

Year	Change
2000	increase by an additional 10% of 1993 baseline
2001	increase by an additional 5% of 1993 baseline
2003	increase by an additional 5% of 1993 baseline

- If appropriate funds were obtained for the waste removal projects, work could be accelerated so that all tanks would be finished before 2004. This would add an additional five tanks (increase of 25% of the 1993 baseline).
- Assumed in this estimate is that the waste removal equipment being added to these tanks will remain in place and be disposed of along with the tank itself. If the equipment is removed from the tanks, the annual generation rate for mixed/intermediate low-level waste could triple for every year.
- Within the scope of work for the waste removal projects, there will be four tanks from the H-Area Tank Farm, which will require waste removal in the future. These tanks are currently planned for storage only and may undergo waste removal beyond the 30-year window.

A.6 Reactors/D-Area

Contact: J. Miller

As of October 1, 1993, the Reactor Division started transition from an operating mode to a shutdown mode of operation eventually leading to D&D of the reactor facilities. This transition is funded for FY 94 with expectation of continued funding into FY 95. A portion of the waste generated will be the results of FY 94 transition activities and not D&D. For 1995, 1996, and 1997, LLW generation is expected to be 1938, 1812, and 1686 m^3/yr, respectively.

As all reactor areas are placed in a shutdown condition, the waste generation attributed to the Reactor Division will decrease significantly. Low activity waste generated as a result of transition activities is likely to include waste from the L-Area hot shop, reactor disassembly basins, filter compartment removal, and CAD rod removal.

Approximately 1 m^3 of nonradioactive hazardous waste will be generated in FY 95 during transition. The waste will be comprised of solvent rags, mercury relays, mercury batteries, nicked-cadmium batteries, spent solvent, and total constituent leachate process waste.

Approximately 7 m^3/yr of mixed waste is forecasted to be generated during transition in FY 95 with the majority contained in B-12 boxes and 55-gallon drums. The following constitutes the probable makeup of the mixed waste: solvent rags, spent solvents, LLW lead (grit), mercury-contaminated rags and filters, and tritiated oil from the AC motors.

Assumptions

- Transition is in progress and will be complete prior to FY 97.
- Waste generation after FY 96 will depend on the extent of D&D activities.
- 105-P Reactor will be shut down.
- 105-K Reactor will be in cold standby.
- 105-R Reactor will be shut down.
- 105-C Reactor will be shut down.
- 400-D Area will be operational.

A.7 Reactor Materials

Contact: S. O. Stallings

The Reactor Materials organization will generate approximately 139 m^3 of low-activity waste in FY 94. The amount of waste generated by the Reactor Materials Division is expected to decrease by 28% in FY 96. The expected decrease will be due to the minimal operations being conducted in M Area before to the anticipated shutdown after FY 97.

Seven drums of hazardous waste are expected to be generated by Reactor Materials in FY 95 and six in FY 96. This waste will consist of crushed fluorescent light bulbs, miscellaneous batteries, paints from shutdown areas, solvent rags, and toxicity characteristic leachate process waste.

One gray B-25 box of mixed waste per year will be generated and contain used filter belts. Mixed waste generated and stored in M-Area Interim Treatment/Storage Facility has not been included in this forecast.

Reactor Materials plans to treat the Interim Treatment/ Storage Facility sludge's starting in mid-1995 and ending in late 1997 to meet land disposal restrictions. These treated wastes will be stored on a pad in M Area until a delisting effort is concluded. They will then be transferred to Waste Management for final disposal in either the HW/ MW or LAW vaults. Currently, a disposal capacity of approximately 750 m^3 is required.

Assumptions

- The prospect of placing M-Area facilities in a shutdown mode has the potential to increase the amount of non routine waste generated. Waste generation will depend on the level of activities that will be required during shutdown. The extent of decommissioning has not been determined to date. These generation levels are dependent on many factors not estimated here.
- Current schedules show that by the end of FY 97, all facilities in Reactor Materials will be in a warm standby mode or shut down. The generation of waste after 1997 will depend on the extent of decontamination that will be done. This may involve removing contaminated process equipment. This activity has the potential to generate a considerable amount of waste. At this time, however, the extent or timing of decontamination has not been determined.

A.8 Separations

Building 235-F

Contact: P. Spitzer

The majority of the volume of waste generated by Building 235-F is compactable low-activity waste. This waste is generated by general housekeeping and maintenance. Fluctuations to the waste generation rate occur according to proposed R&D work. The scope for proposed D&R work has not been finalized. The forecast will be updated as scope changes are made. Personnel in Building 235-F expect to generate 12 purple B-25 boxes and four yellow B-25 boxes in 1996 and 1997.

Normal operations produce six 55-gallon drums and eight 70 cm X 70 cm X 35 cm polyethylene boxes of TRU waste each year.

There will be a slight increase over the next four or five years due to the anticipated characterization and deactivation work on the facility. For PuFF, PeF, and the Old Met Lab, this will decrease afterwards. However, for vaults, actinide billet line, and new met lab, there will be a slight increase due to operation of the vaults. Overall there should not be a dramatic change in waste generation.

An increase of 15% to 25% can be expected over the next five years followed by a decrease of 50% to 60% for surveillance and maintenance of the Puff, Pef, and the Old Met Lab. There will be a similar relatively constant for the remainder of the vault mission.

Building 247-F

Low-activity waste is the only waste type generated by Building 247-F. The generation of low activity waste will be approximately 220 m^3 during a year of normal operations. There will be a slight increase over the next four or five years because of the anticipated characterization and deactivation work on the facility. For the core, this will decrease afterwards; however, for the vault and administrative areas, there is a continued mission. Therefore, there will be a slight increase from vault operation.

An increase of 15% to 25% can be expected over the next five years followed by a decrease of 50% to 60% for surveillance and maintenance of the core. There will be similar increase because of vault operations, but this level should remain relatively constant for the remainder of the vault mission.

Assumptions

Building 247-F will be operated continuously during the future projection period.

FB Line

Contact: K. D. Steeg

The FB-Line facility waste forecast analysis for waste generation rates take into account historical data, the restart of FB Line, implementation of both the FB-Line Waste Certification and Minimization Plan, and the RAD Con program, and project R&D/cleanup work.

Several assumptions were made while preparing the forecast. The first is that slightly more low-level waste will be generated upon initial FB-Line restart. In addition, historical data dictate that substantially more TRU and TRU-mixed waste is generated during a production mode. Thus, two different rates were accounted for on a monthly basis and thereby used to obtain the yearly projected totals. Low-activity waste generation is expected to be approximately 41 purple B-25 boxes per year while 240 yellow B-25 boxes are anticipated to be filled in 1997 for an annual total generation in 1997 of 1248 m^3 of low activity waste.

Radioactive waste generation projection for the New Special Recovery (NSR) facility and the Plutonium Storage Facility (PSF) have not been included in this report because of their uncertain missions and the unlikelihood of any radioactive waste being generated by these facilities.

TRU waste is also highly dependent upon the mode in which the facility is operating but it is expected that 300 drums of TRU waste will be generated during a normal year of operations. Other containers to be shipped that are tied to the mode of operations are large carbon steel boxes and polyethylene filter boxes. Five stainless steel boxes are expected to be generated annually while 43 polyethylene filter boxes per year will be generated each year. Sixty-six drums of TRU-mixed waste are expected to be generated during a normal year of operations.

Mixed waste generation should remain constant throughout the forecast period. Approximately six drums per year from FB Line will be generated. Mixed waste from FB Line consists of decontamination equipment, broken thermometers, lead shielding, and batteries.

Waste generation is anticipated to remain relatively constant for the next four to five years; after which, there will be an increase of about 30% for approximately two to three years during facility transition.

F Canyon

Contact: J. Park

F Canyon personnel forecast that their facility will generate approximately 580 m^3 of low-activity waste each year through 1997. This waste is packaged in compactor boxes and yellow B-25 boxes. The compactor boxes are generated from general housekeeping, process support, and decontamination activities. The content of the boxes includes paper, mop heads, rags, swipes, personal protective clothing, and other cleaning tools. Yellow B-25 boxes are generated by the same activities, although half of them are also generated because of asbestos and cooling water header removal. This last activity will probably continue into the outyears for an unspecified period of time.

F Canyon expects to generate 110 B-25 boxes of intermediate nontritiated waste per year. Waste includes plastic suits, air hoses, crane parts, shoe covers, swipes, rags, rubber gloves, agitators, and other equipment parts.

Crane failure within the canyon is always a possibility. If this occurs and the cranes must be dismantled and disposed, one 6.0 m X 3.7 m X 3.0 m special box may also be generated once per quarter for an unspecified period of time to dispose of the old hot and warm cranes. Low activity waste, intermediate-level waste, and mixed waste may be generated (up to 18,180 kg of lead would need to be stored). None of this waste is in the forecast except for those crane parts that are normally replaced.

Waste generation is expected to remain relatively constant for the next four to five years; after which, there will be an increase of about 30% for approximately two to three years during facility deactivation.

Assumptions

Decommissioning and decontamination for 221-F Canyon will shut down in FY 03.

HB Line

Contact: S. Snyder

Low-activity waste from HB Line can be split into two waste streams, purple B-25 boxes and yellow B-25 boxes. Purple B-25 boxes are used to dispose of compactable waste initially disposed in plastic bags. This waste is comprised of paper, plastic, protective clothing, rags, and small pieces of metal. Yellow B-25 boxes tend to hold filters, tools, used and failed equipment, construction waste, plastic suits, and hoses. Altogether, 252 B-25 boxes per year are forecasted to be generated in 1995-1997, or 635 m^3 per year.

TRU waste was broken down according to its primary isotopic content; Pu-238, Pu-239, or Np-237. In each case, the makeup of the waste is the same. Waste contains windows, rags, paper, wipes, protective clothing, wood, plastic film sheeting, bottles, drum liners, sponges, and failed equipment. This waste is generated from glovebox cabinets, huts, and maintenance work. Some 240 drums of Pu-238, 72 drums of Pu-239, and 84 drums of Np-237 contaminated material is expected to be generated in FY 94. In FY 95, the generation of Pu-239 and Np-237 waste will remain the same while the generation of Pu-238 drums is expected to decrease to 200 drums. TRU waste generation is expected to return to FY 94 levels in FY 96.

TRU-mixed waste was broken down in the same manner as TRU waste. This waste consists of lead-lined gloves and all of this waste that contains between 10 to 100 nCi/g transuranics. A total of 180 drums of Pu-238, 60 drums of Pu-239, and 240 drums of Np-237 are expected to be generated each year.

Two drums of mixed waste will be generated each year. The mixed waste from the process chillers is contaminated with freon/oil containing elevated levels of carbon tetrachloride and chloroform. Mixed waste generated by painting and maintenance activities contain methyl ethyl ketone, toluene, chromium, cadmium, and other metals. All of this mixed waste contains Pu-238.

The amount of waste will remain the same for approximately two years and will increase about 30% during transition to shutdown of about three years, and then it will decline approximately 50% from present values.

H Canyon

Contact: R. W. Jackson

Two different forms of packages are generated for low activity waste-compactor boxes and yellow B-25 boxes. The compactor boxes are primarily generated from general housekeeping activities, rodding tanks, equipment maintenance, sampling, and other routine work. This type of work also generates yellow B-25 boxes. The majority of B-25 boxes, however, are generated due to construction activities, D&R of the old B Line, and the USF project. A total of almost 720 yellow B-25 boxes per year is expected to be generated. A total of 2408 m^3 per year of low-activity waste is expected in 1995-1997.

Six 2.1 m X 3.7 m X 5.5 m steel boxes are forecasted to be generated each year from work in the old B Line. This waste is considered TRU. No other TRU waste is expected from H Canyon. Approximately 316 m^3 of contaminated facility area remains to be cleaned out. Using the generation factor of 21 for Pu-238 facilities yields approximately 72,000 cubic feet of TRU waste.

Approximately 4 m^3 per year of mixed waste is expected to be generated during a normal year of operation. Two B-6 boxes of lead shielding and lead acid batteries will be generated each year. Other mixed waste to be generated includes eight drums of freon and oil from refrigeration and air conditioning equipment, one drum of paint solvents, and one drum of mercury-contaminated material. Three drums per year of oil is also expected to be generated. The oil is generated from maintenance on gearboxes, compressors, and other equipment located in RCAs.

The amount of waste generated will remain the same for approximately two years and will increase about 30% during transition to shutdown of about three years and then it will decline approximately 50% from present values.

Outside Facilities F-Area (OFF)

Contact: J. L. Abney

The only waste to be generated by OFF is low activity waste. Waste generation is highly dependent on D&R activity. Waste is shipped to the SWDF in compactor boxes, skip pans, yellow B-25 boxes, and truckloads (for suspect soil). Approximately eight truckloads per year should be expected because of excavation work. Approximately 397 m^3 per year should be expected from OFF.

RBOF/RRF

Contact: T. O. Oliver

Approximately 192 m^3 per year of low-activity waste will be generated by Receiving Basin for Offsite Fuel. Approximately 30 yellow B-25 boxes per year will be generated from normal maintenance, fuel cask handing, and processing portable deionizers. Clean waste boxes and compactor boxes are also generated by these activities. Two hat boxes, or concrete culverts, will be generated each year to dispose of spent resin from processing portable deionizers. All of the low activity waste streams are being analyzed for carbon-14.

Two shipments per year of intermediate-level nontritiated waste is expected. This waste is comprised of fuel croppings. The type of container to be used has yet to be determined. Each shipment will be approximately 5 m^3.

Plans are being made to determine whether the intermediate-nontritiated waste stream may be decontaminated to meet the criteria for low-level radioactive waste that can be shipped in a yellow B-25 waste transport container. Accordingly, the latter waste stream may see an increased generation directly related to the generation of the intermediate-nontritiated waste stream.

The amount of waste generated will remain the same for approximately two years will increase about 30% during transition to shutdown of about three years, and then it will decline approximately 50% from present values.

The total effect that the implementation of the WSRC Procedure Manual 1S will have on the packaging of facility waste is not yet determined. Segregating waste that has significantly different isotopic distributions may profound affect the number and frequency of waste packages shipped from the facility.

A.9 Site Services

Building 723-F (Laundry)

Contact: D. Butler

The laundry facility will generate approximately 108 m^3 of low activity waste per year. The waste is packaged in clean waste boxes, compactor boxes, and yellow B-25 boxes. The majority of the waste is in the form of discarded clothing and lint filters. Yellow B-25 boxes are usually generated by replacing damaged equipment. No significant changes in the generation rate are expected in the outyears.

Central Shops Works Engineering

Contact: T. A. Richardson

Nonradioactive hazardous waste will be generated by CSWE operations. Approximately 283 m^3/yr will be generated for the next 30 years. All waste will be packaged in 55-gallon drums. Waste is generated by maintenance, painting, and road striping activities, radio and equipment repair, and gasoline spill cleanup generated by the emergency response team activities. The waste is comprised of solvents, paint and paint solvents, mercury batteries, nickel-cadmium batteries, gasoline-contaminated absorbent pads, soil, and oil dry. No significant changes in the generation rate are expected in the outyears.

A.10 Solid Waste Management

Solid Waste Disposal Facility

Contact: D. Dimmick

The SWDF has forecasted that five yellow B-25 boxes may be generated each year from equipment failure and handling unexpected occurrences. The majority of gray boxes currently in the SWDF will be returned to the generators and reworked, including removing hazardous constituents. Those that are handled at the SWDF will generate a portion of the waste included in the five yellow B-25s. In addition, SWDF expects to generate approximately 30 compactor boxes a month of low-activity waste as a result of solvent waste transfer, TRU drum dewatering, and other planned projects or activities.

Consolidated Incineration Facility

Contact: M. Lindsey

The Consolidated Incineration Facility (CIF) is scheduled for startup during the 2Q FY 96 and will provide a process facility to incinerate solid and liquid wastes generated at SRS. The facility will incinerate wastes in temporary storage, as well as newly generated wastes. These include wastes considered hazardous under the RCRA, low-level radioactive waste, and mixed wastes that are both radioactive and hazardous. The CIF itself will generate secondary waste streams of ash and blowdown. The CIF will annually generate an aqueous mixed waste of approximately 200 m^3/yr of blowdown containing 10% dissolved salts and 10% suspended solids. It will also generate approximately 31 m^3 of ash. The resulting solid waste residue from the incineration process will be solidified in a cement matrix in drums with facilities provided by this project.

Assumptions

- The CIF can incinerate low-level waste.
- Waste generated is considered mixed waste.
- The CIF can incinerate self-generated job control waste.

A.11 Savannah River Technology Center

Contact: D. L. Simmons

Low activity waste generation is expected to be approximately 621 m^3 in FY 95 with an increase of approximately 100 m^3 for FY 96. A large majority of waste generated will be from D&D work of the Californium SED facility. Several odd-sized containers will be generated from the Californium facility and the High-Level Caves. Three 3.0 m X 2.4 m X 2.1 m containers will be generated each year from the Californium facility. This waste will be generated for an indefinite period.

TRU waste generation is expected to be 10 m^3 per year from FY 95 through FY 97. The waste is comprised of job control waste from the laboratories. No TRU-mixed waste is expected to be generated.

The forecast identifies almost 60 m^3 of hazardous waste to be generated in FY 95 and FY 96. A majority of this waste will be generated by TNX in support of DWPF. Waste to be generated other than lead includes lead Tils, scintillation, mercury/chromium sludge, mercury/benzene cocktail, toner, mercury condensate, toluene, mixture of toluene and xylene, mercury catalyzed aluminum field rods, survey instruments, flush water, acid water, solvent rags, Coni filters, NiCad batteries, TPB solid materials, mercury solid waste, miscellaneous organic waste, and TPB slurry.

Two drums of mixed waste will be generated in FY 95. Benzene, cadmium, and mercury are hazardous constituents found in the mixed waste from SRTC.

Assumptions

- TNX mission will cease in FY 99.
- The SED in 773-A will undergo D&D in 1995-1998.

A.12 Tritium

Contact: B. M. Wilson

Low-activity waste generation is expected to remain constant throughout the forecast period at approximately 1,139 m^3. All waste will be containerized in B-25 boxes and compactor boxes. Waste to be generated includes shoe covers, plastic suits, rubber gloves, tape, plastic, and paper from line break and hood activities.

Approximately 3 m^3 of intermediate-level tritiated waste is expected to be produced during the 30-year period. No spent melt crucibles are anticipated to be generated in FY 95 because placement of K Reactor was placed in a standby condition. Tritium has approximately 186 old shipping containers currently located in Tritium and the Reactor area. The status of these containers is still being evaluated. These containers have not been included in the forecast numbers.

Mixed waste is comprised of mercury-contaminated equipment such as gold traps and pumps that will be shipped in various sized containers and carboys that are overpacked in a 26-gallon stainless steel container. Eight carboys and one undetermined-sized container will be generated for a total of approximately 3 m^3 each year.

Conversion of many 234-H activities to standby status (replaced by RTF) will result in a short-term increase in:

- Tritiated mercury estimated in FY 96/FY 97
- Tritium-contaminated waste oil
- Tritium-contaminated waste oil with mercury
- Wipes, mops, and job control waste associated with decontamination activities (est. FY 95-FY 96)
- Debris and other wastes associated with D&R activities (after FY 96) followed by later reduction or elimination of these waste streams. Actual impact and timing of these changes is dependent on RTF startup and operation success, DOE-Complex-Consolidation decisions, and other factors that are both unknown at present and outside Tritium Facility control.

Normal technology development and intense public and private sector scrutiny will result in a gradual reduction in production, waste generation and eventual premature shutdown of key facilities. Additionally, to the extent that portions of the 234-H facilities are currently or expected near term to be placed in warm standby and may eventually be transition to EM which will generate transition quantities of waste.

Assumptions

The Tritium facility will remain in operation beyond the 30-year window.

A.13 Offsite Generators

SRS expects to receive approximately 420 m^3 of low-level waste from offsite generators each year for the forecast period.

Appendix B

FY95 INTERMEDIATE NONTRITIATED

B-1 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
F CANYON	YELLOW B-25	110	277	9899	Job control waste, plastic suits, old crane parts, air hoses, agitator and other equipment parts, etc.
F TANK FARM	B-50	15	76	2714	Jumpers, riser plugs, thermowell, transfer jets, dip tubes, slurry pumps, spray chamber, backflush valve, etc.
F TANK FARM	YELLOW B-25	14	35	1260	HEPA filters
F TANK FARM	YELLOW B-25	2	5	180	Jumpers, riser plugs, thermowell, transfer jets, dip tubes, slurry pumps, spray chamber, backflush valve, etc.
H TANK FARM	YELLOW B-25	16	40	1440	Jumpers, riser plugs, thermocouples, reel, tapes, purge inlets, annulus vent jumpers, etc.
H TANK FARM	NONSTANDARD	23	148	5285	Jumpers, riser plugs, thermowells, transfer jets, dip tubes, slurry pumps, spray chambers, etc.
RBOF/RRF	OTHER	2	10	357	Scrap metal from routine basin work in undetermined containers.
		TOTALS	592	21135	

FY96 INTERMEDIATE NONTRITIATED

B-2 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
F CANYON	YELLOW B-25	110	277	9899	Job control waste, plastic suits, old crane parts, air hoses, agitator adn other equipment parts, etc.
F TANK FARM	YELLOW B-25	17	43	1530	HEPA filters
F TANK FARM	YELLOW B-25	2	5	180	Jumpers, jets and feed pumps
F TANK FARM	B-50	15	76	2714	Jumpers, riser plugs, thermowells, transfer jets, dip tubes, slurry pumps, spray chambers, etc.
H TANK FARM	OTHER	31	200	7142	Jumpers, riser plugs, thermowells, transfer jets, dip tubes, slurry pumps, spray chambers, etc.
H TANK FARM	YELLOW B-25	12	30	1080	Jumpers, riser plugs, thermocouples, reel, tapes, purge intelts, annulus vent jumpers, etc.
RBOF/RRF	OTHER	2	10	357	Scrap metal from routine basin work in undetermined containers.
		TOTALS	641	22902	

FY97 INTERMEDIATE NONTRITIATED

B-3 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
F CANYON	YELLOW B-25	110	277	9899	Process support, housekeeping, decontamination, job control waste, agitator, and other equipment parts, etc.
F TANK FARM	B-50	15	76	2714	HEPA filters
F TANK FARM	YELLOW B-25	17	43	1530	Jumpers, riser plugs, thermocouple, reel tapes, surge inlets, annulus vent jumper, HP sampler, etc.
F TANK FARM	YELLOW B-25	2	5	180	Jumpers, jets, and feed pumps
H TANK FARM	YELLOW B-25	21	53	1890	Jumpers, riser plugs, thermocouples, reels, tapes, purge intelts, annulus vent jumpers, etc.
H TANK FARM	OTHER	42	270	9642	Jumpers, riser plugs, thermowells, transfer jets, dip tubes, slurry pumps, spray chambers, etc.
RBOF/RRF	OTHER	2	10	357	Scrap metal from routine basin work in undetermined containers.
		TOTALS	734	26211	

FY95 INTERMEDIATE TRITIATED

B-4 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
TRITIUM	55 GALLON DRUM	1	0.20	7	Tritium contaminated oily rags
TRITIUM	OTHER	4	0.40	14	Tritium contaminated waste(carboys with stainless steel overpacks)
TRITIUM	YELLOW B-12	2	2.50	89	Retired classified components
		TOTALS	3.10	111	

FY96 INTERMEDIATE TRITIATED

B-5 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Ttl Cu. Meter	Total Cu. Feet	COMMENTS
TRITIUM	55 GALLON DRUM	1	0.20	7	Tritium contaminated oily rags
TRITIUM	OTHER	4	0.40	14	Tritium contaminated waste(carboys with stainless steel overpacks)
TRITIUM	YELLOW B-12	2	2.50	89	Retired classified components
		TOTALS	3.10	111	

FY97 INTERMEDIATE TRITIATED

B-6 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Mete	Total Cu. Feet	COMMENTS
TRITIUM	55 GALLON DRUM	1	0.20	7	Tritium contaminated oily rags
TRITIUM	YELLOW B-12	2	0.40	14	Retired classified components
TRITIUM	OTHER	4	2.50	89	Tritium contaminated waste (carboys with stainless steel overpacks)
		TOTALS	3.10	111	

FY95 LOW ACTIVITY

B-7 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
235-F	PURPLE B-25	12	30	1080	Plastic and/or rubber gloves, plastic shoe covers, cloth liners, swipes, plastic bags, and tape
235-F	YELLOW B-25	12	30	1080	Plastic and/or rubber gloves, plastic shoe covers, cloth liners, swipes, plastic bags, tape, damaged tools, etc.
247-F	COMPACTOR BOX	960	144	5146	Job control waste
247-F	YELLOW B-25	30	76	2700	Job control waste
723-F	COMPACTOR BOX	630	95	3377	Discarded clothing, lint filters, and used respirator boxes
723-F	YELLOW B-25	5	13	450	Damaged equipment
772-D	COMPACTOR BOX	650	98	3484	Lab ware, protective clothing
772-D	YELLOW B-25	6	15	540	Equipment, noncompactible items from the labs
772-F	COMPACTOR BOX	2000	300	10220	Plastic gloves, shoe covers, paper, tape, other compactible items
772-F	YELLOW B-25	200	504	18000	Job control waste from analytical measurements and from cleaning. Consists generally plastic bottles, bags, etc.
ETF	COMPACTOR BOX	340	51	1822	Swipes, tape, paper waste, job control waste
ETF	OTHER	1	29	1032	Stainless steel vessel containing spent carbon, 1032 cubic feet
ETF	PURPLE B-25	12	30	1080	Job control waste, old rubber liner, cartridge filters, HEPA filters, old pipes and valves from manholes
ETF	YELLOW B-12	100	126	4500	Mud and dirt
ETF	YELLOW B-25	37	93	3330	Job control waste, old rubber liner, cartridge filters, HEPA filters, old pipes and valves from manholes
ENVIRONMENTAL	MISC		15	536	Job control waste
F CANYON	COMPACTOR BOX	150	23	804	Paper, mop heads, rags, swipes, protective clothing and other cleaning tools
F CANYON	YELLOW B-25	221	557	19890	Job control waste, asbestos
F TANK FARM	PURPLE B-25	15	38	1350	Huts
F TANK FARM	SKIP PAN	160	717	25600	Construction waste
F TANK FARM	BURIAL BOX	2	29	1024	Jumpers, Riser Plugs, Thermowell, Transfer Jets, Dip Tubes, Slurry Pumps, Spray chamber, etc.
F TANK FARM	COMPACTOR BOX	3610	542	19350	Rubber gloves, shoe covers, swipes, stepoff pads, paper and plastic
F TANK FARM	YELLOW B-12	40	50	1800	Soil and ashpalt
F TANK FARM	YELLOW B-25	136	343	12240	Job control waste
FBL	COMPACTOR BOX	3210	482	17206	Job control waste - shoecovers, protective clothing, supplies
FBL	PURPLE B-25	24	60	2160	Job control waste too large for 21" compactor boxes
FBL	YELLOW B-25	180	454	16200	Job control waste
H CANYON	COMPACTOR BOX	3960	594	21226	Rubber gloves, shoe covers, plastic, paper, wood, protective clothing, tools, miscellaneous hardware
H CANYON	YELLOW B-25	720	1814	64800	Rubber gloves, shoe covers, plastic, paper, wood, protective clothing, tools, miscellaneous hardware
H TANK FARM	COMPACTOR BOX	10778	1618	57770	Protective clothing, job control waste
H TANK FARM	YELLOW B-12	219	276	9855	Rubble, soil
H TANK FARM	YELLOW B-25	74	186	6660	Small equipment, soil, job control waste
HBL	PURPLE B-25	72	181	6480	Job control waste
HBL	YELLOW B-25	180	454	16200	Filters, tools, used and failed equipment, construction waste, and plastic suits and hoses

FY95 LOW ACTIVITY

B-8 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
OUTSIDE FAC (F AREA)	COMPACTOR BOX	1500	225	8040	Repairs and replacement of small equipment from 211-F and A-line decontamination work
OUTSIDE FAC (F AREA)	SKIP PAN	11	49	1760	Contaminated rubble
OUTSIDE FAC (F AREA)	TRUCKLOAD	8	60	2160	Suspect soil
OUTSIDE FAC (F AREA)	YELLOW B-25	25	63	2250	Decontamination work and equipment repairs
OFFSITE GENERATORS	MISC		420	15000	Job control waste
RBOF/ARF	COMPACTOR BOX	360	54	1930	Contaminated protective clothing, swipes, mop heads.
RBOF/ARF	OTHER	2	78	2770	Spent resin in hat boxes - alpha waste concrete burial containers.
RBOF/ARF	YELLOW B-25	24	60	2160	Tools, contaminated protective clothing, miscellaneous items removed from the RCA.
REACTOR MATERIALS	PURPLE B-25	25	63	2250	Compactible building waste excluding 321-M
REACTOR MATERIALS	YELLOW B-25	30	76	2700	Contaminated non-compactible waste generated in M Area
REACTORS	COMPACTOR BOX	2000	300	10720	Compactible trash, i.e. paper, plastic, cloth, etc.
REACTORS	YELLOW B-25	650	1638	58500	Non-compactible placed in B-25s due to size, shape, contamination level or tritium contamination(suspect)
SALTSTONE	COMPACTOR BOX	430	65	2305	Job control waste
SALTSTONE	YELLOW B-25	10	25	900	Job control waste
SRTC	COMPACTOR BOX	1500	225	8040	Laboratory waste
SRTC	YELLOW B-25	156	393	14040	Job control waste
SRTC	YELLOW B-12	2	3	90	Soil
SWDF	YELLOW B-25	5	13	450	Damaged equipment
SWDF	COMPACTOR BOX	360	55	1930	Job control waste
TRITIUM	COMPACTOR BOX	1872	281	10033	Miscellaneous job control waste from linebreak and hood activities. Retired non-hazardous low-level process equip.
TRITIUM	YELLOW B-25	420	1058	37795	Shoe covers, plastic suits, rubber gloves, tape, plastic paper, etc.
		TOTALS	15270	544811	

FY96 LOW ACTIVITY

B-9 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
235-F	PURPLE B-25	12	30	1080	Plastic and/or rubber gloves, plastic shoe covers, cloth liners, swipes, plastic bags, and tape
235-F	YELLOW B-25	4	10	360	Plastic and/or rubber gloves, plastic shoe covers, cloth liners, swipes, plastic bags, tape, damaged tools, etc.
247-F	COMPACTOR BOX	960	144	5146	Job control waste
247-F	YELLOW B-25	30	76	2700	Job control waste
723-F	COMPACTOR BOX	630	95	3377	Discarded clothing, lint filters, and used respirator boxes
723-F	YELLOW B-25	5	13	450	Damaged equipment
772-D	YELLOW B-25	6	15	540	Lab ware, protective clothing
772-D	COMPACTOR BOX	650	98	3484	Equipment, uncompactable items from lab
772-F	COMPACTOR BOX	2100	315	11255	Plastic gloves, shoe covers, paper, tape, other compactible discarded items
772-F	YELLOW B-25	210	529	18900	Job control waste from analytical measurements and from cleaning. Consists generally plastic bottles, bags, etc.
ETF	COMPACTOR BOX	340	51	1822	Swipes, tape, paper waste, job control waste
ETF	OTHER	1	29	1032	Stainless steel vessel containing spent carbon, 1032 cubic feet
ETF	PURPLE B-25	14	35	1260	Job control waste, old rubber liner, cartridge filters, HEPA filters, old pipes and valves from manholes
ETF	YELLOW B-12	109	137	4905	Mud and dirt
ETF	YELLOW B-25	36	91	3240	Job control waste, old rubber liner, cartridge filters, HEPA filters, old pipes and valves from manholes
ENVIRONMENTAL	MISC		8	286	Job control waste
DWPF/SALTSTONE	YELLOW B-25	300	756	27000	Small equipment
F CANYON	COMPACTOR BOX	150	23	804	Paper, mop heads, rags, swipes, protective clothing and other cleaning tools
F CANYON	YELLOW B-25	221	557	19890	Job control waste, asbestos
F TANK FARM	SKIP PAN	160	717	25600	Construction waste
F TANK FARM	PURPLE B-25	15	38	1350	Huts
F TANK FARM	COMPACTOR BOX	4000	600	21440	Rubber gloves, shoe covers, swipes, stepoff pads, paper and plastic
F TANK FARM	YELLOW B-12	50	63	2250	Soil and asphalt
F TANK FARM	YELLOW B-25	114	287	10260	Job control waste
FBL	COMPACTOR BOX	3030	455	16241	Job control waste - shoecovers, protective clothing, supplies
FBL	PURPLE B-25	24	60	2160	Job control waste too large for 21" compactor boxes
FBL	YELLOW B-25	180	454	16200	Job control waste
H CANYON	COMPACTOR BOX	3960	594	21226	Rubber gloves, shoe covers, plastic, paper, wood, protective clothing, tools, miscellaneous hardware
H CANYON	YELLOW B-25	720	1814	64800	Rubber gloves, shoe covers, plastic, paper, wood, protective clothing, tools, miscellaneous hardware
H TANK FARM	COMPACTOR BOX	10778	1618	57770	Protective clothing, job control waste
H TANK FARM	YELLOW B-12	240	302	10800	Rubble, soil
H TANK FARM	YELLOW B-25	74	186	6660	Small equipment, soil, job control waste
HBL	PURPLE B-25	72	181	6480	Papers, plastic, shoe covers, rubble, cloth, small pieces of metal
HBL	YELLOW B-25	180	454	16200	Filters, tools, used and failed equipment, plastic suits, plastic hoses, empty spray cans, construction waste, etc.

FY96 LOW ACTIVITY

B-10 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
OUTSIDE FAC (F AREA	COMPACTOR BOX	1500	225	8040	Repairs and replacement of small equipment from 211-F and A-line decontamination work
OUTSIDE FAC (F AREA	SKIP PAN	11	49	1760	Contaminated rubble
OUTSIDE FAC (F AREA	TRUCKLOAD	8	60	2160	Suspect soil
OUTSIDE FAC (F AREA	YELLOW B-25	25	63	2250	Paper, shoe covers, scrapped product,wipes, equipment
OFFSITE GENERATORS	MSC		420	15000	Job control waste
SWDF	YELLOW B-25	20	50	1800	Ductwork, scrapped equipment, miscellaneous
SWDF	COMPACTOR BOX	360	55	1930	Job control waste
RBOF/RRF	OTHER	2	78	2770	Contaminated protective clothing, swipes, mop heads.
RBOF/RRF	YELLOW B-25	24	60	2160	Tools, contaminated protective clothing, miscellaneous items removed from the RCA.
RBOF/RRF	COMPACTOR BOX	360	54	1930	Contaminated protective clothing, swipes, mop heads.
REACTORS	COMPACTOR BOX	2000	300	10720	Compactable trash, i.e. paper, plastic, cloth, etc.
REACTORS	YELLOW B-25	600	1512	54000	Non-compactible placed in B-25s due to size, shape, contamination levels or tritium contamination(suspect)
REACTOR MATERIALS	YELLOW B-25	20	50	1800	Miscellaneous job control waste from linebreak and hood activities. Retired non-hazardous low-level process equip.
REACTOR MATERIALS	PURPLE B-25	20	50	1800	Shoe covers, plastic suits, rubber gloves, tape, plastic, paper, etc.
TRITIUM	YELLOW B-25	420	1058	37795	Shoe covers, plastic suits, rubber gloves, tape, plastic, paper, etc.
TRITIUM	COMPACTOR BOX	1872	281	10033	Job control waste
SRTC	COMPACTOR BOX	1500	225	8040	Laboratory waste
SRTC	OTHER	3	78	2785	Job control waste
SRTC	YELLOW B-25	168	423	15120	Job control waste
SRTC	YELLOW B-12	2	3	90	Soil
		TOTALS	15932	568947	

FY97 LOW ACTIVITY

B-11 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
235-F	PURPLE B-25	12	30	1080	Plastic and/or rubber gloves, plastic shoe covers, cloth liners, swipes, plastic bags, and tape
235-F	YELLOW B-25	4	10	360	Plastic and/or rubber gloves, plastic shoe covers, cloth liners, swipes, plastic bags, tape, damaged tools and equipme
247-F	COMPACTOR BOX	960	144	5146	Job control waste
247-F	YELLOW B-25	30	76	2700	Job control waste
723-F	COMPACTOR BOX	630	95	3377	Discarded clothing, lint filters, and used respirator boxes
723-F	YELLOW B-25	5	13	450	Damaged equipment
772-D	COMPACTOR BOX	675	101	3618	Lab ware, protective clothing
772-D	YELLOW B-25	8	20	720	Equipment, uncompactible items from lab
772-F	COMPACTOR BOX	2100	315	11256	Plastic gloves, shoe covers, paper, tape, other compactible discarded items
772-F	YELLOW B-25	180	454	16200	Job control waste from analytical measurements and from cleaning. Consists generally plastic bottles, bags, etc.
DWPF/SALTSTONE	YELLOW B-25	300	756	27000	Small equipment, job control waste
ETF	COMPACTOR BOX	340	51	1822	Swipes, tape, paper waste, job control waste
ETF	OTHER	1	29	1032	Stainless steel vessel containing spent carbon, 1032 cubic feet
ETF	YELLOW B-25	27	68	2430	Job control waste, old rubber liner, cartridge filters, HEPA filters, old pipes and valves from manholes
ETF	PURPLE B-25	12	30	1080	Job control waste, old rubber liner, cartridge filters, HEPA filters, old pipes and valves from manholes
ETF	YELLOW B-12	100	126	4500	Mud and dirt
ENVIRONMENTAL	MSC		22	786	Job control waste
F CANYON	COMPACTOR BOX	150	23	804	Paper, mop heads, rags, swipes, protective clothing and other cleaning tools
F CANYON	YELLOW B-25	221	557	19890	Job control waste, asbestos
F TANK FARM	SKIP PAN	160	717	25600	Construction waste
F TANK FARM	COMPACTOR BOX	3610	542	19350	Rubber gloves, shoe covers, swipes, stepoff pads, paper and plastic
F TANK FARM	YELLOW B-12	50	63	2250	Soil and ashpalt
F TANK FARM	YELLOW B-25	108	272	9720	Job control waste
F TANK FARM	PURPLE B-25	15	38	1350	Huts
FBL	COMPACTOR BOX	3600	540	19296	Shoe covers, gloves, protective clothing, supplies
FBL	PURPLE B-25	41	103	3690	Job control waste too large for 21" compactor boxes
FBL	YELLOW B-25	240	605	21600	Job control waste
H CANYON	COMPACTOR BOX	3960	594	21226	Rubber gloves, shoe covers, plastic, paper, wood, protective clothing, tools, miscellaneous hardware
H CANYON	YELLOW B-25	720	1814	64800	Rubber gloves, shoe covers, plastic, paper, wood, protective clothing, tools, miscellaneous hardware
H TANK FARM	COMPACTOR BOX	10778	1618	57770	Protective clothing, job control waste
H TANK FARM	YELLOW B-12	244	307	10980	Rubble, soil
H TANK FARM	YELLOW B-25	74	186	6660	Small equipment, soil, job control waste
HBL	PURPLE B-25	72	181	6480	Job control waste
HBL	YELLOW B-25	180	454	16200	Filters, tools, used and failed equipment, construction waste, and plastic suits and hoses

FY97 LOW ACTIVITY

B-12 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
OUTSIDE FAC (F AREA	COMPACTOR BOX	1500	225	8040	Repairs and replacement of small equipment from 211-F and A-line decontamination work
OUTSIDE FAC (F AREA	SKIP PAN	11	49	1760	Contaminated rubble
OUTSIDE FAC (F AREA	TRUCKLOAD	8	60	2160	Suspect Soil
OUTSIDE FAC (F AREA	YELLOW B-25	25	63	2250	Decontamination work and equipment repairs
OFFSITE GENERATORS	MSC		420	15000	Job control waste
RBOF/RRF	COMPACTOR BOX	451	68	2417	Contaminated protective clothing, swipes, mop heads.
RBOF/RRF	OTHER	2	78	2770	Spent resin in hat boxes - alpha waste concrete burial containers.
RBOF/RRF	YELLOW B-25	30	76	2700	Tools, contaminated protective clothing, miscellaneous items removed from the RCA.
REACTOR MATERIALS	PURPLE B-25	25	63	2250	Compactible building waste excluding 321-M
REACTOR MATERIALS	YELLOW B-25	15	38	1350	Contaminated non-compactible waste generated in M Area
REACTORS	COMPACTOR BOX	2000	300	10720	Compactible trash, i.e. paper, plastic, cloth, etc.
REACTORS	YELLOW B-25	550	1386	49500	Non-compactible placed in B-25s due to size, shape, contamination levels or tritium contamination(suspect)
SRTC	COMPACTOR BOX	1365	205	7316	Laboratory waste
SRTC	OTHER	3	47	1680	Laboratory waste and filter housing-SRS, Equipment from the Californium facility
SRTC	YELLOW B-25	168	423	15120	Job control waste
SRTC	YELLOW B-12	2	3	90	Soil
SWDF	YELLOW B-25	5	13	450	Damaged equipment
SWDF	COMPACTOR BOX	360	55	1930	Job control waste
TRITIUM	YELLOW B-25	420	1058	37795	Miscellaneous job control waste from linebreak and hood activities. Retired non-hazardous low-level process equip.
TRITIUM	COMPACTOR BOX	1872	281	10033	Shoe covers, plastic suits, rubber gloves, tape, plastic, paper, etc.
		TOTALS	15866	566550	

FY95 MIXED

B-13 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
772-F	55 GALLON DRUM	3	1	22	Generally solid lead items used for various shielding purposes within the laboratory facility
ENVIRONMENTAL	55 GALLON DRUM	4424	911	32518	Purge water, soil and mud, personal protective equipment
FBL	55 GALLON DRUM	6	1	44	Decontamination equipment, broken thermometers, lead shielding and batteries
F TANK FARM	55 GALLON DRUM	2	0	15	Chromated contaminated material, relief valves, fluorescent bulbs, zinc clad coating part E&F mixed
F TANK FARM	55 GALLON DRUM	4	1	29	Used oil
H CANYON	55 GALLON DRUM	10	2	74	Mercury, swipes, glass, plastic, freon, oil, paint
H CANYON	YELLOW B-6	2	1	24	Contaminated lead shielding, drained lead acid battery carcasses, other lead waste
H CANYON	55 GALLON DRUM	3	1	22	Used oil
H TANK FARM	YELLOW B-6	6	2	72	Lead shielding
H TANK FARM	55 GALLON DRUM	5	1	37	Chromated cooling water (chromate spills)
HBL	55 GALLON DRUM	2	0	15	Paint rags, freon/oil
REACTOR MATERIALS	GREY B-25	1	3	90	Used filter belts
REACTOR MATERIALS	OTHER	704	187	6680	Sludge in 71 gallon containers
REACTORS	55 GALLON DRUM	13	3	96	Contaminated solvent rags, mercury contaminated rags and filters, spent solvent(Trichloroethane)
REACTORS	55 GALLON DRUM	20	4	147	Used oil from equipment
SRTC	55 GALLON DRUM	1	0	7	Tank Farm waste (DWPF) from treatability study
SRTC	YELLOW B-6	1	0	12	Lead
TRITIUM	OTHER	10	3	112	Tritium contaminated waste oil, retired mercury contaminated equipment in carboys and stainless steel boxes
		TOTALS	1121	40015	

FY96 MIXED

B-14 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
772-F	55 GALLON DRUM	3	1	22	Generally solid lead items used for various shielding purposes within the laboratory facility
CIF	55 GALLON DRUM	825	170	6060	Ash/blowdown (Assumes CIF February 2, 1996 startup)
DWPF/SALTSTONE	OTHER		190	6710	Benzene stream feed
	55 GALLON DRUM		12	530	Operations and Maintenance Job Control
ENVIRONMENTAL	55 GALLON DRUM	3173	653	23321	Purge water, soil and mud, personal protective equipment
FBL	55 GALLON DRUM	6	1	44	Decontamination equipment, broken thermometers, lead shielding and batteries
F TANK FARM	55 GALLON DRUM	2	0	15	Chromated contaminated material, job control waste, relief valves, bulbs, zinc clad coating
F TANK FARM	55 GALLON DRUM	4	1	29	Used oil
H CANYON	55 GALLON DRUM	10	2	74	Mercury, swipes, glass, plastic, paint, freon, oil
H CANYON	YELLOW B-12	2	3	90	Contaminated lead shielding, drained lead acid battery carcasses, other lead waste
H CANYON	55 GALLON DRUM	3	1	22	Used oil
H TANK FARM	YELLOW B-6	6	4	135	Lead shielding
H TANK FARM	55 GALLON DRUM	5	1	37	Chromate spills (chromated cooling water)
H TANK FARM	BOX	1	16		ITP failed filter
HBL	55 GALLON DRUM	2	0	15	Paint rags, freon/oil
REACTOR MATERIALS	OTHER	2112	561	20022	Sludge in 71 gallon containers
REACTOR MATERIALS	GREY B-25	1	3	90	Used filter bolts
REACTORS	55 GALLON DRUM	8	2	59	Contaminated solvent rags, mercury contaminated rags and filters, spent solvent(Trichloroethane)
REACTORS	55 GALLON DRUM	10	2	74	Used oil from equipment
SRTC	55 GALLON DRUM	1	0	7	Tank Farm waste (DWPF) from DWPT Treatability Study
TRITIUM	OTHER	10	3	112	Tritium contaminated waste oil, retired mercury contaminated equipment in carboys and stainless steel boxes
	TOTALS		1625	57468	

FY97 MIXED

B-15 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
772-F	55 GALLON DRUM	4	1	29	Generally solid lead items used for various shielding purposes within the laboratory facility
CF	55 GALLON DRUM	1100	226	8085	Ash/blowdown in 55 gallon drums
DWPF/SALTSTONE	OTHER		190	6710	Mixed waste benzene stream
	55 GALLON DRUM		12	530	Operations and Maintenance Job Control
ENVIRONMENTAL	55 GALLON DRUM	3309	681	24321	Purge water, soil and mud, personal protective equipment
FBL	55 GALLON DRUM	6	1	44	Decontamination equipment, broken thermometers, lead shielding and batteries
F TANK FARM	55 GALLON DRUM	4	1	29	Used oil from equipment
F TANK FARM	55 GALLON DRUM	2	0	15	Chromated contaminated equipment
H CANYON	55 GALLON DRUM	10	2	74	Mercury, swipes, glass, plastic, freon, oil, paint
H CANYON	YELLOW B-6	2	1	24	Contaminated lead shielding, drained lead acid battery carcasses, other lead waste
H CANYON	55 GALLON DRUM	3	1	22	Used oil from equipment
H TANK FARM	YELLOW B-6	6	4	135	Lead shielding
H TANK FARM	55 GALLON DRUM	5	1	37	Chromate spills (chromated cooling water)
HBL	55 GALLON DRUM	2	0	15	Paint rags, freon/oil
REACTORS	55 GALLON DRUM	8	2	59	Contaminated solvent rags, mercury contaminated rags and filters, spent solvent(Trichloroethane)
SRTC	55 GALLON DRUM	1	0	7	Tank Farm waste (DWPF) from DWPT Treatability Study
TRITIUM	OTHER	9	3	101	Tritium contaminated waste oil, retired mercury contaminated equipment in carboys and stainless steel boxes
		TOTALS	1126	40237	

FY95 NONRADIOACTIVE HAZARDOUS

B-16 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
CONSTRUCTION	55 GALLON DRUM	79	16	581	Job control waste
CSWE	55 GALLON DRUM	7	1	51	Ignitable
CSWE	55 GALLON DRUM	3	1	22	F list
CSWE	55 GALLON DRUM	3	1	22	Toxic
ETF	55 GALLON DRUM	1	0	7	Oily rags - toxic
ENVIRONMENTAL	55 GALLON DRUM	5962	1227	43820	Purge water, job control waste
F TANK FARM	55 GALLON DRUM	13	3	96	Chromated contaminated materials, relief valves, florescent bulbs, zinc clad coating
H TANK FARM	55 GALLON DRUM	10	2	74	Chromated cooling water - toxic
REACTOR MATERIALS	55 GALLON DRUM	7	1	51	Flourescent light bulbs, miscellaneous batteries, paint, solvent rags - TCLP
REACTORS	55 GALLON DRUM	5	1	37	Solvent rags, mercury relays, mercury batteries, Nicad batteries, spent solvent, TCLP waste
SRTC	55 GALLON DRUM	287	59	2109	Analytical waste, TNX operations waste (see narrative)
		TOTALS	1312	46871	

FY96 NONRADIOACTIVE HAZARDOUS

B-17 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
CONSTRUCTION	55 GALLON DRUM	79	16	581	Job control waste
CSWE	55 GALLON	3	1	22	F list
CSWE	55 GALLON DRUM	7	1	51	Ignitable
CSWE	55 GALLON DRUM	3	1	22	TCLP
DWPF	55 GALLON DRUM	1	0	7	Laboratory waste
ETF	55 GALLON DRUM	1	0	7	Oily rags - toxic
ENVIRONMENTAL	55 GALLON DRUM	4193	863	30820	Purged water, Job control waste
F TANK FARM	55 GALLON DRUM	15	3	110	Chromated contalminated materials, relief valves, florescent bulbs, zinc clad coatings
H TANK FARM	55 GALLON DRUM	10	2	74	Chromated cooling water - toxic
REACTORS	55 GALLON DRUM	3	1	22	*Mercury relays, mercury batteries, Nicad batteries*
REACTOR MATERIALS	55 GALLON DRUM	6	1	44	Flourescent light bulbs, miscellaneous batteries, paint, solvent rags - TCLP
SRTC	55 GALLON DRUM	287	59	2109	Analytical waste, TNX operations waste (see narrative)
		TOTALS	948	33870	

FY97 NONRADIOACTIVE HAZARDOUS

B-18 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
CONSTRUCTION	55 GALLON DRUM	79	16	581	Job control waste
CSWE	55 GALLON DRUM	7	1	51	IGNITABLE
CSWE	55 GALLON DRUM	4	1	30	F list
CSWE	55 GALLON DRUM	3	1	22	TCLP
DWPF	55 GALLON DRUM	1	0	7	Laboratory waste
ETF	55 GALLON DRUM	1	0	7	Oily rags - Toxic
ENVIRONMENTAL	55 GALLON	4280	881	31464	Purged water, Job control waste
F TANK FARM	55 GALLON DRUM	17	4	125	Chromated contaminate materials, relief valves, florescent bulbs, zinc clad coatings
H TANK FARM	55 GALLON DRUM	10	2	74	Chromated cooling water - toxic
REACTOR MATERIALS	55 GALLON DRUM	1	0	7	Flourescent light bulbs, miscellaneous batteries, paint, solvent rags - TCLP
SRTC	55 GALLON DRUM	136	28	1000	Analytical waste, TNX operations waste (see narrative)
		TOTALS	934	33368	

FY95 TRANSURANIC

B-19 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

10/20/94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
235-F	55 GALLON DRUM	13	3	96	Neoprene glovebox gloves, plastic, rubber, equipment and miscellaneous items from cabinets, cells, and gloveboxes
235-F	OTHER	8	1	32	HEPA filters in 24"x24"x12" polyethylene box
772-F	55 GALLON DRUM	21	4	154	Job control waste consisting of plastic and glass sample vials, caps, paper, plastic pipette tips, etc.
FBL	55 GALLON DRUM	480	99	3528	Processing tools, materials taken from within process cabinets, hut decon equipment
FBL	CARBON STEEL BUR	2	85	3024	Construction waste, i.e., scaffolding, panels from gloves boxes, concrete, etc.
FBL	POLYETHYLENE BOX	43	5	187	HEPA filters from process cabinets
H CANYON	OTHER	6	254	9072	Old B-Line D&R - Job control waste, wood, miscellaneous hardware, conduit, concrete, pipe, etc.
HBL	55 GALLON DRUM	356	73	2617	TRU waste typically includes job control waste, wood, bottles, drumliners, windows, failed and used equipment, etc.
SRTC	55 GALLON DRUM	32	7	235	Job control waste - SRS, Equipment from the High Level Caves
SRTC	OTHER	10	10	360	Job control waste
		TOTALS	541	19305	

FY96 TRANSURANIC

B-20 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
235-F	55 GALLON DRUM	3	1	22	Neoprene glovebox gloves, plastic, rubber, equipment and miscellaneous items from cabinets, cells, and gloveboxes
235-F	OTHER	8	1	32	HEPA filters in 24"x24"x12" polyethylene box
772-F	55 GALLON DRUM	22	5	162	Job control waste consisting of plastic and glass sample vials, caps, paper, plastic pipette tips, etc.
FBL	55 GALLON DRUM	240	49	1764	Processing tools, materials taken from within the process cabinets, hut decon equipment
FBL	POLYETHELENE BOX	43	5	172	HEPA filters from process cabinets, construction waste, i.e., concrete, scaffolding, etc.
FBL	BURIAL BOX	3	127	4540	Construction waste, i.e., concrete, scaffolding, etc.
H CANYON	OTHER	6	254	9072	Old B-Line D&R - Job control waste, wood, miscellaneous hardware, conduit, concrete, pipe, etc.
HBL	55 GALLON DRUM	396	81	2911	TRU waste typically includes job control waste, wood, botttles, drumliners, windows, failed and used equipment, etc.
SRTC	55 GALLON DRUM	32	7	235	Job control waste
SRTC	OTHER	10	10	360	Job control waste
		TOTALS	540	19270	

FY97 TRANSURANIC

B-21 Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
235-F	55 GALLON DRUM	3	1	22	Neoprene glovebox gloves, plastic, and rubber
235-F	OTHER	8	1	32	HEPA filters in 24"x24"x12" polyethylene box
772-F	55 GALLON DRUM	23	5	169	Job control waste consisting of plastic and glass sample vials, caps, paper, plastic pipette tips, etc.
FBL	55 GALLON DRUM	300	62	2205	Processing tools, materials from within the process cabinets, hut decon equipment
FBL	OTHER	43	41	1474	HEPA filters from process cabinets
FBL	BURIAL BOX	5	212	7560	Construction waste, i.e., scaffolding, panels from glove boxes, large facility structures, concrete, etc.
H CANYON	CARBON STEEL BOX	6	254	9072	Old B-Line D&R - Job control waste, wood, miscellaneous hardware, conduit, concrete, pipe, etc.
HBL	55 GALLON DRUM	396	81	2911	TRU waste typically includes job control waste, wood, bottles, drumliners, windows, failed and used equipment, etc.
SRTC	OTHER	10	10	360	Job control waste
		TOTALS	667	23805	

FY95 TRU-MIXED

B-22 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
772-F	55 GALLON DRUM	1	0	7	Mainly lead containing waste generated by the use of lead lined glovebox gloves/periodic changing
FBL	55 GALLON DRUM	48	10	353	Lead lined gloves, cadmium, calcium metal
HBL	55 GALLON DRUM	480	99	3528	Lead lined gloves
		TOTALS	109	3888	

FY96 TRU-MIXED

B-23 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
772-F	55 GALLON DRUM	1	0	7	Mainly lead containing waste generated by the use of lead lined glovebox gloves/periodic changing
FBL	55 GALLON DRUM	48	10	353	Lead lined gloves, cadmium, calcium metal
HBL	55 GALLON DRUM	480	99	3528	Lead lined gloves
		TOTALS	109	3888	

FY97 TRU-MIXED

B-24 **Appendix B, 1995, 1996, 1997 Detailed Waste Forecast Summary**

20-Oct-94

Facility	Type of Containers	Number	Total Cu. Meter	Total Cu. Feet	COMMENTS
772-F	55 GALLON DRUM	1	0	7	Mainly lead containing waste generated by the use of lead lined glovebox gloves/periodic changing
FBL	55 GALLON DRUM	66	14	485	Lead lined gloves, cadmium, calcium metal
HBL	55 GALLON DRUM	480	99	3528	Lead lined gloves
		TOTALS	113	4020	

Appendix C

C-1

Appendix C, Facility Specific 30 Year Waste Forecast

20-Oct-94

Construction Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	0	0	0	0	16
1996	0	0	0	0	16
1997	0	0	0	0	16
1998	0	0	0	0	12
1999	0	0	0	0	12
2000	0	0	0	0	12
2001	0	0	0	0	12
2002	0	0	0	0	12
2003	0	0	0	0	12
2004	0	0	0	0	12
2005	0	0	0	0	12
2006	0	0	0	0	12
2007	0	0	0	0	12
2008	0	0	0	0	12
2009	0	0	0	0	12
2010	0	0	0	0	12
2011	0	0	0	0	12
2012	0	0	0	0	12
2013	0	0	0	0	12
2014	0	0	0	0	12
2015	0	0	0	0	12
2016	0	0	0	0	12
2017	0	0	0	0	12
2018	0	0	0	0	12
2019	0	0	0	0	12
2020	0	0	0	0	12
2021	0	0	0	0	12
2022	0	0	0	0	12
2023	0	0	0	0	12
2024	0	0	0	0	12
30 YR TOTALS	0	0	0	0	372

DWPF/Saltstone Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	90	0	0	57	0
1996	756	0	0	202	0.20
1997	756	0	0	202	0.20
1998	756	0	0	202	0.20
1999	756	0	0	202	0.20
2000	756	0	0	202	0.20
2001	756	0	0	202	0.20
2002	756	0	0	202	0.20
2003	756	0	0	202	0.20
2004	756	0	0	202	0.20
2005	756	0	0	202	0.20
2006	756	0	0	202	0.20
2007	756	0	0	202	0.20
2008	756	0	0	202	0.20
2009	756	0	0	202	0.20
2010	756	0	0	202	0.20
2011	756	0	0	202	0.20
2012	756	0	0	202	0.20
2013	756	0	0	202	0.20
2014	756	0	0	202	0.20
2015	756	0	0	202	0.20
2016	756	0	0	202	0.20
2017	756	0	0	202	0.20
2018	756	0	0	202	0.20
2019	756	0	0	202	0.20
2020	756	0	0	202	0.20
2021	756	0	0	202	0.20
2022	756	0	0	202	0.20
2023	756	0	0	202	0.20
2024	756	0	0	202	0.20
30 YR TOTALS	22,014	0	0	5,915	6

Environmental Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	15	0	0	911	1,227
1996	8	0	0	653	863
1997	22	0	0	681	881
1998	50	0	0	709	944
1999	50	0	0	737	917
2000	50	0	0	766	934
2001	50	0	0	794	997
2002	50	0	0	822	970
2003	54	0	0	851	988
2004	54	0	0	878	1,051
2005	54	0	0	907	1,024
2006	54	0	0	935	1,042
2007	54	0	0	963	1,105
2008	54	0	0	992	1,078
2009	54	0	0	1,020	1,096
2010	54	0	0	1,048	1,159
2011	54	0	0	1,076	1,132
2012	54	0	0	1,104	1,150
2013	54	0	0	1,133	1,213
2014	54	0	0	1,161	1,186
2015	54	0	0	1,189	1,204
2016	54	0	0	1,217	1,267
2017	54	0	0	1,245	1,239
2018	54	0	0	1,274	1,273
2019	54	0	0	1,302	1,275
2020	54	0	0	1,330	1,294
2021	54	0	0	1,358	1,327
2022	54	0	0	1,386	1,330
2023	54	0	0	1,417	1,347
2024	54	0	0	1,443	1,377
30 YR TOTALS	1,483	0	0	31,302	33,690

Analytical Labs Waste Forecasty by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	917	0	4	1	0
1996	957	0	4	1	0
1997	890	0	4	1	0
1998	945	0	4	1	0
1999	804	0	4	1	0
2000	804	0	4	1	0
2001	804	0	4	1	0
2002	804	0	4	1	0
2003	804	0	4	1	0
2004	804	0	4	1	0
.2005	804	0	4	1	0
2006	804	0	4	1	0
2007	804	0	4	1	0
2008	804	0	4	1	0
2009	804	0	4	1	0
2010	804	0	4	1	0
2011	804	0	4	1	0
2012	804	0	4	1	0
2013	804	0	4	1	0
2014	804	0	4	1	0
2015	804	0	4	1	0
2016	804	0	4	1	0
2017	804	0	4	1	0
2018	804	0	4	1	0
2019	804	0	4	1	0
2020	804	0	4	1	0
2021	804	0	4	1	0
2022	804	0	4	1	0
2023	804	0	4	1	0
2024	804	0	4	1	0
30 YR TOTALS	24,613	0	127	28	0

F Tank Farm Waste Forecast by Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	1,719	116	0	1	2
1996	1,705	124	0	1	2
1997	1,633	124	0	1	2
1998	1,279	29	0	1	2
1999	1,217	28	0	1	2
2000	1,217	28	0	1	2
2001	1,279	29	0	1	2
2002	1,279	29	0	1	2
2003	1,217	28	0	1	2
2004	1,156	27	0	1	2
2005	1,217	28	0	1	2
2006	1,217	28	0	1	2
2007	1,217	28	0	1	2
2008	1,217	28	0	1	2
2009	1,217	28	0	1	2
2010	1,217	28	0	1	2
2011	1,217	28	0	1	2
2012	1,217	28	0	1	2
2013	1,217	28	0	1	2
2014	1,217	28	0	1	2
2015	1,217	28	0	1	2
2016	1,217	28	0	1	2
2017	1,217	28	0	1	2
2018	1,217	28	0	1	2
2019	1,217	28	0	1	2
2020	1,217	28	0	1	2
2021	1,217	28	0	1	2
2022	1,217	28	0	1	2
2023	1,217	28	0	1	2
2024	1,217	28	0	1	2
30 YR TOTALS	38,041	1,122	0	30	60

ETF Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	329	0	0	0	1
1996	343	0	0	0	1
1997	304	0	0	0	1
1998	330	0	0	0	1
1999	330	0	0	0	1
2000	330	0	0	0	1
2001	330	0	0	0	1
2002	330	0	0	0	1
2003	330	0	0	0	1
2004	330	0	0	0	1
2005	330	0	0	0	1
2006	330	0	0	0	1
2007	330	0	0	0	1
2008	330	0	0	0	1
2009	330	0	0	0	1
2010	330	0	0	0	1
2011	330	0	0	0	1
2012	330	0	0	0	1
2013	330	0	0	0	1
2014	330	0	0	0	1
2015	330	0	0	0	1
2016	330	0	0	0	1
2017	330	0	0	0	1
2018	330	0	0	0	1
2019	330	0	0	0	1
2020	330	0	0	0	1
2021	330	0	0	0	1
2022	330	0	0	0	1
2023	330	0	0	0	1
2024	330	0	0	0	1
					1
30 YR TOTALS	9,886	0	0	0	30

H Tank Farm Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	2,080	188	0	3	2
1996	2,106	230	0	21	2
1997	2,111	323	0	5	2
1998	3,160	14	0	18	2
1999	3,160	14	0	2	2
2000	3,476	15	0	18	2
2001	3,318	14	0	2	2
2002	3,160	14	0	18	2
2003	3,318	14	0	2	2
2004	3,160	14	0	18	2
2005	3,160	14	0	2	2
2006	3,160	14	0	18	2
2007	3,160	14	0	2	2
2008	3,160	14	0	18	2
2009	3,160	14	0	2	2
2010	3,160	14	0	18	2
2011	3,160	14	0	2	2
2012	3,160	14	0	18	2
2013	3,160	14	0	2	2
2014	3,160	14	0	18	2
2015	3,160	14	0	2	2
2016	3,160	14	0	18	2
2017	3,160	14	0	2	2
2018	3,160	14	0	18	2
2019	3,160	14	0	2	2
2020	3,160	14	0	18	2
2021	3,160	14	0	2	2
2022	3,160	14	0	18	2
2023	3,160	14	0	2	2
2024	3,160	14	0	18	2
30 YR TOTALS	92,249	1,121	0	303	61

Reactors Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	1,938	0	0	7	1
1996	1,812	0	0	4	1
1997	1,686	0	0	2	0
1998	0	0	0	0	0
1999	0	0	0	0	0
2000	0	0	0	0	0
2001	0	0	0	0	0
2002	0	0	0	0	0
2003	0	0	0	0	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	0	0	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
30 YR TOTALS	5,436	0	0	13	2

Reactor Materials Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	139	0	0	190	1
1996	100	0	0	564	1
1997	101	0	0	0	0
1998	0	0	0	0	0
1999	0	0	0	0	0
2000	0	0	0	0	0
2001	0	0	0	0	0
2002	0	0	0	0	0
2003	0	0	0	0	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	0	0	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
30 YR TOTALS	340	0	0	754	2

235-F Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	60	0	4	0	0
1996	40	0	1	0	0
1997	40	0	1	0	0
1998	50	0	2	0	0
1999	50	0	2	0	0
2000	50	0	2	0	0
2001	50	0	2	0	0
2002	50	0	2	0	0
2003	20	0	1	0	0
2004	20	0	1	0	0
2005	20	0	1	0	0
2006	20	0	1	0	0
2007	20	0	1	0	0
2008	20	0	1	0	0
2009	20	0	1	0	0
2010	20	0	1	0	0
2011	20	0	1	0	0
2012	20	0	1	0	0
2013	20	0	1	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
30 YR TOTALS	610	0	24	0	0

247-F Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	220	0	0	0	0
1996	220	0	0	0	0
1997	220	0	0	0	0
1998	275	0	0	0	0
1999	275	0	0	0	0
2000	275	0	0	0	0
2001	275	0	0	0	0
2002	275	0	0	0	0
2003	110	0	0	0	0
2004	110	0	0	0	0
2005	110	0	0	0	0
2006	110	0	0	0	0
2007	110	0	0	0	0
2008	110	0	0	0	0
2009	110	0	0	0	0
2010	110	0	0	0	0
2011	110	0	0	0	0
2012	110	0	0	0	0
2013	110	0	0	0	0
2014	110	0	0	0	0
2015	110	0	0	0	0
2016	110	0	0	0	0
2017	110	0	0	0	0
2018	110	0	0	0	0
2019	110	0	0	0	0
2020	110	0	0	0	0
2021	110	0	0	0	0
2022	110	0	0	0	0
2023	110	0	0	0	0
2024	110	0	0	0	0
30 YR TOTALS	4,455	0	0	0	0

FB Line Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	996	0	199	1	0
1996	969	0	191	1	0
1997	1,248	0	329	1	0
1998	1,248	0	270	1	0
1999	1,248	0	270	1	0
2000	1,248	0	270	1	0
2001	873	0	351	2	0
2002	873	0	351	2	0
2003	873	0	351	1	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	0	0	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
30 YR TOTALS	9,576	0	2,582	12	0

F Canyon Waste Forecast by Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ.
1995	580	277	0	0	0
1996	580	277	0	0	0
1997	580	277	0	0	0
1998	580	277	0	0	0
1999	580	277	0	0	0
2000	580	277	0	0	0
2001	754	360	0	0	0
2002	754	360	0	0	0
2003	754	360	0	0	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	0	0	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
30 YR TOTALS	5,742	2,742	0	0	0

HB Line Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ.
1995	635	0	172	0.43	0
1996	635	0	180	0.43	0
1997	635	0	180	0.43	0
1998	635	0	180	0.43	0
1999	635	0	180	0.43	0
2000	826	0	234	0.43	0
2001	826	0	234	0.43	0
2002	826	0	234	0.43	0
2003	318	0	90	0.43	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	0	0	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
30 YR TOTALS	5,971	0	1,684	4	0

H Canyon Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ.
1995	2,408	0	254	5	0
1996	2,408	0	254	5	0
1997	2,408	0	254	5	0
1998	2,408	0	254	5	0
1999	2,408	0	254	5	0
2000	3,130	0	330	7	0
2001	3,130	0	330	7	0
2002	3,130	0	330	7	0
2003	1,204	0	127	3	0
2004	1,204	0	127	3	0
2005	1,204	0	127	3	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	0	0	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
30 YR TOTALS	25,042	0	2,641	55	0

OFF Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ.
1995	397	0	0	0	0
1996	397	0	0	0	0
1997	397	0	0	0	0
1998	397	0	0	0	0
1999	397	0	0	0	0
2000	397	0	0	0	0
2001	397	0	0	0	0
2002	397	0	0	0	0
2003	397	0	0	0	0
2004	397	0	0	0	0
2005	397	0	0	0	0
2006	397	0	0	0	0
2007	397	0	0	0	0
2008	397	0	0	0	0
2009	397	0	0	0	0
2010	397	0	0	0	0
2011	397	0	0	0	0
2012	397	0	0	0	0
2013	397	0	0	0	0
2014	397	0	0	0	0
2015	397	0	0	0	0
2016	397	0	0	0	0
2017	397	0	0	0	0
2018	397	0	0	0	0
2019	397	0	0	0	0
2020	397	0	0	0	0
2021	397	0	0	0	0
2022	397	0	0	0	0
2023	397	0	0	0	0
2024	397	0	0	0	0
30 YR TOTALS	11,910	0	0	0	0

RBOF Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	192	10	0	0	0
1996	192	10	0	0	0
1997	192	10	0	0	0
1998	192	10	0	0	0
1999	192	10	0	0	0
2000	250	10	0	0	0
2001	250	10	0	0	0
2002	96	10	0	0	0
2003	96	10	0	0	0
2004	96	10	0	0	0
2005	96	10	0	0	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	0	0	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2025	0	0	0	0	0
30 YR TOTALS	1,444	110	0	0	0

723-F Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	108	0	0	0	0
1996	108	0	0	0	0
1997	108	0	0	0	0
1998	108	0	0	0	0
1999	108	0	0	0	0
2000	108	0	0	0	0
2001	108	0	0	0	0
2002	108	0	0	0	0
2003	108	0	0	0	0
2004	108	0	0	0	0
2005	108	0	0	0	0
2006	108	0	0	0	0
2007	108	0	0	0	0
2008	108	0	0	0	0
2009	108	0	0	0	0
2010	108	0	0	0	0
2011	108	0	0	0	0
2012	108	0	0	0	0
2013	108	0	0	0	0
2014	108	0	0	0	0
2015	108	0	0	0	0
2016	108	0	0	0	0
2017	108	0	0	0	0
2018	108	0	0	0	0
2019	108	0	0	0	0
2020	108	0	0	0	0
2021	108	0	0	0	0
2022	108	0	0	0	0
2023	108	0	0	0	0
2024	108	0	0	0	0
30 YR TOTALS	3,240	0	0	0	0

CSWE Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	0	0	0	0	2.70
1996	0	0	0	0	2.70
1997	0	0	0	0	2.70
1998	0	0	0	0	2.70
1999	0	0	0	0	2.70
2000	0	0	0	0	2.70
2001	0	0	0	0	2.70
2002	0	0	0	0	2.70
2003	0	0	0	0	2.70
2004	0	0	0	0	2.70
2005	0	0	0	0	2.70
2006	0	0	0	0	2.70
2007	0	0	0	0	2.70
2008	0	0	0	0	2.70
2009	0	0	0	0	2.70
2010	0	0	0	0	2.70
2011	0	0	0	0	2.70
2012	0	0	0	0	2.70
2013	0	0	0	0	2.70
2014	0	0	0	0	2.70
2015	0	0	0	0	2.70
2016	0	0	0	0	2.70
2017	0	0	0	0	2.70
2018	0	0	0	0	2.70
2019	0	0	0	0	2.70
2020	0	0	0	0	2.70
2021	0	0	0	0	2.70
2022	0	0	0	0	2.70
2023	0	0	0	0	2.70
2024	0	0	0	0	2.70
30 YR TOTALS	0	0	0	0	81

SWMD Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	68	0	0	8	0
1996	68	0	0	0	0
1997	68	0	0	0	0
1998	68	0	0	0	0
1999	68	0	0	0	0
2000	68	0	0	0	0
2001	68	0	0	0	0
2002	68	0	0	0	0
2003	68	0	0	0	0
2004	68	0	0	0	0
2005	68	0	0	0	0
2006	68	0	0	0	0
2007	68	0	0	0	0
2008	68	0	0	0	0
2009	68	0	0	0	0
2010	68	0	0	0	0
2011	68	0	0	0	0
2012	68	0	0	0	0
2013	68	0	0	0	0
2014	68	0	0	0	0
2015	68	0	0	0	0
2016	68	0	0	0	0
2017	68	0	0	0	0
2018	68	0	0	0	0
2019	68	0	0	0	0
2020	68	0	0	0	0
2021	68	0	0	0	0
2022	68	0	0	0	0
2023	68	0	0	0	0
2024	68	0	0	0	0
30 YR TOTALS	2,040	0	0	8	0

Appendix C, Facility Specific 30 Year Waste Forecast

CIF Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	0	0	0	0	0
1996	0	0	0	231	0
1997	0	0	0	231	0
1998	0	0	0	231	0
1999	0	0	0	231	0
2000	0	0	0	231	0
2001	0	0	0	231	0
2002	0	0	0	231	0
2003	0	0	0	231	0
2004	0	0	0	231	0
2005	0	0	0	231	0
2006	0	0	0	231	0
2007	0	0	0	231	0
2008	0	0	0	231	0
2009	0	0	0	231	0
2010	0	0	0	231	0
2011	0	0	0	231	0
2012	0	0	0	231	0
2013	0	0	0	231	0
2014	0	0	0	231	0
2015	0	0	0	231	0
2016	0	0	0	231	0
2017	0	0	0	231	0
2018	0	0	0	231	0
2019	0	0	0	231	0
2020	0	0	0	231	0
2021	0	0	0	231	0
2022	0	0	0	231	0
2023	0	0	0	231	0
2024	0	0	0	231	0
30 YR TOTALS	0	0	0	6,698	0

SRTC Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	621	0	17	1	59
1996	729	0	17	1	59
1997	678	0	10	1	28
1998	678	0	10	1	28
1999	678	0	10	1	28
2000	678	0	10	1	7
2001	678	0	10	1	7
2002	678	0	10	1	7
2003	678	0	10	1	7
2004	678	0	10	1	7
2005	678	0	10	1	7
2006	678	0	10	1	7
2007	678	0	10	1	7
2008	678	0	10	1	7
2009	678	0	10	1	7
2010	678	0	10	1	7
2011	678	0	10	1	7
2012	678	0	10	1	7
2013	678	0	10	1	7
2014	678	0	10	1	7
2015	678	0	10	1	7
2016	678	0	10	1	7
2017	678	0	10	1	7
2018	678	0	10	1	7
2019	678	0	10	1	7
2020	678	0	10	1	7
2021	678	0	10	1	7
2022	678	0	10	1	7
2023	678	0	10	1	7
2024	678	0	10	1	7
30 YR TOTALS	20,234	0	314	30	379

Tritium Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	1,339	3	0	3	0
1996	1,339	3	0	3	0
1997	1,339	3	0	3	0
1998	1,339	3	0	3	0
1999	1,339	3	0	3	0
2000	1,339	3	0	3	0
2001	1,339	3	0	3	0
2002	1,339	3	0	3	0
2003	1,339	3	0	3	0
2004	1,339	3	0	3	0
2005	1,339	3	0	3	0
2006	1,339	3	0	3	0
2007	1,339	3	0	3	0
2008	1,339	3	0	3	0
2009	1,339	3	0	3	0
2010	1,339	3	0	3	0
2011	1,339	3	0	3	0
2012	1,339	3	0	3	0
2013	1,339	3	0	3	0
2014	1,339	3	0	3	0
2015	1,339	3	0	3	0
2016	1,339	3	0	3	0
2017	1,339	3	0	3	0
2018	1,339	3	0	3	0
2019	1,339	3	0	3	0
2020	1,339	3	0	3	0
2021	1,339	3	0	3	0
2022	1,339	3	0	3	0
2023	1,339	3	0	3	0
2024	1,339	3	0	3	0
30 YR TOTALS	40,170	92	0	104	0

Offsite Generators Waste Forecast by Waste Type and Year

YEAR	LLW	INTERMED.	TRU	MIXED	HAZ
1995	420	0	0	0	0
1996	420	0	0	0	0
1997	420	0	0	0	0
1998	420	0	0	0	0
1999	420	0	0	0	0
2000	420	0	0	0	0
2001	420	0	0	0	0
2002	420	0	0	0	0
2003	420	0	0	0	0
2004	420	0	0	0	0
2005	420	0	0	0	0
2006	420	0	0	0	0
2007	420	0	0	0	0
2008	420	0	0	0	0
2009	420	0	0	0	0
2010	420	0	0	0	0
2011	420	0	0	0	0
2012	420	0	0	0	0
2013	420	0	0	0	0
2014	420	0	0	0	0
2015	420	0	0	0	0
2016	420	0	0	0	0
2017	420	0	0	0	0
2018	420	0	0	0	0
2019	420	0	0	0	0
2020	420	0	0	0	0
2021	420	0	0	0	0
2022	420	0	0	0	0
2023	420	0	0	0	0
2024	420	0	0	0	0
30 YR TOTALS	12,600	0	0	0	0