Appendix H
Waste Management

This appendix describes the impacts on the waste management infrastructure that would occur if the proposed surplus plutonium disposition facilities were located at the Hanford Site (Hanford), Idaho National Engineering and Environmental Laboratory (INEEL), the Pantex Plant (Pantex), or the Savannah River Site (SRS), or if lead assembly fabrication activities were conducted at INEEL (Argonne National Laboratory–West [ANL–W]), Hanford, Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), or SRS. The waste types evaluated in this section are transuranic (TRU) waste (including mixed TRU waste), low-level waste (LLW), mixed LLW, hazardous waste, nonhazardous solid waste, and nonhazardous liquid waste. The quantities of mixed TRU waste that would be generated are small. Mixed TRU waste would be generated by analytical laboratory operations (handling of solvents and scintillation vials containing plutonium), glovebox maintenance (replacement of lead-lined rubber gloves), and pit bisection (management of hazardous constituents of the incoming pits). According to engineering estimates, solid mixed TRU waste would be generated at the following rates: 1 m^3/yr (1.3 yd^3/yr) for the pit conversion facility, zero for the immobilization facility, less than 5.7 m^3/yr (7.5 yd^3/yr) for the mixed oxide (MOX) facility, less than 1 m^3/yr (1.3 yd^3/yr) for lead assembly fabrication, and 0.03 m^3/yr (0.039 yd^3/yr) for postirradiation examination. Liquid mixed TRU waste would be generated in the MOX facility at a rate of 0.05 m^3/yr (0.065 yd^3/yr), and by postirradiation examination at a rate of less than 0.01 m^3/yr (0.013 yd^3/yr) (DOE 1999a; O'Connor et al. 1998a; ORNL 1998; UC 1998a–h, 1999a–d). These small quantities of waste are included in the total amounts of TRU waste generated.

Generation rates for contaminated liquid waste would generally be small. Operation of the pit conversion facility is estimated to generate no liquid TRU waste, 0.36 m^3/yr (0.47 yd^3/yr) of liquid LLW, no liquid mixed LLW, and 0.74 m^3/yr (0.97 yd^3/yr) of liquid hazardous waste. Operation of the immobilization facility is estimated to generate 0.28 to 0.76 m^3/yr (0.37 to 0.99 yd^3/yr) of liquid TRU waste, no liquid LLW, no liquid mixed LLW, and 4.5 m^3/yr (5.9 yd^3/yr) of liquid hazardous waste. Operation of the MOX facility is estimated to generate 0.5 m^3/yr (0.65 yd^3/yr) of liquid TRU waste, 0.3 m^3/yr (0.39 yd^3/yr) of liquid LLW, no liquid mixed LLW, and 1.9 m^3/yr (2.5 yd^3/yr) of liquid hazardous waste (DOE 1999a; ORNL 1998; UC 1998a–h, 1999a–d). Lead assembly fabrication is estimated to generate 0.2 m^3/yr (0.26 yd^3/yr) of liquid TRU waste, 160 m^3/yr (209 yd^3/yr) of liquid LLW, less than 0.01 m^3/yr (0.013 yd^3/yr) of liquid mixed LLW, and less than 0.01 m^3/yr (0.013 yd^3/yr) of liquid hazardous waste. Postirradiation examination is estimated to generate 0.1 m^3/yr (0.13 yd^3/yr) of liquid TRU waste, 0.1 m^3/yr (0.13 yd^3/yr) of liquid LLW, less than 0.01 m^3/yr (0.013 yd^3/yr) of liquid mixed LLW, and less than 0.01 m^3/yr (0.013 yd^3/yr) of liquid hazardous waste (O'Connor et al. 1998a:36, 66). For all but nonhazardous wastes, DOE combined the liquid- and solid-waste generation estimates into one waste generation rate for ease of comparison with site waste generation rates.

Section 2.4.1 describes impurities that may be present in the plutonium pits. Those impurities are present only at very low levels and, with the exception of tritium, should largely remain entrained in the plutonium. As they generally would not adversely affect the immobilization or MOX fuel fabrication process, it would not be necessary to remove them from the plutonium destined for use in those processes. Tritium, a radioisotope of hydrogen, would be removed by heating the pit material in a vacuum furnace to drive off the tritium gas. Another component of the pit plutonium, gallium, is present as an alloying agent. Because high levels of gallium could adversely affect MOX fuel performance, it would be largely removed during the pit conversion and MOX fuel fabrication processes.

Because impurities are present in the plutonium, they would also be present in the radioactive waste contaminated by plutonium. Although some of these impurities are hazardous materials, they generally would not be present in concentrations and forms sufficient to justify classification of the radioactive waste as mixed TRU waste or mixed LLW. In any event, wastes would be classified and managed in accordance with all applicable regulations.

Major adverse impacts are not expected at any of the U.S. Department of Energy (DOE) sites. The *Surplus Plutonium Disposition Environmental Impact Statement* (SPD EIS) conservatively assumes that all TRU waste generated by proposed facilities would have to be stored on the site until the Waste Isolation Pilot Plant (WIPP) is ready to accept this waste in 2016 (DOE 1997a:17). Although TRU waste would be routinely generated for the first time at Pantex, impacts from additional TRU waste storage at the DOE sites should not be major. A description of the methods used to estimate impacts on waste management facilities is presented in Appendix F.8.

Decisions in the Records of Decision (RODs) for the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (WM PEIS) (DOE 1997b) could affect where DOE would send wastes in the future and could result in the closing of some existing waste management facilities and construction of new facilities at DOE sites. The ROD for TRU waste issued on January 20, 1998, states that each of the DOE sites that currently has or will generate TRU waste will prepare and store its TRU waste on the site for eventual shipment to WIPP. The ROD for hazardous waste issued on August 5, 1998, states that most DOE sites will continue to use offsite facilities for the treatment and disposal of major portions of the nonwastewater hazardous waste, with the Oak Ridge Reservation and SRS continuing to treat some of their own hazardous waste on the site in existing facilities where this is economically favorable. RODs for LLW and mixed LLW are pending.

H.1 HANFORD

H.1.1 Assessment Data

Impacts on Hanford waste management facilities were estimated using information on existing environmental conditions from Chapter 3 and information on the characteristics of the proposed surplus plutonium disposition facilities from Chapter 2 and the facility data reports. A description of the methods used to evaluate impacts on waste management facilities is presented in Appendix F.8.

H.1.2 Facilities

H.1.2.1 Pit Conversion Facility

H.1.2.1.1 Construction of Pit Conversion Facility

Table H–1 compares the expected construction waste generation rates for the facility that may be constructed at Hanford with the existing generation rates for Hanford waste. No radioactive waste would be generated during the 3-year construction period because this action involves modification of uncontaminated buildings only (UC 1998a). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations.

Table H–1. Potential Waste Management Impacts of Construction of Pit Conversion Facility in FMEF at Hanford

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	13	560	2
Nonhazardous			
Liquid	1,300	200,000	1
Solid	28	43,000	<1

[a] See definitions in Appendix F.8.
[b] UC 1998a. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FMEF, Fuels and Materials Examination Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in U.S. Department of Transportation (DOT) approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998a). Hazardous waste generation for this facility is estimated to be 2 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the Hanford hazardous waste management system.

Nonhazardous solid waste includes office garbage, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal (UC 1998a). Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonrecyclable, nonhazardous solid waste generated by this facility is estimated to be less than 1 percent of existing annual waste generation. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets (UC 1998a). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that much of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for this facility is estimated to be 1 percent of existing annual site waste generation, 1 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 1 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly Washington Public Power Supply System [WPPSS]) Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.1.2.1.2 Operation of Pit Conversion Facility

The waste management facilities within the pit conversion facility would process, temporarily store, and ship all wastes generated. Table H–2 compares the expected waste generation rates from operating the new facility at Hanford with the existing generation rates for Hanford waste. No high-level waste (HLW) would be generated by the facility (UC 1998a). Depending in part on decisions in the RODs for the WM PEIS, wastes could be

treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current

Table H–2. Potential Waste Management Impacts of Operation of Pit Conversion Facility in FMEF at Hanford

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	18	450	4
LLW	60	3,902	2
Mixed LLW	1	847	<1
Hazardous	2	560	<1
Nonhazardous			
Liquid	40,000	200,000	20
Solid	1,800	43,000	4

[a] See definitions in Appendix F.8.
[b] UC 1998a. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: FMEF, Fuels and Materials Examination Facility; LLW, low-level waste; TRU, transuranic.

WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford will be evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* being prepared by the DOE Richland Operations Office (DOE 1997c).

TRU wastes generated during operations include spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality control samples, and solidified inorganic solutions. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facility (UC 1998a). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generated for this facility is estimated to be 4 percent of existing annual waste generated and 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. A total of 180 m^3 (235 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 2 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled TRU waste currently in storage, and 1 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 860 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of approximately 260 m^2 (310 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on less than 0.1 ha (0.25 acre) of land at Hanford should not be major.

The 180 m^3 (235 yd^3) of TRU waste generated by this facility would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation. Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998a). A total of 600 m^3 (785 yd^3) of LLW would be generated over the operation period. LLW generation for this facility is estimated to be 2 percent of existing annual waste generation, less than 1 percent of the 1.74 million-m^3 (2.28 million-yd^3) disposal capacity of the LLW Burial Grounds, and less than 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* (*Storage and Disposition PEIS*) (DOE 1996a:E-9), 600 m^3 (780 yd^3) of waste would require 0.17 ha (0.42 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998a). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for Hanford. Hanford currently treats and disposes of mixed LLW on the site. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this facility is estimated to be 1 m^3/yr (1.3 yd^3/yr) or less than 1 percent of existing annual waste generation, and less than 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. Over the operating life of the facility, the 10 m^3 (13 yd^3) of mixed LLW generated would be less than 1 percent of the 16,800-m^3 (22,000-yd^3) storage capacity of the Central Waste Complex, and less than 1 percent of the 14,200-m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management of this additional waste at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1998a). Hazardous waste generation for this facility is estimated to be less than 1 percent of existing annual waste generation. These wastes should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste includes office garbage, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998a). The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated by this facility is estimated to be 4 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and process wastewater from lab sinks and drains, mop water, and cooling tower blowdown. Wastewater would be treated,

if necessary, before being discharged to the 400 Area sanitary sewer that connects to the Energy Northwest (formerly WPPSS) wastewater treatment system (UC 1998a). Nonhazardous liquid waste generated for this facility is estimated to be 20 percent of the existing annual site waste generated, 17 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 17 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.1.2.2 Immobilization Facility

H.1.2.2.1 Construction of Immobilization Facility

Table H–3 compares the expected construction waste generation rates for the immobilization facility that may be constructed at Hanford with the existing generation rates for Hanford waste. No radioactive waste would be generated during the 3-year construction period because this action involves modification of uncontaminated buildings only (UC 1999a, 1999b). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for both the ceramic and glass immobilization technologies and would be the same for the 17-t (19-ton) and 50-t (55-ton) immobilization scenarios, because the same size facility would be built under any scenario (UC 1999a, 1999b).

Table H–3. Potential Waste Management Impacts of Construction of Immobilization Facility in FMEF at Hanford

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	8	560	1
Nonhazardous			
Liquid	5,200	200,000	3
Solid	430	43,000	1

[a] See definitions in Appendix F.8.
[b] UC 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FMEF, Fuels and Materials Examination Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints, chemicals, as well as rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1999a, 1999b). Hazardous waste generation for this facility is estimated to be 1 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the Hanford hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal (UC 1999a, 1999b). Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonhazardous solid waste generated for this facility is estimated to be 1 percent of existing annual

waste generated. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets (UC 1999a, 1999b). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that much of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for this facility is estimated to be 3 percent of existing annual site waste generated, 2 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 2 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.1.2.2.2 Operation of Immobilization Facility

The waste management facilities within the immobilization facility would process, temporarily store, and ship all wastes generated. Table H–4 compares the expected waste generation rates from operating the new facility at Hanford with the existing generation rates for Hanford waste. Although HLW would be used in the immobilization process, no HLW would be generated by the facility (UC 1999a, 1999b). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation would be the same for both ceramic and glass immobilization technologies, but varies between the 17-t (19-ton) and the 50-t (55-ton) immobilization cases (UC 1999a, 1999b). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford will be evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* being prepared by the DOE Richland Operations Office (DOE 1997c).

Table H–4. Potential Waste Management Impacts of Operation of Immobilization Facility in FMEF at Hanford

	Estimated Waste Generation (m^3/yr)[b]		Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation	
Waste Type[a]	17 t	50 t		17 t	50 t
TRU[d]	95	130	450	21	29
LLW	80	110	3,902	2	3
Mixed LLW	1	1	847	<1	<1
Hazardous	75	75	560	13	13
Nonhazardous					
Liquid	40,000	44,000	200,000	20	22
Solid	340	340	43,000	1	1

[a] See definitions in Appendix F.8.
[b] UC 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: FMEF, Fuels and Materials Examination Facility; LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, and solidified inorganic solutions. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1999a, 1999b). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this facility is estimated to be 21 to 29 percent of existing annual waste generation and 5 to 7 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. A total of 950 to 1,300 m^3 (1,240 to 1,700 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 8 to 11 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled TRU waste currently in storage and 6 to 8 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford. Assuming the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 4,500 to 6,000 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of approximately 1,400 to 1,800 m^2 (1,670 to 2,150 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.14 to 0.18 ha (0.35 to 0.44 acre) of land at Hanford should not be major.

The 950 to 1,300 m^3 (1,240 to 1,700 yd^3) of TRU waste generated by this facility would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, and solidified inorganic solutions. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facility before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation (UC 1999a, 1999b). A total of 800 to 1,100 m^3 (1,050 to 1,440 yd^3) of LLW would be generated over the operation period. LLW generation for this facility is estimated to be 2 to 3 percent of existing annual waste generation, less than 1 percent of the 1.74 million-m^3 (2.28 million-yd^3) disposal capacity of the LLW Burial Grounds and less than 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 800 to 1,100 m^3 (1,050 to 1,440 yd^3) of waste would require 0.23 to 0.31 ha (0.57 to 0.77 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, and scintillation vials from the analytical laboratory (UC 1999a, 1999b). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for Hanford. Hanford currently treats and disposes of mixed LLW on the site. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this facility is estimated to be 1 m^3/yr (1.3 yd^3/yr), or less than 1 percent of existing annual waste generation. The 1 m^3/yr (1.3 yd^3/yr) of mixed LLW would be less than 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. Over the operating life of this facility, the 10 m^3 (13 yd^3) of mixed LLW generated would be less than 1 percent of the 16,800-m^3 (22,000-yd^3) storage capacity of the Central Waste Complex, and less than 1 percent of the 14,200-m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management

of this additional mixed LLW at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, lubrication oils, film processing fluids, hydraulic fluids, coolants, paints, chemicals, batteries, fluorescent light tubes, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1999a, 1999b). Hazardous waste generation for this facility is estimated to be 13 percent of existing annual waste generation. Because these wastes would be treated and disposed of at offsite commercial facilities, they should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste includes office garbage, machine shop wastes, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1999a, 1999b). The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated by this facility is estimated to be 1 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from cooling tower blowdown. Wastewater would be treated, if necessary, before being discharged to the 400 Area sanitary sewer that connects to the Energy Northwest (formerly WPPSS) wastewater treatment system (UC 1999a, 1999b). Nonhazardous liquid waste generated for this facility is estimated to be 20 to 22 percent of the existing annual site waste generation, 17 to 19 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, and 17 to 19 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.1.2.3 MOX Facility

H.1.2.3.1 Construction of MOX Facility

Table H–5 compares the expected construction waste generation rates for the facility that may be constructed at Hanford with the existing generation rates for Hanford waste. No radioactive waste would be generated during the 3-year construction period because this action involves new construction or modification of uncontaminated buildings only (UC 1998b). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. The amount of waste generated during construction would vary if the Fuels and Materials Examination Facility (FMEF) needs to be modified to accept the mixed oxide (MOX) facility versus constructing a new building (UC 1998b:attachment).

Table H–5. Potential Waste Management Impacts of Construction of MOX Facility in FMEF or New Construction at Hanford

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]		Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation	
	FMEF	New		FMEF	New
Hazardous	9	19	560	2	3
Nonhazardous					
Liquid	19,000	20,000	200,000	9	10
Solid	6,800	8,600	43,000	16	20

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FMEF, Fuels and Materials Examination Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints, chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998b). Hazardous waste generation for this facility is estimated to be 2 to 3 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the Hanford hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal (UC 1998b). Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonhazardous solid waste generated for this facility is estimated to be 16 to 20 percent of existing annual waste generation. Because these wastes would be managed at offsite facilities, the additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998b). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that much of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid-waste generated for this facility is estimated to be 9 to 10 percent of existing annual site waste generation, 8 to 9 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 8 to 9 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.1.2.3.2 Operation of MOX Facility

The waste management facilities within the MOX facility would process, temporarily store, and ship all wastes generated. Table H–6 compares the expected waste generation rates from operating the new facility at Hanford with the existing generation rates for Hanford waste. No HLW would be generated by the facility (UC 1998b). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998,

Table H–6. Potential Waste Management Impacts of Operation of MOX Facility in FMEF or New Construction at Hanford

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	68	450	15
LLW	94	3,902	2
Mixed LLW	3	847	<1
Hazardous	3	560	1
Nonhazardous			
Liquid	26,000	200,000	13
Solid	440	43,000	1

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: FMEF, Fuels and Materials Examination Facility; LLW, low-level waste; TRU, transuranic.

TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation during operations would be the same whether the MOX facility is located in FMEF or in a new building (UC 1998b:attachment). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford will be evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* being prepared by the DOE Richland Operations Office (DOE 1997c).

TRU wastes generated during operations include spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998b). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this facility is estimated to be 15 percent of existing annual waste generation and 4 percent of the 1,820-m^3/yr (2,380-yd^3/yr) planned capacity of the Waste Receiving and Processing Facility. A total of 680 m^3 (890 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 6 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled TRU waste currently in storage and 4 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 3,200 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of approximately 960 m^2 (1,150 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.1 ha (0.25 acre) of land at Hanford should not be major.

The 680 m^3 (890 yd^3) of TRU waste generated by this facility would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3

(220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, and solidified inorganic solutions. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facility before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation (UC 1998b). A total of 940 m^3 (1,230 yd^3) of LLW would be generated over the operation period. LLW generation for this facility is estimated to be 2 percent of existing annual waste generation, less than 1 percent of the 1.74 million-m^3 (2.28 million-yd^3) disposal capacity of the LLW Burial Grounds, and less than 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 940 m^3 (1,230 yd^3) of waste would require 0.1 ha (0.25 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW includes solvents contaminated with plutonium and scintillation vials from the analytical laboratory (UC 1998b). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for Hanford. Hanford currently treats and disposes of mixed LLW on the site. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this facility is estimated to be 3 m^3/yr (3.9 yd^3/yr) or less than 1 percent of existing annual waste generation. The 3 m^3/yr (3.9 yd^3/yr) of mixed LLW would be less than 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. Over the operating life of this facility, the 30 m^3 (39 yd^3) of mixed LLW generated would be less than 1 percent of the 16,800-m^3 (22,000-yd^3) storage capacity of the Central Waste Complex, and less than 1 percent of the 14,200-m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management of this additional waste at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, lubricants, oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1998b). Hazardous waste generation for this facility is estimated to be 1 percent of existing annual waste generation. These wastes should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste includes office garbage, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998b). The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated for this facility is estimated to be 1 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, and cooling tower blowdown; and treated wastewater from the liquid effluent treatment system. Wastewater would be treated, if necessary, before being discharged to the 400 Area sanitary sewer that connects to the Energy Northwest (formerly WPPSS) wastewater treatment system (UC 1998b). Nonhazardous liquid waste generated for this facility is estimated to be 13 percent of the existing annual site waste generation, 11 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 11 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest Sewage Treatment

Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.1.2.4 Pit Conversion and Immobilization Facilities

H.1.2.4.1 Construction of Pit Conversion and Immobilization Facilities

Table H–7 compares the expected construction waste generation rates for the facilities that may be constructed at Hanford with the existing generation rates for Hanford waste. No radioactive waste would be generated during the 3-year construction period because this action involves modification of uncontaminated buildings only (UC 1998a, 1999a, 1999b). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for both the ceramic and glass immobilization technologies and would be the same for the 17-t (19-ton) and 50-t (55-ton) immobilization scenarios because the same size facility would be built under any scenario (UC 1999a, 1999b).

Table H–7. Potential Waste Management Impacts of Construction of Pit Conversion and Immobilization Facilities in FMEF at Hanford

	Estimated Waste Generation (m^3/yr)[b]			Percent of Site Waste Generation		
Waste Type[a]	Pit Conversion	Immobilization (Ceramic or Glass)	Site Waste Generation (m^3/yr)[c]	Pit Conversion	Immobilization (Ceramic or Glass)	Both Facilities
Hazardous	13	18	560	2	3	6
Nonhazardous						
Liquid	1,300	8,800	200,000	1	4	5
Solid	28	1,100	43,000	<1	2	3

[a] See definitions in Appendix F.8.
[b] UC 1998a, 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FMEF, Fuels and Materials Examination Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998a, 1999a, 1999b). Hazardous waste generation for this combination of facilities is estimated to be 6 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the Hanford hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal (UC 1998a, 1999a, 1999b). Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be less than 3 percent of existing annual waste generation. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets (UC 1998a, 1999a, 1999b). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that much of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for this combination of facilities is estimated to be 5 percent of existing annual site waste generation, 4 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 4 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.1.2.4.2 Operation of Pit Conversion and Immobilization Facilities

The waste management facilities within the pit conversion and immobilization facilities would process, temporarily store, and ship all wastes generated. Table H–8 compares the expected waste generation rates from operating the new facilities at Hanford with the existing generation rates for Hanford waste. Although HLW would be used in the immobilization process, no HLW would be generated by the facilities (UC 1998a, 1999a, 1999b). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation would be the same for both the ceramic and glass immobilization technologies, but varies between the 17-t (19-ton) and the 50-t (55-ton) immobilization cases (UC 1999a, 1999b). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford will be evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* being prepared by the DOE Richland Operations Office (DOE 1997c).

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality control samples, and solidified inorganic solutions. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998a, 1999a, 1999b). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 25 to 32 percent of existing annual waste generation and 6 to 8 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. A total of 1,130 to 1,480 m^3 (1,478 to 1,936 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 10 to 13 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled

Table H–8. Potential Waste Management Impacts of Operation of Pit Conversion and Immobilization Facilities in FMEF at Hanford

	Estimated Waste Generation (m^3/yr)[b]				Percent of Site Waste Generation			
		Immobilization (Ceramic or Glass)		Site Waste Generation		Immobilization (Ceramic or Glass)		
Waste Type[a]	Pit Conversion	17 t	50 t	(m^3/yr)[c]	Pit Conversion	17 t	50 t	Both Facilities
TRU[d]	18	95	130	450	4	21	28	25 to 32
LLW	60	80	110	3,902	2	2	3	4
Mixed LLW	1	1	1	847	<1	<1	<1	<1
Hazardous	2	75	75	560	<1	13	13	14
Nonhazardous								
Liquid	40,000	45,000	49,000	200,000	20	23	25	43 to 44
Solid	1,800	340	340	43,000	4	1	1	5

[a] See definitions in Appendix F.8.
[b] UC 1998a, 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: FMEF, Fuels and Materials Examination Facility; LLW, low-level waste; TRU, transuranic.

TRU waste currently in storage and 7 to 8 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 5,400 to 6,900 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 1,600 to 2,100 m^2 (1,910 to 2,510 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.16 to 0.21 ha (0.40 to 0.51 acre) of land at Hanford should not be major.

The 1,130 to 1,480 m^3 (1,478 to 1,936 yd^3) of TRU waste generated by these facilities would be approximately 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP, and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation (UC 1998a, 1999a, 1999b). Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998a). A total of 1,400 to 1,700 m^3 (1,830 to 2,220 yd^3) of LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 4 percent of existing annual waste generation, less than 1 percent of the 1.74 million-m^3 (2.28 million-yd^3) disposal capacity of the LLW Burial Grounds, and 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 1,400 to 1,700 m^3 of waste would require 0.40 to 0.48 ha (0.99 to 1.2 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998a, 1999a, 1999b). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner

consistent with the site treatment plan for Hanford. Hanford currently treats and disposes of mixed LLW on the site. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this combination of facilities is estimated to be 2 m^3/yr (2.6 m^3/yr) or less than 1 percent of existing annual waste generation, and less than 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. Over the operating lives of these facilities, the 20 m^3 (26 ft^3) of mixed LLW generated would be less than 1 percent of the 16,800-m^3 (22,000-yd^3) storage capacity of the Central Waste Complex, and less than 1 percent of the 14,200-m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management of this additional waste at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1998a, 1999a, 1999b). Hazardous waste generation for this combination of facilities is estimated to be 14 percent of existing annual waste generation. Because these wastes would be treated and disposed of at offsite commercial facilities, they should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste includes office garbage, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998a, 1999a, 1999b). The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 5 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and, process wastewater from lab sinks and drains, mop water, and cooling tower blowdown. Wastewater would be treated, if necessary, before being discharged to the 400 Area sanitary sewer that connects to the Energy Northwest (formerly WPPSS) wastewater treatment system (UC 1998a, 1999a, 1999b). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 43 to 44 percent of the existing annual site waste generation, 36 to 38 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 36 to 38 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.1.2.5 Pit Conversion and MOX Facilities

H.1.2.5.1 Construction of Pit Conversion and MOX Facilities

Table H–9 compares the expected construction waste generation rates for the facilities that may be constructed at Hanford with the existing generation rates for Hanford waste. No radioactive waste would be generated during the 3-year construction period because this action involves new construction or modification of uncontaminated buildings only (UC 1998a, 1998b). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. The amount of waste generated during construction would vary if FMEF needs to be modified to accept the MOX facility versus constructing a new building (UC 1998b:attachment).

Table H–9. Potential Waste Management Impacts of Construction of Pit Conversion and MOX Facilities in FMEF or New MOX Facility at Hanford

	Estimated Waste Generation (m^3/yr)[b]			Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation		
	Pit	MOX			Pit		Both
Waste Type[a]	Conversion	FMEF	New		Conversion	MOX	Facilities
Hazardous	13	9	19	560	2	2 to 3	4 to 6
Nonhazardous							
Liquid	1,300	19,000	20,000	200,000	1	9 to 10	10 to 11
Solid	28	6,800	8,600	43,000	<1	16 to 20	16 to 20

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998a, 1998b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FMEF, Fuels and Materials Examination Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998a, 1998b). Hazardous waste generation for this combination of facilities is estimated to be 4 to 6 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the Hanford hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal (UC 1998a, 1998b). Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 16 to 20 percent of existing annual waste generation. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998a, 1998b). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that much of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for this combination of facilities is estimated to be 10 to 11 percent of existing annual site waste generation, 9 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 9 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.1.2.5.2 Operation of Pit Conversion and MOX Facilities

The waste management facilities within the pit conversion and MOX facilities would process, temporarily store, and ship all wastes generated. Table H–10 compares the expected waste generation rates from operating the new facilities at Hanford with the existing generation rates for Hanford waste. No HLW would be generated by the facilities (UC 1998a, 1998b). Depending in part on decisions in the RODs for the WM PEIS,

Table H–10. Potential Waste Management Impacts of Operation of Pit Conversion and MOX Facilities in FMEF or New MOX Facility at Hanford

	Estimated Waste Generation (m^3/yr)[b]		Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation		
Waste Type[a]	Pit Conversion	MOX		Pit Conversion	MOX	Both Facilities
TRU[d]	18	68	450	4	15	19
LLW	60	94	3,902	2	2	4
Mixed LLW	1	3	847	<1	<1	<1
Hazardous	2	3	560	<1	1	1
Nonhazardous						
Liquid	40,000	26,000	200,000	20	13	33
Solid	1,800	440	43,000	4	1	5

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998a, 1998b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: FMEF, Fuels and Materials Examination Facility; LLW, low-level waste; TRU, transuranic.

wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation during operations would be the same whether the MOX facility is located in FMEF or in a new building (UC 1998b:attachment). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford will be evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* being prepared by the DOE Richland Operations Office (DOE 1997c).

TRU wastes generated during operations include spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998a, 1998b). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 19 percent of existing annual waste generation and 5 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. A total of 860 m^3 (1,120 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 8 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled TRU waste currently in storage and 5 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 4,000 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of approximately 1,200 m^2 (1,440 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.12 ha (0.30 acre) of land at Hanford should not be major.

The 860 m^3 (1,120 yd^3) of TRU waste generated by these facilities would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation. Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998a). A total of 1,540 m^3 (2,010 yd^3) of LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 4 percent of existing annual waste generation, less than 1 percent of the 1.74 million-m^3 (2.28 million-yd^3) disposal capacity of the LLW Burial Grounds, and 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 1,540 m^3 (2,010 yd^3) of waste would require 0.44 ha (1.09 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998a, 1998b). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for Hanford. Hanford currently treats and disposes of mixed LLW on the site. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this combination of facilities is estimated to be 4 m^3/yr (5.2 yd^3/yr) or less than 1 percent of existing annual waste generation, and less than 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. Over the operating lives of these facilities, the 40 m^3 (52 yd^3) of mixed LLW generated would be less than 1 percent of the 16,800-m^3 (22,000-yd^3) storage capacity of the Central Waste Complex, and less than 1 percent of the 14,200-m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management of this additional waste at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1998a, 1998b). Hazardous waste generation for this combination of facilities is estimated to be 1 percent of existing annual waste generation. These wastes should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste includes office garbage, machine shop cuttings, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998a, 1998b). The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 5 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, and cooling tower blowdown; and treated wastewater from the liquid effluent treatment system. Wastewater would be treated, if necessary, before being discharged to the

400 Area sanitary sewer that connects to the Energy Northwest (formerly WPPSS) wastewater treatment system (UC 1998a, 1998b). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 33 percent of the existing annual site waste generation, 28 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 28 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.1.2.6 Immobilization and MOX Facilities

H.1.2.6.1 Construction of Immobilization and MOX Facilities

Table H–11 compares the expected construction waste generation rates for the facilities that may be constructed at Hanford with the existing generation rates for Hanford waste. No radioactive waste would be generated during the 3-year construction period because this action involves new construction or modification of uncontaminated buildings only (UC 1998b, 1999a, 1999b). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for ceramic and glass immobilization technologies (UC 1999a, 1999b), although the amount of waste generated during construction would vary if FMEF needs to be modified to accept the immobilization and MOX facilities versus constructing a new building for MOX (UC 1998b).

Table H–11. Potential Waste Management Impacts of Construction of Collocating Immobilization and MOX Facilities in FMEF or New MOX Facility at Hanford

	Estimated Waste Generation (m^3/yr)[b]					Percent of Site Waste Generation			
	IF in FMEF (Ceramic or Glass)		MOX		Site Waste Generation (m^3/yr)[c]	IF Ceramic or Glass	MOX	Both Facilities	
Waste Type[a]	w/ MOX	w/o MOX	FMEF	New				Both in FMEF	New MOX
Hazardous	21	8	9	19	560	1-4	2-3	5	5
Nonhazardous									
Liquid	11,000	5,200	19,000	20,000	200,000	3-5	9-10	15	13
Solid	1,200	430	6,800	8,600	43,000	1-3	16-20	19	21

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998b, 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FMEF, Fuels and Materials Examination Facility; IF, Immobilization Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998b, 1999a, 1999b). Hazardous waste generation for this combination of facilities is estimated to be 5 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the Hanford hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal (UC 1998b, 1999a, 1999b). Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Waste metals

and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 19 to 21 percent of existing annual waste generation. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998b, 1999a, 1999b). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that much of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for this combination of facilities is estimated to be 13 to 15 percent of existing annual site waste generation, 11 to 13 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, and 11 to 13 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.1.2.6.2 Operation of Immobilization and MOX Facilities

The waste management facilities within the immobilization and MOX facilities would process, temporarily store, and ship all wastes generated. Table H–12 compares the expected waste generation rates from operating the new facilities at Hanford with the existing generation rates for Hanford waste. Although HLW would be used in the immobilization process, no HLW would be generated by the facilities (UC 1998b, 1999a, 1999b). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation would be the same for ceramic and glass immobilization technologies (UC 1999a, 1999b) and would be the same whether the MOX facility is located in FMEF or in a new building (UC 1998b:attachment). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford will be evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* being prepared by the DOE Richland Operations Office (DOE 1997c).

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998b, 1999a, 1999b). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

Table H–12. Potential Waste Management Impacts of Operation of Collocating Immobilization and MOX Facilities in FMEF or New MOX Facility at Hanford

	Estimated Waste Generation (m^3/yr)[b]			Percent of Site Waste Generation		
Waste Type[a]	Immobilization (Ceramic or Glass)	MOX	Site Waste Generation (m^3/yr)[c]	Immobilization (Ceramic or Glass)	MOX	Both Facilities
TRU[d]	95	68	450	21	15	36
LLW	80	94	3,902	2	2	4
Mixed LLW	1	3	847	<1	<1	<1
Hazardous	75	3	560	13	1	14
Nonhazardous						
Liquid	40,000-46,000	26,000	200,000	20	13	33-36
Solid	340	440	43,000	1	1	2

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998b, 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: FMEF, Fuels and Materials Examination Facility; LLW, low-level waste; TRU, transuranic.

TRU waste generation for this combination of facilities is estimated to be 36 percent of existing annual waste generation and 9 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. A total of 1,630 m^3 (2,132 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 14 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled TRU waste currently in storage, and 10 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 7,700 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 2,300 m^2 (2,750 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.23 ha (0.57 acre) of land at Hanford should not be major.

The 1,630 m^3 (2,132 yd^3) of TRU waste generated by these facilities would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, and solidified inorganic solutions. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste (UC 1999a, 1999b). LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation (UC 1998b, 1999a, 1999b). A total of 1,740 m^3 (2,276 yd^3) of LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 4 percent of existing annual waste generation, less than 1 percent of the 1.74 million-m^3 (2.28 million-yd^3) disposal capacity of the LLW Burial Grounds, and 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 1,740 m^3 (2,276 yd^3) of waste would require 0.5 ha (1.2 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, and scintillation vials from the analytical laboratory (UC 1998b, 1999a, 1999b). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for Hanford. Hanford currently treats and disposes of mixed LLW on the site. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this combination of facilities is estimated to be 4 m^3/yr (5.2 yd^3/yr) or less than 1 percent of existing annual waste generation, and less than 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. Over the operating life of these facilities, the 40 m^3 (52 yd^3) of mixed LLW generated would be less than 1 percent of the 16,800-m^3 (22,000-yd^3) storage capacity of the Central Waste Complex, and less than 1 percent of the 14,200-m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management of this additional waste at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, lubricants, oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1998b, 1999a, 1999b). Hazardous waste generation for this combination of facilities is estimated to be 14 percent of existing annual waste generation. Because these wastes would be treated and disposed of at offsite commercial facilities, these wastes should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste includes office garbage, machine shop cuttings, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998b, 1999a, 1999b). The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 2 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, cooling tower blowdown; and treated wastewater from the liquid effluent treatment system. Wastewater would be treated, if necessary, before being discharged to the 400 Area sanitary sewer that connects to the Energy Northwest (formerly WPPSS) wastewater treatment system (UC 1998b, 1999a, 1999b). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 33 to 36 percent of the existing annual site waste generation, 28 to 31 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 28 to 31 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.1.2.7 Pit Conversion, Immobilization, and MOX Facilities

H.1.2.7.1 Construction of Pit Conversion, Immobilization, and MOX Facilities

Table H–13 compares the expected construction waste generation rates for the facilities that may be constructed at Hanford with the existing generation rates for Hanford waste. No radioactive waste would be generated during the 3-year construction period because this action involves new construction and modification of uncontaminated buildings only (UC 1998a, 1998b, 1999a, 1999b). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were

Table H–13. Potential Waste Management Impacts of Construction of Pit Conversion and Immobilization Facilities in FMEF and New MOX Facility at Hanford

	Estimated Waste Generation (m^3/yr)[b]				Percent of Site Waste Generation			
Waste Type[a]	Pit Conversion	Immobilization (Ceramic or Glass)	MOX	Site Waste Generation (m^3/yr)[c]	Pit Conversion	Immobilization (Ceramic or Glass)	MOX	All Facilities
Hazardous	13	18	19	560	2	3	3	9
Nonhazardous								
Liquid	1,300	8,800	20,000	200,000	1	4	10	15
Solid	28	1,100	8,600	43,000	<1	2	20	22

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998a, 1998b, 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FMEF, Fuels and Materials Examination Facility.

generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for ceramic and glass immobilization technologies (UC 1999a, 1999b).

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, motor oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during the 3-year construction period would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998a, 1998b, 1999a, 1999b). Hazardous waste generation for this combination of facilities is estimated to be 9 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the Hanford hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal (UC 1998a, 1998b, 1999a, 1999b). Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 22 percent of existing annual waste generation. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998a, 1998b, 1999a, 1999b). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that much of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for this combination of facilities is estimated to be 15 percent of existing annual site waste generation, 13 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, and 13 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.1.2.7.2 Operation of Pit Conversion, Immobilization, and MOX Facilities

The waste management facilities within the pit conversion, immobilization, and MOX facilities would process, temporarily store, and ship all wastes generated. Table H–14 compares the expected waste generation rates from operating the new facilities at Hanford with the existing generation rates for Hanford waste. Although HLW would be used in the immobilization process, no HLW would be generated by the facilities (UC 1998a, 1998b, 1999a, 1999b). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation would be the same for ceramic and glass immobilization technologies (UC 1999a, 1999b). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford will be evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* being prepared by the DOE Richland Operations Office (DOE 1997c).

Table H–14. Potential Waste Management Impacts of Operation of Pit Conversion and Immobilization Facilities in FMEF and New MOX Facilities at Hanford

	Estimated Waste Generation (m^3/yr)[b]				Percent of Site Waste Generation			
Waste Type[a]	Pit Conversion	Immobilization (Ceramic or Glass)	MOX	Site Waste Generation (m^3/yr)[c]	Pit Conversion	Immobilization (Ceramic or Glass)	MOX	All Facilities
TRU[d]	18	95	68	450	4	21	15	40
LLW	60	80	94	3,902	2	2	2	6
Mixed LLW	1	1	3	847	<1	<1	<1	1
Hazardous	2	75	3	560	<1	13	1	14
Nonhazardous								
Liquid	40,000	45,000	26,000	200,000	20	23	13	56
Solid	1,800	340	440	43,000	4	1	1	6

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998a, 1998b, 1999a, 1999b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: FMEF, Fuels and Materials Examination Facility; LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, contaminated beryllium pieces and cuttings, sweepings, used containers and equipment, paper and cloth wipes, analytical and quality control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facility (UC 1998a, 1998b, 1999a, 1999b). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 40 percent of existing annual waste generation and 10 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. A total of 1,810 m^3 (2,367 yd^3) of TRU waste would be generated over the 10-year operation period.

This would be 16 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled TRU waste currently in storage, and 10 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 8,600 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of approximately 2,600 m^2 (3,110 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.26 ha (0.64 acre) of land at Hanford should not be major.

The 1,810 m^3 (2,367 yd^3) of TRU waste generated by these facilities would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste (UC 1998a, 1999a, 1999b). LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation (UC 1998a, 1998b, 1999a, 1999b). Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998a). A total of 2,340 m^3 (3,061 yd^3) of LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 6 percent of existing annual waste generation, less than 1 percent of the 1.74 million-m^3 (2.28 million-yd^3) disposal capacity of the LLW Burial Grounds, and 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 2,340 m^3 (3,061 yd^3) of waste would require 0.67 ha (1.66 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998a, 1998b, 1999a, 1999b). Mixed LLW would be stabilized, packaged, and stored onsite for treatment and disposal in a manner consistent with the site treatment plan for Hanford. Hanford currently treats and disposes of mixed LLW on the site. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this combination of facilities is estimated to be 5 m^3/yr (6.5 yd^3/yr) or 1 percent of existing annual waste generation, and less than 1 percent of the 1,820-m^3/yr (2,380-yd ^{3}/yr) capacity of the Waste Receiving and Processing Facility. Over the operating lives of these facilities, the 50 m^3 (65 yd^3) of mixed LLW generated would be less than 1 percent of the 16,800-m^3 (22,000-yd^3) storage capacity of the Central Waste Complex, and less than 1 percent of the 14,200-m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management of this additional waste at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1998a, 1998b, 1999a, 1999b). Hazardous waste generation for this combination of facilities is estimated to be 14 percent of existing annual waste generation. Because these wastes would be treated and disposed of at offsite commercial facilities, these wastes should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste includes office garbage, machine shop cuttings, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998a, 1998b, 1999a, 1999b). The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 6 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, cooling tower blowdown, boiler blowdown; and treated wastewater from the liquid effluent treatment system. Nonhazardous process wastewater would be treated, if necessary, before being discharged to the 400 Area sanitary sewer which connects to the Energy Northwest (formerly WPPSS) wastewater treatment system (UC 1998a, 1998b, 1999a, 1999b). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 56 percent of the existing annual site waste generation, 48 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, 48 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest Sewage Treatment Facility and within the 138,000-m^3/yr (181,000-yd^3/yr) excess capacity of the Energy Northwest Sewage Treatment Facility (Mecca 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.2 INEEL

H.2.1 Assessment Data

Impacts on INEEL waste management facilities were estimated using information on existing environmental conditions from Chapter 3 and information on the characteristics of the proposed surplus plutonium disposition facilities from Chapter 2 and the facility data reports. A description of the methods used to evaluate impacts on waste management facilities is presented in Appendix F.8.

H.2.2 Facilities

H.2.2.1 Pit Conversion Facility

H.2.2.1.1 Construction of Pit Conversion Facility

Table H–15 compares the expected construction waste generation rates for the pit conversion facility that may be constructed at INEEL with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this facility involves the modification of an uncontaminated building (UC 1998c). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and applicable Federal and State regulations.

Table H–15. Potential Waste Management Impacts of Construction of Pit Conversion Facility in FPF at INEEL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	16	835	2
Nonhazardous			
Liquid	2,300	2,000,000	<1
Solid	40	62,000	<1

[a] See definitions in Appendix F.8.
[b] UC 1998c. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FPF, Fuel Processing Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998c). Hazardous waste generation for this facility is estimated to be 2 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the INEEL hazardous waste management system.

Nonhazardous solid waste includes office garbage, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite recycling or onsite disposal facilities (UC 1998c). Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore would not be included in the waste volumes. Construction debris would be disposed of in the INEEL onsite landfill complex in the Central Facilities Area (CFA). Nonrecyclable solid sanitary waste would be sent off the site for disposal in the Bonneville County landfill. Nonhazardous solid

waste generated for this facility is estimated to be less than 1 percent of existing annual waste generation. Assuming all nonhazardous solid waste were disposed of on the site, this additional waste would require less than 1 percent of the 48,000-m^3/yr (62,800-yd^3/yr) capacity in the CFA landfill complex. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at INEEL.

Nonhazardous liquid waste includes sanitary waste from any sinks, showers, and water closets (UC 1998c). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at onsite facilities, even though it is likely that most of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous liquid waste generated for this facility is estimated to be less than 1 percent of existing annual waste generation, 1 percent of the 166,000-m^3/yr (217,000-yd^3/yr) capacity of the Fuel Processing Facility (FPF) sanitary sewer system, less than 1 percent of the 3.2 million-m^3/yr (4.2 million-yd^3/yr) capacity of the Idaho Nuclear Technology and Engineering Center (INTEC) Sewage Treatment Plant and within the 3,117,000-m^3/yr (4,077,000-yd^3/yr) excess capacity of the INTEC Sewage Treatment Plant (Abbott et al. 1997:20). Therefore, the generation of nonhazardous liquid waste should not have a major impact on the system during construction.

H.2.2.1.2 Operation of Pit Conversion Facility

The waste management facilities within the pit conversion facility would process, temporarily store, and ship all wastes generated. Table H–16 compares the expected waste generation rates from operating the new facility at INEEL with the existing site waste generation rates. No HLW would be generated by the pit conversion facility (UC 1998c). Depending in part on decisions in the ROD for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage and disposal of radioactive, hazardous, and mixed wastes at INEEL are described in the *DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs Final EIS* (DOE 1995a).

TRU wastes generated during operations include spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality control samples, and solidified inorganic solutions. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the pit conversion facility. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Longer-term storage, drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned Waste Characterization Facility at INEEL (UC 1998c). TRU waste is not routinely generated at INEEL, although 39,300 m^3 (51,400 yd^3) of contact-handled TRU waste is currently in storage. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this facility is estimated to be 18 m^3/yr (24 yd^3/yr) or a total of 180 m^3 (235 yd^3) over the 10-year operation period. This would be less than 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) capacity of the planned Advanced Mixed Waste Treatment Project and less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity available at the Radioactive Waste Management Complex (RWMC).

Table H–16. Potential Waste Management Impacts of Operation of Pit Conversion Facility in FPF at INEEL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	18	(e)	NA
LLW	60	2,624	2
Mixed LLW	1	180	1
Hazardous	2	835	<1
Nonhazardous			
Liquid	41,000	2,000,000	2
Solid	1,800	62,000	3

[a] See definitions in Appendix F.8.
[b] UC 1998c. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
[e] TRU waste is not routinely generated at INEEL, although 39,300 m^3 (51,400 yd^3) of contact-handled TRU waste is currently in storage.
Key: FPF, Fuel Processing Facility; LLW, low-level waste; NA, not applicable; TRU, transuranic.

Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 860 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 260 m^2 (310 yd^2) would be required. The impacts of storing additional quantities of TRU waste on less than 0.1 ha (0.25 acre) of land at INEEL should not be major.

The 180 m^3 (235 yd^3) of TRU waste generated by this facility would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and is within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operation would originate from activities in the processing areas that contain the glove-box lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facility before being transferred for additional treatment and/or disposal in existing facilities on the site. Liquid LLW would be evaporated or solidified before being packaged for accumulation. Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998c). LLW generation for this facility is estimated to be 2 percent of existing annual waste generation, less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity at the RWMC, and less than 1 percent of the 37,700-m^3/yr (49,300-yd^3/yr) disposal capacity of the RWMC. If the LLW were treated at Waste Experimental Reduction Facility, the 60 m^3 (78 yd^3) of annual waste generation would be less than 1 percent of the 49,610 m^3 (64,890 yd^3) annual facility capacity. A total of 600-m^3 (780-yd^3) LLW would be generated over the operation period. Using the 6,264-m^3/ha (3,315-yd^3/acre) disposal land usage factor for INEEL published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 600 m^3 (780 yd^3) of waste would require 0.1 ha (0.25 acre) of disposal space. Therefore, impacts of the management of this additional LLW at INEEL should not be major.

Mixed LLW includes solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998c). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site

treatment plan for INEEL. INEEL currently treats some mixed LLW on the site and ships some to Envirocare of Utah. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this facility is estimated to be 1 m^3/yr (1.3 yd^3/yr) or 1 percent of the existing annual waste generation, and less than 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) planned capacity of the Advanced Mixed Waste Treatment Project. Over the operating life of this facility, the 10 m^3 (13 yd^3) of mixed LLW generated would be less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity at the RWMC. Therefore, the management of this additional waste at INEEL should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at onsite and offsite permitted facilities (UC 1998c). Hazardous waste generation for this facility is estimated to be less than 1 percent of the existing annual waste generation and less than 1 percent of the 9,848-m^3 (12,881-yd^3) onsite storage capacity. Therefore, impacts on the hazardous waste management system at INEEL should not be major.

Nonhazardous solid waste includes office garbage, machine shop cuttings, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998c). The remaining solid sanitary waste would be sent off the site for disposal in the Bonneville County landfill. Nonrecyclable, nonhazardous solid waste generated by this facility is estimated to be 3 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at INEEL.

Nonhazardous liquid waste includes sanitary waste from sinks, showers and water closets, and process wastewater from lab sinks and drains, mop water, cooling tower blowdown, and boiler blowdown. Nonhazardous wastewater would be treated, if necessary, before being discharged to the FPF sanitary sewer that connects to the INTEC wastewater treatment system (UC 1998c). Nonhazardous liquid waste generated for this facility is estimated to be 2 percent of the existing annual site waste generation, 25 percent of the 166,000-m^3/yr (217,000-yd^3/yr) capacity of the FPF sanitary sewer system, 1 percent of the 3.2 million-m^3/yr (4.2 million-yd^3/yr) capacity of the INTEC Sewage Treatment Plant and within the 3,117,000-m^3/yr (4,077,000-yd^3/yr) excess capacity of the INTEC Sewage Treatment Plant (Abbott et al. 1997:20). Therefore, the management of this additional waste should not have a major impact on the system.

H.2.2.2 MOX Facility

H.2.2.2.1 Construction of MOX Facility

Table H–17 compares the expected construction waste generation rates for the new MOX facility that may be constructed at INEEL with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this facility involves new construction only (UC 1998d). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous

Table H–17. Potential Waste Management Impacts of Construction of New MOX Facility at INEEL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	19	835	2
Nonhazardous			
Liquid	20,000	2,000,000	1
Solid	8,600	62,000	14

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.

waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998d). Hazardous waste generation for this facility is estimated to be 2 percent of the existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on the INEEL hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite recycling or onsite disposal facilities (UC 1998d). Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Construction debris would be disposed of in the onsite INEEL landfill complex in the CFA. Nonrecyclable solid sanitary waste would be sent off the site for disposal in the Bonneville County landfill. Nonhazardous solid waste generated for this facility is estimated to be 14 percent of existing annual waste generation. Assuming all nonhazardous solid waste was to be disposed of on the site, this additional waste would require 18 percent of the 48,000-m^3/yr (62,800-yd^3/yr) capacity in the CFA landfill complex. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at INEEL.

Nonhazardous liquid waste includes sanitary waste from any sinks, showers and water closets, and wastewater from dewatering (UC 1998d). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at facilities on the site, even though it is likely that most of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for this facility is estimated to be 1 percent of existing annual waste generation, 12 percent of the 166,000-m^3/yr (217,000-yd^3/yr) capacity of the FPF sanitary sewer system, less than 1 percent of the 3.2 million-m^3/yr (4.2 million-yd^3/yr) capacity of the INTEC Sewage Treatment Plant and within the 3,117,000-m^3/yr (4,077,000-yd^3/yr) excess capacity of the INTEC Sewage Treatment Plant (Abbott et al. 1997:20). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.2.2.2.2 Operation of MOX Facility

The waste management facilities within the MOX facility would process, temporarily store, and ship all wastes generated. Table H–18 compares the expected waste generation rates from operating the new facility at INEEL with the existing site waste generation rates. No HLW would be generated by the MOX facility (UC 1998d). Depending in part on decisions in the ROD for the WM PEIS, wastes could be treated and disposed of on the

Table H–18. Potential Waste Management Impacts of Operation of New MOX Facility at INEEL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	68	(e)	NA
LLW	94	2,624	4
Mixed LLW	3	180	2
Hazardous	3	835	<1
Nonhazardous			
Liquid	26,000	2,000,000	1
Solid	440	62,000	1

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
[e] TRU waste is not routinely generated at INEEL, although 39,300 m^3 (51,400 yd^3) of contact-handled TRU waste is currently in storage.
Key: LLW, low-level waste, NA, not applicable; TRU, transuranic.

site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage and disposal of radioactive, hazardous, and mixed wastes at INEEL are described in the *DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs EIS* (DOE 1995a).

TRU wastes generated during operations include spent filters, sweepings, used containers and equipment, paper and cloth wipes, analytical and quality control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the MOX facility (UC 1998d). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned Waste Characterization Facility at INEEL. TRU waste is not routinely generated at INEEL, although 39,300 m^3 (51,400 yd^3) of contact-handled TRU waste is currently in storage. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generated by this facility is estimated to be 68 m^3/yr (89 yd^3/yr) or a total of 680 m^3 (890 yd^3) over the 10-year operation period. This would be 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) capacity of the planned Advanced Mixed Waste Treatment Project and less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity available at the RWMC. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 3,200 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 960 m^2 (1,150 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.1 ha (0.25 acre) of land at INEEL should not be major.

The 680 m^3 (890 yd^3) of TRU waste generated by this facility would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3

(220,400 yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, and solidified inorganic solutions. It is likely that the LLW generated during operation would originate from activities in the processing areas containing the glove-box lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation (UC 1998d). LLW generation for this facility is estimated to be 4 percent of existing annual waste generation, 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity at the RWMC, and less than 1 percent of the 37,700-m^3/yr (49,300-yd^3/yr) disposal capacity of the RWMC. If the LLW were to be treated at the Waste Experimental Reduction Facility, the 94 m^3 (123 yd^3) of annual waste generation would be less than 1 percent of the 49,610 m^3 (64,890 yd^3) annual facility capacity. A total of 940-m^3 (1,230-yd^3) LLW would be generated over the period of operation. Using the 6,264-m^3/ha (3,315-yd^3/acre) disposal land usage factor for INEEL published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 940 m^3 (1,230 yd^3) of waste would require 0.15 ha (0.37 acre) of disposal space. Therefore, impacts of the management of this additional LLW at INEEL should not be major.

Mixed LLW includes solvents contaminated with plutonium and scintillation vials from the analytical laboratory (UC 1998d). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for INEEL. INEEL currently treats mixed LLW on the site and ships some mixed LLW to Envirocare of Utah. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for this facility is estimated to be 3 m^3/yr (3.9 yd^3/yr) or 2 percent of existing annual waste generation. The 3 m^3/yr (3.9 yd^3/yr) of mixed LLW would be less than 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) planned capacity of the Advanced Mixed Waste Treatment Project. Over the operating life of this facility, the 30 m^3 (39 yd^3) of mixed LLW generated would be less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity at the RWMC. Therefore, the management of this additional waste at INEEL should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at onsite and offsite permitted facilities (UC 1998d). Hazardous waste generation for this facility is estimated to be less than 1 percent of existing annual waste generation and less than 1 percent of the 9,848-m^3 (12,881-yd^3) onsite storage capacity. Therefore, impacts on the hazardous waste management system at INEEL should not be major.

Nonhazardous solid waste includes office garbage, machine shop cuttings, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998d). The remaining solid sanitary waste would be sent off the site for disposal in the Bonneville County landfill. Nonrecyclable, nonhazardous solid waste generated by this facility is estimated to be 1 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at INEEL.

Nonhazardous liquid waste includes sanitary waste from sinks, showers and water closets, process wastewater from lab sinks and drains, mop water, cooling tower blowdown, boiler blowdown, and treated wastewater from the liquid effluent treatment system. Nonhazardous wastewater would be treated, if necessary, before being discharged to the FPF sanitary sewer that connects to the INTEC wastewater treatment system (UC 1998d). Nonhazardous liquid waste generated for this facility is estimated to be 1 percent of existing annual site waste generation, 16 percent of the 166,000-m^3/yr (217,000-yd^3/yr) capacity of the FPF sanitary sewer system,

1 percent of the 3.2 million-m^3/yr (4.2 million-yd^3/yr) capacity of the INTEC Sewage Treatment Plant and within the 3,117,000-m^3/yr (4,077,000-yd^3/yr) excess capacity of the INTEC Sewage Treatment Plant (Abbott et al. 1997:20). Therefore, the management of this additional waste should not have a major impact on the system.

H.2.2.3 Pit Conversion and MOX Facilities

H.2.2.3.1 Construction of Pit Conversion and MOX Facilities

Table H–19 compares the expected construction waste generation rates for the facilities that may be constructed at INEEL with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because these facilities involve new construction and modification of uncontaminated buildings only (UC 1998c, 1998d). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations.

Table H–19. Potential Waste Management Impacts of Construction of Pit Conversion Facility in FPF and New MOX Facility at INEEL

	Estimated Waste Generation (m^3/yr)[b]		Site Waste	Percent of Site Waste Generation		
WasteType[a]	Pit Conversion	MOX	Generation (m^3/yr)[c]	Pit Conversion	MOX	Both Facilities
Hazardous	16	19	835	2	2	4
Nonhazardous						
Liquid	2,300	20,000	2,000,000	<1	1	1
Solid	40	8,600	62,000	<1	14	14

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998c, 1998d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
Key: FPF, Fuel Processing Facility.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998c, 1998d). Hazardous waste generation for these facilities is estimated to be 4 percent of existing annual hazardous waste generation. The additional waste load generated during construction should not have a major impact on INEEL hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite recycling or disposal facilities on the site (UC 1998c, 1998d). Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Construction debris would be disposed of in the onsite INEEL landfill complex in the CFA. Nonrecyclable solid sanitary waste would be sent off the site for disposal in the Bonneville County landfill. Nonhazardous solid waste generation for these facilities is estimated to be 14 percent of existing annual waste generation. Assuming all nonhazardous solid waste was to be disposed on the site, this additional waste would require 18 percent of the 48,000-m^3/yr (62,800-yd^3/yr) capacity in the CFA landfill complex. The additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at INEEL.

Nonhazardous liquid waste includes sanitary waste from any sinks, showers and water closets, and wastewater from dewatering (UC 1998c, 1998d). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at facilities on the site, even though it is likely that most of this waste would be collected in portable toilets and would be managed at offsite facilities. Nonhazardous liquid waste generated for these facilities is estimated to be 1 percent of existing annual waste generation, 13 percent of the 166,000-m^3/yr (217,000-yd^3/yr) capacity of the FPF sanitary sewer system, 1 percent of the 3.2 million-m^3/yr (4.2 million-yd^3/yr) capacity of the INTEC Sewage Treatment Plant and within the 3,117,000-m^3/yr (4,077,000-yd^3/yr) excess capacity of the INTEC Sewage Treatment Plant (Abbott et al. 1997:20). Therefore, the management of this additional waste should not have a major impact on the system during construction.

H.2.2.3.2 Operation of Pit Conversion and MOX Facilities

The waste management facilities within the pit conversion and MOX facilities would process, temporarily store, and ship all wastes generated. Table H–20 compares the expected waste generation rates from operating the new facilities at INEEL with the existing site waste generation rates. No HLW would be generated by the pit conversion and MOX facilities (UC 1998c, 1998d). Depending in part on decisions in the ROD for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage and disposal of radioactive, hazardous, and mixed wastes at INEEL are described in the *DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs EIS* (DOE 1995a).

TRU wastes generated during operations include spent filters, contaminated beryllium pieces and cuttings, sweepings, used containers and equipment, paper and cloth wipes, analytical and quality control samples, solidified inorganic solutions, and dirty plutonium oxide scrap (UC 1998c, 1998d). Lead gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste (UC 1998c). TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the pit conversion and MOX facilities (UC 1998c, 1998d). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned Waste Characterization Facility at INEEL (UC 1998c). TRU waste is not routinely generated at INEEL, although 39,300 m^3 (51,400 yd^3) of contact-handled TRU waste is currently in storage. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are

Table H–20. Potential Waste Management Impacts of Operation of Pit Conversion Facility in FPF and New MOX Facility at INEEL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b] Pit Conversion	MOX	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation Pit Conversion	MOX	Both Facilities
TRU[d]	18	68	(e)	NA	NA	NA
LLW	60	94	2,624	2	4	6
Mixed LLW	1	3	180	1	2	2
Hazardous	2	3	835	<1	<1	1
Nonhazardous						
Liquid	41,000	26,000	2,000,000	2	1	3
Solid	1,800	440	62,000	3	1	4

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998c, 1998d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
[e] TRU waste is not routinely generated at INEEL, although 39,300 m^3 (51,400 yd^3) of contact-handled TRU waste is currently in storage.
Key: FPF, Fuel Processing Facility; LLW, low-level waste; NA, not applicable; TRU, transuranic.

described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for these facilities is estimated to be 86 m^3/yr (112 yd^3/yr) or a total of 860 m^3 (1,120 yd^3) over the 10-year operation period. This would be 1 percent of the 6,500-m^3 (8,500-yd^3) capacity of the planned Advance Mixed Waste Treatment Project and less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity available at the RWMC. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 4,100 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 1,200 m^2 (1,440 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.12 ha (0.30 acre) of land at INEEL should not be major.

The 860 m^3 (1,120 yd^3) of TRU waste generated by these facilities would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operation would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste (UC 1998c). LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Liquid LLW would be evaporated or solidified before being packaged for accumulation (UC 1998c, 1998d). Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998c). LLW generation for these facilities is estimated to be 6 percent of existing annual waste generation, 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity at the RWMC, and less than 1 percent of the 37,700-m^3/yr (49,300-yd^3/yr) disposal capacity of the RWMC. If the LLW were to be treated at the Waste Experimental Reduction Facility, the 154 m^3 (201 yd^3) of annual waste generation would be less than 1 percent of the 49,610 m^3 (64,880 yd^3) annual facility capacity. A total of 1,540-m^3 (2,014-yd^3) LLW would be generated over the operation period. Using the 6,264-m^3/ha (3,315-yd^3/acre) disposal land usage factor for INEEL published in the *Storage and*

Disposition PEIS (DOE 1996a:E-9), 1,540 m^3 (2,014 yd^3) of waste would require 0.22 ha (0.54 acre) of disposal space. Therefore, impacts of the management of this additional LLW at INEEL should not be major.

Mixed LLW includes solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998c, 1998d). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for INEEL. INEEL currently treats mixed LLW on the site and ships some mixed LLW to Envirocare of Utah. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for these facilities is estimated to be 4 m^3/yr (5.2 yd^3/yr), or 2 percent of existing annual waste generation, and less than 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) planned capacity of the Advanced Mixed Waste Treatment Project. Over the operating life of these facilities, the 40 m^3 (52 yd^3) of mixed LLW generated would be less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity at the RWMC. Therefore, the management of this additional waste at INEEL should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operation includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at onsite and offsite permitted facilities (UC 1998c, 1998d). Hazardous waste generation for these facilities is estimated to be 1 percent of existing annual waste generation and 1 percent of the 9,848-m^3 (12,881-yd^3) onsite storage capacity. Therefore, impacts on the hazardous waste management system at INEEL should not be major.

Nonhazardous solid waste includes office garbage, machine shop cuttings, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998c, 1998d). The remaining solid sanitary waste would be sent off the site for disposal in the Bonneville County landfill. Nonrecyclable, nonhazardous solid waste generated by these facilities is estimated to be 4 percent of existing annual waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at INEEL.

Nonhazardous liquid waste includes sanitary waste from sinks, showers and water closets, process wastewater from lab sinks and drains, mop water, cooling tower blowdown, boiler blowdown, and treated wastewater from the liquid effluent treatment system. Nonhazardous wastewater would be treated, if necessary, before being discharged to the FPF sanitary sewer that connects to the INTEC wastewater treatment system (UC 1998c, 1998d). Nonhazardous liquid waste generated for these facilities is estimated to be 3 percent of existing annual waste generation, 40 percent of the 166,000-m^3/yr (217,000-yd /yr) capacity of the FPF sanitary sewer system,

Mixed LLW includes solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998e, 1998f). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for Pantex. Pantex currently ships mixed LLW to Envirocare of Utah and Diversified Scientific Services, Inc of Tennessee. These facilities or other treatment or disposal facilities that meet DOE criteria would be used (UC 1998e). Mixed LLW generation for these facilities is estimated to be 4 m^3/yr (5.2 yd^3/yr) or 17 percent of existing annual site waste generation and, therefore, should not have a major impact on the mixed LLW management system at Pantex.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (UC 1998e, 1998f). Hazardous waste generation for these facilities is estimated to be 1 percent of existing annual site waste generation, and 1 percent of the 750-m^3/yr (980-yd^3/yr) capacity of the planned Hazardous Waste Treatment and Processing Facility, and, therefore, should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, machine shop cuttings, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to onsite and offsite disposal and recycling facilities. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998e, 1998f). The remaining solid sanitary waste would be sent off the site for disposal in a local landfill such as the Amarillo landfill. Nonrecyclable, nonhazardous solid waste generated by these facilities is estimated to be less than 28 percent of existing annual site waste generation. This additional waste load should have not a major impact on the nonhazardous solid waste management system at Pantex.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, and water closets; process wastewater from lab sinks and drains, mop water, cooling tower blowdown, and boiler blowdown; and treated wastewater from the liquid effluent treatment system. Nonhazardous wastewater would be treated, if necessary, before being discharged to the Pantex wastewater treatment system (UC 1998e, 1998f). Nonhazardous liquid waste generated for these facilities is estimated to be 11 percent of existing annual site waste generation, 5 percent of the 946,250-m^3/yr (1,237,700-m^3/yr) capacity of the Pantex sanitary wastewater treatment system and within the 473,125-m^3/yr (618,848-yd^3/yr) excess capacity of the Pantex Wastewater Treatment Facility (M&H 1997:29). Therefore, impacts on the system should not be major.

H.4 SRS

H.4.1 Assessment Data

Impacts on SRS waste management facilities were estimated using information on existing environmental conditions from Chapter 3 and information on the characteristics of the proposed surplus plutonium disposition facilities from Chapter 2 and the facility data reports. A description of the methods used to evaluate impacts on waste management is presented in Appendix F.8.

H.4.2 Facilities

H.4.2.1 Pit Conversion Facility

H.4.2.1.1 Construction of Pit Conversion Facility

Table H–27 compares the expected construction waste generation rates for the facilities that may be constructed at SRS with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this action involves new construction only (UC 1998g). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations.

Table H–27. Potential Waste Management Impacts of Construction of New Pit Conversion Facility at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	50	74	68
Nonhazardous			
Liquid	5,300	416,100	1
Solid	120	6,670	2

[a] See definitions in Appendix F.8.
[b] UC 1998g. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998g). Hazardous waste generation for construction of this facility is estimated to be 68 percent of existing annual site waste generation. Because these wastes would be treated and disposed of at offsite commercial facilities, the additional waste load generated during construction should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste includes office garbage, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice, and shipped to commercial or municipal facilities for recycling or disposal (UC 1998g). Waste metals would be sent off the site for recycling and, therefore, were not included in the waste volumes. Nonhazardous-solid-waste generation during construction of this facility is estimated to be 2 percent of existing annual site waste generation. The

additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets (UC 1998g). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at the Central Sanitary Wastewater Treatment Facility, even though it is likely that much of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous liquid waste generated for construction of this facility is estimated to be 1 percent of existing annual site waste generation, 2 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, less than 1 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.4.2.1.2 Operation of Pit Conversion Facility

The waste management facilities within the pit conversion facility would process, temporarily store, and ship all wastes generated. Table H–28 compares the expected waste generation rates from operating the new facility at SRS with the existing site waste generation rates. No HLW would be generated by the facility (UC 1998g). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

Table H–28. Potential Waste Management Impacts of Operation of New Pit Conversion Facility at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	18	427	4
LLW	60	10,043	1
Mixed LLW	1	1,135	<1
Hazardous	2	74	3
Nonhazardous			
Liquid	25,000	416,100	6
Solid	1,800	6,670	27

[a] See definitions in Appendix F.8.
[b] UC 1998g. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations include spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality-control samples, and solidified inorganic solutions. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste

would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facility. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS (UC 1998g). Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this facility is estimated to be 4 percent of existing annual site waste generation and 1 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 180 m^3 (235 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 3 percent of the 6,977 m^3 (9,126 yd^3) of contact-handled TRU waste currently in storage, and 1 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 860 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 260 m^2 (310 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on less than 0.1 ha (0.25 acre) of land at SRS should not be major.

The 180 m^3 (235 yd^3) of TRU waste generated by this facility would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3 (220,400 yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities. Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998g). A total of 600 m^3 (780 yd^3) of LLW would be generated over the operation period. LLW generation for this facility is estimated to be 1 percent of existing annual site waste generation, less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 2 percent of the 30,500-m^3 (39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 600 m^3 (780 yd^3) of waste would require 0.1 ha (0.25 acre) of disposal space at SRS. Therefore, impacts of the management of this additional LLW at SRS should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998g). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for this facility is estimated to be less than 1 percent of existing annual site waste generation, and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of this facility, the 10 m^3 (13 yd^3) of mixed LLW generated would be 1 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at a combination of onsite and offsite permitted facilities (UC 1998g). Assuming that all hazardous waste is managed on the site, hazardous waste

generation for this facility is estimated to be 3 percent of existing annual site waste generation, less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and less than 1 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage buildings. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, coal ash, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998g). The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by this facility is estimated to be 27 percent of existing annual site waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and process wastewater from lab sinks and drains, mop water, cooling tower blowdown, and steam condensate. Wastewater would be treated, if necessary, before being discharged to the F-Area sanitary sewer system that connects to the Central Sanitary Wastewater Treatment Facility (UC 1998g). Nonhazardous liquid waste generated for this facility is estimated to be 6 percent of the existing annual site waste generation, 9 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 2 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore the management of this additional waste should not have a major impact on the system.

H.4.2.2 Immobilization Facility

H.4.2.2.1 Construction of Immobilization Facility

Table H–29 compares the expected construction waste generation rates for the facilities that may be constructed at SRS with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this action involves new construction only (UC 1999c, 1999d). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for the ceramic and glass immobilization technologies and is the same for the 17-t (19-ton) and 50-t (55-ton) immobilization scenarios (UC 1999c, 1999d).

Table H–29. Potential Waste Management Impacts of Construction of New Immobilization Facility at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	35	74	47
Nonhazardous			
Liquid	21,000	416,100	5
Solid	2,200	6,670	33

[a] See definitions in Appendix F.8.
[b] UC 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[Text deleted.]

[Text deleted.]

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, lubricants, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1999c, 1999d). Hazardous waste generation for construction of this facility is estimated to be 47 percent of existing annual site waste generation. Because these wastes would be treated and disposed of at offsite commercial facilities, the additional waste load generated during construction should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to commercial or municipal facilities for recycling or disposal (UC 1999c, 1999d). Waste metals would be sent off the site for recycling and, therefore, were not included in the waste volumes. Nonhazardous-solid-waste generation during construction of this facility is estimated to be 33 percent of existing annual site waste generation. Because these wastes would be managed at commercial or municipal facilities, the additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets (UC 1999c, 1999d). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at the Central Sanitary Wastewater Treatment Facility, even though it is likely that much of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous liquid waste generated for construction of this facility is estimated to be 5 percent of existing annual site waste generation, 8 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 1 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.4.2.2.2 Operation of Immobilization Facility

The waste management facilities within the immobilization facility would process, temporarily store, and ship all wastes generated. Table H–30 compares the expected waste generation rates from operating the new facility at SRS with the existing site waste generation rates. Although HLW would be used in the immobilization process, no HLW would be generated by the facility (UC 1999c, 1999d). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation would be the same for the ceramic and glass immobilization technologies, although the amount of waste generated would vary between the 17-t and the 50-t immobilization cases (UC 1999c, 1999d). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

Table H–30. Potential Waste Management Impacts of Operation of New Immobilization Facility at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b] 17 t	Estimated Waste Generation (m^3/yr)[b] 50 t	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation 17 t	Percent of Site Waste Generation 50 t
TRU[d]	95	130	427	22	30
LLW	81	110	10,043	1	1
Mixed LLW	1	1	1,135	<1	<1
Hazardous	89	89	74	120	120
Nonhazardous					
Liquid	55,000	57,000	416,100	13	14
Solid	850	850	6,670	13	13

[a] See definitions in Appendix F.8.
[b] UC 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality-control samples, and solidified inorganic solutions. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facility (UC 1999c, 1999d). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this facility is estimated to be 22 to 30 percent of existing annual site waste generation and 6 to 8 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 950 to 1,300 m^3 (1,240 to 1,700 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 14 to 19 percent of the 6,977 m^3 (9,126 yd^3) of contact-handled TRU waste currently in storage, and 3 to 4 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 4,500 to 6,000 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 1,400 to 1,800 m^2 (1,670 to 2,150 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.14 to 0.18 ha (0.35 to 0.44 acre) of land at SRS should not be major.

The 950 to 1,300 m^3 (1,240 to 1,700 yd^3) of TRU waste generated by this facility would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3 (220,400 yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, and solidified inorganic solutions. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities (UC 1999c, 1999d). A total

of 810 to 1,100-m^3 (1,060- to 1,440-yd^3) LLW would be generated over the operation period. LLW generation for this facility is estimated to be 1 percent of existing annual site waste generation, 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 3 to 4 percent of the 30,500-m^3 (39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 810 to 1,080 m^3 (1,060 to 1,413 yd^3) of waste would require approximately 0.1 to 0.12 ha (0.25 to 0.30 acre) of disposal space at SRS. Therefore, impacts of the management of this additional LLW at SRS should not be major.

Mixed LLW includes leaded shielding, solvents contaminated with plutonium, and scintillation vials from the analytical laboratory (UC 1999c, 1999d). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for this facility is estimated to be less than 1 percent of existing annual site waste generation, and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of this facility, the 10 m^3 (13 yd^3) of mixed LLW generated would be 1 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, lubricants, oils, film processing fluids, hydraulic fluids, coolants, paints, chemicals, batteries, fluorescent light tubes, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at a combination of onsite and offsite permitted facilities (UC 1999c, 1999d). Assuming that all hazardous waste is managed on the site, hazardous waste generation for this facility is estimated to be 120 percent of existing annual site waste generation, but less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 17 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage buildings. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, coal ash, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. Ash from the coal-fired steam generating plant would be disposed of in the onsite ash disposal landfills (UC 1999c, 1999d). The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by this facility is estimated to be 13 percent of existing annual site waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from cooling tower blowdown and steam condensate. Nonhazardous wastewater would be treated, if necessary, before being discharged to the F-Area sanitary sewer system that connects to the Central Sanitary Wastewater Treatment Facility (UC 1999c, 1999d). Nonhazardous liquid waste generated for this facility is estimated to be 13 to 14 percent of the existing annual site waste generation, 20 to 21 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, and 4 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.4.2.3 MOX Facility

H.4.2.3.1 Construction of MOX Facility

Table H–31 compares the expected construction waste generation rates for the facility that may be constructed at SRS with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this action involves new construction only (UC 1998h). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations.

Table H–31. Potential Waste Management Impacts From Construction of New MOX Facility at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	19	74	26
Nonhazardous			
Liquid	20,000	416,100	5
Solid	8,600	6,670	128

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998h. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998h). Hazardous waste generation for construction of this facility is estimated to be 26 percent of existing annual site waste generation. Because these wastes would be treated and disposed at offsite commercial facilities, the additional waste load generated during construction should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to commercial or municipal facilities for recycling or disposal (UC 1998h). Waste metals would be sent off the site for recycling and, therefore, were not included in the waste volumes. Nonhazardous-solid-waste generation during construction of this facility is estimated to be 128 percent of existing annual site waste generation. Because these wastes would be managed at commercial or municipal facilities, the additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998h). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at the Central Sanitary Wastewater Treatment Facility, even though it is likely that much of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous liquid waste generated for construction of this facility is estimated to be 5 percent of existing annual site waste generation, 7 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 1 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary

Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system during construction should not be major.

H.4.2.3.2 Operation of MOX Facility

The waste management facilities within the MOX facility would process, temporarily store, and ship all wastes generated. Table H–32 compares the expected waste generation rates from operating the new facility at SRS with the existing site waste generation rates. No HLW would be generated by the facility (UC 1998h). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with the current site practices. Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

Table H–32. Potential Waste Management Impacts From Operation of New MOX Facility at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	68	427	16
LLW	94	10,043	1
Mixed LLW	3	1,135	<1
Hazardous	3	74	4
Nonhazardous			
Liquid	26,000	416,100	6
Solid	440	6,670	7

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998h. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations include spent filters, used containers and equipment, paper and cloth wipes, analytical and quality-control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facility (UC 1998h). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 16 percent of existing annual site waste generation and 4 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 680 m^3 (890 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 10 percent of the 6,977 m^3 (9,126 yd^3) of contact-handled TRU waste currently

in storage, and 2 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 3,200 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 960 m^2 (1,150 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.1 ha (0.25 acre) of land at SRS should not be major.

The 960 m^3 (1,150 yd^3) of TRU waste generated by this facility would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3 (220,400 yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, and solidified inorganic solutions. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facility before being transferred for additional treatment and/or disposal in existing onsite facilities (UC 1998h). A total of 940 m^3 (1,230 yd^3) of LLW would be generated over the operation period. LLW generation for this facility is estimated to be 1 percent of existing annual site waste generation, 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 3 percent of the 30,500-m^3 (39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 940 m^3 (1,230 yd^3) of waste would require less than 0.11 ha (0.27 acre) of disposal space at SRS. Therefore, management of this additional LLW at SRS should have no major impact.

Mixed LLW includes solvents contaminated with plutonium, and scintillation vials from the analytical laboratory (UC 1998h). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for this facility is estimated to be less than 1 percent of existing annual site waste generation, and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of this facility, the 30-m^3 (39-yd^3) mixed LLW generated would be 2 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, lubricants, oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at a combination of onsite and offsite permitted facilities (UC 1998h). Assuming that all hazardous waste is managed on the site, hazardous waste generation for this facility is estimated to be 4 percent of existing annual site waste generation, less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 1 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage building. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998h). The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by this facility is

estimated to be less than 7 percent of existing annual site waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, cooling tower blowdown and steam condensate; and treated wastewater from the liquid effluent treatment system. Nonhazardous wastewater would be treated, if necessary, before being discharged to the F-Area sanitary sewer system that connects to the Central Sanitary Wastewater Treatment Facility (UC 1998h). Nonhazardous liquid waste generated for this facility is estimated to be 6 percent of the existing annual site waste generation, 10 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, and 2 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system should not be major.

H.4.2.4 Pit Conversion and Immobilization Facilities

H.4.2.4.1 Construction of Pit Conversion and Immobilization Facilities

Table H–33 compares the expected construction waste generation rates for the facilities that may be constructed at SRS with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this action involves new construction only (UC 1998g, 1999c, 1999d). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for the ceramic and glass immobilization technologies and the 17-t (19-ton) and 50-t (55-ton) immobilization scenarios (UC 1999c, 1999d).

[Text deleted.]

Table H–33. Potential Waste Management Impacts of Construction of New Pit Conversion and Immobilization Facilities at SRS

	Estimated Waste Generation (m^3/yr)[b]		SiteWaste	Percent of Site Waste Generation		
Waste Type[a]	Pit Conversion	Immobilization (Ceramic or Glass)	Generation (m^3/yr)[c]	Pit Conversion	Immobilization (Ceramic or Glass)	Both Facilities
Hazardous	50	35	74	68	47	115
Nonhazardous						
Liquid	5,300	21,000	416,100	1	5	6
Solid	120	2,200	6,670	2	33	35

[a] See definitions in Appendix F.8.
[b] UC 1998g, 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[Text deleted.]

[Text deleted.]

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998g, 1999c, 1999d). Hazardous waste generation for construction of this

combination of facilities is estimated to be 115 percent of existing annual site waste generation. Because these wastes would be treated and disposed at offsite commercial facilities, the additional waste load generated during construction should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice, and shipped to commercial or municipal facilities for recycling or disposal (UC 1998g, 1999c, 1999d). Waste metals would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonhazardous-solid-waste generation during construction of this combination of facilities is estimated to be 35 percent of existing annual site waste generation. Because these wastes would be managed at commercial or municipal facilities, the additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets (UC 1998g, 1999c, 1999d). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at the Central Sanitary Wastewater Treatment Facility, even though it is likely that much of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous liquid waste generated for construction of this combination of facilities is estimated to be 6 percent of existing annual site waste generation, 9 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 2 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system during construction should not be major.

H.4.2.4.2 Operation of Pit Conversion and Immobilization Facilities

The waste management facilities within the pit conversion and immobilization facilities would process, temporarily store, and ship all wastes generated. Table H–34 compares the expected waste generation rates from operating the new facilities at SRS with the existing site waste generation rates. Although HLW would be used in the immobilization process, no HLW would be generated by the facilities (UC 1998g, 1999c, 1999d). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed in accordance with current site practices. Waste generation would be the same for the ceramic and glass immobilization technologies, although the amount of waste generated would vary between the 17-t (19-ton) and 50-t (55-ton) immobilization cases (UC 1999c, 1999d). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality-control samples, and solidified inorganic solutions. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998g, 1999c, 1999d). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU

Table H–34. Potential Waste Management Impacts of Operation of New Pit Conversion and Immobilization Facilities at SRS

	Estimated Waste Generation (m^3/yr)[b]			Site Waste Generation	Percent of Site Waste Generation			
	Pit	Immobilization			Pit	Immobilization		Both
Waste Type[a]	Conversion	17 t	50 t	(m^3/yr)[c]	Conversion	17 t	50 t	Facilities
TRU[d]	18	95	130	427	4	22	30	26 to 34
LLW	60	81	110	10,043	1	1	1	1 to 2
Mixed LLW	1	1	1	1,135	<1	<1	<1	<1
Hazardous	2	89	89	74	3	120	120	123
Nonhazardous								
Liquid	25,000	55,000	57,000	416,100	6	13	14	19 to 20
Solid	1,800	850	850	6,670	27	13	13	40

[a] See definitions in Appendix F.8.
[b] UC 1998g, 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

Waste Characterization and Certification Facility at SRS. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 26 to 34 percent of existing annual site waste generation and 7 to 8 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 1,130 to 1,480 m^3 (1,478 to 1,936 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 16 to 21 percent of the 6,977 m^3 (9,126 yd^3) of contact-handled TRU waste currently in storage, and 3 to 4 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 5,400 to 6,900 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 1,600 to 2,100 m^2 (1,910 to 2,510 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.16 to 0.21 ha (0.40 to 0.52 acre) of land at SRS should not be major.

The 1,130 to 1,480 m^3 (1,478 to 1,936 yd^3) of TRU waste generated by these facilities would be approximately 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3 (220,400 yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities (UC 1998g, 1999c, 1999d). Tritium recovered from pit disassembly would be disposed of as LLW (UC 1999d). A total of 1,410 to 1,700-m^3 (1,844 to 2,220-yd^3) LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 1 to 2 percent of existing annual site waste generation, 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 5 to 6 percent of the 30,500-m^3 (39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 1,410 to

1,700 m^3 (1,844 to 2,220 yd^3) of waste would require 0.16 to 0.19 ha (0.40 to 0.47 acre) of disposal space at SRS. Therefore, impacts of the management of this additional LLW at SRS should not be major.

Mixed LLW includes leaded shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998g, 1999c, 1999d). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for this combination of facilities is estimated to be less than 1 percent of existing annual site waste generation, and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of these facilities, the 20 m^3 (26 yd^3) of mixed LLW generated would be 1 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at a combination of onsite and offsite permitted facilities (UC 1998g, 1999c, 1999d). Assuming that all hazardous waste is managed on the site, hazardous waste generation for this combination of facilities is estimated to be 123 percent of existing annual site waste generation, but only 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 18 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage building. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, coal ash, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998g, 1999c, 1999d). Ash from the coal-fired steam generating plant would be disposed of in the onsite ash disposal landfills (UC 1999c, 1999d). The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 40 percent of existing annual site waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and process wastewater from lab sinks and drains, mop water, cooling tower blowdown, and steam condensate. Nonhazardous wastewater would be treated, if necessary, before being discharged to the F-Area sanitary sewer system that connects to the Central Sanitary Wastewater Treatment Facility (UC 1998g, 1999c, 1999d). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 19 to 20 percent of the existing annual site waste generation, 29 to 30 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, and 6 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system should not be major.

H.4.2.5 Pit Conversion and MOX Facilities

H.4.2.5.1 Construction of Pit Conversion and MOX Facilities

Table H–35 compares the expected construction waste generation rates for the facilities that may be constructed at SRS with the existing site waste generation rates. No radioactive waste would be generated because all construction would involve new buildings (UC 1998g, 1998h). In addition, no soil contaminated with hazardous

or radioactive constituents would be generated during the 3-year construction period. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations.

Table H–35. Potential Waste Management Impacts of Construction of New Pit Conversion and MOX Facilities at SRS

	Estimated Waste Generation (m^3/yr)[b]		Site Waste	Percent of Site Waste Generation		
Waste Type[a]	Pit Conversion	MOX	Generation (m^3/yr)[c]	Pit Conversion	MOX	Both Facilities
Hazardous	50	19	74	68	26	94
Nonhazardous						
Liquid	5,300	20,000	416,100	1	5	6
Solid	120	8,600	6,670	2	128	130

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998g, 1998h. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998g, 1998h). Hazardous waste generation for construction of this combination of facilities is estimated to be 94 percent of existing annual site waste generation. Because these wastes would be treated and disposed at offsite commercial facilities, the additional waste load generated during construction should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice, and shipped to commercial or municipal facilities for recycling or disposal (UC 1998g, 1998h). Waste metals would be sent off the site for recycling and, therefore, were not included in the waste volumes. Nonhazardous-solid-waste generation during construction of this combination of facilities is estimated to be 130 percent of existing annual site waste generation. Because these wastes would be managed at commercial or municipal facilities, the additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998g, 1998h). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at the Central Sanitary Wastewater Treatment Facility, even though it is likely that much of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous-liquid-waste generation for construction of this combination of facilities is estimated to be 6 percent of existing annual site waste generation, 9 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 2 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system during construction should not be major.

H.4.2.5.2 Operation of Pit Conversion and MOX Facilities

The waste management facilities within the pit conversion and MOX facilities would process, temporarily store, and ship all wastes generated. Table H–36 compares the expected waste generation rates from operating the new facilities at SRS with the existing site waste generation rates. No HLW would be generated by the facilities (UC 1998g, 1998h). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed in accordance with current site practices. Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

Table H–36. Potential Waste Management Impacts of Operation of New Pit Conversion and MOX Facilities at SRS

	Estimated Waste Generation (m^3/yr)[b]		Site Waste Generation	Percent of Site Waste Generation		
Waste Type[a]	Pit Conversion	MOX	(m^3/yr)[c]	Pit Conversion	MOX	Both Facilities
TRU[d]	18	68	427	4	16	20
LLW	60	94	10,043	1	1	2
Mixed LLW	1	3	1,135	<1	<1	<1
Hazardous	2	3	74	3	4	7
Nonhazardous						
Liquid	25,000	26,000	416,100	6	6	12
Solid	1,800	440	6,670	27	7	34

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998g, 1998h. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations include spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality-control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998g, 1998h). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 20 percent of existing annual site waste generation, and 5 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 860 m^3 (1,120 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 12 percent of the 6,977 m^3 (9,126 yd^3) of contact-handled TRU waste currently in storage, and 2 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 4,100 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an

area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 1,200 m^2 (1,440 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.12 ha (0.30 acre) of land at SRS should not be major.

The 860 m^3 (1,120 yd^3) of TRU waste generated by these facilities would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3 (220,400 yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities (UC 1998g, 1998h). Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998g). A total of 1,540-m^3 (2,014-yd^3) LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 2 percent of existing annual site waste generation, 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 5 percent of the 30,500-m^3 (39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 1,540 m^3 (2,014 yd^3) of waste would require 0.18 ha (0.44 acre) of disposal space at SRS. Therefore, the management of this additional LLW at SRS should have no major impact.

Mixed LLW includes leaded shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998g, 1998h). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for this combination of facilities is estimated to be less than 1 percent of existing annual site waste generation, and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of these facilities, the 40 m^3 (52 yd^3) of mixed LLW generated would be 2 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at a combination of onsite and offsite facilities (UC 1998g, 1998h). Assuming that all hazardous waste is managed on the site, hazardous waste generation for this combination of facilities is estimated to be 7 percent of existing annual site waste generation, less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 1 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage building. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, coal ash, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998g, 1998h). The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be less than 34 percent of existing annual site waste generation. This

additional waste load should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, cooling tower blowdown, and steam condensate; and treated wastewater from the liquid effluent treatment system. Nonhazardous wastewater would be treated, if necessary, before being discharged to the F-Area sanitary sewer system that connects to the Central Sanitary Wastewater Treatment Facility (UC 1998g, 1998h). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 12 percent of the existing annual site waste generation, 19 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 4 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, the management of this additional waste should not have a major impact on the system.

H.4.2.6 Immobilization and MOX Facilities

H.4.2.6.1 Construction of Immobilization and MOX Facilities

Table H–37 compares the expected construction waste generation rates for the facilities that may be constructed at SRS with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this action involves new construction only (UC 1998h, 1999c, 1999d). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for the ceramic and glass immobilization technologies (UC 1999c, 1999d).

Table H–37. Potential Waste Management Impacts of Construction of New Immobilization and MOX Facilities at SRS

	Estimated Waste Generation (m^3/yr)[b]		Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation		
Waste Type[a]	Immobilization (Ceramic or Glass)	MOX		Immobilization (Ceramic or Glass)	MOX	Both Facilities
Hazardous	35	19	74	47	26	73
Nonhazardous						
Liquid	21,000	20,000	416,100	5	5	10
Solid	2,200	8,600	6,670	33	128	161

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998h, 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[Text deleted.]

[Text deleted.]

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998h, 1999c, 1999d). Hazardous waste generation for construction of this combination of facilities is estimated to be 73 percent of existing annual site waste generation. Because these

wastes would be treated and disposed at offsite commercial facilities, the additional waste load generated during construction should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice, and shipped to commercial or municipal facilities for recycling or disposal (UC 1998h, 1999c, 1999d). Waste metals would be sent off the site for recycling and, therefore, were not included in the waste volumes. Nonhazardous-solid-waste generation during construction of this combination of facilities is estimated to be 161 percent of existing annual site waste generation. Because these wastes would be managed at commercial or municipal facilities, the additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998h, 1999c, 1999d). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at the Central Sanitary Wastewater Treatment Facility, even though it is likely that much of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous liquid waste generated for construction of this combination of facilities is estimated to be 10 percent of existing annual site waste generation, 15 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 3 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system during construction should not be major.

H.4.2.6.2 Operation of Immobilization and MOX Facilities

The waste management facilities within the immobilization and MOX facilities would process, temporarily store, and ship all wastes generated. Table H–38 compares the expected waste generation rates from operating the new facilities at SRS with the existing site waste generation. Although HLW would be used in the immobilization process, no HLW would be generated by the facilities (UC 1998h, 1999c, 1999d). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed in accordance with current site practices. Waste generation would be the same for the ceramic and glass immobilization technologies (UC 1999c, 1999d). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality-control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste.

Table H–38. Potential Waste Management Impacts of Operation of New Immobilization and MOX Facilities at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b] Immobilization (Ceramic or Glass)	MOX	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation Immobilization (Ceramic or Glass)	MOX	Both Facilities
TRU[d]	95	68	427	22	16	38
LLW	81	94	10,043	1	1	2
Mixed LLW	1	3	1,135	<1	<1	<1
Hazardous	89	3	74	120	4	124
Nonhazardous						
Liquid	55,000	26,000	416,100	13	6	20
Solid	850	440	6,670	13	7	19

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998h, 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

It is anticipated that all TRU waste would be contact-handled waste. TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998h, 1999c, 1999d). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 38 percent of existing annual site waste generation and 9 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 1,630 m^3 (2,132 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 23 percent of the 6,977 m^3 (9,126 yd^3) of contact-handled TRU waste currently in storage, and 5 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 7,700 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 2,300 m^2 (2,750 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.23 ha (0.57 acre) of land at SRS should not be major.

The 1,630 m^3 (2,132 yd^3) of TRU waste generated by these facilities would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3 (220,400 yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, and solidified inorganic solutions. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities (UC 1998h, 1999c, 1999d). A total of 1,750-m^3 (2,289-yd^3) LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 2 percent of existing annual site waste generation, 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 6 percent of the 30,500-m^3

(39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 1,750-m^3 (2,289-yd^3) waste would require 0.2 ha (0.49 acre) of disposal space at SRS. Therefore, impacts of the management of this additional LLW at SRS should not be major.

Mixed LLW includes lead shielding, solvents contaminated with plutonium, and scintillation vials from the analytical laboratory (UC 1998h, 1999c, 1999d). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for this combination of facilities is estimated to be less than 1 percent of existing annual site waste generation, and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of these facilities, the 40-m^3 (52-yd^3) mixed LLW generated would be 2 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, lubricants, oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at a combination of onsite and offsite permitted facilities (UC 1998h, 1999c, 1999d). Assuming that all hazardous waste is managed on the site, hazardous waste generation for this combination of facilities is estimated to be 124 percent of existing annual site waste generation, but only 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 18 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage buildings. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, coal ash, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998h, 1999c, 1999d). Ash from the coal-fired steam generating plant would be disposed of in the onsite ash disposal landfills (UC 1999c, 1999d). The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be less than 19 percent of existing annual site waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, cooling tower blowdown, and steam condensate; and treated wastewater from the liquid effluent treatment system. Nonhazardous wastewater would be treated, if necessary, before being discharged to the F-Area sanitary sewer system that connects to the Central Sanitary Wastewater Treatment Facility (UC 1998h, 1999c, 1999d). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 20 percent of the existing annual site waste generation, 29 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 6 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore the management of this additional waste should not have a major impact on the system.

H.4.2.7 Pit Conversion, Immobilization, and MOX Facilities

H.4.2.7.1 Construction of Pit Conversion, Immobilization, and MOX Facilities

Table H–39 compares the expected construction waste generation rates for the facilities that may be constructed at SRS with the existing site waste generation rates. No radioactive waste would be generated during the 3-year construction period because this action involves new construction only (UC 1998g, 1998h, 1999c, 1999d). In addition, no soil contaminated with hazardous or radioactive constituents would be generated during construction. However, if any were generated, the waste would be managed in accordance with site practice and all applicable Federal and State regulations. Construction waste generation would be the same for the ceramic and glass immobilization technologies (UC 1999c, 1999d).

Table H–39. Potential Waste Management Impacts of Construction of New Pit Conversion, Immobilization, and MOX Facilities at SRS

	Estimated Waste Generation (m^3/yr)[b]			Site Waste	Percent of Site Waste Generation			
Waste Type[a]	PCF	IF (Ceramic or Glass)	MOX	Generation (m^3/yr)[c]	PCF	IF (Ceramic or Glass)	MOX	All Facilities
Hazardous	50	35	19	74	68	47	26	141
Nonhazardous								
Liquid	5,300	21,000	20,000	416,100	1	5	5	11
Solid	120	2,200	8,600	6,670	2	33	128	163

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998g, 1998h, 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[Text deleted.]
Key: IF, immobilization facility; PCF, pit conversion facility.

[Text deleted.]

Hazardous waste generated during construction includes liquids such as spent cleaning solutions, lubricants, oils, hydraulic fluids, antifreeze solutions, paints and chemicals, and rags or wipes contaminated with these materials. These wastes are typically generated during construction of an industrial facility. Any hazardous waste generated during construction would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities (UC 1998g, 1999c, 1999d). Hazardous waste generation for construction of this combination of facilities is estimated to be 141 percent of existing annual site waste generation. Because these wastes would be treated and disposed at offsite commercial facilities, the additional waste load generated during construction should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste includes office garbage, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to commercial or municipal facilities for recycling or disposal (UC 1998g, 1999c, 1999d). Waste metals would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonhazardous-solid-waste generation during construction of these facilities is estimated to be 163 percent of existing annual site waste generation. Because these wastes would be managed at commercial or municipal facilities, the additional waste load generated during construction should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets and wastewater from dewatering (UC 1998g, 1999c, 1999d). To be conservative, it was assumed that all nonhazardous liquid waste generated during construction would be managed at the Central Sanitary Wastewater Treatment Facility, even though it is likely that much of this waste would be collected in portable toilets and managed at offsite facilities. Nonhazardous liquid waste generated during construction of these facilities is estimated to be 11 percent of existing annual site waste generation, 17 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 3 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore the management of this additional waste should not have a major impact on the system.

H.4.2.7.2 Operation of Pit Conversion, Immobilization, and MOX Facilities

The waste management facilities within the pit conversion, immobilization, and MOX facilities would process, temporarily store, and ship all wastes generated. Table H–40 compares the expected waste generation rates from operating the new facilities at SRS with the existing site waste generation rates. Although HLW would be used in the immobilization process, no HLW would be generated by the facilities (UC 1998g, 1998h, 1999c, 1999d). Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that the LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Waste generation would be the same for the ceramic and glass immobilization technologies (UC 1999c, 1999d). Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

Table H–40. Potential Waste Management Impacts of Operation of New Pit Conversion, Immobilization, and MOX Facilities at SRS

	Estimated Waste Generation (m^3/yr)[b]			Site Waste	Percent of Site Waste Generation			
Waste Type[a]	PCF	Immobilization (Ceramic or Glass)	MOX	Generation (m^3/yr)[c]	PCF	Immobilization (Ceramic or Glass)	MOX	All Facilities
TRU[d]	18	95	68	427	4	22	16	42
LLW	60	81	94	10,043	1	1	1	2
Mixed LLW	1	1	3	1,135	<1	<1	<1	<1
Hazardous	2	89	3	74	3	120	4	127
Nonhazardous								
Liquid	25,000	55,000	26,000	416,100	6	13	6	26
Solid	1,800	850	440	6,670	27	13	7	46

[a] See definitions in Appendix F.8.
[b] DOE 1999a; UC 1998g, 1998h, 1999c, 1999d. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; PCF, pit conversion facility; TRU, transuranic.

TRU wastes generated during operations include metal cladding from fuel elements, spent filters, contaminated beryllium pieces and cuttings, used containers and equipment, paper and cloth wipes, analytical and quality-control samples, solidified inorganic solutions, and dirty plutonium oxide scrap. Lead-lined gloves are likely to be managed as mixed TRU waste. It is anticipated that all TRU waste would be contact-handled waste. TRU

wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the new facilities (UC 1998g, 1998h, 1999c, 1999d). Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for this combination of facilities is estimated to be 42 percent of existing annual site waste generation and 10 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 1,810 m^3 (2,367 yd^3) of TRU waste would be generated over the 10-year operation period. This would be 26 percent of the 6,977 m^3 (9,126 yd^3) of contact-handled TRU waste currently in storage, and 5 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS. Assuming that the waste were stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 8,600 drums would be required to store this waste. Assuming that these drums can be stacked two high, that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of about 2,600 m^2 (3,110 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on 0.26 ha (0.64 acre) of land at SRS should not be major.

The 2,600 m^3 (3,110 yd^3) of TRU waste generated by these facilities would be 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500 m^3 (220,400 yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW includes used equipment, wipes, protective clothing, solidified inorganic solutions, and tritium. It is likely that the LLW generated during operations would originate from activities in the processing areas containing the glovebox lines but not from operations within the gloveboxes. Operations within the gloveboxes are likely to generate mostly TRU waste. LLW would be treated, packaged, certified, and accumulated at the new facilities before being transferred for additional treatment and/or disposal in existing onsite facilities (UC 1998g, 1998h, 1999c, 1999d). Tritium recovered from pit disassembly would be disposed of as LLW (UC 1998g). A total of 2,350-m^3(3,074-yd^3) LLW would be generated over the operation period. LLW generation for this combination of facilities is estimated to be 2 percent of existing annual site waste generation, 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 8 percent of the 30,500-m^3 (39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 2,350 m^3 (3,074 yd^3) of waste would require 0.27 ha (0.67 acre) of disposal space at SRS. Therefore, the management of this additional LLW at SRS should have no major impact.

Mixed LLW includes leaded shielding, solvents contaminated with plutonium, scintillation vials from the analytical laboratory, and hazardous constituents that were introduced as part of the incoming pits (UC 1998g, 1998h, 1999c, 1999d). Mixed LLW would be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for this combination of facilities is estimated to be less than 1 percent of existing annual site waste generation, and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of these facilities, the 50 m^3 (65 yd^3) of mixed LLW generated would be 3 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations includes spent cleaning solutions, vacuum pump oils, film processing fluids, hydraulic fluids, antifreeze solutions, paints, chemicals, batteries, fluorescent light tubes, lead packaging, and contaminated rags or wipes. Hazardous waste would be packaged for treatment and disposal at

a combination of onsite and offsite permitted facilities (UC 1998g, 1998h, 1999c, 1999d). Assuming that all hazardous waste is managed on the site, hazardous waste generation for this combination of facilities is estimated to be 127 percent of existing annual site waste generation, but only 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 18 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage buildings. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste includes office garbage, coal ash, machine shop waste, and other industrial wastes from utility and maintenance operations. Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling (UC 1998g, 1998h, 1999c, 1999d). Ash from the coal-fired steam generating plant would be disposed of in the onsite ash disposal landfills (UC 1999c, 1999d). The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by this combination of facilities is estimated to be 46 percent of existing annual site waste generation. Because most of this waste would be managed at commercial or municipal facilities, this additional waste load should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets; process wastewater from lab sinks and drains, mop water, cooling tower blowdown, and steam condensate; and treated wastewater from the liquid effluent treatment system. Nonhazardous wastewater would be treated, if necessary, before being discharged to the F-Area sanitary sewer system that connects to the Central Sanitary Wastewater Treatment Facility (UC 1998g, 1998h, 1999c, 1999d). Nonhazardous liquid waste generated for this combination of facilities is estimated to be 26 percent of the existing annual site waste generation, 40 percent of the 276,000-m^3/yr (361,000-yd^3/yr) capacity of the F-Area sanitary sewer, 8 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system should not be major.

H.5 LEAD ASSEMBLY FABRICATION

This section describes the impacts on the waste management infrastructure that may occur if lead assembly fabrication were to occur at ANL–W, Hanford, LLNL, LANL, or SRS. For each site, separate sections are presented for construction and operations.

H.5.1 ANL–W

H.5.1.1 Construction

Wastes would be generated during modification of the Fuel Manufacturing Facility (FMF) and the Zero Power Physics Reactor (ZPPR) for lead assembly fabrication. Table H–41 compares the expected waste generation rates for the modification of facilities at ANL–W with the existing generation rates for INEEL waste. LLW would be generated during modification of contaminated areas of FMF and ZPPR, although no TRU waste, mixed waste, or hazardous wastes should be generated (O'Connor et al. 1998a).

Table H–41. Potential Waste Management Impacts of Modification of Facilities for Lead Assembly Fabrication at ANL–W

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
LLW	18	2,624	1
Nonhazardous			
Liquid	37	2,000,000	<1
Solid	11	62,000	<1

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998a. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3; waste generation rates for INEEL.
Key: ANL–W, Argonne National Laboratory–West; LLW, low-level waste.

LLW generated during modification of the FMF and ZPPR buildings would include used equipment, decontamination wastes, and protective clothing (O'Connor et al. 1998a). A total of 36 m^3 (47 yd^3) of LLW would be generated during the 2-year modification period. LLW generation for these activities is estimated to be 1 percent of existing annual waste generation, less than 1 percent of the 112,400-m^3 (147,000-yd^3) storage capacity at the RWMC, and less than 1 percent of the 37,700-m^3/yr (49,300-yd^3/yr) disposal capacity of the RWMC. Using the 6,264-m^3/ha (3,315-yd^3/acre) disposal land usage factor for the RWMC published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 36 m^3 (47 yd^3) of waste would require less than 0.1 ha (0.25 acre) of disposal space at INEEL. Therefore, impacts of the management of this additional LLW at ANL–W and INEEL should not be major.

Nonhazardous solid waste would include office garbage, construction debris, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice, and would be disposed of in the onsite CFA landfill complex or shipped to offsite facilities for recycling. Nonrecyclable nonhazardous solid waste generated during modification is estimated to be less than 1 percent of existing annual site waste generation and less than 1 percent of the 48,000-m^3/yr (62,800-yd^3/yr) capacity of the CFA landfill complex. The additional waste load generated during the modification period should not have a major impact on the nonhazardous solid waste management system at ANL–W or INEEL.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals, and water closets. To be conservative, it was assumed that all nonhazardous liquid waste generated during modification would be managed

at the ANL–W sanitary wastewater treatment facility. Nonhazardous liquid waste generated for modification is estimated to be less than 1 percent of the existing annual waste generation for the INEEL, and 1 percent of the 6,057-m^3/yr (7,923-yd^3/yr) capacity of the ANL–W sanitary wastewater treatment facility. Therefore, this waste load should not have a major impact on the ANL–W sanitary wastewater treatment system.

H.5.1.2 Operations

Table H–42 compares the expected waste generation rates from lead assembly fabrication at ANL–W with the existing INEEL waste generation rates. No HLW would be generated by the proposed activities. Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. This SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at ANL–W and INEEL are described in the *DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Final EIS* (DOE 1995a).

Table H–42. Potential Waste Management Impacts of Operation of Facilities for Lead Assembly Fabrication at ANL–W

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	41	NA	NA
LLW	200	2,624	8
Mixed LLW	1	180	1
Hazardous	<1	835	<1
Nonhazardous			
Liquid	1,600	2,000,000	<1
Solid	1,300	62,000	2

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998a. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3; waste generation rates for INEEL.
[d] Includes mixed TRU waste.
Key: ANL–W, Argonne National Laboratory–W; LLW, low-level waste; NA, not applicable; TRU, transuranic.

TRU wastes generated during lead assembly fabrication would include glovebox gloves, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, metallography waste, and sludges (O'Connor et al. 1998a). It is anticipated that all TRU waste would be contact-handled waste. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Long-term storage, drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned Waste Characterization Facility at INEEL. TRU waste is not routinely generated at INEEL. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for these activities at ANL–W is estimated to be 41 m^3/yr (54 yd^3/yr), or 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) capacity of the planned Advanced Mixed Waste Treatment Project. A total of 132 m^3 (173 yd^3) of waste would be generated over the 3-year operation period. This would be less than 1 percent

of the 39,300 m^3 (51,404 yd^3) of contact-handled TRU waste currently in storage, and less than 1 percent of the 177,300-m^3 (231,908-yd^3) storage capacity available at INEEL.

The 132 m^3 (173 yd^3) of TRU waste generated by these activities would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW may include room trash (e.g., blotter paper, wipes, mop heads); protective clothing; solidified sludges; ion exchange resins; metal cans and rods; and wastewater from the laundry, analytical laboratory, and decontamination process (O'Connor et al. 1998a). LLW would be packaged, certified, and accumulated before being transferred for treatment and disposal in existing onsite facilities. A total of 700 m^3 (916 yd^3) of LLW would be generated over the 3-year operation period. LLW generation for these activities is estimated to be 8 percent of existing annual site waste generation, less than 1 percent of the 49,610-m^3/yr (64,880-yd^3/yr) capacity of the WERF, 1 percent of the 112,400-m^3 (147,000-yd^3) storage capacity at the the RWMC, and 1 percent of the 37,700-m^3/yr (49,300-yd^3/yr) disposal capacity of the RWMC. Using the 6,264-m^3/ha (3,315-yd^3/acre) disposal land usage factor for the RWMC published in the *Storage and Disposition Final PEIS* (DOE 1996a:E-9), 700 m^3 (916 yd^3) of waste would require 0.11 ha (0.27 acre) of disposal space at INEEL. Therefore, impacts of the management of this additional LLW at ANL–W and INEEL should not be major.

Mixed LLW may include sludges, cleaning solvents, and analytical waste (O'Connor et al. 1998a). Mixed LLW will be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for ANL–W. INEEL currently treats mixed LLW onsite and ships some mixed LLW to Envirocare of Utah. Onsite disposal is planned in a new mixed LLW disposal facility. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for these activities is estimated to be 1 percent of existing annual waste generation and less than 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) planned capacity of the Advanced Mixed Waste Treatment Project. The 4 m^3 (5.2 yd^3) of mixed LLW expected to be generated would be less than 1 percent of the 112,400-m^3 (147,000-yd^3) storage capacity at the RWMC. Therefore, the management of this additional waste at ANL–W and INEEL should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations would include small quantities of process ends. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (O'Connor et al. 1998a). Hazardous waste generation for these activities is estimated to be less than 1 percent of existing annual waste generation and less than 1 percent of the 1,600-m^3 (2,090-yd^3) onsite storage capacity, and therefore should not have a major impact on the hazardous waste management system at ANL–W or INEEL.

Nonhazardous solid waste would include office and lunch room garbage, packaging materials, sewage sludges, and other industrial wastes from utility and maintenance operations (O'Connor et al. 1998a). Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. The remaining solid sanitary waste would be sent off the site for disposal in the Bonneville County landfill. Nonrecyclable, nonhazardous solid waste generated by these activities is estimated to be 2 percent of existing annual site waste generation. It is unlikely that this additional waste load would have a major impact on the nonhazardous solid waste management system at ANL–W or INEEL.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals and water closets, and wastewater from cooling tower blowdown (O'Connor et al. 1998a). Nonhazardous liquid waste generated for

these activities is estimated to be less than 1 percent of the existing annual waste generation for INEEL and 26 percent of the 6,057-m^3/yr (7,923-yd^3/yr) capacity of the ANL–W sanitary wastewater treatment facility. Therefore, this additional waste should not have a major impact on the ANL–W sanitary wastewater treatment system.

H.5.2 Hanford

H.5.2.1 Construction

Table H–43 compares the expected waste generation rates for the modification of Hanford facilities for lead assembly fabrication with the existing generation rates for Hanford waste. No radioactive waste would be generated during modification because this action involves modification of uncontaminated buildings only (O'Connor et al. 1998b).

Table H–43. Potential Waste Management Impacts of Modification of Facilities for Lead Assembly Fabrication at Hanford

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Nonhazardous			
Liquid	15	200,000	<1
Solid	50	43,000	<1

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.

Nonhazardous solid waste includes office garbage, construction debris, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Richland Sanitary Landfill. Nonrecyclable nonhazardous solid waste generated during modification is estimated to be less than 1 percent of existing annual waste generation. The additional waste load generated during the 2-year modification period should not have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets. To be conservative, it was assumed that all nonhazardous liquid waste generated during modification would be managed at onsite facilities. Nonhazardous liquid waste generated during modification is estimated to be less than 1 percent of existing annual site waste generation, less than 1 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, and less than 1 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility. Therefore, this waste load is unlikely to have a major impact on the system during the modification period.

H.5.2.2 Operations

Table H–44 compares the expected waste generation rates from lead assembly fabrication at Hanford with the existing site waste generation rates. No HLW would be generated during lead assembly fabrication. Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998,

Table H–44. Potential Waste Management Impacts of Operation of Facilities for Lead Assembly Fabrication at Hanford

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	41	450	9
LLW	200	3,902	5
Mixed LLW	1	847	<1
Hazardous	<1	560	<1
Nonhazardous			
Liquid	1,600	200,000	1
Solid	1,300	43,000	3

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998b. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste
Key: LLW, low-level waste; TRU, transuranic.

TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at Hanford are being evaluated in the *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* that is being prepared by the DOE Richland Operations Office (DOE 1997c).

TRU wastes generated during operations would include glovebox gloves, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, metallography waste, and sludges (O'Connor et al. 1998b). It is anticipated that all TRU waste would be contact-handled waste. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Waste Receiving and Processing Facility at Hanford. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for these activities is estimated to be 9 percent of existing annual site waste generation and 2 percent of the 1,820-m^3/yr (2,380-yd^3/yr) planned capacity of the Waste Receiving and Processing Facility. A total of 132 m^3 (173 yd^3) of TRU waste would be generated over the 3-year operation period. This would be 1 percent of the 11,450 m^3 (14,977 yd^3) of contact-handled TRU waste currently in storage and 1 percent of the 17,000-m^3 (22,200-yd^3) storage capacity available at Hanford.

The 132 m^3 (173 yd^3) of TRU waste generated by these activities would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW may include room trash (e.g., blotter paper, wipes, mop heads); protective clothing; solidified sludges; ion exchange resins; metal cans and rods; and wastewater from the laundry, analytical laboratory, and decontamination process (O'Connor et al. 1998b). LLW would be packaged, certified, and accumulated before being transferred for treatment and disposal in existing onsite facilities. A total of 700 m^3 (916 yd^3) of LLW would be generated over the 3-year operation period. LLW generation for these activities is estimated to be 5

percent of existing annual site waste generation, less than 1 percent of the 1,740,000-m^3 (2,280,000-yd^3) disposal capacity of the LLW Burial Grounds, and less than 1 percent of the 230,000-m^3 (301,000-yd^3) capacity of the Grout Vaults. Using the 3,480-m^3/ha (1,842-yd^3/acre) disposal land usage factor for Hanford published in the *Final Storage and Disposition PEIS* (DOE 1996a:E-9), 700 m^3 (916 yd^3) of waste would require 0.2 ha (0.49 acre) of disposal space at Hanford. Therefore, impacts of the management of this additional LLW at Hanford should not be major.

Mixed LLW may include sludges, cleaning solvents, and analytical waste (O'Connor et al. 1998b). Mixed LLW will be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for Hanford. Mixed LLW generation for these activities is estimated to be less than 1 percent of existing annual waste generation and less than 1 percent of the 1,820-m^3/yr (2,380-yd^3/yr) capacity of the Waste Receiving and Processing Facility. Over the operating life of this facility, the 4 m^3 (5.2 yd^3) of mixed LLW expected to be generated would be less than 1 percent of the 16,800-m^3 (21,970-yd^3) storage capacity of the Central Waste Complex and less than 1 percent of the 14,200 m^3 (18,600-yd^3) disposal capacity in the Radioactive Mixed Waste Disposal Facility. Therefore, the management of this additional waste at Hanford should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations would include small quantities of process ends. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (O'Connor et al. 1998b). Hazardous waste generation for these activities is estimated to be less than 1 percent of existing annual waste generation. These wastes should not have a major impact on the hazardous waste management system at Hanford.

Nonhazardous solid waste would include office and lunch room garbage, packaging materials, sewage sludges, and other industrial wastes from utility and maintenance operations (O'Connor et al. 1998b). Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. The remaining solid sanitary waste would be sent off the site for disposal in the Richland Sanitary Landfill. Nonrecyclable, nonhazardous solid waste generated by these activities is estimated to be 3 percent of existing annual site waste generation. It is unlikely that this additional waste load would have a major impact on the nonhazardous solid waste management system at Hanford.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals and water closets, and wastewater from cooling tower blowdown (O'Connor et al. 1998b). Nonhazardous liquid waste generated for these activities is estimated to be 1 percent of the existing annual site waste generation, 1 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the 400 Area sanitary sewer, and 1 percent of the 235,000-m^3/yr (307,000-yd^3/yr) capacity of the Energy Northwest (formerly WPPSS) Sewage Treatment Facility. Therefore, this additional waste load should not have a major impact on the system.

H.5.3 LLNL

H.5.3.1 Construction

Table H–45 compares the expected waste generation rates for the modification of LLNL facilities for lead assembly fabrication with the existing generation rates for LLNL waste. No radioactive waste would be generated during modification because this action involves modification of uncontaminated buildings only (O'Connor et al. 1998c).

Table H–45. Potential Waste Management Impacts of Modification of Facilities for Lead Assembly Fabrication at LLNL

WasteType[a]	Estimated Waste Generation (m^3/yr) [b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Nonhazardous			
Liquid	17	456,000	<1
Solid	12	4,282	<1

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998c. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.

Nonhazardous solid waste includes office garbage, construction debris, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to offsite facilities for recycling or disposal. Waste metals and other recyclable solid wastes would be sent off the site for recycling, and therefore were not included in the waste volumes. Nonrecyclable solid sanitary waste would be sent off the site and would likely be disposed of in the Vasco Road Landfill. Nonrecyclable nonhazardous solid waste generated during modification is estimated to be 1 percent of existing annual waste generation. The additional waste load generated during the 2-year modification period should not have major impact on the nonhazardous solid waste management system at LLNL.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals, and water closets. To be conservative, it was assumed that all nonhazardous liquid waste generated during modification would be discharged to the LLNL sewer system. Nonhazardous liquid waste generated during modification is estimated to be less than 1 percent of existing annual site waste generation and less than 1 percent of the 2,327,800-m^3/yr (3,044,762-yd^3/yr) capacity of the LLNL sanitary sewer, and therefore is unlikely to have a major impact on the LLNL sewer system or the city of Livermore Water Reclamation Plant during the modification period.

H.5.3.2 Operations

Table H–46 compares the expected waste generation rates from lead assembly fabrication at LLNL with the existing site waste generation rates. No HLW would be generated during lead assembly fabrication. Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment and storage of radioactive, hazardous, and mixed wastes at LLNL are described in the *Final EIS for Continued Operation of LLNL and SNL, Livermore* (DOE 1992).

TRU wastes generated during operations would include glovebox gloves, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, metallography waste, and sludges (O'Connor et al. 1998c). It is anticipated that all TRU waste would be contact-handled waste. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. It is likely that drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned Decontamination and Waste Treatment Facility. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

Table H–46. Potential Waste Management Impacts of Operation of Facilities for Lead Assembly Fabrication at LLNL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	41	27	152
LLW	200	124	161
Mixed LLW	1	353	<1
Hazardous	<1	579	<1
Nonhazardous			
Liquid	1,600	456,000	<1
Solid	1,300	4,282	30

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998c. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste
Key: LLW, low-level waste; TRU, transuranic.

TRU waste generation for these activities is estimated to be 152 percent of existing annual site waste generation. A total of 132 m^3 (173 yd^3) of TRU waste would be generated over the 3-year operation period. This would be 51 percent of the 257 m^3 (336 yd^3) of contact-handled TRU waste currently in storage, and 4 percent of the 3,335 m^3 (4,362 yd^3) of onsite storage capacity. Assuming that the waste is stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 630 drums would be needed to store this waste. Assuming that these drums can be stacked two high, each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space and shipping and receiving space, a storage area of about 190 m^2 (227 yd^2) would be required. Impacts of the storage of additional quantities of TRU waste on less than 0.1 ha (0.25 acre) of land at LLNL should not be major.

The 132 m^3 (173 yd^3) of TRU waste generated by these activities would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW may include room trash (e.g., blotter paper, wipes, mop heads); protective clothing; solidified sludges; ion exchange resins; metal cans and rods; and wastewater from the laundry, analytical laboratory, and decontamination process (O'Connor et al. 1998c). LLW would be packaged, certified, and accumulated before being transferred for treatment and storage in existing facilities on the site. LLW generation for these activities is estimated to be 161 percent of existing annual site waste generation and 26 percent of the 771-m^3/yr (1,008-yd^3/yr) capacity of the size reduction facility. A total of 700 m^3 (916 yd^3) of LLW would be generated over the 3-year operation period. This would be 13 percent of the 5,255-m^3 (6,874-yd^3) onsite storage capacity, and would not be expected to require LLNL to build additional storage capacity because this waste would be shipped to a disposal facility on a routine basis. If additional storage space were required, and assuming that the waste is stored in 208-l (55-gal) drums each with a capacity of 0.21 m^3 (0.27 yd^3), about 3,300 drums would be needed to store this waste. Assuming that these drums can be stacked two high, each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space and shipping and receiving space, a storage area of about 1,000 m^2 (1,196 yd^2) would be required. Impacts of the storage of additional quantities of LLW on 0.1 ha (0.25 acre) of land at LLNL should not be major.

LLW from LLNL is currently shipped to NTS for disposal. The additional LLW from conduct of lead assembly fabrication at LLNL would be 4 percent of the 20,000 m^3 (26,000 yd^3) of LLW disposed at NTS in 1995 and less

than 1 percent of the 500,000-m^3 (650,000-yd^3) disposal capacity at NTS. Using the 6,085-m^3/ha (3,221-yd^3/acre) disposal land usage factor for NTS published in the *Final Storage and Disposition PEIS* (DOE 1996a:E-9), 700 m^3 (916 yd^3) of waste would require 0.12 ha (0.30 acre) of disposal space at NTS or a similar facility. Therefore, impacts of the management of this additional LLW at the disposal site should not be major. Impacts of disposal of LLW at NTS are described in the *Final EIS for the NTS and Off-Site Locations in the State of Nevada* (DOE 1996c).

Mixed LLW may include sludges, cleaning solvents, and analytical waste (O'Connor et al. 1998c). Mixed LLW will be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for LLNL. Mixed LLW disposal would occur off the site. Mixed LLW generation for these activities is estimated to be less than 1 percent of existing annual waste generation and less than 1 percent of the 2,012-m^3/yr (2,632-yd^3/yr) capacity of the Building 513 and 514 Waste Treatment Facility. Over the operating life of this facility, the 4 m^3 (5.2 yd^3) of mixed LLW expected to be generated would be less than 1 percent of the 2,825-m^3 (3,695-yd^3) onsite storage capacity. Therefore, the management of this additional waste at LLNL should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations would include small quantities (< 1 m^3/yr [< 1.3 yd^3/yr]) of process ends. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (O'Connor et al. 1998c). Hazardous waste generated by these activities is estimated to be less than 1 percent of existing annual waste generation and less than 1 percent of the 2,825-m^3 (3,695-yd^3) hazardous waste storage capacity. Because the additional waste load is very small, management of this waste should not have a major impact on the hazardous waste management system at LLNL.

Nonhazardous solid waste would include office and lunch room garbage, packaging materials, sewage sludges, and other industrial wastes from utility and maintenance operations (O'Connor et al. 1998c). Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. The remaining solid sanitary waste would be sent off the site for disposal in the Vasco Road Landfill. Nonrecyclable, nonhazardous solid waste generated by these activities is estimated to be 30 percent of existing annual site waste generation. It is unlikely that this additional waste load would have a major impact on the nonhazardous solid waste management system at LLNL.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals and water closets, and wastewater from cooling tower blowdown (O'Connor et al. 1998c). After monitoring to ensure that the wastewater meets discharge limits, sanitary wastewaters from lead assembly fabrication along with other sanitary wastewaters from LLNL and Sandia National Laboratory–Livermore, would be routed to the city of Livermore Water Reclamation Plant. Nonhazardous liquid waste generated for these activities is estimated to be less than 1 percent of the existing annual site waste generation, and less than 1 percent of the 2,327,800-m^3/yr (3,044,762-yd^3/yr) capacity of the LLNL sanitary sewer and therefore should not have a major impact on LLNL and the city of Livermore sanitary wastewater treatment systems.

H.5.4 LANL

H.5.4.1 Construction

Table H–47 compares the expected waste generation rates for the modification of LANL facilities for lead assembly fabrication with the existing generation rates for LANL waste. TRU waste and LLW would be generated during modification of the glovebox line in Building PF–4, although no mixed waste or hazardous wastes would be generated (O'Connor et al. 1998d).

Table H–47. Potential Waste Management Impacts of Modification of Facilities for Lead Assembly Fabrication at LANL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	3	262	1
LLW	3	1,585	<1
Nonhazardous Liquid	10	692,857	<1

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998d:33. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

TRU wastes generated during modification of Building PF–4 would include contaminated equipment and gloveboxes. It is anticipated that all TRU waste would be contact-handled waste. No liquid TRU waste is anticipated (O'Connor et al. 1998d). Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the Radioactive Materials Research, Operations and Demonstration (RAMROD) Facility and the Radioactive Assay and Nondestructive Test (RANT) Facility (DOE 1999b:2-108, 2-112, 2-113). Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b).

TRU waste generation for modification of Building PF–4 is estimated to be 1 percent of existing annual site waste generation, and less than 1 percent of the 1,050-m^3/yr (1,373-yd^3/yr) TRU-waste-processing capacity of the RAMROD and RANT facilities. A total of 5 m^3 (6.5 yd^3) of TRU waste would be generated over the 2-year modification period. This would be less than 1 percent of the 11,262 m^3 (14,731 yd^3) of contact-handled TRU waste currently in storage, and less than 1 percent of the 24,355-m^3 (31,856-yd^3) storage capacity available at LANL.

In addition, the 5 m^3 (6.5 yd^3) of TRU waste generated by modification of this building would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for WIPP (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW generated during modification of Building PF–4 would include decontamination wastes and protective clothing. It is expected that no radioactive liquid LLW would be generated (O'Connor et al. 1998d). A total of 5 m^3 (6.5 yd^3) of LLW would be generated during the modification period. LLW generation for these activities is estimated to be less than 1 percent of existing annual waste generation, 1 percent of the 663-m^3 (867-yd^3) LLW storage capacity, and less than 1 percent of the 252,000-m^3 (329,616-yd^3) capacity of the TA–54 LLW disposal area. Using the 12,562-m^3/ha (6,649-yd^3/acre) disposal land usage factor for LANL published in the *Final Stockpile Stewardship and Management PEIS* (SSM PEIS) (DOE 1996d:H-9), 5 m^3 (6.5 yd^3) of waste would require less than 0.1 ha (0.25 acre) of disposal space at LANL. Therefore, impacts of the management of this additional LLW at LANL should not be major.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals, and water closets. To be conservative, it was assumed that all nonhazardous liquid waste generated during modification would be managed at the LANL sanitary wastewater treatment plant. Nonhazardous liquid waste generated for modification is estimated to be less than 1 percent of the existing annual waste generation, less than 1 percent of the 1,060,063-m^3/yr (1,386,562-yd^3/yr) capacity of the sanitary wastewater treatment plant, and less than 1 percent

of the 567,750-m^3/yr (742,617-yd^3/yr) capacity of the sanitary tile fields. Therefore, this waste load would not have a major impact on the LANL sanitary wastewater treatment system.

H.5.4.2 Operations

Table H–48 compares the expected waste generation rates from lead assembly fabrication at LANL with the existing site waste generation rates. No HLW would be generated during lead assembly fabrication. Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998,TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of treatment, storage, and disposal of waste at LANL, including expansion of the LLW disposal facility, are evaluated in the *Site-Wide EIS for Continued Operation of LANL* (DOE 1999b).

Table H–48. Potential Waste Management Impacts of Operation of Facilities for Lead Assembly Fabrication at LANL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	41	262	16
LLW	200	1,585	13
Mixed LLW	1	90	1
Hazardous	<1	942	<1
Nonhazardous			
Liquid	1,600	692,857	<1
Solid	1,300	5,453	24

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998d:34. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations would include glovebox gloves, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, metallography waste, and sludges (O'Connor et al.1998d). It is anticipated that all TRU waste would be contact-handled waste. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the RAMROD and RANT facilities (DOE 1999:2-108, 2-112, 2-113). Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for these activities is estimated to be 16 percent of existing annual site waste generation and 4 percent of the 1,050 m^3/yr (1,373-yd^3/yr) TRU-waste-processing capacity of the RAMROD and RANT facilities. A total of 132 m^3 (173 yd^3) of TRU waste would be generated over the 3-year operation period. This would be 1 percent of the 11,262 m^3 (14,731 yd^3) of contact-handled TRU waste currently in storage, and less than 1 percent of the 24,355-m^3 (31,856-yd^3) storage capacity available at LANL.

The 132 m^3 (173 yd^3) of TRU waste generated by these activities would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for WIPP (DOE 1997d:3-3). Impacts from disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW may include room trash (e.g., blotter paper, wipes, mop heads); protective clothing; solidified sludges; ion exchange resins; metal cans and rods; and wastewater from the laundry, analytical laboratory, and decontamination process (O'Connor et al. 1998d). LLW would be packaged, certified, and accumulated before being transferred for treatment and disposal in existing onsite facilities. A total of 700 m^3 (916 yd^3) of LLW would be generated over the 3-year operation period. LLW generation for these activities is estimated to be 13 percent of existing annual site waste generation, 106 percent of the 663-m^3 (867-yd^3) LLW storage capacity, and less than 1 percent of the 252,000-m^3 (329,616-yd^3) capacity of the TA–54 LLW disposal area. Because the waste would be sent for disposal on a regular basis, storage should not be a problem. Using the 12,562-m^3/ha (6,649-yd^3/acre) disposal land usage factor for LANL published in the SSM PEIS (DOE 1996d:H-9), 700 m^3 (916 yd^3) of waste would require 0.1 ha (0.25 acre) of disposal space at LANL. It is estimated that without any waste contribution from lead assembly fabrication, the existing disposal space in the TA–54 LLW disposal facility will be exhausted within the next 10 years. Expansion of the LLW disposal capacity at LANL is evaluated in the *Site-Wide EIS for Continued Operation of LANL* (DOE 1999b). Impacts from the management of the additional SPD LLW at LANL should not be major.

Mixed LLW may include sludges, cleaning solvents, and analytical waste (O'Connor et al. 1998d). Mixed LLW will be stabilized, packaged, and stored on the site for treatment and disposal in a manner consistent with the site treatment plan for LANL. Mixed LLW disposal would occur off the site. Mixed LLW generation for these activities is estimated to be 1 percent of existing annual waste generation, and 1 percent of the 583-m^3 (762.6-yd^3) mixed LLW storage capacity. Therefore, the management of this additional waste at LANL should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations would include small quantities of process ends. Hazardous waste would be packaged for treatment and disposal at offsite permitted commercial facilities (O'Connor et al. 1998d). Hazardous waste generation for these activities is estimated to be less than 1 percent of existing annual waste generation and less than 1 percent of the 1,864-m^3 (2,438-yd^3) hazardous waste storage capacity. These wastes should not have a major impact on the hazardous waste management system at LANL.

Nonhazardous solid waste would include office and lunch room garbage, packaging materials, sewage sludges, and other industrial wastes from utility and maintenance operations (O'Connor et al. 1998d). Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. The remaining solid sanitary waste would be disposed of in the Los Alamos County Landfill. Nonrecyclable, nonhazardous solid waste generated by these activities is estimated to be 24 percent of existing annual site waste generation. It is unlikely that this additional waste load would have a major impact on the nonhazardous solid waste management system at LANL.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals and water closets, and wastewater from cooling tower blowdown (O'Connor et al. 1998d). Nonhazardous liquid waste generated for these activities is estimated to be less than 1 percent of the existing annual site waste generation, less than 1 percent of the 1,060,063-m^3/yr (1,386,562-yd^3/yr) capacity of the sanitary wastewater treatment plant, and less than 1 percent of the 567,750-m^3/yr (742,617-yd^3/yr) capacity of the sanitary tile fields, and therefore should not have a major impact on the system.

H.5.5 SRS

H.5.5.1 Construction

Table H–49 compares the expected waste generation rates for the modification of facilities at SRS with the existing generation rates for SRS waste. No radioactive or mixed waste would be generated during modification because the areas of the buildings that will be modified are uncontaminated.

Table H–49. Potential Waste Management Impacts of Modification of Facilities for Lead Assembly Fabrication at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
Hazardous	1	74	1
Nonhazardous			
Liquid	2,400	416,100	1
Solid	19	6,670	<1

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998e:35. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.

The small amount of hazardous waste generated during building modification would include batteries, fluorescent light tubes, and liquids such as cleaning solutions, lubricants, oils, and hydraulic fluids (O'Connor et al. 1998e). These wastes are typical of those generated during construction of an industrial facility. Any hazardous waste generated during modification would be packaged in DOT-approved containers and shipped off the site to permitted commercial treatment and disposal facilities. Hazardous waste generationfor modification of this facility is estimated to be 1 percent of existing annual site waste generation. The additional waste load generated during the 2-year modification period should not have a major impact on the SRS hazardous waste management system.

Nonhazardous solid waste would include office garbage, construction debris, scrap lumber, concrete and steel waste, and other construction trash. Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to commercial facilities for recycling or disposal. Waste metals would be sent off the site for recycling, and therefore, were not included in the waste volumes. Nonhazardous-solid-waste generation during modification of this facility is estimated to be less than 1 percent of existing annual site waste generation. The additional waste load generated during the modification period should not have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste would include sanitary waste from any sinks, showers, urinals, and water closets. To be conservative, it was assumed that all nonhazardous liquid waste generated during modification would be managed at the Central Sanitary Wastewater Treatment Facility. Nonhazardous liquid waste generated for modification of this facility is estimated to be 1 percent of existing annual site waste generation, 2 percent of the 136,274-m^3/yr (178,246-yd^3/yr) capacity of the H-Area sanitary sewer, less than 1 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, the management of this additional waste should not have a major impact on the system during the modification period.

H.5.5.2 Operations

Table H–50 compares the expected waste generation rates from lead assembly fabrication at SRS with the existing site waste generation rates. No HLW would be generated during lead assembly fabrication. Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated and disposed of on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated on the site in the Consolidated Incineration Facility and treated and disposed of at offsite commercial facilities. This EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts from treatment, storage, and disposal of radioactive, hazardous, and mixed wastes at SRS are described in the *SRS Waste Management Final EIS* (DOE 1995b).

Table H–50. Potential Waste Management Impacts of Operation of Facilities for Lead Assembly Fabrication at SRS

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	41	427	10
LLW	200	10,043	2
Mixed LLW	1	1,135	<1
Hazardous	<1	74	<1
Nonhazardous			
Liquid	1,600	416,100	<1
Solid	1,300	6,670	19

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998e:38. Values rounded to two significant figures.
[c] From the waste management section in Chapter 3.
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

TRU wastes generated during operations would include glovebox gloves, spent filters, used containers and equipment, paper and cloth wipes, analytical and quality control samples, metallography waste, and sludges (O'Connor et al. 1998e). It is anticipated that all TRU waste would be contact-handled waste. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS. Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for these activities is estimated to be 10 percent of existing annual site waste generation, and 2 percent of the 1,720-m^3/yr (2,250-yd^3/yr) planned capacity of the TRU Waste Characterization and Certification Facility. A total of 132 m^3 (173 yd^3) of TRU waste would be generated over the 3-year operation period. This would be 2 percent of the 6,977 m^3 (9,125 yd^3) of contact-handled TRU waste currently in storage, and less than 1 percent of the 34,400-m^3 (44,995-yd^3) storage capacity available at SRS.

The 132 m^3 (173 yd^3) of TRU waste generated by these activities would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP, and within the 168,500-m^3

(220,400-yd^3) limit for WIPP (DOE 1997d:3-3). Impacts from disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW may include room trash (e.g., blotter paper, wipes, mop heads); protective clothing; solidified sludges; ion exchange resins; metal cans and rods; and wastewater from the laundry, analytical laboratory, and decontamination process (O'Connor et al. 1998e). LLW would be packaged, certified, and accumulated before being transferred for treatment and disposal in existing onsite facilities. A total of 700 m^3 (916 yd^3) of LLW would be generated over the 3-year operation period. LLW generation for these activities is estimated to be 2 percent of existing annual site waste generation, 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and 2 percent of the 30,500-m^3 (39,900-yd^3) capacity of the Low-Activity Waste Vaults. Using the 8,687-m^3/ha (4,598-yd^3/acre) disposal land usage factor for SRS published in the *Final Storage and Disposition PEIS* (DOE 1996a:E-9), 700 m^3 (916 yd^3) of waste would require 0.1 ha (0.25 acre) of disposal space at SRS. Therefore, impacts from the management of this additional LLW at SRS should not be major.

Mixed LLW may include sludges, cleaning solvents, and analytical waste (O'Connor et al. 1998e). Mixed LLW will be stabilized, packaged, and stored on the site for treatment and offsite disposal in a manner consistent with the site treatment plan for SRS. Mixed LLW generation for these activities is estimated to be less than 1 percent of existing annual site waste generation and less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility. Over the operating life of this facility, the 4 m^3 (5.2 yd^3) of mixed LLW expected to be generated would be less than 1 percent of the 1,900-m^3 (2,490-yd^3) capacity of the Mixed Waste Storage Buildings. Therefore, the management of this additional waste at SRS should not have a major impact on the mixed LLW management system.

Hazardous waste generated during operations would include small quantities of process ends (O'Connor et al. 1998e). Hazardous waste would be packaged for treatment and disposal at a combination of onsite and offsite permitted facilities. Assuming that all hazardous waste is managed on the site, hazardous waste generation for these activities is estimated to be less than 1 percent of existing annual site waste generation, less than 1 percent of the 17,830-m^3/yr (23,320-yd^3/yr) capacity of the Consolidated Incineration Facility, and less than 1 percent of the 5,200-m^3 (6,800-yd^3) capacity of the hazardous waste storage buildings. The management of these additional hazardous wastes at SRS should not have a major impact on the hazardous waste management system.

Nonhazardous solid waste would include office and lunch room garbage, packaging materials, sewage sludges, and other industrial wastes from utility and maintenance operations (O'Connor et al. 1998e). Nonhazardous solid waste would be packaged in conformance with standard industrial practice. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. The remaining solid sanitary waste would be sent to the Three Rivers Landfill (DOE 1998a:3-42). Nonrecyclable, nonhazardous solid waste generated by these activities is estimated to be 19 percent of existing annual site waste generation. It is unlikely that this additional waste load would have a major impact on the nonhazardous solid waste management system at SRS.

Nonhazardous liquid waste includes sanitary waste from sinks, showers, urinals and water closets, and wastewater from cooling tower blowdown (O'Connor et al. 1998e). Nonhazardous liquid waste generated for these activities is estimated to be less than 1 percent of the existing annual site waste generation, 1 percent of the 136,274-m^3/yr (178,246-yd^3/yr) capacity of the H-Area sanitary sewer, less than 1 percent of the 1,449,050-m^3/yr (1,895,357-yd^3/yr) capacity of the Central Sanitary Wastewater Treatment Facility, and within the 1,032,950-m^3/yr (1,351,099-yd^3/yr) excess capacity of the Central Sanitary Wastewater Treatment Facility (Sessions 1997). Therefore, impacts on the system should not be major.

H.6 POSTIRRADIATION EXAMINATION

This section describes the impacts on the waste management infrastructure that may occur if postirradiation examination were to occur at ANL–W or ORNL. For each site, separate sections are presented for construction and operations.

H.6.1 ANL–W

H.6.1.1 Construction

It is expected that postirradiation examination could be performed at ANL–W without the need for facility modifications that would generate waste (O'Connor et al. 1998a). Therefore, there would be no construction waste to impact the waste management infrastructure.

H.6.1.2 Operations

The waste management facilities within the postirradiation examination facilities would process, temporarily store, and ship all wastes generated. Table H–51 compares the expected waste generation rates from postirradiation examination at ANL–W with the existing generation rates for INEEL. No HLW would be generated by the postirradiation examination facilities. Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices. Impacts of the treatment, storage and disposal of radioactive, hazardous, and mixed wastes at INEEL are described in the *DOE Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final EIS* (DOE 1995a).

Table H–51. Potential Waste Management Impacts at INEEL of Conducting Postirradiation Examination at ANL–W

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	3	0[e]	NA
LLW	35	2,624	1
Mixed LLW	<1	181	<1
Hazardous	<1	835	<1
Nonhazardous			
Liquid	380	2,000,000	<1
Solid	51	62,000	<1

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998a. Values rounded to two significant figures.
[c] From the INEEL section of Chapter 3.
[d] Includes mixed TRU waste.
[e] In 1997, 2 m^3 (2.6 yd^3) of TRU wastes were generated at ANL–W (DOE 1998b:A-4).
Key: LLW, low-level waste; NA, not applicable; TRU, transuranic.

TRU wastes generated during operations would include used containers, paper and cloth wipes, fuel debris, clad pieces, and radiochemical solutions. Mixed TRU waste would include oil, solvents, and lead shielding

contaminated with TRU materials (O'Connor et al. 1998a). TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the postirradiation examination facilities. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading of the TRUPACT for shipment to WIPP would occur at the planned Waste Characterization Facility at INEEL (UC 1998c). Impacts from the treatment of TRU waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for postirradiation examination is estimated to be 3 m^3/yr (3.9 yd^3/yr), less than 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) capacity of the planned Advanced Mixed Waste Treatment Project. A total of 11 m^3 (14.4 yd^3) of waste is expected to be generated over the operations period. This would be less than 1 percent of the 177,300-m^3 (231,900-yd^3) storage capacity of the RWMC, and less than 1 percent of the 39,300 m^3 (51,404 yd^3) of contact-handled TRU waste currently in storage at INEEL. Assuming that the waste were stored in 208-l (55-gal) drums, each with a capacity of 0.21 m^3 (0.27 yd^3), approximately 52 drums would be required. Assuming that these drums can be stacked two high, and that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of approximately 16 m^2 (19 yd^2) would be required. Impacts of the storage of these additional quantities of TRU waste on less than 0.1 ha (0.25 acre) of land at INEEL should not be major.

The 11 m^3 (14.4 yd^3) of TRU waste generated by postirradiation examination activities would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW may include wipes, used containers and equipment, clad pieces, and protective clothing (O'Connor et al. 1998a). LLW would be packaged, certified, and accumulated before being transferred for treatment or disposal in existing onsite facilities. A total of 140 m^3 (183 yd^3) of LLW would be generated over the operations period. LLW generation for these activities is estimated to be 1 percent of existing annual INEEL waste generation, less than 1 percent of the 49,610-m^3/yr (64,880-yd^3/yr) capacity of WERF, less than 1 percent of the 112,400-m^3 (146,500-yd^3) storage capacity at the RWMC, and less than 1 percent of the 37,700-m^3/yr (49,300-yd^3/yr) disposal capacity of the RWMC.

Using the 6,264-m^3/ha (3,315-yd^3/acre) disposal land usage factor for the RWMC published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 140 m^3 (183 yd^3) of waste would require less than 0.1 ha (0.25 acre) of disposal space at INEEL. Therefore, impacts of the management of this additional LLW at ANL–W and INEEL are not expected to be major. Impacts of the disposal of LLW at INEEL are described in the *DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs Final EIS* (DOE 1995a).

Mixed LLW may include small quantities of oils, solvents, and lead shielding contaminated with fission products (O'Connor et al. 1998a). Mixed LLW would be treated and disposed of in a manner consistent with the site treatment plan for ANL–W and INEEL. INEEL currently treats mixed LLW on the site and ships some mixed LLW to Envirocare of Utah. Onsite disposal is planned in a new mixed LLW disposal facility. These facilities or other treatment or disposal facilities that meet DOE criteria would be used. Mixed LLW generation for these activities is estimated to be less than 1 percent of existing annual INEEL waste generation, and less than 1 percent of the planned 6,500-m^3/yr (8,500-yd^3/yr) capacity of the Advanced Mixed Waste Treatment Project. The 1 m^3 (1.3 yd^3) of mixed LLW expected to be generated would be less than 1 percent of the 112,400-m^3 (146,500-yd^3) storage capacity of the RWMC. Therefore, the management of this additional waste would not be expected to have major impacts on the mixed LLW management systems at ANL–W or INEEL.

Hazardous waste generated during operations would include small quantities of used oils, solvents, resins, glues, and contaminated containers (O'Connor et al. 1998a). Hazardous waste would be packaged for treatment and disposal at offsite facilities. Hazardous waste generation for these activities is estimated to be less than 1 percent of existing annual INEEL waste generation, and less than 1 percent of the 1,600-m^3 (2,100-yd^3) onsite storage capacity. Therefore, impacts on the hazardous waste management systems at ANL–W or INEEL should not be major.

Nonhazardous solid waste would include paper, plastic, and metal garbage; oils; cleaners; and scrap wood and metal (O'Connor et al. 1998a). Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to onsite and offsite disposal and recycling facilities. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. The remaining solid sanitary waste would be sent offsite for disposal in the Bonneville County landfill. Nonrecyclable, nonhazardous solid waste generated by these activities is estimated to be 2 percent of existing annual INEEL waste generation. This additional waste load should not have a major impact on the nonhazardous solid waste management systems at ANL–W or INEEL.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals, and water closets (O'Connor et al. 1998a). Nonhazardous liquid waste generation for these activities is estimated to be less than 1 percent of the existing annual INEEL waste generation, and 6 percent of the 6,057-m^3/yr (7,923-yd^3/yr) capacity of the ANL–W sewage treatment facility, and therefore would not be expected to have major impacts.

H.6.2 ORNL

H.6.2.1 Construction

It is expected that postirradiation examination could be performed at ORNL without the need for facility modifications that would generate waste (O'Connor et al. 1998a). Therefore, there would be no construction waste to impact the waste management infrastructure.

H.6.2.2 Operations

The waste management facilities within the postirradiation examination facilities would process, temporarily store, and ship all wastes generated. Table H–52 compares the expected waste generation rates from postirradiation examination at ORNL with the existing generation rates for ORR. No HLW would be generated by the postirradiation examination facilities. Depending in part on decisions in the RODs for the WM PEIS, wastes could be treated on the site or at other DOE sites or commercial facilities. Per the ROD for TRU waste issued on January 20, 1998, TRU and mixed TRU waste would be certified on the site to current WIPP waste acceptance criteria and shipped to WIPP for disposal. Per the ROD for hazardous waste issued on August 5, 1998, nonwastewater hazardous waste would continue to be treated at the TSCA Incinerator, and treated and disposed of at offsite commercial facilities. The SPD EIS also assumes that LLW, mixed LLW, and nonhazardous waste would be treated, stored, and disposed of in accordance with current site practices.

TRU wastes generated during operations would include used containers, paper and cloth wipes, fuel debris, clad pieces, and radiochemical solutions. Mixed TRU waste would include oil, solvents, and lead shielding contaminated with TRU materials. (O'Connor et al. 1998a). TRU wastes would be treated, packaged, and certified to WIPP waste acceptance criteria at the postirradiation examination facilities. Liquid TRU wastes would be evaporated or solidified before being packaged for storage. Drum-gas testing, real-time radiography, and loading of the TRUPACT for shipment to WIPP would occur at the Waste Examination and Assay Facility or the planned Waste Handling and Packaging Plant (DOE 1996a;E-72). Impacts from the treatment of TRU

Table H–52. Potential Waste Management Impacts of Conducting Postirradiation Examination at ORNL

Waste Type[a]	Estimated Waste Generation (m^3/yr)[b]	Site Waste Generation (m^3/yr)[c]	Percent of Site Waste Generation
TRU[d]	3	9	30
LLW	35	5,181	1
Mixed LLW	<1	1,122	<1
Hazardous	<1	34,048	<1
Nonhazardous			
Liquid	380	2,406,300	<1
Solid	51	49,470	<1

[a] See definitions in Appendix F.8.
[b] O'Connor et al. 1998a. Values rounded to two significant figures.
[c] Includes ORNL, Y–12 and East Tennessee Technology Park (formerly K–25). Data for radioactive wastes from DOE 1996e:15, 16. Data for hazardous and nonhazardous wastes from DOE 1996a:3-220–3-225).
[d] Includes mixed TRU waste.
Key: LLW, low-level waste; TRU, transuranic.

waste to WIPP waste acceptance criteria are described in the WM PEIS (DOE 1997b) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

TRU waste generation for postirradiation examination is estimated to be 3 m^3/yr (3.9 yd^3/yr), 30 percent of existing ORR waste generation and less than 1 percent of the planned 620-m^3/yr (811-yd^3/yr) capacity of the TRU Waste Treatment Plant (DOE 1996a:E-86). A total of 11 m^3 (14.4 yd^3) of waste is expected to be generated over the operations period. This would be 1 percent of the 1,760 m^3 (2,302 yd^3) of the capacity of contact-handled TRU waste storage space (DOE 1996a:3-219). Assuming that the waste were stored in 208-l (55-gal) drums, each with a capacity of 0.21 m^3 (0.27 yd^3), approximately 52 drums would be required. Assuming that these drums can be stacked two high, and that each drum occupies an area of 0.4 m^2 (4 ft^2), and adding a 50 percent factor for aisle space, a storage area of approximately 16 m^2 (19 yd^2) would be required. Impacts of the storage of these additional quantities of TRU waste on less than 0.1 ha (0.25 acre) of land at the ORR should not be major.

The 11 m^3 (14.4 yd^3) of TRU waste generated by postirradiation examination activities would be less than 1 percent of the 143,000 m^3 (187,000 yd^3) of contact-handled TRU waste that DOE plans to dispose of at WIPP and within the 168,500-m^3 (220,400-yd^3) limit for this facility (DOE 1997d:3-3). Impacts of disposal of TRU waste at WIPP are described in the *WIPP Disposal Phase Final Supplemental EIS* (DOE 1997d).

LLW may include wipes, used containers and equipment, clad pieces, and protective clothing (O'Connor et al. 1998a). Wastes would be treated and stored on the site before being transferred for onsite or offsite disposal. LLW generation for these activities is estimated to be 1 percent of existing annual ORR waste generation, and less than 1 percent of the 11,300-m^3/yr (14,780-yd^3/yr) capacity of the Waste Compactor Facility (DOE 1996a:E-86).

LLW generated at ORR is currently disposed of on the site or stored for offsite disposal at DOE's NTS or commercial disposal facilities. If the shipment of LLW for disposal were delayed, a maximum of approximately 140 m^3 (183 yd^3) of LLW may have to be stored at ORR. This would be less than 1 percent of the 51,850 m^3 (67,820 yd^3) of LLW storage capacity at ORR (DOE 1996a:3-222, 3-224). Assuming that the waste were stored in 208-l (55-gal) drums, each with a capacity of 0.21 m^3 (0.27 yd^3), about 670 drums would be required. Assuming that these drums can be stacked two high, and that each drum occupies an area of 0.4 m^2 (4 ft^2), and

adding a 50 percent factor for aisle space, a storage area of about 200 m^2 (239 yd^2) would be required. Impacts of the storage of additional quantities of LLW on less than 0.1 ha (0.25 acre) of land at ORR would not be major.

As stated above, a total of 140 m^3 (183 yd^3) of LLW would be generated over the operation period. Using the 6,085-m^3/ha (3,221-yd^3/acre) disposal land usage factor for NTS published in the *Storage and Disposition PEIS* (DOE 1996a:E-9), 140 m^3 (183 yd^3) of waste would require less than 0.1 ha (0.25 acre) of disposal space at NTS or some other similar facility. Impacts at the disposal site from the use of this small area for disposal should not be major. Impacts of disposal of LLW at NTS are described in the *Final EIS for the NTS and Off-Site Locations in the State of Nevada* (DOE 1996c).

Mixed LLW may include small quantities of oils, solvents, and lead shielding contaminated with fission products (O'Connor et al. 1998a). Mixed LLW would be treated and disposed of in a manner consistent with the site treatment plan for ORR. Mixed LLW generation for these activities is estimated to be less than 1 percent of existing annual ORR waste generation, and less than 1 percent of the 15,700-m^3/yr (20,536-yd^3/yr) capacity of the TSCA incinerator (DOE 1996a:E-90). The 1 m^3 (1.3 yd^3) of mixed LLW expected to be generated would be less than 1 percent of the 231,753-m^3 (303,133-yd^3) storage capacity at ORR (DOE 1996a:3-220, 3-222, 3-224). Therefore, the management of this additional waste at ORR would not be expected to have major impacts on the mixed LLW management system.

Hazardous waste generated during operations would include small quantities of used oils, solvents, resins, glues, and contaminated containers (O'Connor et al. 1998a). Hazardous waste would be packaged for treatment and disposal at onsite and offsite facilities. Hazardous waste generation for these activities is estimated to be less than 1 percent of existing annual ORR waste generation, and less than 1 percent of the 1,051-m^3 (1,375-yd^3) onsite storage capacity (DOE 1996a:3-220, 3-222). Assuming that all the hazardous waste were to be treated at the TSCA incinerator, this additional waste would be less than 1 percent of the 15,700-m^3/yr (20,536-yd^3/yr) capacity of the system (DOE 1996a:E-90), and therefore would not be expected to have major impacts on the hazardous waste management system at ORNL or ORR.

Nonhazardous solid waste would include paper, plastic, and metal garbage; oils; cleaners; and scrap wood and metal (O'Connor et al. 1998a). Nonhazardous solid waste would be packaged in conformance with standard industrial practice and shipped to onsite and offsite disposal and recycling facilities. Recyclable solid wastes such as office paper, metal cans, and plastic and glass bottles would be sent off the site for recycling. The remaining solid sanitary waste would be disposed of in the Industrial and Sanitary Landfill located at Y–12. Nonrecyclable, nonhazardous solid waste generated by these activities is estimated to be less than 1 percent of existing annual ORR waste generation, and less than 1 percent of the 1,100,000-m^3 (1,438,800-yd^3) capacity of the Industrial and Sanitary Landfill (DOE 1996a:3-220). It is unlikely that this small additional waste load would have major impacts on the nonhazardous solid waste management system at ORNL or ORR.

Nonhazardous liquid waste would include sanitary waste from sinks, showers, urinals, and water closets (O'Connor et al. 1998a). Nonhazardous liquid waste generation for these activities is estimated to be less than 1 percent of the existing annual ORR waste generation, and less than 1 percent of the 414,000-m^3/yr (541,512-yd^3/yr) capacity of the ORNL Sanitary Wastewater Treatment Facility (DOE 1996a:3-223), and therefore would not be expected to have major impacts.

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