DOE/RL-98-09

UC-630

1998 Report on Hanford Site Land Disposal Restrictions for Mixed Waste

D. G. Black

Date Published
April 1998

United States
Department of Energy
P.O. Box 550
Richland, Washington 99352

Approved for Public Release

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Document Number:	DOE/RL-98-09
Document Title:	1998 Report on Hanford Site Land Disposal Restrictions for Mixed Waste

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EXECUTIVE SUMMARY

This report was submitted to meet the requirements of *Hanford Federal Facility Agreement and Consent Order*[1] (Tri-Party Agreement) Milestone M-26-01H. This milestone requires the preparation of an annual report that covers characterization, treatment, storage, minimization, and other aspects of managing land-disposal-restricted mixed waste at the Hanford Facility.

The U.S. Department of Energy, its predecessors, and contractors on the Hanford Facility were involved in the production and purification of nuclear defense materials from the early 1940s to the late 1980s. These production activities have generated large quantities of liquid and solid mixed waste. This waste is regulated under authority of both the *Resource Conservation and Recovery Act of 1976*[2] and the *Atomic Energy Act of 1954*[3]. This report covers only mixed waste.

The Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy have entered into the Tri-Party Agreement[1] to bring the Hanford Facility operations into compliance with dangerous waste regulations. The Tri-Party Agreement required development of the original land disposal restrictions (LDR) plan and its annual updates to comply with LDR requirements for mixed waste. This report is the eighth update of the plan first issued in 1990.

The Tri-Party Agreement requires and the baseline plan and annual update reports provide the following information.

Waste Characterization Information. Provides information about characterizing each LDR mixed waste stream. The sampling and analysis methods and protocols, past characterization results, and, where available, a schedule for providing the characterization information are discussed.

Storage Data. Identifies and describes the mixed waste on the Hanford Facility. Storage data include the *Resource Conservation and Recovery Act of 1976*[2] dangerous waste codes, generator process knowledge needed to identify the waste and to make LDR determinations, quantities stored, generation rates, location and method of storage, an assessment of storage-unit compliance status, storage capacity, and the bases and assumptions used in making the estimates.

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[1]Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order*, Vol. 1 and 2, as updated by the sixth amendment dated February 1996, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

[2]*Resource Conservation and Recovery Act of 1976*, as amended, 42 U.S.C. 6901, et seq.

[3]*Atomic Energy Act of 1954*, as amended, 42 U.S.C. 2011.

Treatment Information. Identifies the current treatment processes, plans, and schedules for developing treatment technologies that meet LDR treatment standards. Also includes discussions of treatment alternatives and accelerated treatment.

Waste Reduction Information. Identifies methods for reducing the generation of LDR waste. Includes treatment methods and process changes made or planned to reduce the generation of LDR waste, methods to minimize the volume of LDR waste, and methods to minimize the toxicity of newly generated waste.

Schedule. Provides schedules depicting the events necessary to achieve compliance with LDR requirements, including planned or completed variances or treatment equivalencies needed to achieve LDR compliance.

Progress. Identifies progress made in achieving compliance since the last LDR report.

Waste generated on the Hanford Facility resulted from primarily defense materials production. Usable defense materials were separated from fission-product waste using precipitation and solvent extraction processes. The large quantities of liquid waste that resulted from these separation processes were stored in underground single-shell tanks (SST) and double-shell tanks (DST). Additional waste resulted from the following:

- Nuclear fuel fabrication
- Process laboratory activities
- Equipment and structure cleaning and decontamination
- Process- and storage-unit closure
- Research and development activities, such as Fast Flux Test Facility operation.

After waste reduction, the total projected annual generation rates for the streams covered in this report range from 5519 cubic meters in 2000 to 15,701 cubic meters in 1998.

The following waste types are addressed in this report:

- Mixed waste (i.e., hazardous waste that contains radionuclides) designated as characteristic dangerous waste and as toxic or persistent by the Washington State criteria

- Listed waste because it contains small amounts of spent solvents and discarded pure chemical products.

The waste consists of liquid, sludge, hard crystalline material (salt cake), and such materials as contaminated equipment, paper, and rags. Much is already known about the waste characteristics from process knowledge and sampling and analysis programs. Action schedules have been developed to further characterize the waste.

The waste currently is stored in underground SSTs and DSTs, in containers placed in storage units such as the Central Waste Complex (CWC), caissons, and other facilities units. A surface impoundment, the Liquid Effluent Retention Facility, has been constructed to store large quantities of wastewater that contain radionuclide concentrations low enough to allow surface storage. The waste is removed from these storage units, treated to meet LDR standards, and sent for final disposal in accordance with schedules established in Tri-Party Agreement milestones.

Approximately 214,840 cubic meters of mixed LDR waste are currently in storage. The DSTs are expected to be full by 2000 under the current planning baseline. To alleviate the space shortages, DST contents will be concentrated through the 242-A Evaporator. This has allowed DOE to indefinitely postpone building new DSTs. The 242-A Evaporator processed 4720 cubic meters of waste into the Liquid Effluent Retention Facility basins in 1997. The storage space at the CWC is currently 60 to 65 percent full. Storage projections show that the CWC's capacity will not be exceeded during the waste management life cycle (through 2032) based on the FY 1998 treatment and disposal planned funding levels and forecast waste volumes.

The waste treatment processes for these waste streams include the current treatment processes to reduce corrosion of storage tanks and planned treatment processes to reduce waste toxicity and immobilize waste constituents in DSTs. Current waste treatment consists of adjusting pH and adding corrosion inhibitors in DSTs and using sorbents and solidifying agents (requirements placed on generators before the Central Waste Complex will accept the waste). Surface decontamination (e.g., washing, grit blasting, dry ice pellet blasting) is performed at the T Plant complex. Planned waste treatment processes include developing neutralization and toxic constituent destruction processes; developing waste separation, pretreatment, and stabilization processes (commercial facilities); and separating tank waste (pretreatment) into low-activity and high-level waste fractions, both of which will be vitrified. The low-level fraction will be disposed of on site. The high-level fraction will be sent to an offsite geologic repository for disposal.

The Hanford Facility developed a sitewide waste minimization plan that sets minimization goals and establishes processes for measuring progress toward these goals. Each plant or process has a program in place to implement the sitewide goals.

The Hanford Facility has a preexisting agreement (Tri-Party Agreement) that meets the legal requirements specified under the *Federal Facilities Compliance Act of 1992*. This agreement exempts the Hanford Facility from having to develop a site treatment plan, although other activities under the Act are still required. Both the Washington State Department of Ecology and the U.S. Environmental Protection Agency determined that this *Hanford Site Land Disposal Restrictions Report for Mixed Waste*, required by the Tri-Party Agreement, meets the requirements of a site treatment plan. In accordance with the Act, DOE submitted an LDR plan and an order requiring compliance with the plan (the Tri-Party Agreement). Accordingly, various Tri-Party Agreement milestones have been set to fulfill LDR storage, characterization, and/or treatment requirements identified in the LDR report. Failure to meet any of these milestones would constitute a deviation from the LDR plan and a violation of the Tri-Party Agreement.

The continued storage of land-disposal-restricted waste until sufficient treatment and disposal capacity is available was negotiated as part of the Tri-Party Agreement. Schedules to implement the dangerous waste management compliance activities until treatment capacity is available are described in the Tri-Party Agreement and this report. Any newly identified compliance actions will be scheduled in accordance with procedures established in the agreement.

ACKNOWLEDGMENTS

The efforts of many people across the Hanford Facility were instrumental in preparing and issuing this report. Direct major support was provided by the following:

Report Lead Author and Coordinator:

D. G. Black	Waste Management Federal Services Hanford Inc.

Technical Editing and Document Services:

M. P. Curry	Lockheed Martin Services, Inc.

Report Input and Contractor Review:

W. R. Brown	Fluor Daniel Hanford, Inc.
F. M. Coony	Waste Management Federal Services of Hanford, Inc.
D.P. Fassett	Waste Management Federal Services of Hanford, Inc.
G.D. Hendricks	B&W Hanford Company
J. R. Hilliard	B&W Hanford Company
S. E. Killoy	B&W Hanford Company
O. S. Kramer	Fluor Daniel Hanford, Inc.
G. J. LeBaron	B&W Hanford Company
S. S. Lowe	Waste Management Federal Services of Hanford, Inc.
M. W. McCoy	Pacific Northwest National Laboratory
A. G. Miskho	Fluor Daniel Hanford, Inc.
D. E. Nester	Waste Management Federal Services of Hanford, Inc.
D. H. Nichols	Waste Management Federal Services of Hanford, Inc.
P. A. Powell	Lockheed Martin Hanford Corporation
G. S. Robinson	Bechtel Hanford Inc.
J. N. Strode	Lockheed Martin Hanford Corporation

U.S. Department of Energy, Richland Operations Office coordination of the management review and approval:

K. D. Bazzell
R. F. Guercia

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ACRONYMS AND ABBREVIATIONS

ALARA	as low as reasonably achievable
ATG	Allied Technology Group
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	*Code of Federal Regulations*
CH	contact handled
CWC	Central Waste Complex
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy-Headquarters
DSSF	double-shell slurry feed
DSSI	Diversified Scientific Services, Inc.
DST	double-shell tank
Ecology	Washington State Department of Ecology
EM	U.S. Department of Energy, Office of Environmental Management
EPA	U.S. Environmental Protection Agency
FFCAct	*Federal Facilities Compliance Act of 1992*
FR	*Federal Register*
FY	fiscal year
HEPA	high-efficiency particulate air (filter)
HLW	high-level waste
LDR	land disposal restriction
LLBG	low-level burial grounds
LLCE	long-length contaminated equipment
LLMW	low-level mixed waste
MLLW	mixed low-level waste
MWDF	mixed waste disposal facility
NA	not applicable
National Report	*National Report on Prohibited Wastes and Treatment Options*
NCAW	neutralized current acid waste
NDA	nondestructive analysis
NDE	nondestructive examination
PCB	polychlorinated biphenyl
PFP	Plutonium Finishing Plant
PHMC	Project Hanford Management Contract
PUREX	Plutonium-Uranium Extraction (Plant)
RCRA	*Resource Conservation and Recovery Act of 1976*
REC	Radiochemical Engineering Cells
RH	remote handled
RL	U.S. Department of Energy, Richland Operations Office
SDAR	Storage Disposal Approval Record

ACRONYMS AND ABBREVIATIONS (cont)

SST	single-shell tank
STP	Site treatment plan
SWITS	Solid Waste Information and Tracking System (database)
TBD	to be determined
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TRU	transuranic
TRUM	transuranic mixed
TRUSAF	Transuranic Waste Storage and Assay Facility
TSCA	*Toxic Substances Control Act of 1976*
TSD	treatment, storage, and disposal
TWRS	Tank Waste Remediation System
UHC	underlying hazardous constituents
WAC	*Washington Administrative Code*
WERF	Waste Experimental Reduction Facility
WESF	Waste Encapsulation and Storage Facility
WIPP	Waste Isolation Pilot Plant
WMH	Waste Management Federal Services of Hanford, Inc.
WRAP	Waste Receiving and Processing (Facility) (2336-W)
WSRd	Waste Specification Records

1.0 INTRODUCTION

The baseline land disposal restrictions (LDR) plan was prepared in 1990 in accordance with *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989) Milestone M-26-00. The text of this milestone is as follows.

> "LDR requirements include limitations on storage of specified hazardous wastes (including mixed wastes). In accordance with approved plans and schedules, the U.S. Department of Energy (DOE) shall develop and implement technologies necessary to achieve full compliance with LDR requirements for mixed wastes at the Hanford Facility. LDR plans and schedules shall be developed with consideration of other action plan milestones and will not become effective until approved by the U.S. Environmental Protection Agency (EPA) (or Washington State Department of Ecology [Ecology]) upon authorization to administer LDRs pursuant to Section 3006 of the *Resource Conservation and Recovery Act of 1976* (RCRA). Disposal of LDR wastes at any time is prohibited except in accordance with applicable LDR requirements for nonradioactive wastes at all times. The plan will include, but not be limited to, the following:
>
> Waste characterization plan
>
> Storage report
>
> Treatment report
>
> Treatment plan
>
> Waste minimization plan
>
> A schedule depicting the events necessary to achieve full compliance with LDR requirements
>
> A process for establishing interim milestones."

The original plan was published in October 1990. This is the eighth of a series of annual updates required by Tri-Party Agreement Milestone M-26-01. A Tri-Party Agreement change request approved in March 1992 changed the annual due date from October to April and consolidated this report with a treatment alternatives report prepared under Milestone M-25-00. The reporting period for this report is from April 1, 1997, to March 31, 1998.

The 1990 baseline plan was a follow-on document to the *National Report on Prohibited Wastes and Treatment Options* (National Report) (DOE 1990), which identified all solvents (40 *Code of Federal Regulations* [CFR] 268.30) and California List (40 CFR 268.32) waste restricted from land disposal, and a subsequent effort by DOE (WHC 1990a) to identify any additional waste restricted from land disposal as a result of First-, Second-, and Third-Third LDRs promulgation (55 *Federal Register* [FR] 22520).

This year's report will be used as the Hanford Facility's equivalent to the final site treatment plan (STP) submitted to the U.S. Department of Energy-Headquarters (DOE-HQ) as required by the *Federal Facility Compliance Act of 1992* (FFCAct). Washington State and the EPA concurred that the U.S. Department of Energy, Richland Operations Office (RL) was not obligated to complete a site treatment plan. However, RL and the Hanford Facility contractors have been participating in the FFCAct process by providing data and cost information to support a complex-wide effort to set priorities for treatment projects.

In response to Ecology comments on the 1997 LDR report, the report's format was changed this year. Where past reports were broken down primarily by storage locations, this report uses waste streams. Also, Chapter 3 includes a waste stream profile sheet for each stream. The profile sheets present most of the generation, characterization, minimization, treatment, storage, and disposal (TSD) information for the streams.

1.1 BACKGROUND AND PURPOSE

On September 19, 1989, DOE entered into a federal facilities compliance agreement with the EPA and the Colorado Department of Health regarding the storage of certain radioactive mixed waste at the Rocky Flats Plant. The agreement required the DOE to prepare and submit the National Report (DOE 1990) to the EPA. This report was submitted to EPA in January 1990. It included information on all DOE sites that store radioactive mixed waste subject to the LDRs in effect when the report was prepared.

The EPA has promulgated various new LDR rules since the Rocky Flats compliance agreement. (Recent major LDR rulemakings in the 61 FR and 62 FR series are listed in Chapter 5, "References.") The LDRs apply to the hazardous component of mixed waste. Of particular interest at federal facilities is the storage prohibition found in RCRA, Section 3004(j).

Washington State promulgated new regulations [*Washington Administrative Code* (WAC) 173-303-070(3)(a) and 173-303-070(5)] that affect the designation of waste generated and waste in storage after November 20, 1995. First, federal waste codes (e.g., D001) are assigned to a waste stream, followed by state codes (e.g., WT01). Based on these amendments, the state code is not assigned in many cases. (The new regulations have not been applied to waste in storage that was generated before the effective date. The new regulations will be applied to stored waste moved to a new storage location or removed from storage for treatment after the effective date.)

By passing the FFCAct, Congress incorporated provisions for storing mixed waste at DOE facilities. Among these provisions was a 3-year delay in the effective date of the waiver of immunity for violations of the land disposal storage prohibition [RCRA, Section 3004(j)] with respect to mixed waste storage at DOE facilities. The DOE can continue to avoid penalties after the expiration of the 3-year extension if certain plans are developed and submitted pursuant to RCRA, Section 3021(b). Plans are not required for DOE sites that are subject to an existing state permit, agreement, or order that establishes a schedule for treatment. Because the Tri-Party Agreement addresses compliance with RCRA, Section 3021(b)(5), the requirements of RCRA, Section 3021(b), do not apply to mixed waste stored on the Hanford Facility. In addition, 61 FR 18591 extended the RCRA 3004(j) storage prohibition effective date. For DOE sites in compliance with the FFCAct, the extension is indefinite.

This report describes the generation and management of LDR mixed waste generated, treated, and stored at the Hanford Facility. Discussions focus on the hazardous aspects of mixed waste, although treatment, storage, and disposal are frequently complicated by the radioactive components. This report discusses the LDR mixed waste managed at the Hanford Facility by waste stream. The waste is separated into streams based primarily on physical characteristics and future treatment before disposal. This grouping results in 33 streams of LDR waste being defined. Table 1-1 shows the 33 stream names used for this plan. The report's format is new with this revision. Most of the information on each waste stream is presented in a waste stream profile sheet. These sheets make up Chapter 3; the narrative that supports and augments the sheets is in Chapter 4.

A significant number of waste streams that were included in previous LDR reports are no longer included as separate waste streams in this report. Table 1-2 lists the names of these streams and sources of the waste, and summarizes the reasons they were deleted from the report.

1.2 ASSUMPTIONS

This section lists key milestones and assumptions used to prepare this report.

RL has negotiated changes to the Tri-Party Agreement to allow the pretreatment and immobilization of low-level waste (LLW) to be turned over to private contractors. The private companies will treat the tank waste and return the treated waste products to DOE. To integrate the privatization process, the LLW pretreatment process will be included with the LLW immobilization process.

Table 1-1. Stream Names. (3 sheets)

Stream ID	Stream name	Waste source
RL-MLLW-01	LDR Compliant Solids	Inorganic salt waste, excavated soil, and contaminated equipment expected to be suitable for direct disposal.
RL-MLLW-02	Inorganic Solids	Inorganic particulates, absorbed liquids and sludge, paint waste, salt waste, and aqueous lab packs from numerous onsite generators.
RL-MLLW-03	Organic Solids	Organic waste similar to RL-MLLW-02.

Table 1-1. Stream Names. (3 sheets)

Stream ID	Stream name	Waste source
RL-MLLW-04	Debris	Inorganic and organic debris including plastic and rubber, metal, and heterogeneous debris.
RL-MLLW-05	Elemental Lead	Elemental lead and lead shielding.
RL-MLLW-06	Elemental Mercury	Elemental mercury from various source.
RL-MLLW-07	M-91 MLLW	Remote-handled waste generated on and off site
RL-MLLW-08	GTC3	Greater Than Class 3 waste. Consists of radioisotope thermoelectric generators received in 1980 and 1983.
RL-TRUM-01	Generalized CH-TRUM	Contact-handled TRU mixed waste.
RL-TRUM-02	Generalized RH-TRUM	Remote-handled TRU mixed waste.
RL-TRUM-03	CH/RH TRUM w/PCBs	TRU mixed waste that contains PCBs.
DST-1	Double-shell tank waste	Widely varying waste from chemical separations processes (e.g., PUREX, PFP, and cesium and strontium separations) and related support facilities used from 1970 to date.
SST-1	Single-shell tank waste	Waste from spent nuclear fuel processing and related support facilities between 1944 and 1980.
PUREX-1	PUREX Containment Building	Chromium-contaminated debris from the E-Cell floor stored in F-Cell.
PUREX-2	PUREX Storage Tunnels	Discarded equipment and waste from PUREX and other facilities containing mercury, lead, silver, cadmium, chromium, barium, and mineral oil.
324REC	324 Radiochemical Engineering Cell waste	Variety of high-activity radioactive waste, containing toxic heavy metals, generated during research and development activities since the mid-1960's and the processing of 324 Building high-level vault waste.
B Plant-1	B Plant Cell-4 Waste	Containers of mixed and/or highly radioactive solid waste generated in the Waste Encapsulation and Storage Facility hot cells since 1988.
B Plant-2	B Plant Containment Building Storage	Discarded and failed process jumpers and equipment from B Plant operational processes stored in the B Plant canyon deck and process cells.
T-Dragoff	T Plant Complex Drag-off Box	Miscellaneous pieces of equipment accumulated over a period of years stored in a container in the T Plant complex.

Table 1-1. Stream Names. (3 sheets)

Stream ID	Stream name	Waste source
T-Condenser	T Plant Complex EC-1 Condenser	A condenser from the 242-A Evaporator now stored in the T Plant complex.
T-Tank	T Plant Complex Tank Trailer Waste	Liquid waste from analytical laboratories Stored in a tank trailer outside the T Plant complex.

DST Double-shell tank
PCB Polychlorinated biphenyl
PFP Plutonium Finishing Plant
PUREX Plutonium-Uranium Extraction Plant
TRU Transuranic

Table 1-2. Streams No Longer Applicable to Report. (2 sheets)

Stream name	Waste source	Reason
PUREX Plant Aging Waste	First extraction-column fission products from PUREX plant.	Waste no longer generated. Inventory is in DSTs.
4843 Sodium Storage Facility Waste	Waste sodium from FFTF operations.	Significant amounts of alkali metal waste are no longer generated. Inventory is being stored at the CWC and the TSD unit has undergone RCRA closure (April 14, 1997).
PUREX Ammonia Scrubber Waste	Waste generated from adsorption of gaseous ammonia from fuel processing operations at the PUREX Plant.	Waste no longer generated. Inventory in DSTs.
PUREX Process Condensate	Condensed vapors from PUREX Plant operations.	Waste no longer generated. Inventory in DSTs.
Hexone Waste	Hexone that had been planned for use in the 202-S solvent extraction process.	Hexone has been incinerated off site.
183-H Solar Evaporation Basins Waste	Containerized solids retrieved from 183-H Area Solar Evaporations Basins, generated from 300 Area fuel fabrication waste from 1973 to 1985.	Closure plan activities for the TSD unit are complete. Unit is in postclosure care. Process waste inventory is now in storage at the CWC.
303-K Stored Waste	Temporary storage of 300 Area fuel fabrication solid and liquid waste.	TSD unit is undergoing closure. Waste treated and disposed of or now in storage at the CWC.
CWC Stored Low-Level, Transuranic, and PCB Waste	Onsite and offsite solid waste from many generators, primarily from routine operations after 1987	Waste has been split into 12 individual streams in this report for more comprehensive reporting.

Table 1-2. Streams No Longer Applicable to Report. (2 sheets)

Stream name	Waste source	Reason
224-T Transuranic Storage and Assay Facility Stored Waste	TRU waste from on site and off site packaged for eventual WIPP disposal.	Inventory moved to the CWC. TSD will be closed.
B Plant Organic Waste	Organic solvent waste from the strontium solvent extraction process that operated in B Plant from 1968 to 1979.	Waste has been shipped to a permitted disposal site for destruction.
242-A Evaporator Process Condensate	242-A Evaporator (evaporation of water from DST and SST system waste)	Waste stream is being treated and disposed of as generated.

CWC Central Waste Complex
DST Double-shell tank
FFTF Fast Flux Text Facility
PCB Polychlorinated biphenyl
PFP Plutonium Finishing Plant
PUREX Plutonium-Uranium Extraction
RCRA *Resource Conservation and Recovery Act of 1976*
SST Single-shell tank
TRU Transuranic
TSD Treatment, storage, and/or disposal
WIPP Waste Isolation Pilot Plant

The following other Tri-Party Agreement milestones related to the management of LDR waste, including approved change requests, are some of the most significant.

- Complete pretreatment and immobilization of Hanford Facility low-activity waste by December 2024 (M-60-00).
- Start hot operations of two low-activity waste pretreatment and immobilization facilities by December 2002 (M-60-12).
- Complete single-shell tank (SST) interim stabilization by September 2000 (M-41-00). Complete closure of all SST farms by September 2024 (M-45-00). This milestone includes a requirement to initiate tank waste retrieval from one SST by December 2003 (M-45-05T1).
- Issue tank characterization reports for all 177 SSTs and double-shell tanks (DST) by September 1999 (M-44-00).
- Complete construction and initiate operations of expanded laboratory hot cells for high-level mixed waste by June 1994 (M-11-00). This milestone is complete.
- Initiate treatment of contact-handled low-level mixed waste by September 1999 (M-19-01), and complete treatment and/or direct disposal of at least 1,644 cubic meters of contact-handled low-level mixed waste by September 2002 (M-19-00). The M-19 change request that establishes these alternatives to the construction and

operation of the Waste Retrieval and Processing (WRAP) 2A facility received final approval in October 1996.

- Complete closure of the non-permitted mixed waste units in the 324 Building radiochemical engineering cells (REC) B-Cell, REC D-Cell, and the high-level vault (HLV) (M-89-00). A completion date for this milestone will be established immediately following Ecology approval of the REC/HLV closure plan (M-20-55).

- Complete removal of 324 Building REC B-Cell mixed waste and equipment by May 31, 1999 (M-89-02).

- Complete B Plant facility transition phase and initiate the surveillance and maintenance phase by September 1999 (M-82-00). This milestone includes removing organic waste from the B Plant canyon by June 1997 (M-82-03), documenting any hazardous substances or dangerous waste remaining in B Plant by June 1998 (M-82-07), and completing disposition of the organic waste by September 1998 (M-82-08).

- Complete acquisition of new facilities and modification of existing and planned facilities needed for storage, treatment, if necessary, and disposal of all Hanford Facility transuranic (TRU) and transuranic mixed (TRUM) waste, low-level mixed waste (LLMW), and and greater than category 3 (GTC3) waste (M-91-00 series of milestones; see details in Chapter 2).

The following are key assumptions that have been used to develop the treatment plans and schedules for DST waste and assumptions related to the use of tank space.

- The pretreatment methods to be developed will include acceptable technology to separate the waste into LLW and high-level waste (HLW)[1] streams so that the bulk of chemical waste is in the low-activity stream and the bulk of radionuclides are in the high-activity stream.

- Pretreated waste from all DSTs and SSTs will be provided to the LLW and HLW vitrification facilities, using selective blending if necessary.

- The level of cyanides and organics in DST and SST waste received from pretreatment will be treatable by vitrification, and the glass waste forms will comply fully with leachability requirements or appropriate variances will be obtained.

- Space in DSTs will be available to support DST and SST waste disposal activities.

1 The terms LLW, HLW, and TRU are used in this report to be consistent with Section 8 of the third-third LDR regulations (55 FR 22520). These terms are not intended to match the definitions in the contracts for privatization activities.

- Liquid waste from SSTs will continue to be transferred to DSTs as part of the stabilization program for the SSTs.

- Process condensate from the 242-A Evaporator and other hazardous wastewater, including liquid effluents from tank waste pretreatment and vitrification will be treated in the 200 Area Effluent Treatment Facility (ETF).

For waste generated by the Hanford Facility Environmental Restoration Program, only the quantities of waste that are sent to the CWC or other waste management facilities are considered part of the scope of this report. Waste sent to the Environmental Restoration Disposal Facility is not included in this report.

1.3 SCHEDULE AND MECHANICS OF PLAN UPDATE

Information in the baseline plan will be updated in future annual reports in accordance with Tri-Party Agreement Milestone M-26-01. The annual report revisions include the following:

- Revision of the stream generation rates to reflect current operating plans and schedules

- Revision of treatment plans and schedules to reflect further-defined waste treatments and treatment schedules

- Revision of the stream characterizations to reflect additional sample analyses or process changes

- Revision of the compliance status of the units to reflect future compliance assessments and permitting activities

- Reevaluation of the adequacy of the capacity of current units for storing LDR waste

- Addition of new or proposed milestones, as applicable

- Changes in the configuration of the mixed waste complex required under the FFCAct

- Addition of new LDR mixed waste streams as they are identified or declared to be waste. These may include cesium and strontium capsules, spent nuclear fuel basin sludge, bulk sodium waste, and 300 Area special-case waste. Tri-Party Agreement milestones for some of this waste have been established in the M-92 milestone series.

1.4 MILESTONE PLANNING PROCESS

Milestones and work schedules for activities related to the management of LDR mixed waste will be consistent with the work schedules contained in Appendix D of the Tri-Party Agreement (Ecology et al. 1989) and the annual update to the work schedule. The scope of these schedules includes interim milestones and additional target dates to accomplish the major milestones contained in Section 2.0 of the Tri-Party Agreement. Summary milestone schedules for activities related to the management of LDR mixed waste are discussed in Section 3.0 of the Tri-Party Agreement. Any new LDR milestones and changes to approved LDR milestone schedules will be implemented via the Change Control System process defined in Section 12.0 of the Tri-Party Agreement.

Tri-Party Agreement Milestone M-26-01 also requires that appropriate new milestones be proposed through this annual report. No new milestones are proposed for this reporting period.

The LDR milestone planning process used by DOE and its contractors also must consider the DOE and federal budget processes; integration with concurrent Hanford Facility operations, including waste management and environmental restoration activities; and overall sitewide regulatory compliance and coordination with other milestone initiatives described in the Tri-Party Agreement. Because these planning elements are numerous and complex, issues will be coordinated and reconciled through the ongoing project managers and the Inter-Agency Management Integration Team meetings within the broader framework provided by Section 8.0 of the Tri-Party Agreement. Also, LDR waste management activities will be included, as appropriate, in Tri-Party Agreement milestone review meetings.

1.5 ACTIVITIES AND ACHIEVEMENTS

This section summarizes the major activities and accomplishments related to compliance with LDRs from April 1, 1997, through March 31, 1998.

- Two campaigns were completed for the 242-A Evaporator in fiscal year (FY) 1997. The volume of tank waste stored in the DSTs was reduced by 3970 cubic meters; 4720 cubic meters of process condensate were produced.

- The B-Cell crane was replaced to facilitate packaging the 324 Building REC waste. Facilities have been identified to receive the waste.

- A closure plan for the 324 Building REC has been developed and Ecology has provided comments. The comments are being resolved.

- In October 1997, the B Plant organic waste stored in the B Plant canyon and a permitted storage unit outside the canyon was shipped to Diversified Scientific

Services, Inc. (DSSI), for disposal. B Plant no longer stores any waste from this stream.

- The DST Dangerous Waste Part B Permit Application, DOE/RL-90-39 (RL 1991a), is being revised. In March 1997, Chapter 11, "Closure," and Appendix 11A, "Known Releases," were transmitted to Ecology for review. A workshop on Chapter 11 was held in August 1997. In July 1997, Chapter 6, "Procedures to Prevent Hazards," and Appendix 6A, "Double-Shell Tank System Dangerous Waste Inspection Schedule," were transmitted to Ecology for review. In December 1997, Chapter 3, "Waste Analysis," and Appendix 3A, "Double-Shell Tank System Waste Analysis Plan" were transmitted to Ecology for review.

- All outstanding safety issues pertaining to the safety status of waste in the tanks have been or are being resolved. Work is continuing with organic and flammable gas issues. The organic safety issue is expected to be resolved this fiscal year.

- The DOE and Project Hanford Management Contractor (PHMC) continue to support transferring the tank waste treatment program to the private sector. During 1997, the PHMC completed the readiness-to-proceed documents to support the retrieval, vitrification, and storage of tank waste.

- RCRA closure for the 4843 Sodium Storage Facility was completed and accepted by Ecology in May 1997. Small quantities of generated sodium waste are now collected in a satellite accumulation area and sent to the CWC.

- The Allied Technology Group (ATG) was awarded a commercial contract for nonthermal treatment of up to 1860 cubic meters of waste during FY 1999 through FY 2001. Waste will come from the inorganic solids (RL-MLLW-02) and debris (RL-MLLW-04) waste streams.

- The inventory of stored low-level mixed waste (LLMW) at the Central Waste Complex (CWC) remained virtually constant during FY 1997. This is the first year since LLMW storage began in 1987 that the volume did not increase significantly. These results were obtained from a number of projects, including the following:

  - Treated 880 drums (185 cubic meters) of debris using commercially available macroencapsulation technology (polyethylene entombment), demonstrating the technology's viability as a treatment option for Hanford Facility waste. They are awaiting disposal in the LLBG (Subtitle-C portion).

  - Treated four long-length contaminated equipment (LLCE) items from the Tank Waste Remediation System (TWRS) tank farms. These items totaled 28 cubic meters and were treated by macroencapsulation (sealed container). They are awaiting disposal in the LLBG (Subtitle-C portion).

- Treated 16 drums (3 cubic meters) of inorganic solids using stabilization treatment technology and a portland cement-based stabilizer. The waste originated from Battelle Columbus (Ohio) decontamination and decommissioning activities under the FFCAct-STP jurisdiction.

- Disposed of 178 drums (56 cubic meters) of soil originating from the tank farms backlog waste program. A contained-in determination was granted by Ecology that enabled the project to move forward.

- Disposed of 196 cubic meters of stored high-efficiency particulate air (HEPA) filters that were redesignated as LLW after Washington State deregulated the WC01 and WC02 waste codes.

- Prepared and transported a 22 cubic meter Knolls Atomic Power Laboratory core basket from CWC storage to the Mixed Waste Disposal Facility (MWDF) where it is awaiting disposal.

- Performed characterization verifications on a significant number of past-practice waste containers from the debris and inorganic particulates waste streams.

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2.0 FACILITY SUMMARY

This section summarizes the generation, characterization, storage, treatment, and reduction of radioactive LDR waste at the Hanford Facility.

2.1 WASTE GENERATION

The projected volumes of mixed waste to be generated are presented in Table 2-1 and the Waste Stream Profile Sheets in Chapter 3. Assumptions governing these generation rates are discussed in Section 1.2.

The waste volumes generated annually are presented in Chapter 3. These volumes represent the current best estimates of future waste generation for each LDR mixed waste stream or the quantity of mixed waste that will be added to TSD units. These estimates are based on detailed evaluation of plant operating schedules, past operating history, and projections of future waste generation. The projected generation volumes may be higher or lower than the actual generation rates because of changes in waste treatment or production schedules or waste minimization activities.

Decommissioning and remediation activities for RCRA past-practice units are anticipated to generate large volumes of contaminated soil and debris (e.g., contaminated structures, drums, tanks, piping, equipment, and cleanup debris). Some of this soil and debris may be subject to regulation under the LDR Program. Volumes from these and other onsite waste activities governed by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) are typically documented in records of decision, action memoranda, RCRA permit modifications, and/or decontamination and decommissioning work plans. Volumes for onsite CERCLA waste activities are not included in this RCRA LDR report.

Mixed waste resulting from CERCLA activities generally will be disposed of on site in the Environmental Restoration Disposal Facility. Waste regulated under CERCLA that does not meet the Environmental Restoration Disposal Facility's waste acceptance criteria and is sent to the CWC for storage is included in this report as part of the waste receipt projections for the CWC. Waste Stream Profile Sheets RL-MLLW-04-A, Debris, and RL-MLLW-05, Elemental Lead, list quantities of waste from the Environmental Restoration Program.

Table 2-1. Waste Inventory and Generation Summary

Waste stream ID	Waste stream name	Current inventory (m^3)	Generation projection (fiscal year) (m^3)				
			1998	1999	2000	2001	2002
RL-MLLW-01	LDR Compliant Solids	1425	76	167	102	738	762
RL-MLLW-02	Inorganic Solids	2683	117	117	77	63	95
RL-MLLW-03	Organic Solids	907	79	87	122	111	106
RL-MLLW-04	Debris	3067	308	415	549	500	614
RL-MLLW-05	Elemental Lead	290	9	6	11	10	20
RL-MLLW-06	Elemental Mercury	2	0.008	0.005	0.005	0.003	0.003
RL-MLLW-07	M91 MLLW	211	44	122	231	229	216
RL-MLLW-08	GTC3	1	0	0	0	0	0
RL-TRUM-01	Generalized CH-TRUM	274	164	166	123	290	302
RL-TRUM-02	Generalized RH-TRUM	0	4	4	4	168	177
RL-TRUM-03	CH/RH-TRU/M with PCBs	73	0	0	0	0	0
DST	Double-Shell Tank System	69,261	14,900	13,400	4300	7900	5000
SST	Single-Shell Tank System	133,800	0	0	0	0	0
PUREX-1	PUREX Containment Building	1	0	0	0	0	0
PUREX-2	PUREX Storage Tunnels	2800	0	400	0	0	0
324REC	324 Building Radiochemical Engineering Cells	4.1	0	0	0	0	0
B PLANT-1	B Plant Cell 4 Waste	1.4	0	0	0	0	0
B PLANT-2	B Plant Containment Building Storage	(a)	(a)	0	0	0	0
T-Dragoff	T Plant Complex Drag-Off Box	10	0	0	0	0	0
T-Condenser	T Plant Complex EC-1 Condenser	32.11	0	0	0	0	0
T-Tank	T Plant Complex Tank Trailer Waste	0.76	0	0	0	0	0
	Totals	214,843	15,701	14,884	5519	10,009	7292

(a) No volume estimate available. Estimated at 97,000 kg generation for 1998. Current inventory is 293,447 kg.

CH	contact handled
GTC3	greater than class 3
LDR	land disposal restrictions
MLLW	mixed low-level waste
RH	remote handled
PCB	polychlorinated biphenyl
TRUM	transuranic mixed (waste)

2.2 WASTE CHARACTERIZATION

As documented in this report, characterization of mixed waste stored at the Hanford Facility has been based on current process knowledge and, where available, waste sample analyses. Waste will be sampled and characterized as necessary until the waste is disposed of. Future characterization plans for the waste streams and their status are summarized in Table 2-2. Characterization of individual waste streams is further described in Chapters 3 and 4.

The dangerous waste designations for the waste streams are summarized in the waste stream profile sheets in Chapter 3. In some cases, additional waste codes are included for waste that may be received in the future. Dangerous waste, as defined by Washington State regulations, encompasses more waste types than are covered under the federal hazardous waste program. In some cases, the waste designations will include federal and state-only waste codes because waste from many sources will be managed under the waste stream profile sheet. Future waste characterization and complete implementation of the WAC 173-303 amendments may show that more or fewer waste codes apply to a waste stream managed under a given profile sheet. Any changes resulting from future characterization will be included in updates to this report. Washington State-only information is included in this report for completeness only; state-only LDRs are not subject to the RCRA statutory requirements.

The waste stored in the SST and DST systems, and the silver nitrate waste stored in Plutonium-Uranium Extraction (PUREX) Facility Tunnels 1 and 2 have been assigned the D001 (ignitable) waste designation because oxidizers, nitrates, and/or nitrites are present. They are not ignitable by themselves, and the designation results from the possibility of them reacting with other materials.

The F001 through F005 waste codes (spent halogenated and nonhalogenated solvents) have been assigned to the SST- and DST-system waste because of the mixture rule from the introduction of spent solvents. The waste does not contain significant quantities of spent solvents. Also, these waste codes apply to all downstream waste derived from DST system waste, such as process condensate from the 242-A Evaporator. The past discharges of spent solvents to SST and DST systems, and the resultant tank-to-tank transfers have mixed essentially all the waste in the tanks. The tank waste does not contain large quantities of organic solvents, as is typically the case for waste designated F001 through F005. The SST and DST system waste is primarily inorganic with trace contamination by F001 through F005 solvents.

In November 1994, the F039 waste code was added to the Part A Form 3 Permit Applications for the DST System, Low-Level Burial Ground, CWC, WRAP Module 1, and other TSD units. This was done to allow for management of waste potentially listed with waste code F039 generated during onsite mixed waste disposal operations. The 200 Area ETF can manage F039 waste streams if they are derived from just F001 through F005 sources. Currently, no F039 waste is being generated or stored at the Hanford Facility.

Waste codes and required treatments for underlying hazardous constituents (UHC) are within the scope of this report. The waste characterization section of the waste stream profile sheets in Chapter 3 contains lists of constituents where UHCs are to be identified. The Hanford

Facility TSD unit contractors are identifying applicable UHCs and determining waste treatment impacts. As UHC information becomes available, it will be included in this report.

The schedule and means for reporting waste characterization data are outlined in the Tri-Party Agreement (Ecology et al. 1989) as amended by Section 9.6, "Data Reporting Requirements." This section states that DOE will make available to Ecology and EPA all validated laboratory analytical data collected since the Tri-Party Agreement took effect within 15 work days of data validation. Within 1 week after the laboratory data are validated, DOE will notify Ecology and EPA of their availability in the Hanford Environmental Information System. This notification will include the time and location of the sampling, the type of data available, and a list of the sample parameters or target compounds. The time limits for reporting sample analyses are 216 days for SST analyses, 176 days for hot cell analyses, and 126 days for low-level and mixed waste. (All time limits are computed from the date of sampling.)

2.3 WASTE STORAGE

The storage unit capacity for solid mixed waste at the Hanford Facility is projected to be adequate for all generated mixed waste throughout waste management's life cycle (FY 2032), assuming direct disposal and treatment programs are funded to their current levels. This projection is based on the individual projections of all generators who ship waste to the CWC and the availability of planned treatment facilities. The projection of waste generation rates is reevaluated annually.

Using current space projections, by 2000, the currently available DSTs will essentially be filled to capacity. The baseline plans are to consolidate and evaporate DST waste, which will eliminate the need to provide additional tank space. This will allow for their continued use for waste storage of new waste. Change request M-42-95-01, which changes the due date for Tri-Party Agreement Milestone M-42-00, providing for additional DST capacity, to "TBD" [to be determined] and deletes all supporting uncompleted M-42 interim milestones, was approved December 1, 1995. This change request postpones the construction of new DSTs indefinitely.

Except for the SST system, the storage units for mixed waste described in this report have not been known to release any dangerous constituents to the environment. This has been determined by analyzing all available information such as monitoring data, inspections, and operational history. The SST system is estimated to have released between 2862 cubic meters and 4022 cubic meters of liquid waste to the ground (FDH 1998). This estimate excludes any cooling water added to tanks after they were known to be leaking. To minimize further releases from this storage unit, the pumpable liquid portion of the waste stored in the SST system is being transferred to the DST system. Releases to the environment before waste was stored or packaged in substantially its current configuration are not included in this report. For example, some of the waste now stored at the CWC came from the 183-H Solar Basins. While the 183-H Solar Basins leaked waste to the ground, this was before the waste was packaged into drums, so this leakage estimate is not included in this report. For the purposes of this report, emissions allowed by permits and spills that are promptly cleaned up are not considered releases to the environment and are not included in the waste stream profile sheets in Chapter 3.

Table 2-2. LDR Summary Table. (5 sheets)
Solid LLMW and TRUM

Hanford waste stream ID	Waste stream title	Description	End of FY 1997 inventory (m^3)	FY98 -FY02 forecast (m^3)	Package type	LLMW treatment and/or disposal volume[1] FY1997 (m^3)	FY1998 (m^3)	FY1999 (m^3)	FY2000 (m^3)	FY2001 (m^3)	FY2002 (m^3)	Characterization status	Treatment/disposal path forward	Treatment/disposal assumptions and/or issues
RL-MLLW-01	LDR Compliant Solids	A. Backlog soils	230	0	Drums/boxes	56	230	0	0	0	0	Fully characterized, ready for disposal.	Direct disposal into the LLBG (Subtitle-C portion).	All packages with possible PCB contamination have been removed from the waste lot.
		B. 200ETF dryer solids	70	313	Drums/boxes	0	0	0	0	82	117	Fully characterized, ready for disposal.	Awaiting disposal into the LLBG (Subtitle-C portion).	All packages are received into interim storage at CWC with LDR certifications.
		C. SST/DST system long-length contaminated equipment	81	1532	LLCEs	28	0	0	54	700	693	Fully characterized, ready for disposal.	Macroencapsualtion performed by generator (TWRS), awaiting disposal into the LLBG (Subtitle-C portion).	TWRS will perform all treatment required to make the LLCE items acceptable for land disposal in the LLBG (Subtitle-C portion).
		D. 183H Solar Basin solidified liquids	844	0	Drums/boxes	0	0	0	844	0	0	Requires cyanide retesting and/or verification to the new protocol.	Direct disposal into the LLBG (Subtitle-C portion).	Existing stabilization treatment complies with LDR requirements.
		E. SST and DST system soils	25	0	Drums/boxes	0	0	0	0	25	0	Sample drums and complete analysis to support a "contained-in" determination.	Request for a contained-in determination and dispose into the LLBG (LLW portion).	Because the waste originates from the same generators as the backlog soils, it is assumed a contained-in determination can be obtained.
		F. State-only waste	86	0	Drums/boxes	0	0	0	0	86	0	Waste needs to have characterization performed.	Awaiting disposal into the LLBG (Subtitle-C portion).	Waste meets all state LDRs, but still needs to be managed under the dangerous waste regulations.
		G. 183H empty bags	90	0	Drums	0	0	0	0	0	0	Characterization has shown that these bags do not qualify as RCRA-empty.	Waste stream to be moved to RL-MLLW-04-A for treatment.	See RL-MLLW-04-A.
		H. WC01/02 HEPA filters[2]	196	0	Drums/boxes	196	0	0	0	0	0	Complete	Disposed of into the LLBG (LLW portion).	None
		Subtotal =	1425	1845		280	230	0	898	893	810			
RL-MLLW-02	Inorganic Solids	A. 183H Solar Basin solids	2452	0	Drums/boxes	0	0	0	0	0	0	Fully characterized, ready for treatment.	Requires stabilization treatment; however, no schedule is set. After treatment, will be disposed of into the LLBG (Subtitle-C portion).	Obtained approval from Ecology for STABL as an alternative treatment for subject waste.
		B. Inorganic solids	182	438	Drums/boxes	3	0	90	0	50	50	Waste requires characterization, including UHC identification. Newly generated waste is fully characterized.	Nonthermal treatment per onsite and offsite capabilities. Disposal into LLBG (Subtitle-C portion).	Majority of the waste contains characteristic metals only.
		C. Inorganic lab packs	49	31	Drums	0	0	10	0	10	10	Waste requires characterization, including UHC identification. Newly generated waste is fully characterized.	Treat as required via WRAP-1 and/or non-thermal treatment contract. Disposal into LLBG (LLW portion).	Majority of the waste contains characteristic inorganic constituents and/or metals only.
		Subtotal =	2,683	469		3	0	100	0	60	60			

Table 2-2. LDR Summary Table. (5 sheets)
Solid LLMW and TRUM

Hanford waste stream ID	Waste stream title	Description	End of FY 1997 inventory (m^3)	FY98 -FY02 forecast (m^3)	Package type	LLMW treatment and/or disposal volume[1]						Characterization status	Treatment/disposal path forward	Treatment/disposal assumptions and/or issues
						FY1997 (m^3)	FY1998 (m^3)	FY1999 (m^3)	FY2000 (m^3)	FY2001 (m^3)	FY2002 (m^3)			
RL-MLLW-03	Organic Solids	A. General organic solids	598	328	Drums/boxes	0	0	0	0	334	370	Waste requires characterization, including UHC identification. Newly generated waste is fully characterized.	Treat via the thermal treatment contract beginning FY2001. Disposal into the LLBG (Subtitle-C portion).	Enough waste will be ready for treatment (I.e., characterized) to meet the thermal treatment contract minimum quantities.
		B. Organic lab packs	309	177	Drums	0	0	0	0	200	200	Waste requires characterization, including UHC identification. Newly generated waste is fully characterized.	Treat via the thermal treatment contract beginning FY2001. Disposal into the LLBG (Subtitle-C portion).	Enough waste will be ready for treatment (i.e., characterized) to meet the thermal treatment contract minimum quantities.
		Subtotal =	907	505		0	0	0	0	534	570			
RL-MLLW-04	Debris	A. General debris	2860	2,386	Drums/boxes	0	0	508	500	762	762	Waste requires characterization. Newly generated waste is fully characterized.	Treat via nonthermal treatment contract beginning FY1999 and by small demonstration activities (e.g., WERF, Macro-Secure). Disposal into the LLBG (Subtitle-C portion).	Organic/carbonaceous LDR treatment exemptions required to proceed with macroencapsualtion technologies.
		B. Macroencapsulation pilot program	185	0	HDPE tubes	0	0	185	0	0	0	Complete	Redesignated and awaiting disposal into the LLBG (Subtitle-C portion).	None
		C. Navy Core basket	22	0	Cask	0	0	22	0	0	0	Fully characterized, ready for disposal.	Awaiting disposal into the LLBG (Subtitle-C portion).	Package was received from the Navy macroencapsulated.
		Subtotal =	3067	2386		0	0	715	500	762	762			
RL-MLLW-05	Elemental Lead	None	290	56	Drums/boxes	0	60	0	0	0	0	Waste requires characterization. Newly generated waste is fully characterized.	Use commercial treatment services to macroencapsualtion subject waste or recycle through decontamination efforts on site.	Assumes that decontaminated lead can be radiologically "free-released" to recycle.
RL-MLLW-06	Elemental Mercury	None	2	0	Drums	0	0	0	0	0	0	Waste requires characterization. Newly generated waste is fully characterized.	Amalgamate at WRAP-1. Disposal into the LLBG (LLW portion).	The majority of the mercury was amalgamated by the generators to meet storage requirements. May require some alternative treatments to disposition.
RL-MLLW-07	M91 MLLW	Generalized RH	211	841	Drums/boxes	0	0	0	0	0	0	Waste requires characterization. Newly generated waste is fully characterized.	Disposition per the M-91TPA milestones. Disposal into the LLBG (LLW portion or Subtitle-C portion as applicable).	ALARA is the major concern with dispositioning subject waste. New or modified facilities to handle RH waste are required.
RL-MLLW-08	GTC3	None	1	0	Casks	0	0	0	0	0	0	Waste requires characterization.	Disposition per the M-91 Tri-Party Agreement milestones. Disposal location is not determined.	ALARA is the major concern with dispositioning subject waste. DOE Order 5480.2A and the Hanford Facility's LLBG (LLW portion) Performance assessment prohibits land-disposal of GTC3.

Table 2-2. LDR Summary Table. (5 sheets)
Solid LLMW and TRUM

Hanford waste stream ID	Waste stream title	Description	End of FY 1997 inventory (m^3)	FY98 -FY02 forecast (m^3)	Package type	LLMW treatment and/or disposal volume[1]						Characterization status	Treatment/disposal path forward	Treatment/disposal assumptions and/or issues
						FY1997 (m^3)	FY1998 (m^3)	FY1999 (m^3)	FY2000 (m^3)	FY2001 (m^3)	FY2002 (m^3)			
RL-TRUM-01	Generalized CH-TRUM	None	274	1045	Drums/boxes	0	0	298	648	583	459	Waste requires certification to meet WIPP's shipping and receiving requirements.	WIPP certifications to be performed at WRAP-1, and disposal at WIPP.	During WIPP's initial operations, they will not be able to receive TRUM waste; therefore, only non-mixed TRU will be sent.
RL-TRUM-02	Generalized RH-TRUM	None	0	357	Shielded drums, boxes, and casks	0	0	0	0	0	0	Waste requires certification to meet WIPP's shipping and receiving req⋅irements.	WIPP certifications to be performed per the M-91 milestones. Disposal at WIPP.	ALARA is the major concern with dispositioning subject waste. New or modified facilities to handle RH waste are required.
RL-TRUM-03	CH/RH-TRU and TRUM w/PCBs	None	73	0	Drums, boxes, and casks	0	0	0	0	0	0	Currently no disposal path forward has been determined; therefore, characterization activities/requirements are to be determined.	Disposition per the M-91 milestones. Disposal is not determined.	WIPP cannot receive TSCA PCB wastes. Waste will remain in storage until a national path forward can be determined, or the waste will be treated to remove the PCBs.
		TOTAL =	8933	7504		283	290	1113	2046	2832	2661			

Table 2-2. LDR Summary Table (5 sheets)
Non-CWC Stored Waste.

Waste stream name	FY 1997 inventory (m^3)	Number of packages	Package type	Characterization status	Treatment/disposal path forward	Treatment/disposal capabilities/capacities/issues
Double-Shell Tank System	69,261	28	Underground tanks	In progress per M-44-00.	Retrieve the waste, pretreat into LLW and HLW streams, and vitrify. Commercialization plans under way.	Dispose of LLW waste on site in a retrievable mode, store high-level waste until offsite geologic repository is open. Capacities, etc. TBD.
Single-Shell Tank System	133,800	149	Underground tanks	In progress per M-44-00.	Retrieve into DST. Same as DST.	Same as DST.
PUREX Containment Building	1	1	Metal box	Fully characterized.	No path forward developed.	No path forward developed.
PUREX Storage Tunnels	2800	36	Various, on rail cars	Partially characterized. May have to be segregated and more fully characterized.	No path forward developed.	No path forward developed.
324 Building Radiochemical Engineering Cells	4.1	N/A	Not yet packaged	Fully characterized.	Will be transported to the PUREX Tunnels and CWC for storage and possible future treatment.	324 REC is not a permitted storage unit. Will be transferred to permitted TSDs by 5/31/99 per M-89-02.
B Plant Cell 4 Waste	1.4	43	0.21 m^3 drums	Information based on process knowledge. No additional characterization planned.	No path forward developed. Will remain at the B Plant Complex until facility is dispositioned by the Environmental Restoration Contractor.	Waste is highly radioactive and requires remote handling. Waste will remain in the B Plant canyon.
B Plant Containment Building Storage	Unknown[3]	Unknown	Unknown	Information based on process knowledge. No additional characterization planned.	No path forward developed. Will remain at the B Plant Complex until facility is dispositioned by the Environmental Restoration Contractor.	Waste is highly radioactive and requires remote handling. Waste will remain in the B Plant canyon.
T Plant Complex Drag-off Box	10	1	Storage box	Further characterization to be done. Currently not scheduled.	Planned disposal location is Subtitle-C or LLW portion of LLBG.	
T Plant Complex Tank Trailer Waste	0.76	1	5000 gal tank trailer	Fully characterized.	DST system likely to accept waste if PCBs are not present. Plans are to remove contents.	Will be transferred to DSTs.

Table 2-2. LDR Summary Table (5 sheets)
Non-CWC Stored Waste.

Waste stream name	FY 1997 inventory (m^3)	Number of packages	Package type	Characterization status	Treatment/disposal path forward	Treatment/disposal capabilities/capacities/issues
T Plant Complex EC-1 Condenser	32.11	1	Condenser	Whether additional characterization will be performed is not known. Whether this equipment contains regulated constituents is not known at this time.	Dependent on FY 1999 funding. Planned disposal location is Subtitle-C or LLW portion of LLBG.	Treatment required, if any, will depend on characterization results. No treatment path forward.
Total waste volume and package count, not including CWC ("N/A "entries not counted)	205,910	260				
Total waste inventory including CWC	214,843	N/A				

[1]Dispositioned waste volumes include TRU and TRUM waste. No determination has been made of how much of each waste type will be sent and when it will be sent.
[2]The 196 m^2 of HEPA filters are not counted in the subtotal inventory volume for MLLW-01 because this waste was disposed of into the LLBG (LLW portion) in FY 1997.
[3]Volume unknown, but mass estimated at approx. 293,447 kg.

ALARA as low as reasonably achievable
CH contact-handled
DST double-shell tank
ETF Effluent Treatment Facility
HDPE high-density polyethylene
HEPA high-efficiency particulate air
LLBG low-level burial ground
LLCE long-length contaminated equipment
N/A not applicable
PCB polychlorinated biphenyl
RCRA *Resource Conservation and Recovery Act of 1976*
RTR real-time radiography
SST single-shell tank
STABL stabilization
Tri-Party Agreement *Hanford Federal Facility Agreement and Consent Order*
TRU transuranic
TRUM transuranic mixed
TSCA *Toxic Substances Control Act of 1976*
TWRS Tank Waste Remediation System
UHC underlying hazardous constituent
WIPP Waste Isolation Pilot Plant
WRAP Waste Receiving and Processing (facility)

The volume and types of the radioactive mixed waste currently in storage at the Hanford Facility are summarized in Table 2-1. The table shows that as of 1997, the Hanford Facility stored approximately 214,840 cubic meters of radioactive mixed waste in TSD units included in this report.

2.4 WASTE TREATMENT

The federal LDRs apply to each type of hazardous waste that has been restricted from land disposal. Treatment standards are identified as either concentration based or technology based. Concentration-based standards have been developed based on "best demonstrated available technology." Except for cyanides, which must be destroyed, treatment to meet concentration-based standards can be pursued via any technology other than dilution, which is not permissible. The only requirement is that the waste be treated to reduce the concentration of the constituents of concern. However, waste types to which technology-based standards apply must be treated by that specified technology. Hazardous waste designated with multiple RCRA codes must be treated in accordance with the standards for each waste code and subcategory, when applicable, unless 40 CFR 268.9(a) and (b) apply. In situations where overlap occurs, the more stringent standard must be applied. EPA's LDR rulemaking efforts, 59 FR 47982, resulted in the universal treatment standards, which contain numerical limits for underlying hazardous constituents (UHC). The UHCs are applicable to certain ignitable-, corrosive-, reactive-, and toxic-characteristic organic hazardous waste (D001, D002, D003, and D018 through D043, respectively) and to pesticide nonwastewater (D012-D017) destined for land disposal. It is anticipated that EPA will apply UHCs to certain metal-bearing waste in the near future. Once the UHCs are in effect, metal-bearing waste in storage, but not already subject to UHC determinations, may require further characterization.

Applicable planned treatment methods and treatment alternatives are described in the waste stream profile sheets in Chapter 3 and summarized in Table 2-1. The Hanford Site Technology Coordination Group science and technology needs for FY 1998 are documented in the *Hanford Science and Technology Needs Statement*, DOE/RL-98-01, available on the Internet at http\\www.hanford.gov. These science and technology needs can be reviewed for applicability to the waste stream profile sheets, Section 1, "Waste Stream Identification and Source." The "Hanford Paths to Closure Technology Tables" are available on the Internet at http\\www.em.doc.gov/closure/. The innovative technology activities contained in these tables can be reviewed for applicability to the waste stream profile sheets, Section 4, "Waste Stream Treatments."

The use of offsite commercial treatment technologies is currently being considered for some waste streams. The use of onsite commercial technologies also is possible. The DOE is considering using nontraditional contracting approaches (i.e., "privatization") for site remediation work. The use of commercial technologies is likely to play a role in site remediation work (primarily under CERCLA regulations). Certain waste treatment operations for waste stored at the CWC, such as stabilization and thermal treatment and vitrification of SST and DST waste, are planned to be provided by either Hanford Facility or private contractors.

The Tri-Party Agreement specifies the required dates for construction and startup of, and waste treatment in, the major treatment units. No requirements have been established for accelerated treatment beyond these dates. (Figure 2-1 shows the Tri-Party Agreement work schedule.) All this waste is considered to be stored in an environmentally sound manner except SST waste and some DST waste with unique safety problems caused by its chemical and/or radiological content. Further details on accelerated treatment are located in the discussions of individual waste streams found in Chapter 4.

The following paragraphs summarize the three largest volume LDR mixed waste streams on the Hanford Facility. More detail about these and other streams is given in subsequent chapters.

2.4.1 Double-Shell Tank System Waste

The DST system waste consists of LLW, TRU waste, and HLW. In the interim storage mode, however, the waste is managed as HLW and some of the liquid fraction is reduced in volume by processing in the 242-A Evaporator. To meet disposal requirements, present plans are to separate the waste into a LLW stream and a HLW/TRU stream before treatment. The HLW/TRU stream may undergo additional treatment as necessary to reduce its volume and concentrate its radionuclide loading.

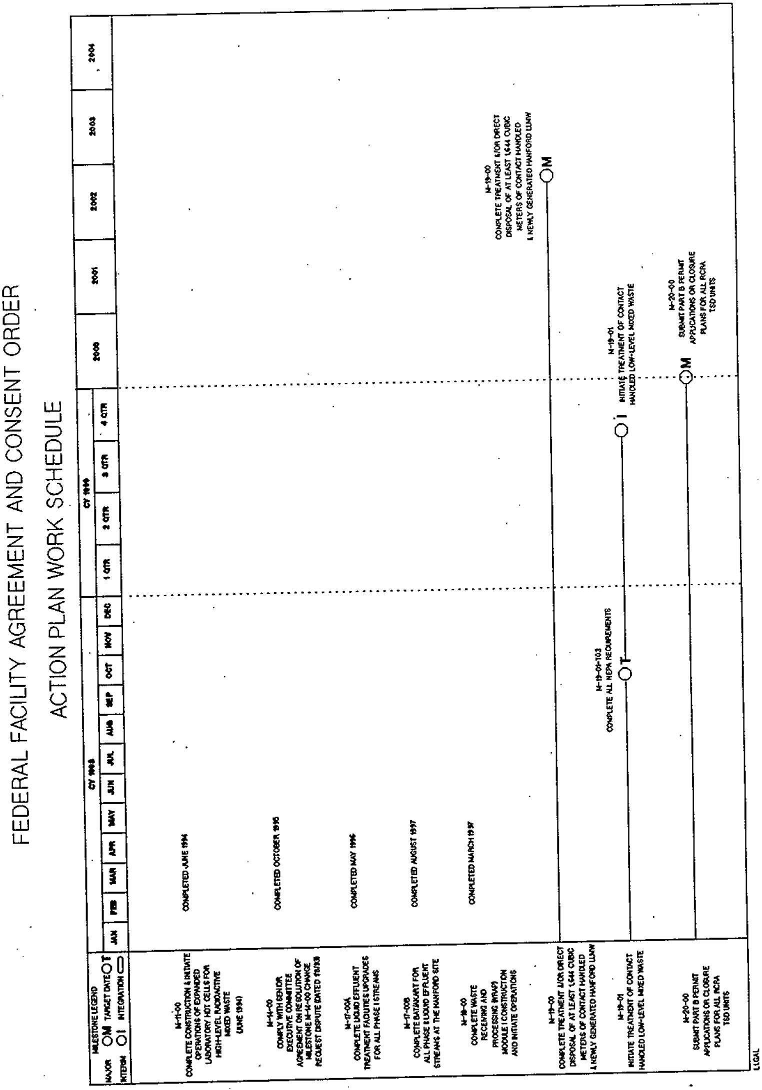
Before ultimate disposal, the DST waste will be treated to meet applicable LDR requirements. The present plans are for private companies to build and operate vitrification facilities where the DST system waste will be formed into glass logs. Vitrification is the specified LDR treatment technology for HLW and TRU waste. At this time, it is unclear if vitrification is also the specified treatment for LLW. If it is not the specified treatment, the LLW will have to be treated to meet appropriate concentration-based standards.

Once vitrification is complete, present plans are to send the waste for storage or disposal at the national geologic repository. Because the repository cannot accept hazardous waste, additional permitting, legislation, or some other action might be required before actual shipment of the vitrified waste.

2.4.2 Single-Shell Tank System Waste

The SST system waste consists of LLW, TRU waste, and HLW; however, in the interim storage mode it is managed as HLW. The physical forms of SST system waste are sludge, salt cake, and liquid. Liquid waste, which includes supernatant and interstitial liquid in the salt cake, is being transferred to the DST system for later treatment as long as the safety status of the SST system does not worsen after pumping. The planning base for the SST system is to retrieve the waste, as specified by the Tri-Party Agreement, and transfer it to the DST system. It then will be separated into LLW and HLW/TRU waste fractions. Both waste fractions will be vitrified for disposal in the same way as the DST system waste. No additional waste will be generated and stored in the SST system; waste has not been introduced into the SST system since 1980.

Figure 2-1. Tri-Party Agreement Action Plan Work Schedule.



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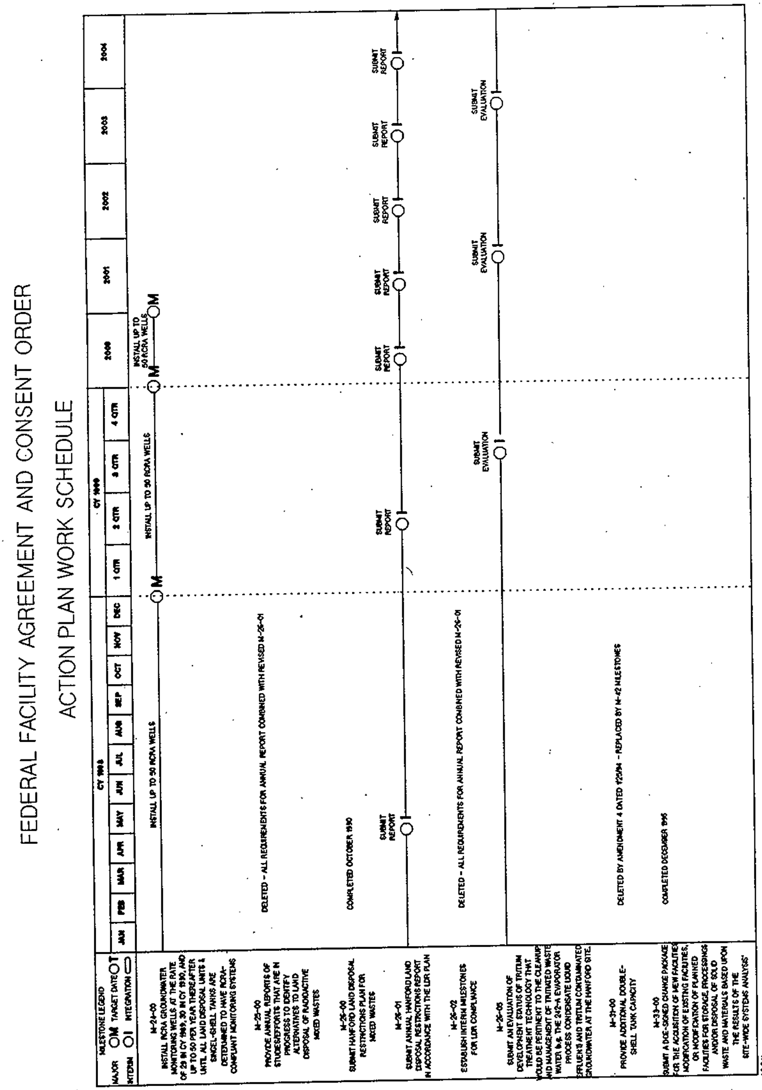

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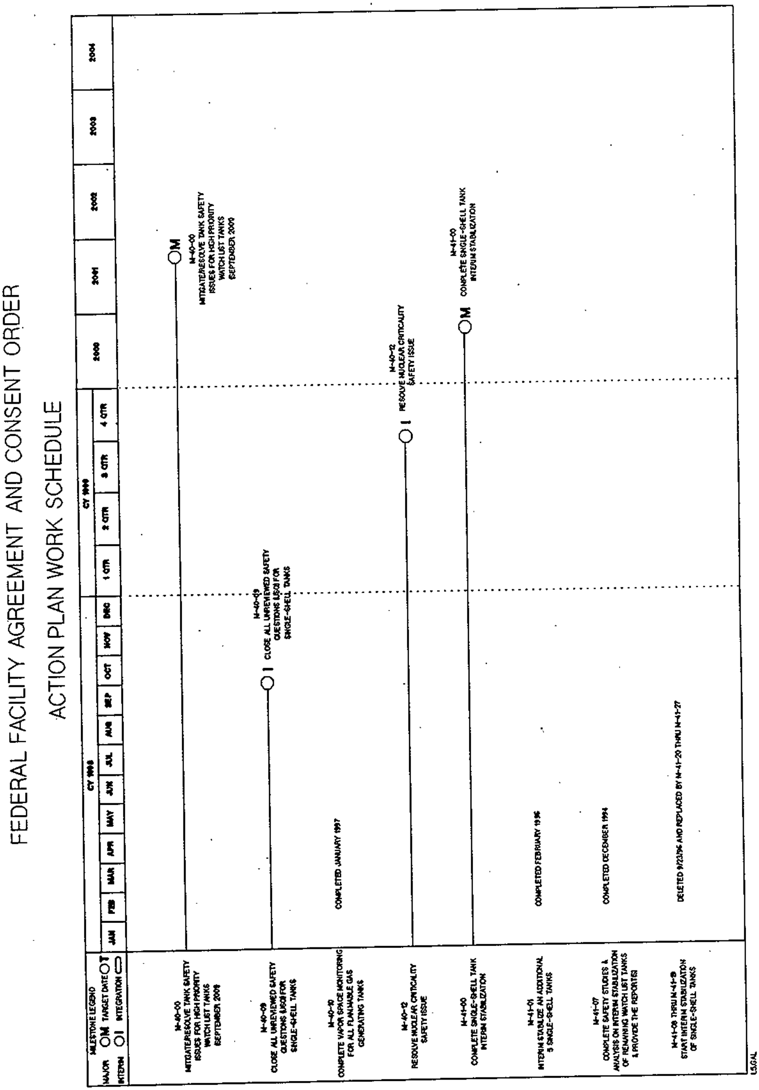

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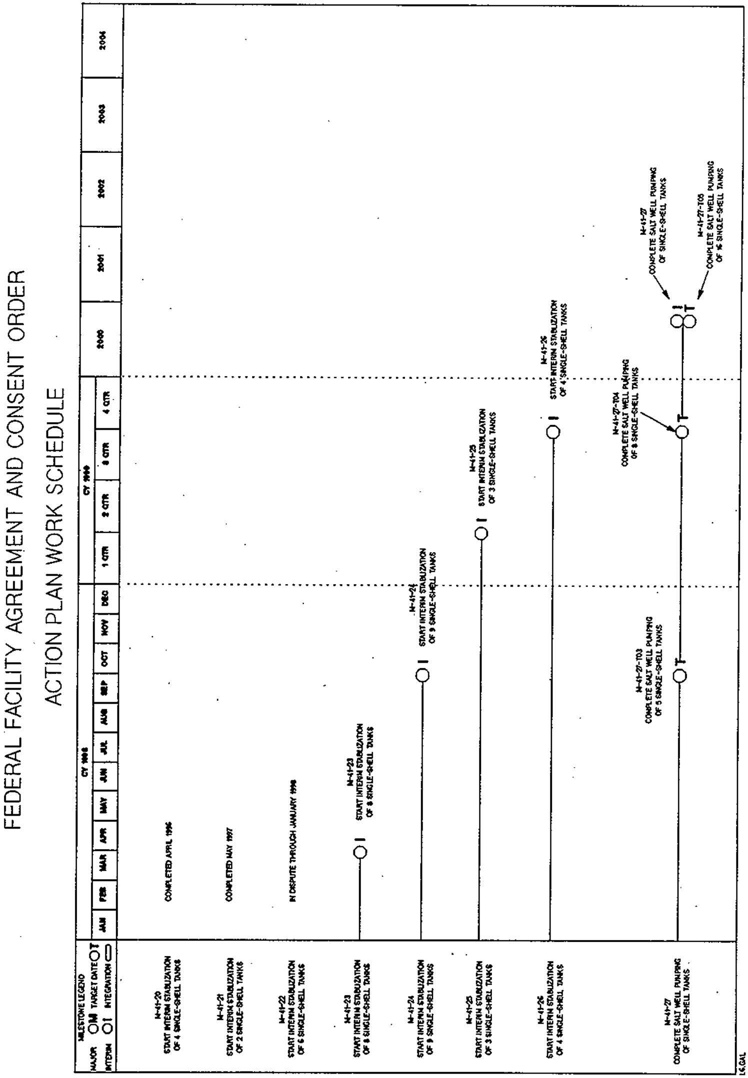

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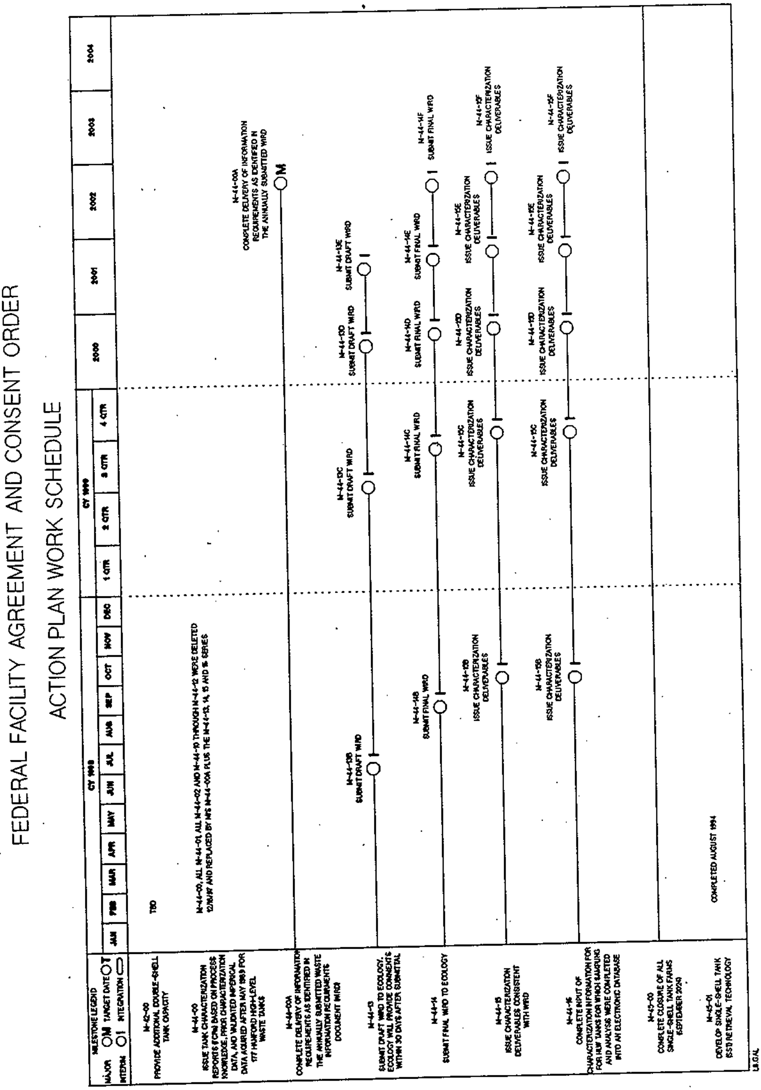

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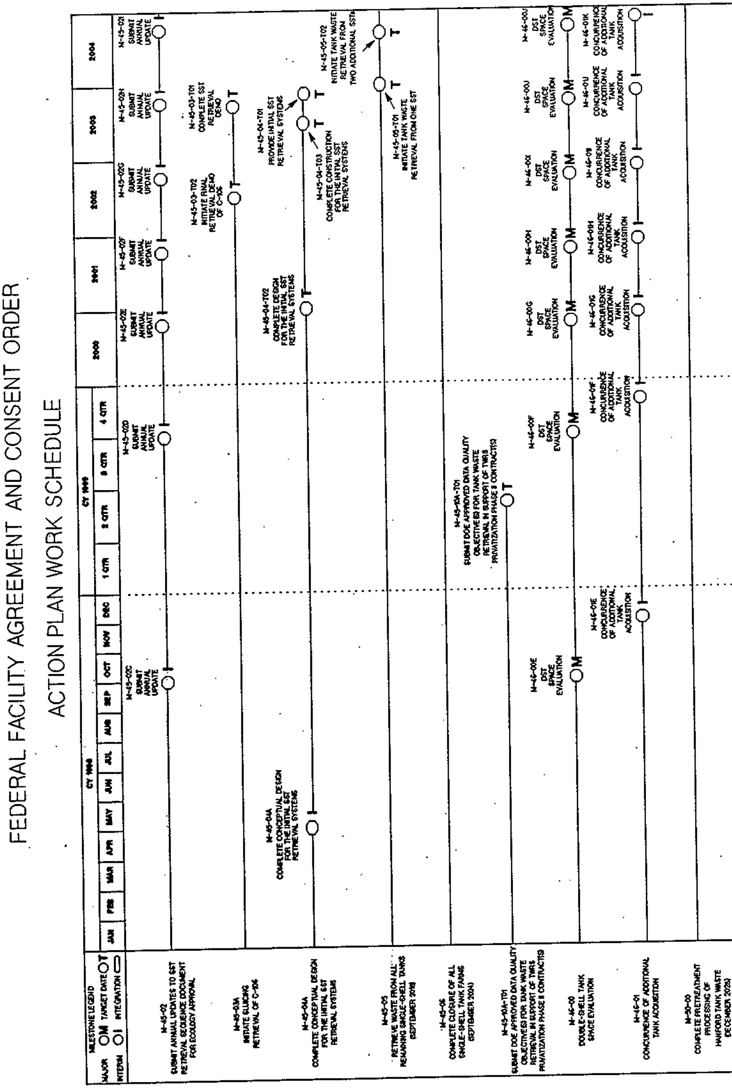

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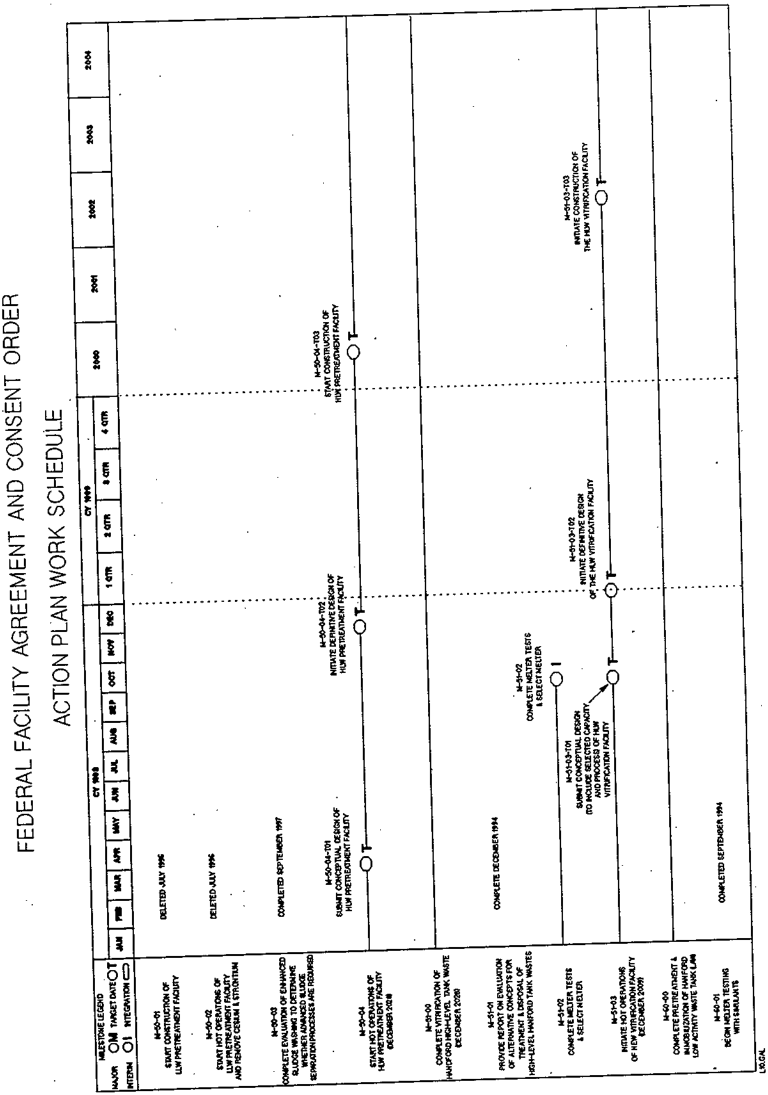

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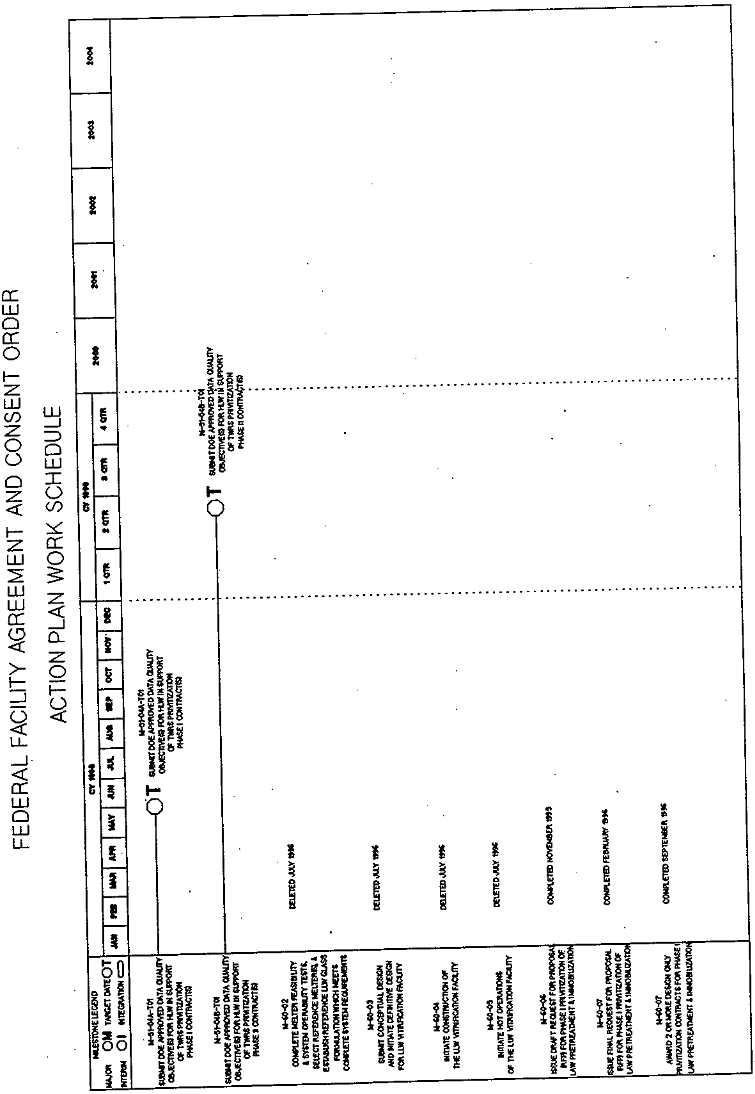

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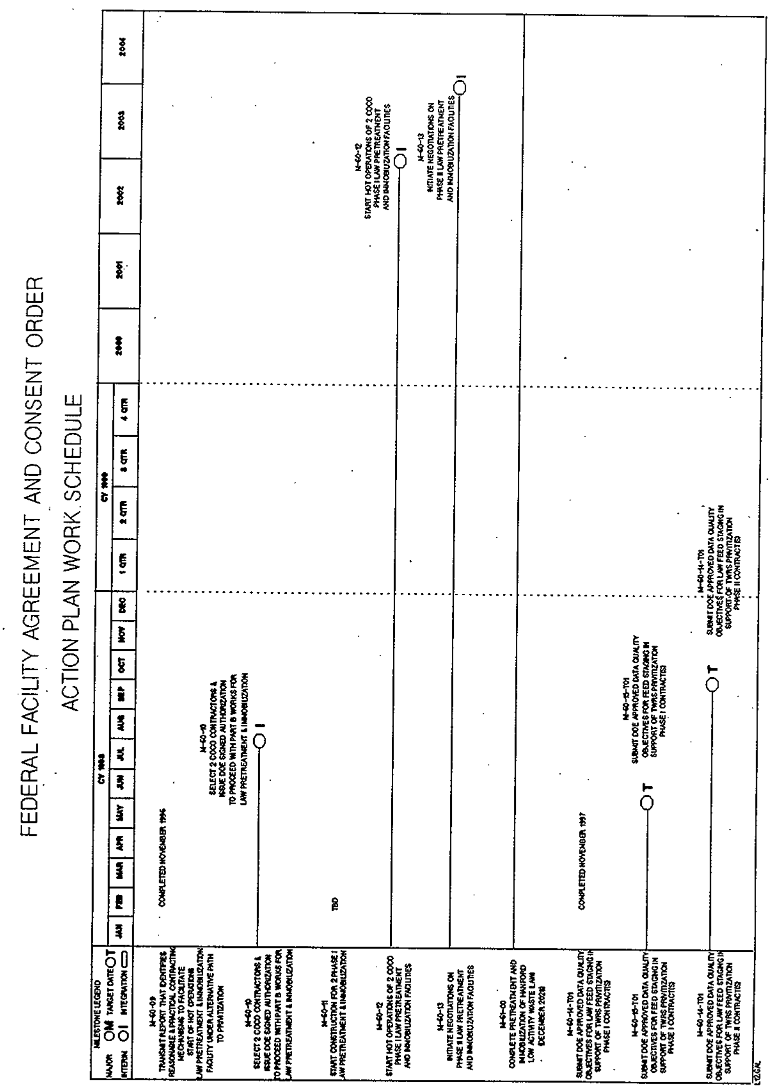

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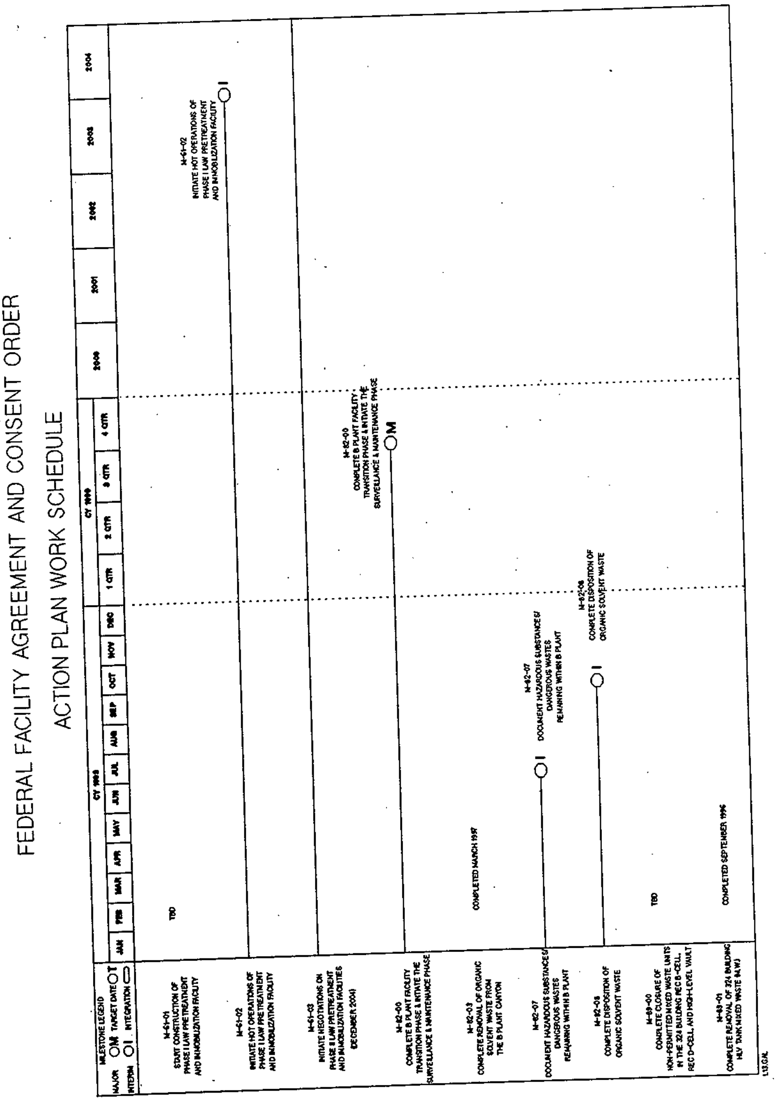

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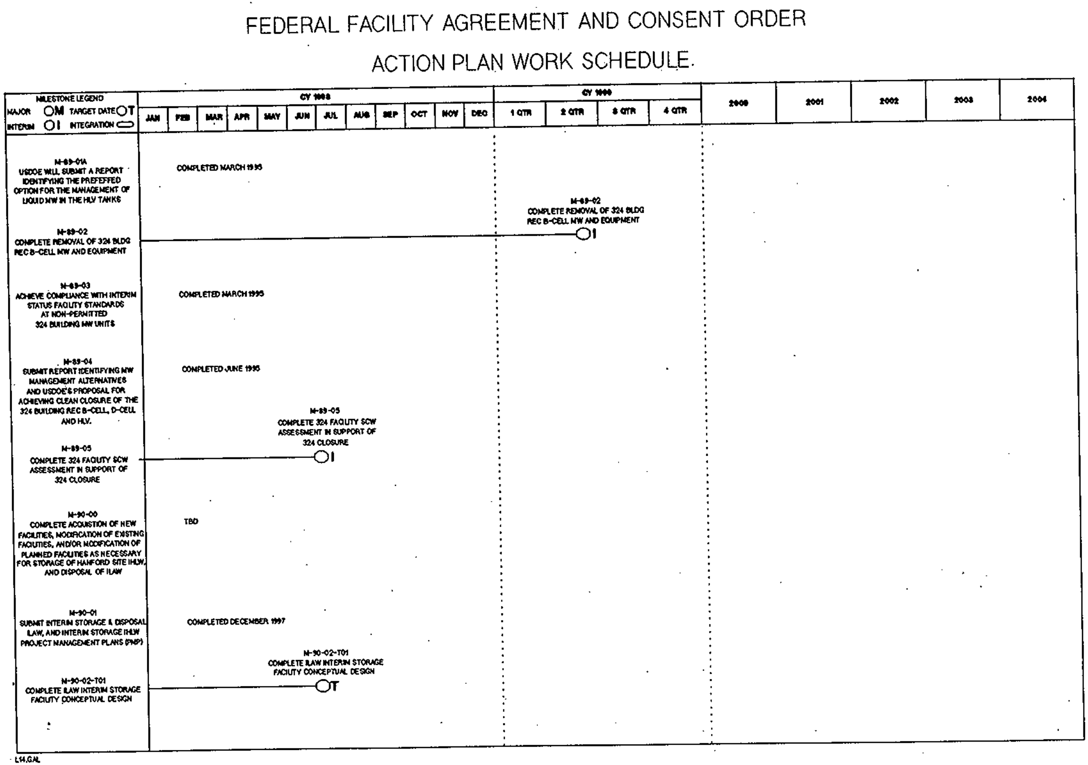

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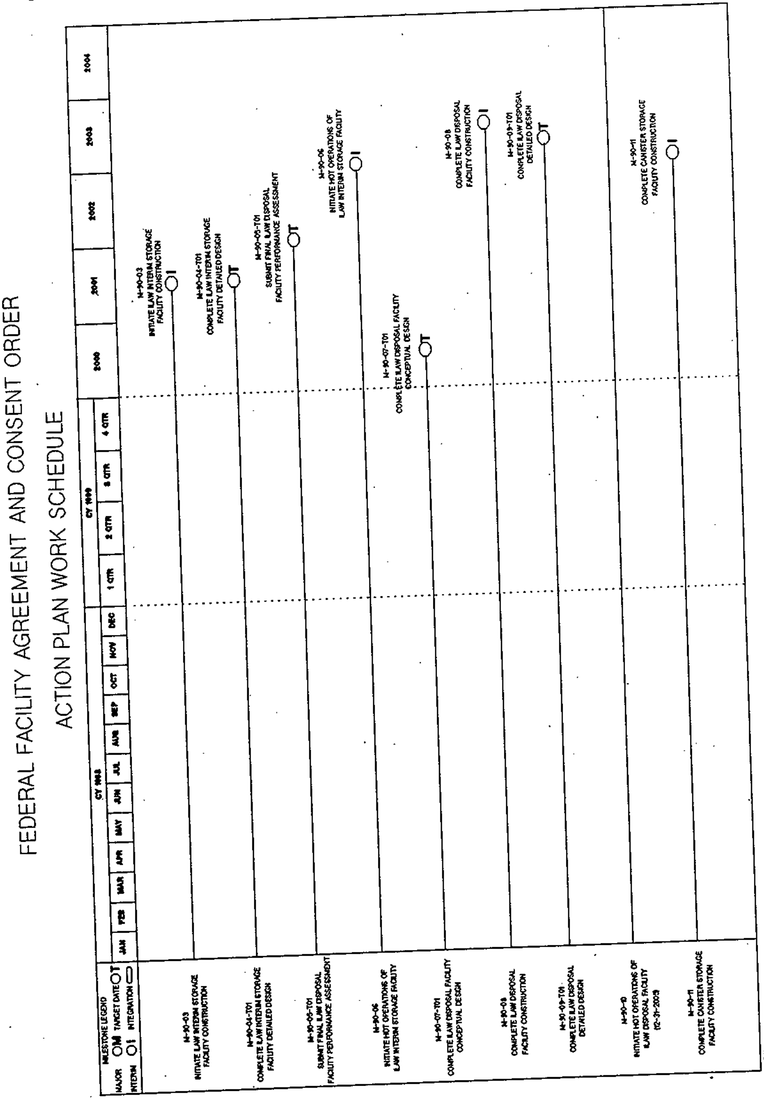

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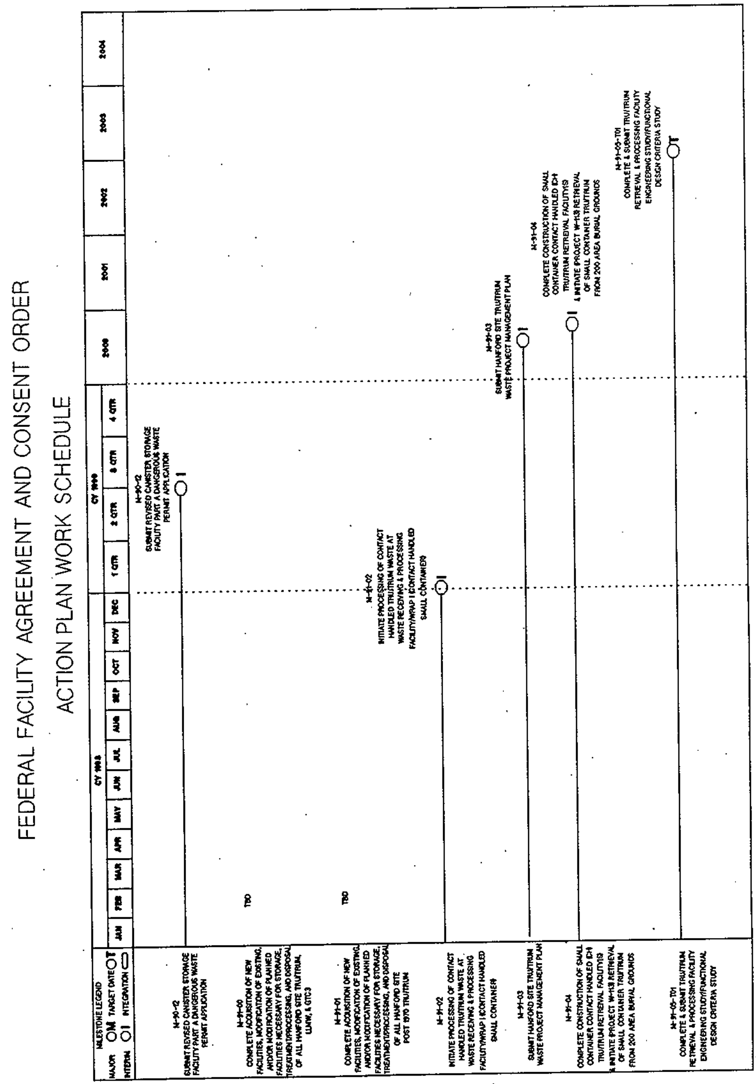

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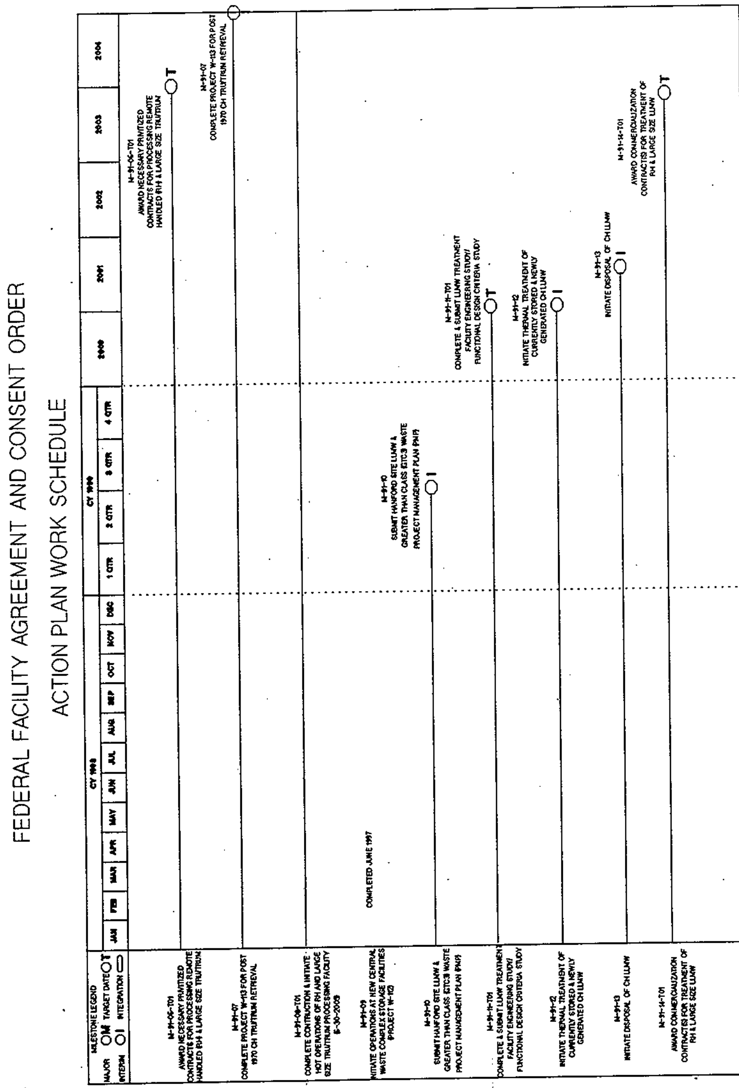

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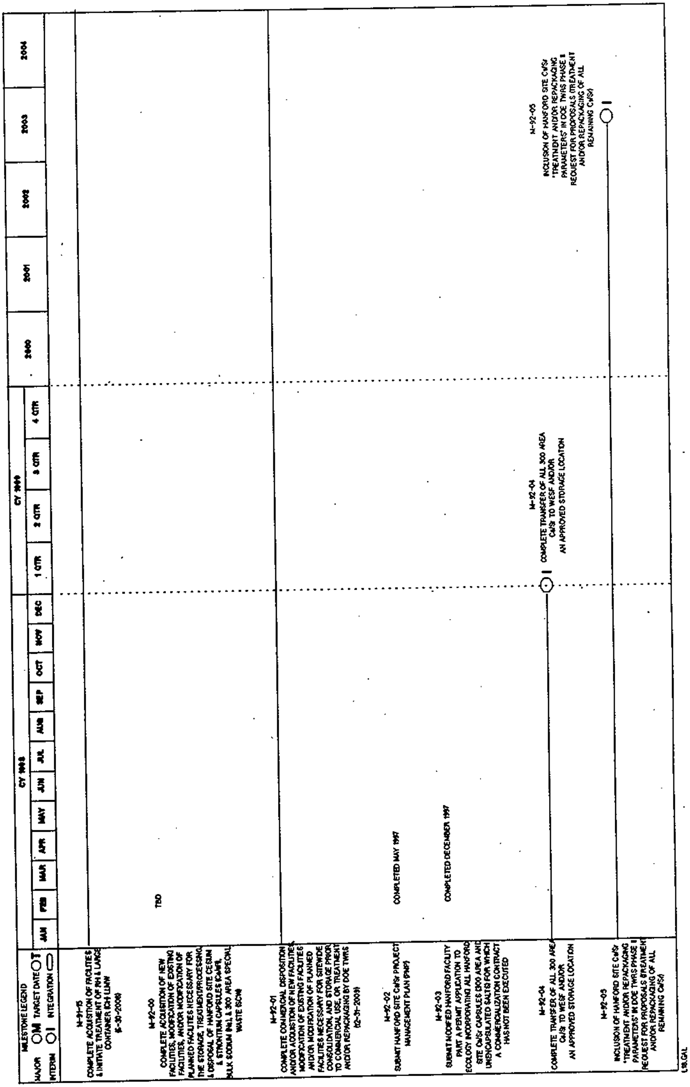

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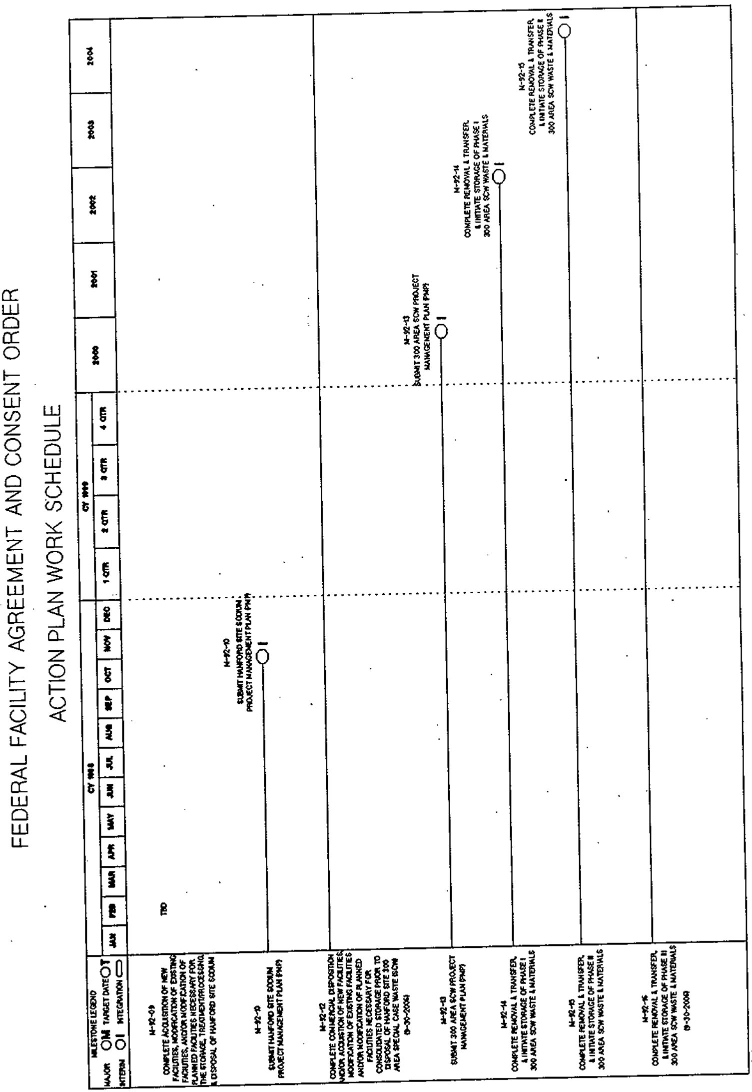

2.4.3 Central Waste Complex Stored Waste

The Hanford Facility's CWC is a RCRA interim-status storage unit for LLMW and TRU and TRUM waste. Some of the waste also is contaminated with polychlorinated biphenyls (PCB) and is regulated under the *Toxic Substances Control Act of 1976* (TSCA).

The CWC has functioned as the Hanford Facility's main solid waste storage location since 1987. During its first 10 years of operation, waste inventories at the CWC increased significantly. The lack of characterization, treatment, and disposal capabilities for handling LLMW and TRUM waste contributed to this increase.

In 1997, significantly more treatment and direct disposal activities began, which is reducing the yearly increase in the LLMW storage inventory. Additional onsite and offsite treatment activities will prepare significant volumes of LLMW for disposal. The Hanford Facility's LLMW Subtitle-C disposal site, the Subtitle-C portion of the LLBG, is expected to open for disposal operations during FY 1999; this should cause the CWC's waste inventory to begin declining by FY 2000. The Waste Isolation Pilot Plant (WIPP) is scheduled to begin receiving TRUM waste beginning in FY 1999. The opening of these facilities, in conjunction with the FY 1999 start of WRAP-1's TRUM processing line, will put the Hanford Facility on a path forward to reduce the TRUM waste stored at the CWC.

Annual goals have been established by both RL and contractor management for all types of waste generated at the Hanford Facility. Through the performance of waste minimization assessments and the selection of economically practicable options, the overall site goals are translated into specific goals for each waste stream.

2.5 WASTE MINIMIZATION

2.5.1 Waste Minimization Program Elements

Six basic elements make up the waste minimization program: top management support, characterization of waste generated and the process that generates it, waste minimization assessments, cost allocation, technology transfer, and program evaluation.

2.5.1.1 Statement of Management Support/Commitment. The RL manager and contractor management are committed to minimizing the generation of waste by giving preference to source reduction, material substitution, and environmentally sound recycling over treatment, storage, and disposal of such waste. A written policy, signed by the RL manager, covering this commitment can be found in *Hanford Site Waste Minimization and Pollution Prevention Awareness Program Plan*, DOE/RL-91-31 (RL 1991b). Management takes appropriate action to provide adequate personnel, budget, training, and resources on a continuing basis to ensure that the objectives of the waste minimization program are met.

Management further demonstrates its support by including waste minimization training in the Hanford General Employee Training program. Management also sponsors, incentive programs that reward individual and group contributions, and includes waste minimization in job performance evaluations of persons having waste minimization responsibilities.

2.5.1.2 Characterization of Waste Generation. Waste that is generated is characterized to obtain information on the quantity generated and its hazardous constituents and their concentration.

2.5.1.3 Periodic Waste Minimization Assessments. Waste minimization is to be integrated into the design of any new facility or the modification of an existing facility or process. Waste that is nonetheless generated will be assessed periodically for waste minimization potential using a formal evaluation process. This requires that an assessment team be formed to evaluate each waste-generating process selected. Cost-effective reduction opportunities that have been identified will be implemented aggressively. Funding can be sought from the Return on Investment program.

2.5.1.4 Cost Allocation System. A cost accounting system that accounts for the "true cost" of waste generated must include short- and long-term costs arising from all aspects of waste generation. These include under-use of raw materials found in the waste stream, management of the waste generated, waste disposal, and third-party liabilities if the waste is improperly disposed of. Associated costs will include those for personnel, record keeping, transportation, pollution control, equipment, treatment, storage, disposal, liability, compliance, and oversight.

2.5.1.5 Technology Transfer. The transfer of federally developed technology between laboratories and potential users is a contractual responsibility of DOE facilities and laboratories. Transfer of technologies specific to waste minimization may develop from information exchange systems, workshops, or topical conferences.

2.5.1.6 Program Evaluation. Achievements and milestones in the program are part of the contractor's performance evaluation and determination of award- and performance-based fees. The results of this evaluation by the contractor are reported by the Pollution Prevention group of the integrating contractor to RL in periodic reports.

The following success criteria are available to aid in demonstrating effective waste-minimization efforts:

- Reduced amount of all waste types
- Reduced waste management costs
- Improved regulatory compliance
- Reduced health risks
- Increased production efficiency
- Reduced accident risk
- Improved public relations.

2.5.2 Program Objectives

The objectives of the waste minimization program are as follows:

- Foster a philosophy to conserve resources and minimize waste and pollution while achieving Hanford Facility strategic objectives.
- Promote the use of nonhazardous materials in operations to minimize the potential risks to human health and the environment.
- Reduce or eliminate the generation of waste through input substitution, process modification, improved housekeeping, and closed-loop recycling to achieve minimal adverse effects to the air, water, and land.
- Comply with applicable federal and state regulations and DOE requirements for waste minimization, waste reduction, and pollution prevention.
- Characterize waste streams and develop a baseline of waste-generation data.
- Identify and implement methods and technologies for waste minimization.
- Target policies, procedures, or practices that may be barriers to waste minimization.
- Promote integration and coordination of waste generators and waste managers on waste minimization matters.
- Develop specific goals for waste minimization activities and schedules for achieving those goals.
- Enhance communication of waste minimization objectives, goals, and ideas.
- Create incentives for waste minimization.
- Collect and exchange waste minimization information through technology transfer, outreach, and educational networks.
- Develop mechanisms for fully disseminating current technical information to Hanford Facility users.

2.5.3 Location-Specific Waste Minimization

All locations that generate hazardous, mixed, and/or radioactive waste are required to have a waste minimization program in place. The implementation and effectiveness of the programs are audited regularly. The following are key components of the program.

- To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU waste that contains no hazardous or dangerous constituents.
- To minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes.
- Waste is characterized and the potential for minimization is investigated.
- Minimization goals are set annually and tracked quarterly.
- Where allowed by regulation, mixed waste is treated to remove the dangerous constituents.
- Where allowed by regulation, corrosive materials are neutralized to remove their corrosive characteristics or are packaged in a manner that ensures the integrity of the containment barriers.
- Waste handling, segregation, and certification will be performed following detailed procedures when the disposal criteria are promulgated.

2.6 TREATABILITY VARIANCES, EQUIVALENCY PETITIONS, RULEMAKING PETITIONS, AND CASE-BY-CASE EXEMPTIONS

If variances, equivalency petitions, rulemaking petitions, or case-by-case exemptions are required because of delays in the development of treatment, storage, or disposal capacity, they will be applied for in accordance with the procedures detailed in the Tri-Party Agreement (Ecology et al. 1989) and/or applicable regulations. Specific variances, exemptions, etc. that have been granted or applied for or are known to be needed in the future are covered in the applicable waste stream profile sheets (Chapter 3) and/or narrative (Chapter 4).

The Tri-Party Agreement provides for extending a schedule or deadline on receipt of a timely request for extension and when good cause exists for the requested extension. Any request for an extension must be submitted in writing and specify the following:

- The timetable and deadline or schedule for which the extension is sought
- The length of the extension sought

- The good cause for the extension
- Any related deadline or schedule that would be affected if the extension were granted.

Good causes for an extension include the following:

- An event of force majeure as defined in Article XLVII of the Tri-Party Agreement, subject to Ecology's reservation in Paragraph 147
- A delay caused by another party's failure to meet any requirement of the Tri-Party Agreement
- A delay caused by invocation of dispute resolution to the extent provided by Paragraph 30(f) and Paragraph 59(I) or judicial order
- A delay caused, or likely to be caused, by an extension granted to another deadline or schedule
- Any other event or series of events mutually agreed to by the parties as constituting good cause.

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3.0 WASTE STREAM PROFILE SHEETS

A profile sheet has been prepared for each waste stream. These sheets make up this chapter. The following paragraphs describe the data fields of each sheet. Information augmenting the data on the profile sheets is presented in Chapter 4.0. The numbers at the beginning of each of the following paragraphs refer to the section numbers on the waste stream profile sheets.

1.1 Waste stream ID. Uniquely identifies the stream.

1.2 Waste stream name. A short, descriptive name for the waste stream.

1.3.1 Stream source and history description. Describes where the waste came from, why it was generated, when it was placed into storage, and how it was managed before being stored in the current location. The generator's name is included if the waste wasn't generated at the Hanford Facility.

1.3.2 Waste category(s). Lists categories in a multiple-choice format. The box is checked that best describes the function or type of process that generated the waste.

1.3.3 Additional notes. Provides information on waste generation that cannot be supplied in the multiple-choice format.

2.1 Waste stream description. Briefly describes the physical contents of the stream.

2.2.1 Waste type. Lists options in a multiple-choice format. One box is checked for radiological content; another is checked to differentiate between contact- and remote-handled waste types.

2.2.2 Comments on radiological characteristics. Provides space for information on radiological characteristics of the waste that cannot be supplied in a multiple-choice format.

2.3.1 Matrix characteristics table. Amplifies the waste stream description in field 2.1. The "Matrix Parameter Category Code" is the treatability group code (e.g., S5320) from *DOE Treatability Group Guidance*, DOE/LLW-217 (DOE 1995). The "matrix code description" is the name that applies to the code (e.g., wood debris). For some streams, one entry makes up 100 percent of the waste. "Typical" or "range (%)" lists the estimated percentage of the waste that fits this category. The overall matrix parameter category code is the overall code from the table that describes the greatest percentage of the waste. "Overall matrix description" is the name associated with this overall code.

2.3.2 Confidence level for matrix characteristics data. Provides a subjective judgement of how accurately the physical contents of the waste are known (i.e., the data in discussed in item 2.3.1). For example, a drum that has not been inspected might be ranked "low." A low or medium ranking could imply that this stream needs further characterization.

2.3.3 Comments on matrix characteristics and/or confidence level. Provides space for information on matrix characteristics of the waste and the confidence level that cannot be supplied in the multiple-choice format.

2.4.1 Wastewater/non-wastewater under RCRA. Lists options in a multiple-choice format. The appropriate box is checked for whether, under federal LDR requirements, the waste is considered wastewater or nonwastewater. This does not apply for state-only dangerous waste.

2.4.2 Regulated contaminant table. Provides the following information in a tabular format. The "EPA/State codes" are the listed or characteristic waste codes such as D001, F005, etc. "Waste description" is the characteristic or contaminant of concern (e.g., ignitable or methyl ethyl ketone). The "LDR Subcategory" is any applicable subcategory of the waste code, e.g., Corrosive Characteristic wastes, or Radioactive High Level Wastes for D002. The LDR subcategory only applies to D001 though D011. Some profile sheets may add the constituent of concern in this field for "F-coded" waste because all known waste at the Hanford Facility falls under the F001 through F005 subcategory. Concentration of the constituent, if known, is included in the table. In many cases, the concentration is not known, so this may be left blank or "TBD." "Basis" explains how the concentration information was determined (e.g., process knowledge, lab analysis, etc.). The final column is for the regulatory-required method for treating the waste or the required concentration, as obtained from the applicable regulations. UHC information will be entered into this table when it applies to the waste.

2.4.2.1 List of any waste codes from the table for which the stream already meets established LDR treatment standards. Self-explanatory.

2.4.3 Does this waste stream contain PCBs?. Lists options in a multiple-choice format. The appropriate box is checked for polychlorinated biphenyl content and the concentration range is indicated.

2.4.4 What is the confidence level for the regulated contaminant characteristic data? Lists options in a multiple-choice format. This assigns a subjective rating to the accuracy of the information presented on contaminants, waste codes, etc. A low or medium rating implies that more needs to be done in this area.

2.4.5 Comments on regulated contaminant characteristics and/or confidence level. Provides space for comments on regulated contaminant characteristics of the waste and confidence in the accuracy of the information.

2.4.6 Will further characterization be performed? Lists options in a multiple-choice format. The appropriate box is checked and details, schedule information, and milestone numbers are given.

3.1 Is this waste stream currently stored? Lists options in a multiple-choice format. All or most streams will have "yes" checked. If the waste is currently being generated and none is stored, "no" is checked.

3.2 Current storage method. Indicates the type of storage unit.

3.3 TSD unit and building number and (if available/applicable) number of containers/tanks in each. Provides space for listing this information in a fill-in-the-blanks format.

3.4 DOE storage method compliance assessment. Lists options in a multiple-choice format. Ecology requires DOE to periodically assess its compliance with storage requirements. The appropriate box is checked to identify whether this assessment has been completed and whether or not the storage unit is in compliance. Provides space to list the date of the most recent assessment and write comments.

3.5 Applicable Tri-Party Agreement milestones related to storage. Includes milestone numbers related to waste storage. These include such items as construction of storage facilities, unit upgrades, and completion of compliance assessments, permitting, and environmental impact statements.

3.6 Current inventory for this stream. Gives the inventory for the stream in cubic meters. Typically the inventory listed is as of September 30, 1997. The volume is the total container volume (if boxes, drums, etc.), the internal filled tank volume, or the volume of waste that will have to be treated (if contaminated equipment, etc.). If only some other volume measurement (e.g., a gross volume) is available, this is explained in the comments section of field 3.6.

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years? Lists options in a multiple-choice format. "Yes" is checked for streams that were being generated from April 1997 through March 1998, or will be generated in the period ending in September 2002.

3.8 An indication of whether the generation of this waste is best described as routine, or one-time/sporadic. Lists options in a multiple-choice format.

3.9 Estimated generation projection table by fiscal year. Lists options in a multiple-choice format. The table is completed for waste projected to be generated for the next 5 fiscal years. Ecology will require that the 1999 LDR report compare the projections to the actual quantity generated.

3.10 Has there ever been any unusual release of this stream to the environment? Lists options in a multiple-choice format. Provides information on releases. For the purposes of this report, emissions allowed by permits and spills that are promptly cleaned up are not considered releases to the environment and are not included in the profile sheets. Releases that must be noted include leaks that have not been cleaned up and long-term releases not permitted under RCRA.

4.1 Is this stream currently being treated? Lists options in a multiple-choice format. The appropriate treatment box is checked and details are provided if treatment is currently under way.

4.2 Planned treatment. Lists options in a multiple-choice format. The appropriate box is checked indicating plans for treating the waste stream to meet applicable regulations.

4.3 Planned treatment method, facility, extent of treatment capacity available. Gives details of planned treatment, for both onsite TSD units and offsite facilities, as well as details of how much of the required capacity is or is not available.

4.4 Treatment schedule information. Provides space to include such information as when treatment starts and ends and how much waste will be treated each year.

4.5 Applicable Tri-Party Agreement milestone numbers, including permitting. Provides space to list appropriate milestone numbers.

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? Provides space to describe how waste minimization will be considered in developing the treatment method.

4.7 Treatability variances, equivalency petitions, rulemaking petitions, and case-by-case exemptions. Gives details of any existing or future treatability variances (40 CFR 268.44), equivalency petitions (40 CFR 268.42(c)), rulemaking petitions (WAC 173-303-910, 40 CFR 260.20), and case-by-case exemptions (WAC 173-303-140(6)).

5.1 After treatment, how will the waste stream be disposed of? Provides space to describe methods, locations, milestone numbers, variances required, etc., as applicable.

6.1 Has a waste minimization assessment been completed for the stream? Lists options in a multiple-choice format. The appropriate box is checked.

6.2 Explanation of any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream. Provides space to write explanation.

6.3 Schedule for implementing waste minimization methods. Provides space to include waste minimization schedule.

6.4 Waste reduction achieved during the calendar year and projected future reductions. Provides space to list any assumptions used in preparing the estimates.

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-A**

1.2 Waste stream name: **Backlog Soils**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Subject waste was generated in the early 1990s through various operational activities at the 200 East and 200 DST and SST systems. During FY 1994 and FY 1995, a significant effort (Tank Farms Backlog Waste Program) was undertaken to fully characterize this waste to the CWC storage requirements. This activity was completed in FY 1995, and all waste was put into compliant storage at the CWC.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☐ Materials production/recovery effluents
- ☐ Analytical laboratory waste
- ☒ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **Subject waste was selected as a Direct Disposal waste stream per DOE/RL-95-35, Direct Disposal Team Report (RL 1995a).**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste consists of soils (dirt, sand, gravel, rocks, etc.) that were excavated from the various waste tank farms. The waste was incidentally contaminated with tank waste; therefore, the waste is designated with F001 through F005 based on the "contained-in" policy. The waste is packaged in drums and boxes.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Since the waste was only incidentally contaminated with tank waste, the radiological characteristics are minimal. No shielding was utilized in the packaging of the waste.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S4000	**Soil/Gravel**	**100%**

Overall matrix parameter category code: **S4000**

Overall matrix description: **Soil/Gravel**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Waste has been verified through the Backlog Waste Program per the Backlog Waste Analysis Plan (BWAP). A Contained-In determination was approved for subject waste by Ecology. The waste is acceptable for disposal into the LLW portion of Hanford's LLBGs.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1-Trichloro-ethane**	**Spent solvent**	**<1mg/kg**	**Analysis**	**6.0mg/kg**
F002	**Methylene Chloride**	**Spent solvent**	**<1mg/kg**	**Analysis**	**30mg/kg**
F003	**Acetone & Hexone**	**Spent solvent**	**<1mg/kg**	**Analysis**	**160mg/kg**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	**<1mg/kg**	**Analysis**	**5.6mg/kg**
F005	**Methyl Ethyl Ketone**	**Spent solvent**	**<1mg/kg**	**Analysis**	**36mg/kg**
WP02	**Persistant, DW**	**NA**	**NA**	**NA**	**None**
UHCs	**NA**				

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.3 for which the stream already meets established LDR treatment standards: **All hazardous constituents are below the LDR limits. Furthermore, a "contained-in" determination was granted by Ecology to allow disposal of the subject waste into the LLW portion of Hanford's LLBGs.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **All hazardous constituents are below the LDR limits. Furthermore, a "contained-in" determination was granted by Ecology (March 1997) to allow disposal of the subject waste into the LLW portion of Hanford's LLBGs.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **Central Waste Complex. Approximately 600 packages (230 cubic meters).**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **230**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available:

4.4 Treatment schedule information:

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **None**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Hanford LLBG (LLW portion) is planned to receive the subject waste. Applicable Tri-Party Agreement milestone numbers include M-19-00 and M-19-02 (completed).**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction**

when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.

6.3 Schedule for implementing waste minimization methods: **Since subject waste is currently generated and being disposed during FY 1998, no additional waste minimization activities are planned.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-B**

1.2 Waste stream name: **200ETF Dryer Solids**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste is generated at the 200 Area Effluent Treatment Facility (200ETF). Waste generation began in FY 1995 and future waste generation is forecasted through FY 2032. The waste originates from 200ETF's thin-film dryer which removes moisture from concentrated brine solutions.**

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste consists of inorganic powders/particulates that are generated from the thin-film dryer unit at the 200ETF facility. The current inventory is mainly sodium sulfate powders. However, some future generated powders are expected to be ammonium sulfate. The waste is designated with F001 through F005 codes through the derived-from rule, and the waste is packaged in drums.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **The radiological characteristics are minimal. No shielding was utilized in the packaging of the waste.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S3140	**Salt Waste**	**100%**

Overall matrix parameter category code: **S3140**

Overall matrix description: **Salt Waste**

2.3.2 Confidence level for matrix characteristics data ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Waste has been received and verified through the Waste Specification System (WSS). The waste is acceptable for direct disposal into the Subtitle-C portion of Hanford's LLBGs.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1-Trichloro-ethane**	**Spent solvent**	**<1mg/kg**	**Analytical Data**	**6.0mg/kg**
F002	**Methylene Chloride**	**Spent solvent**	**<1mg/kg**	"	**30mg/kg**
F003	**Acetone & Hexone**	**Spent solvent**	**<4mg/kg**	"	**160mg/kg**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	**<1mg/kg**	"	**5.6mg/kg**
F005	**Methyl Mthyl Ketone**	**Spent solvent**	**<1mg/kg**	"	**36mg/kg**

UHCs **NA**

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **All hazardous constituents are below the LDR limits. Subject waste is awaiting disposal into the Subtitle-C section of Hanford's LLBGs. The waste stream inconsistently met treatment standards as generated.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **All hazardous constituents are below the LDR limits as determined by 200ETF's waste analysis.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **CWC. Approximately 300 packages (70 cubic meters).**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **70**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS). With respect to the forecasted inventory, the base assumption is that 50% of the total 200ETF dryer powder volume will be in this direct disposal waste stream. The other 50% will not meet the criteria and will require treatment. This fraction is in the RL-MLLW-02-B waste stream.**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**76**			☐
1999	**82**			☐
2000	**48**			☐

2001	38	☐
2002	69	☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available:

4.4 Treatment schedule information:

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **None**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment:

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Hanford's LLBG (Subtitle-C portion) will receive the subject waste. Waste meets established LDRs as generated. Applicable Tri-Party Agreement milestone numbers include M-19-00.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

The return-on-investment project for concentrator tank "B" sludge handling will reduce waste by 19 m3 per year in the 200ETF for 1998. The 200ETF also submitted return-on-investment proposals (not yet approved) on the following topics in FY 1997:

- **Decomposer catalyst replacement (18 m3/year)**
- **Purgewater quantity reduction (74 m3/year)**

These relate to inorganic salt waste from 200ETF treatment.

6.3 Schedule for implementing waste minimization methods: **Since the subject waste is currently generated and being disposed during FY 1998, no additional waste minimization activities are planned.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **See 6.2 above.**

6.4.1 Assumptions used in above estimates: **None**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-C**

1.2 Waste stream name: **DST and SST System LLCE**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Long-Length Contaminated Equipment (LLCE) waste is generated the maintenance and deactivation of the SST and DST systems. Ten LLCEs have been generated since 1993 and are being stored in Hanford's Subtitle-C LLBG disposal site. These ten units have been void-filled with grout and have been treated with the hazardous debris immobilization technology of macroencapsulation.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☐ Materials production/recovery effluents
- ☐ Analytical laboratory waste
- ☒ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **The waste consists of failed or deactiviated tank equipment (e.g., pumps, instrument trees, air lances, etc.) ranging up to 70 feet in length. The waste meets the defintion of hazardous debris and has been macroencapsulated to meet the Alternative Treatment Standards for Hazardous Debris (40 CFR268.45). The waste does not contain organic/carbonaceous waste.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Because the subject waste has been in contact with tank waste, some areas of the LLCE items have dose rates in excess of 200mR. For ALARA and worker safety reasons, these areas have been covered with lead shot blankets. These blankets will be removed when the LLCE items are covered with disposal backfill.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
Z1200	**Macroencapsulated Forms**	**100%**

Overall matrix parameter category code: **Z1200**

Overall matrix description: **Macroencapsulated Forms**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **All LLCE items have been verified through the Waste Specification System and the paperwork associated with disposal is complete, awaiting the initiation of disposal operations at Hanford's Subtitle-C LLBG disposal site.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1-Trichloro-ethane**	**Spent solvent**	**<100mg/kg**	**WSS**	**(1)**
F002	**Methylene Chloride**	**Spent solvent**	**<100mg/kg**	**WSS**	**(1)**
F003	**Acetone & Hexone**	**Spent solvent**	**<100mg/kg**	**WSS**	**(1)**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	**<100mg/kg**	**WSS**	**(1)**
F005	**Methyl Ethyl Ketone**	**Spent solvent**	**<100mg/kg**	**WSS**	**(1)**
D007	**TC-Chromium**	**NA**	**<1mg/kg**	**WSS**	**(1)**
D009	**TC-Mercury**	**Low Mercury**	**<1mg/kg**	**WSS**	**(1)**

(1) **Debris standards in 40 CFR 268.45**

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Waste has been macroencapsulated and meets the Alternative Treatment Standards for hazardous debris; furthermore, subject waste does not contain organic/carbonaceous waste.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **Contaminant concentration levels were determined by means of process knowledge.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☒Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if applicable/available) number of containers/tanks in each: **Hanford's LLBGs (Subtitle-C portion), 218-W-5 Trench 34**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **81**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	0			☐
1999	85			☐
2000	54			☐
2001	700			☐
2002	693			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☒Yes ☐No If yes, provide details: **Macro-encapsualted at Hanford's T-Plant Complex (FY1996 and FY1997).**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☒ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Macroencapsualtion per 40 CFR 268.45, and treatment will be performed at DST and SST system facilities. Treatment capacitiy on an as-needed basis.**

4.4 Treatment schedule information: **LLCE items are treated same year they are generated.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **Counts toward M-19-00 volume goals.**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **Determined that macroencapsulation per polyethylene entombment would minimize the amount of secondary waste generated and be ALARA for handling subject waste during loading and shipping.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **The LLCE items are placed into the Subtitle-C section of Hanford's LLBGs (218-W-5 Trenches 31 and 34). Disposal operations for these trenches is scheduled for FY1999. Tri-Party Agreement milestone M-91-13 requires initiation of disposal of LLMW.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?

☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are an ongoing activity.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-D**

1.2 Waste stream name: **183-H Solar Basin Solidified Liquids**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Waste was generated during the late 1980s from closure activities of the 183-H solar evaporation basins that were located at the H-Reactor on the Hanford Site. The waste consists of solidified evaporated liquids and seepage liquids from the facility. Treatment was required to eliminate free liquids and stabilize hazardous constituents. The waste was placed into the CWC for storage shortly after generation.**

Since the 183-H solar evaporation basin closure activities have been completed, no further generation of this waste is anticipated.

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☒ Other (explain): Run-on and seepage liquids

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **The waste consists of solidified evaporated liquids and seepage liquids from the facility. Solidification was required to eliminate free-liquids and stabilize hazardous constituents. Waste was placed into 55-gallon drums that have been over-packed into 85-gallon drums.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☐LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **All packages have mimimal dose rates (i.e., < 0.5mR) and they contain uranium up to a concentration of 350 ug/g**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
Z1000	**Immobilized Forms**	**99%**
S3113	**Inorganic Particulate Absorbents**	**1%**

Overall matrix parameter category code: **Z1000**

Overall matrix description: **Immobilized Forms**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Extensive sampling and charaterization verification work was performed on subject waste during FY 1994.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
P029	**Copper cyanide**	**NA**	**1.1/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P030	**Cyanides**	**NA**	**1.1/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P098	**Potassium cyanide**	**NA**	**1.1/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P106	**Sodium cyanide**	**NA**	**1.1/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P120	**Vanadium pentoxide**	**NA**	**5.9mg/kg**	**Treatment Technology**	**STABL**
U123	**Formic Acid**	**NA**	**<1mg/kg**	**Treatment Tech.**	**STABL(Equivalency)**

UHCs NA

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Waste has been stabilized using Sorbond LPC-II (American Colloid Company) which meets the STABL specified treatment for P120 and the equivalency treatment for U123; furthermore, all cyanide concentrations are significantly below the LDR concentrations. Subject waste does not contain organic/carbonaceous waste.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **Contaminant concentration levels were determined by means of extensive sampling and analysis.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if applicable/available) number of containers/tanks in each: **CWC buildings 2401W, 2402W - 2402WL, 2403WA - 2403WD and 2404WA - 2404WC. There are 2,700 to 2,800 total containers.**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **844**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**0**			☒
1999	**0**			☒
2000	**0**			☒
2001	**0**			☒
2002	**0**			☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details: **Waste is currently treated.**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available:

4.4 Treatment schedule information:

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting):

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **Obtained treatability equivalency from Ecology to allow stabilization in lieu of combustion treatment for formic acid (U123).**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Subject waste will be disposed of into Hanford's Subtitle-C LLBGs (218-W-5 Trenches 31 and 34) when the disposal site becomes operational for disposal of "P" and "U" listed wastes. Disposal for this waste is scheduled for FY 2000. Tri-Party Agreement milestone M-91-13 requires initiation of disposal of LLMW by FY 2001.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are an ongoing activity.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **None**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-E**

1.2 Waste stream name: **DST and SST System Soils**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Subject waste is analagous to Backlog Soils (RL-MLLW-01-A) but was received through the normal acceptance methods (i.e., not through the Backlog Waste Analysis Plan). The waste came from various operational activities at the DST and SST systems. This waste was received through FY1994, and put into compliant storage at the CWC.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **Subject waste was selected as a Direct Disposal waste stream per DOE/RL-95-35, Direct Disposal Team Report (RL 1995a).**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste consists of soils (dirt, sand, gravel, rocks, etc.) that were excavated from the various waste tank farms. The waste was incidentally contaminated with tank waste; therefore, the waste is designated with F001 through F005 based on the contained-in policy. The waste is packaged in drums and boxes.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Since the waste was only incidentally contaminated with tank waste, the radiological characteristics are minimal. No shielding was utilized in the packaging of the waste.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S4000	**Soil/Gravel**	**100%**

Overall matrix parameter category code: **S4000**

Overall matrix description: **Soil/Gravel**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **Subject waste will undergo matrix characterization verifications before it can be upgraded to "high." If some of the waste does not meet direct disposal criteria, it will be reassigned into an applicable waste stream that requires treatment (e.g., RL-MLLW-02 or -03). A contained-in determination will be sought for qualified waste.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1-Trichloro-ethane**	**Spent solvent**	**<1mg/kg**	**Process Knowledge**	**6.0mg/kg**
F002	**Methylene Chloride**	**Spent solvent**	**<1mg/kg**	**Process Knowledge**	**30mg/kg**
F003	**Acetone & Hexone**	**Spent solvent**	**<1mg/kg**	**Process Knowledge**	**160mg/kg**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	**<1mg/kg**	**Process Knowledge**	**5.6mg/kg**
F005	**Methyl Ethyl Ketone**	**Spent solvent**	**<1mg/kg**	**Process Knowledge**	**36mg/kg**

UHCs NA

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **All hazardous constituents are below the LDR limits. A "contained-in" determination will be sought from Ecology to allow disposal of subject waste into the LLW portion of Hanford's LLBGs.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The waste must undergo sampling and analysis to test for F001 through F005 constituents in preparation for a "contained-in" determination. At that time, information will be upgraded on the Waste Specification System to "high".**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Sampling and analysis is currently scheduled for FY 2000/FY 2001.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **CWC. Approximately 100 packages (25 cubic meters).**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **none**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **25**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.6 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m³	(and/or)	kg	NA
1998	**0**			☒
1999	**0**			☒
2000	**0**			☒
2001	**0**			☒
2002	**0**			☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available:

4.4 Treatment schedule information:

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **None**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **If disposal takes place in the LLW portion of Hanford's LLBGs, then a "contained-in" determination will be requried. If disposal takes place in the Subtitle-C section of Hanford's LLBGs, then no special variances are required. The LLW disposal path forward will be attempted first. If a "contained-in" determination cannot be obtained, then the Subtitle-C disposal path will be taken. Disposal is planned for FY 2000/FY 2001. Applicable Tri-Party Agreement milestone number is M-19-00.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Since subject waste is currently generated and being directly disposed, no additional waste minimization activities are planned.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-F**

1.2 Waste stream name: **State-Only Waste**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste consists of waste designated with State-only dangerous waste codes (WP02, WT02, WSC2, etc.). The waste has been generated by numerous onsite generation activities and offsite generators during the past ten years. The waste has been placed into storage at the CWC awaiting disposal into Hanford's LLBG (Subtitle-C portion).**

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☒ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☒ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **The waste is not restricted by State LDRs; however, the waste will remain under dangerous waste regulation and directly disposed into Hanford's LLBG (Subtitle-C portion).**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste consists of soils (dirt, sand, gravel, rocks, etc.), that contain State-only dangerous waste constituents. Some of the waste contains organic/carbonaceous waste constituents and will require a variance or sorting before disposal. The waste is packaged in drums and boxes.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **None**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5400	**Hetergeneous Debris**	**100%**

Overall matrix parameter category code: **S5400**

Overall matrix description: **Heterogeneous Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **Subject waste will undergo matrix characterization verifications before it can be upgraded to a high confidence level on the Waste Specification System. If some of the waste does not meet direct disposal criteria (e.g., organic/carbonaceous, etc.), it will be reassigned into an applicable waste stream requiring treatment (e.g., RL-MLLW-02 or 03).**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
WT02	**Toxic, DW**	**NA**	***	**Analysis or Knowledge**	**None**
WSC2	**Soild Corrosive**	**NA**	**pH>12.5**	"	**None**
WP02	**Persistant, DW**	**NA**	***	"	**None**
UHCs	**NA**				

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **To qualify for this waste stream, waste must designate as a State-only dangerous waste, ready for disposal as generated. Some of the waste preliminary assigned to this waste stream will not meet the above criteria or contain organic/carbonaceous waste. This waste will be reassigned to the most appropriate waste stream after matrix characterization verifications are performed.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The waste must undergo characterization verification and be upgraded to the Waste Specification System requirements before the confidence level can be High.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Characterization verification will be performed and is currently scheduled for FY 2000 - FY 2001.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **CWC. Approximately 250 packages (86 cubic meters).**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **86**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection table by fiscal year

	m^3	(and/or)	kg	NA
1998	**0**			☒
1999	**0**			☒
2000	**0**			☒

2001 **0** ☒
2002 **0** ☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **NA**

4.4 Treatment schedule information: **NA**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **None**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Since subject waste stream is limited to only State-only dangerious waste, no treatment is required; however, the waste must be disposed in Hanford's LLBG (Subtitle-C portion). Disposal is planned for FY2001. Applicable TPA milestone number is M-19-00.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous**

constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.

6.3 Schedule for implementing waste minimization methods: **No additional waste minimization activities are planned.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-G**

1.2 Waste stream name: **183-H Empty Bags**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Waste was generated during the late 1980s from closure activities of the 183-H solar evaporation basins that were located at the H-Reactor on the Hanford Site. The waste stream consists of contamination control bags that were used during basin sludge and solids removal operations. The waste was placed into the CWC for storage shortly after generation.**

Because the 183-H solar evaporation basin closure activities have been completed, no further generation of this waste is anticipated.

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **The waste stream consists of plastic bags that were used for contamination control (i.e., keeping the external surfaces of containers clean) during basin sludge and solids removal operations. Initially it was believed that the bags would meet the definition of RCRA empty containers and therefore could be disposed of as LLW. After an initial review of the waste that potentially would meet this criteria, the waste could not be verified to the level required by the project specific WAP. Therefore, none of the current waste under this waste stream will qualify as RCRA empty containers.**

This waste stream will be carried in this year's report to match other Program documentation; however, the stream will be dropped in next year's report and the waste reassigned to stream RL-MLLW-04-A.

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Radiological information confidence is high.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5310	**Plastic/Rubber Debris**	**100%**

Overall matrix parameter category code: **S5310**

Overall matrix description: **Plastic/Rubber Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Verified during 1st quarter, FY 1998.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
P029	**Copper cyanide**	**NA**	**Not determined**	**Knowledge**	**Macroencapsulation**
P030	**Cyanides**	**NA**	"	"	"
P098	**Potassium cyanide**	**NA**	"	"	"
P106	**Sodium cyanide**	**NA**	"	"	"
P120	**Vanadium pentoxide**	**NA**	"	"	"
U123	**Formic acid (Formate)**	**NA**	"	"	"

UHCs Not Applicable

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **The "organic/carbonaceous" State-only LDR is applicable to 100% of the waste. Therefore, an organic/carbonaceous waste exemption will be required prior to macroencapsulation.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **None**

2.4.6 Will further characterization be performed? ☐Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if applicable/available) number of containers/tanks in each: **CWC, buildings 2401W, 2402W - 2402WL, 2403WA - 2403WD, and 2404WA - 2404WC. 200 to 240 total containers (changes due to repackaging/overpacking operations).**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage:

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **90**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System.**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3 (and/or) kg	NA
1998		☒
1999		☒

2000 ☒
2001 ☒
2002 ☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Macroencapsulation under 40 CFR 268.45 (alternative treatment standards for hazardous debris).**

4.4 Treatment schedule information: **TBD**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-00**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe: **NA**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **The organic/carbonaceous waste State-only LDR is applicable to 100% of the waste. Therefore, an organic/carboaceous waste exemption will be required prior to macroencapsulation.**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **The disposal location and schedule for this waste is TBD waiting on RL direction on the disposition approach for the untreated 183-H basin waste. Tri-Party Agreement milestone M-91-00 requires that 1,644 m3 of LLMW be treated or directly disposed by FY 2002. Disposition of this 183-H waste would apply in meeting the milestone waste volume if treated and disposed by FY 2002.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☐No ☒NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **Waste has been in storage for greater than ten years. Waste minimization activities will be implemented when the disposition direction for the waste is determined.**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-01-H**

1.2 Waste stream name: **WC01/02 HEPA Filters**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Subject waste consists of HEPA filters and other miscellaneous debris items that are designated with the WC01 or WC02 State-only waste codes. These wastes were received into the CWC between FY 1987 through FY 1995. The WAC dangerous waste regulations deregulated these waste codes during the 1993 and 1995 amendments to the WAC. Waste residing in the CWC meeting only the WC01/02 designation was verified and disposed of into the LLBGs (LLW portion) during FY1997.**

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☒ Materials production/recovery effluents
- ☐ Analytical laboratory waste
- ☐ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **Subject waste was not restricted by State-only LDRs or the dangerous waste regulations. Since all waste meeting this criteria has been removed from the CWC and disposed of, the subject waste stream will be removed from next year's report.**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Subject waste consists of HEPA filters and other miscellaneous debris items that were designated with the WC01 or WC02 State-only waste codes. The waste was packaged in drums and boxes.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☐LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Formerly MLLW but redesignated as LLW due to a change in the WAC dangerous waste regulations.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5410	**Composite Filters**	**100%**

Overall matrix parameter category code: **S5410**

Overall matrix description: **Composite Filters**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Subject waste was verified to the requirements of the Waste Specification System.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
WC01	**Carcingenic**	**EHW**	**"Discontinued"**	**NA**	**NA**
WC02	**Carcingenic**	**DW**	**"Discontinued"**	**NA**	**NA**
UHCs	**NA**				

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Since the WAC dangerous waste regulations deregulated waste codes WC01/02, the subject waste was no longer regulated; therefore, the waste was disposed as LLW.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The waste was verified per the requirements of the Waste Specification System prior to disposal.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Verifications and disposal took place during FY1997.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☐Yes ☒No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:

3.4 DOE storage method compliance assessment
☐In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment:

3.4.2 Compliance assessment comments (explain future plans):

3.5 Applicable Tri-Party Agreement milestones related to storage:

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **196**
Date of inventory values: **FY1997**
Comments on waste inventory: **Subject volume has been disposed, volume has been listed here for accountability.**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.11.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection table by fiscal year

	m^3	(and/or)	kg	NA
1998	**0**			☒
1999	**0**			☒
2000	**0**			☒
2001	**0**			☒
2002	**0**			☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **NA**

4.4 Treatment schedule information: **NA**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **None**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Subject waste was disposed into Hanford's LLBGs (LLW portion).**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☐No ☒NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **Since subject waste is currently generated and disposed, no additional waste minimization activities are planned.**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-02-A**

1.2 Waste stream name: **183-H Solar Basin Solids**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Waste was generated during the late 1980s from closure activities of the 183-H solar evaporation basins that were located at the H-Reactor on the Hanford Site. The waste consists of precipitated crystals, solids, sludges and sandblast grit. The waste was placed into CWC for storage shortly after generation.**

Since the 183-H solar evaporation basin closure activities have been completed, no further generation of this waste is anticipated.

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☐ Materials production/recovery effluents
- ☐ Analytical laboratory waste
- ☒ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **The waste consists of precipitated crystals, solids, sludges and sandblast grit generated from the closure of the 183-H solar evaporation basin units. The waste is composed of mainly sodium nitrate salts/compounds with significant amounts of inorganic absorbants (e.g., diatomaceous earth) intermixed with the waste.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **All packages have mimimal dose rates (i.e., < 0.5mR) and they contain uranium upto a concentration of 1,700 ug/g**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S3100	**Inorganic Homogeneous Solids**	**95%**
S3113	**Inorganic Particulate Absorbents**	**5%**

Overall matrix parameter category code: **S3100**

Overall matrix description: **Inorganic Homogeneous Solids**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Extensive sampling and charaterization work was performed on subject waste as documented in the 183-H Solar Evaporation Basins closure/post-closure plan (DOE/RL 88-09) and during FY 1994 in the "183-H Basin Mixed Waste Analysis and Testing Report" (WHC-SD-100-TD-001).**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
P029	**Copper cyanide**	**NA**	**10/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P030	**Cyanides**	**NA**	**10/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P098	**Potassium cyanide**	**NA**	**10/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P106	**Sodium cyanide**	**NA**	**10/0.32mg/kg**	**Anaylsis**	**590/30mg/kg**
P120	**Vanadium pentoxide**	**NA**	**32.3mg/kg(max)**	**Analysis**	**STABL**
U123	**Formic Acid (Formate)**	**NA**	**366mg/kg(max)**	**Analysis**	**STABL(Equivalency)**
D001	**Ignitable Characteristic (Low TOC)**			**Analysis**	**DEACT & meet 268.48**
UHCs:					
Antimony			**2.88mg/kg**	**Analysis**	**2.1mg/l TCLP**
Beryllium			**0.28mg/kg**	**Analysis**	**0.014mg/l TCLP**
Nickel			**13mg/kg**	**Analysis**	**5.0mg/l TCLP**
Selenium			**0.03mg/L**	**Analysis**	**0.16mg/l TCLP**
Zinc			**9.9mg/kg**	**Analysis**	**5.3mg/l TCLP**

All UHC determinations are based on a total composition analysis. Therefore, TCLP analysis will have to be performed on these UHCs after treatment.

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Subject waste meets treatment standards for all waste codes except D001, U123, and P120. Waste requires treatment to deactivate the ignitability characteristic and, if necessary, to treat through stabilization for the UHCs. Subject waste does not contain organic/carbonaceous waste.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **Contaminant concentration levels were determined by means of extensive sampling and anaylsis and are documented in WHC-SD-W100-TD-001 and DOE/RL 88-09.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if applicable/available) number of containers/tanks in each: **CWC buildings 2401W, 2402W - 2402WL, 2403WA - 2403WD and 2404WA - 2404WC. There are 9,200 to 9,400 total containers (changes due to repackaging/overpacking operations).**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream

Total LDR volume (cubic meters): **2,452**

Date of inventory values: **9/30/97**

Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?

☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:

☐Routine ☒One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**0**			☒
1999	**0**			☒
2000	**0**			☒
2001	**0**			☒
2002	**0**			☒

3.10 Has there ever been any unusual release of this stream to the environment?

☐Yes ☒No

If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?

☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat on site
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **TBD**

4.4 Treatment schedule information: **TBD**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-00**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.

If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **Obtained a treatabilitiy equivalency Ecology to allow stabilization in lieu of combustion treatment for formic acid (U123).**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **The disposal location and schedule for this waste is TBD and is awaiting DOE-RL direction on the disposition approach for the untreated 183-H solar evaporation basin waste. Tri-Party Agreement milestone M-91-00 requires that 1,644 cubic meters of MLLW be treated or directly disposed by FY 2002. Disposition of the 183-H waste would apply in meeting the Tri-Party Agreement waste volume.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☐No ☒NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **Waste is currently generated and has been stored for greater then ten years. Waste minimization activities will be implemented when the disposition direction for subject waste is determined.**

6.3 Schedule for implementing waste minimization methods: **TBD**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **None**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-02-B**

1.2 Waste stream name: **General Inorganic Solids**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream is generated by numerous activities at the Hanford Facility and by offsite generators; however, the major waste stream contributor is the 200ETF. Hanford began accumulating the subject waste stream in 1987 and is storing it in the CWC buildings.**

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☒ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **Only one-half the salt waste generated by 200ETF is included in this waste stream. The other half which doesn't require any treatment prior to disposal is included in waste stream RL-MLLW-01-B.**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste stream consists of inorganic solid waste including inorganic particulates, inorganic absorbed liquids/sludges, inorganic paint waste, and inorganic salt waste that does not contain organic consistuents. Soil/gravel that is not contaminated with organics or PCBs is also included in this waste stream.**

One half of the 200ETF dryer solids are included in this waste since it is assumed the subject waste will require treatment for TC metals. The other half of the 200ETF facility dryer solids are under RL-MLLW-01-B.

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **The inorganic solid waste is packaged to CH levels. A small portion of the existing inventory may contain waste that is not CH although it is packaged to a CH level. The labpacks are CH waste.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S3140	**Inorganic Salt Waste**	**40-50%**
S3110	**Inorganic Particulates**	**10-15%**
S3150	**Solidified Homogeneous Solids**	**10-15%**
S3120	**Inorganic Sludges**	**5-10%**
S3130	**Inorganic Paint Waste**	**<5%**
S4000	**Soil/Gravel**	**<5%**
S5300	**Organic Debris**	**15-20%**

Overall matrix parameter category code: **S3100**

Overall matrix description: **Inorganic Solids**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory of waste has a low to medium confidence level for matrix characteristic data, since some dates back to 1987. A significant portion of the pre-1995 waste in the CWC inventory will require additional characterization to meet DOT and RCRA requirements prior to treatment.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.3 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Ignitable Char**	***	***	**DEACT & meet 268.48**
D002	**Corrosive**	**Corrosive Char**	***	***	**DEACT & meet 268.48**
D003	**Reactive**	**Reactive Cyanides**	***	***	**590/30 mg/kg**
D004	**TC-Arsenic**	**NA**	***	***	**5.0mg/l TCLP**
D005	**TC-Barium**	**NA**	***	***	**100mg/l TCLP**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**1.0mg/l TCLP**
D007	**TC-Chromium**	**NA**	***	***	**5.0mg/l TCLP**
D008	**TC-Lead**	**Lead Char**	***	***	**5.0mg/l TCLP**
D009	**TC-Mercury**	**Low Mercury**	**< 260 mg/kg**	***	**0.20mg/l TCLP**
D010	**TC-Selenium**	**NA**	***	***	**5.7mg/l TCLP**
D011	**TC-Silver**	**NA**	***	***	**5.0mg/l TCLP**
F001	**1,1,1-trichloroethane**	**Spent solvent**	**< 6.0mg/kg**	***	**6.0mg/kg**
F002	**Methylene Chloride**	**Spent solvent**	**< 30mg/kg**	***	**30mg/kg**
F003	**Acetone & Hexone**	**Spent solvent**	**< 160mg/kg**	***	**160mg/kg**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	**< 5.6mg/kg**	***	**5.6mg/kg**
F005	**Methyl Ethyl Ketone**	**Spent solvent**	**< 36mg/kg**	***	**36mg/kg**
WT01	**Toxic, EHW**	**NA**	***	***	**None (1)**
WT02	**Toxic, DW**	**NA**	***	***	**None**
WP02	**Persistant, DW**	**NA**	***	***	**None**
WSC2	**Solid Corrosive**	**NA**	**<=2.5pH**		**Remove Solid-Acid Char**

UHCs **TBD on a per-package basis during waste receipt or from characterization activities.**

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **The inorganic solid waste stream does not meet the established LDR treatment standards and requires treatment prior to disposal.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The forecast waste would include similar waste designations. The waste constituents and concentrations vary between individual waste packages in this waste stream.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to March 1995 is currently being recharacterized and this will be completed in 2000. Any waste received after March 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 Facility name and building number and number of containers/tanks (if applicable) in each:
CWC

3.4 DOE storage method compliance assessment

☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream

Total LDR volume (cubic meters): **182**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?

☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:

☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**110**			☐
1999	**110**			☐
2000	**72**			☐
2001	**58**			☐
2002	**88**			☐

3.10 Has there ever been any unusual release of this stream to the environment?

☐Yes ☒No

If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?

☒Yes ☐No If yes, provide details: **In 1998, 1 m3 of waste will be treated at Hanford's T-Plant Complex, and in 1999 100 m3 of other inorganic solids will be treated under the commercial non-thermal treatment contract with ATG. If waste is designated for both F001 through F005 spent solvents and metals, sampling and analysis data will ensure that spent solvent treatment standards are met prior to stabilization. If not, the waste will undergo appropriate treatment to destroy organics first.**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☒ Treating or plan to treat onsite

☒ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Stabilization is targeted as the treatment technology for subject waste. Treatment will be performed by means of onsite and offsite commercial treatment contracts, and by onsite treatment units (mainly Hanford's T-Plant complex). Currently, the offsite treatment capacity is limited to 100 cubic meters in FY 1999 and 100 cubic meters in FY 2000 (this is the specified contract amount in the ATG Non-Thermal Treatment Contract). The onsite treatment capacity for this type of waste is very limited (i.e., less than 10 cubic meters per year).**

4.4 Treatment schedule information: **Offsite commercial non-thermal treatment will begin during FY 1999 with the startup of the ATG Non-Thermal Treatment Contract. Subject contract has an option to extend it through FY2000 and treat an additional 100 cubic meters of this waste stream. Additional treatment contracts (onsite and/or offsite) will be obtained on an as needed basis after FY 2000. Onsite stabilization is planned to operate in years 1998-2032 on an as needed basis**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-00 and M-19-01**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group assesses waste generation, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment:
None

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Subject waste will be disposed into Hanford's LLBGs (Subtitle-C and LLW portions) depending on the waste's regulatory status after treatment. Applicable Tri-Party Agreement milestone numbers include M-19-00 and M-91-13.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are an ongoing activity.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass):
None

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-02-C**

1.2 Waste stream name: **Inorganic Labpacks**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream is generated by numerous activites on the Hanford Facility and by offsite generators; however, the major waste generator are the various onsite analytical laboratories. Hanford began accumulating this waste stream in 1987 and is storing it in the CWC Buildings.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☒ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste stream consists of inorganic aqueous and solid labpacks. A maximum of 15 gallons of aqueous liquids can be contained in each 55-gallon package. This waste will also contain various debris articles meeting the definition of organic/carbonaceous waste. Significant amounts of inorganic adsorbants are dispersed in the packages for control of failed inner containers.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **None**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S3113	**Inorganic Particulates Absorbents**	**55-65%**
X6200	**Aqueous Labpacks**	**15-20%**

X6300	**Solid Labpacks**	**5-10%**
S5300	**Organic Debris**	**15-20%**

Overall matrix parameter category code: **S6000**

Overall matrix description: **Labpacks**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory of waste has a low to medium confidence level for matrix characteristic data. A significant portion of the pre-1995 waste in the CWC inventory will require additional characterization to meet DOT and RCRA requirements prior to treatment.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Low TOC**	***	***	**DEACT & meet 268.48**
D002	**Corrosive**	**Corrosive Char**	***	***	**DEACT & meet 268.48**
D004	**TC-Arsenic**	**NA**	***	***	**5.0mg/l TCLP**
D005	**TC-Barium**	**NA**	***	***	**100mg/l TCLP**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**1.0mg/l TCLP**
D007	**TC-Chromium**	**NA**	***	***	**5.0mg/l TCLP**
D008	**TC-Lead**	**Lead Char**	***	***	**5.0mg/l TCLP**
D009	**TC-Mercury**	**Low Mercury**	**<260 mg/kg**	***	**0.20mg/l TCLP**
D010	**TC-Selenium**	**NA**	***	***	**5.7mg/l TCLP**
D011	**TC-Silver**	**NA**	***	***	**5.0mg/l TCLP**
F001	**1,1,1-Trichloroethane**	**Spent solvent**	**<6.0mg/kg**	**Analysis**	**6.0mg/kg**
F002	**Methylene Chloride**	**Spent solvent**	**<30mg/kg**	"	**30mg/kg**
F003	**Acetone & Hexone**	**Spent solvent**	**<160mg/kg**	"	**160mg/kg**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	**<5.6mg/kg**	"	**5.6mg/kg**
F005	**Methyl Ethyl Ketone**	**spent solvent**	**<36mg/kg**	"	**36mg/kg**
WT01	**Toxic, EHW**	**NA**	***	***	**None (1)**
WT02	**Toxic, DW**	**NA**	***	***	**None**
WSC2	**Solid Corrosive**	**NA**	***	***	**Remove Solid-Acid Char**

UHCs TBD on a per-package basis during waste receipt or from characterization activities.

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **If the waste is designated with organic listed waste codes (i.e., F001-005), these organics**

are below the LDR concentration levels. All other waste codes and any UHCs identified do not meet the established LDR treatment standards and require treatment prior to disposal.

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants noted above are applicable to the existing inventory. The forecast waste would include similar waste designations; however, additional listed waste codes (i.e., P and U codes) could be applied and will be added to the profile sheet when known. The waste constituents and concentrations vary between individual waste packages in this waste stream, in accordance with WAC 173-303-070(3) and (5).**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to March 1995 is currently being recharacterized and will be completed by FY 2001. Any waste received after March 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-09**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): 49
Date of inventory values: 9/30/97
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	7			☐
1999	7			☐
2000	5			☐
2001	5			☐
2002	7			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☒ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Deactivation and/or stabilization is the planned treatment option for inorganic labpacks. WRAP Module-1 is the planned treatment facility. It is anticipated that WRAP-1 could process 10 to 15 cubic meters of LLMW labpack waste per year.**

4.4 Treatment schedule information: **Treatment of subject waste is not planned until after FY 2001.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-00**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group accesses waste generation, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment:
TBD

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Subject waste will be disposed into Hanford's LLBGs (Subtitle-C and LLW portions) depending on the waste's regulatory status after treatment. Applicable Tri-Party Agreement milestone number is M-19-00.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are an ongoing activity.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **none: no waste was treated during the calendar year.**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-03-A**

1.2 Waste stream name: **General Organic Solids**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream is generated by numerous activities on the Hanford Facility and by offsite generators; however, the major contributor to the waste stream is DST and SST system activities. Hanford began accumulating subject waste stream in 1987 and storing it in the CWC buildings.**

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☒ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste stream consists of organic contaminated solids including particulates, absorbed liquids/sludges, paint waste, soils, and resins. Heavy metals are typically associated with this waste. Waste stream PCB constituents are regulated under TSCA.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste stream is packaged to CH levels. A small portion of the existing inventory may contain waste that is not CH although it is packaged to a CH level. The labpack waste is contact handled.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S4000	**Soil/Gravel**	**50-60%**
S3100	**Inorganic Solids**	**10-15%**

S5440	**Predominantly Organic Debris**	**25-30%**
S3200	**Organic Homogeneous Solids**	**10-15%**

Overall matrix parameter category code: **S3200**

Overall matrix description: **Organic Homogeneous Solids**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory of waste has a low to medium confidence level for matrix characteristic data. A significant portion of the pre-1995 waste in the CWC inventory will require additional characterization to meet DOT and RCRA requirements prior to treatment.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Ignitable Char**	***	***	**DEACT & meet 268.48**
D002	**Corrosive**	**Corrosive Char**	***	***	**DEACT & meet 268.48**
D003	**Reactive**	**Reactive Cyanides**	***	***	**590/30 mg/kg**
D004	**TC-Arsenic**	**NA**	***	***	**5.0 mg/l TCLP**
D005	**TC-Barium**	**NA**	***	***	**100 mg/l TCLP**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**1.0 mg/l TCLP**
D007	**TC-Chromium**	**NA**	***	***	**5.0 mg/l TCLP**
D008	**TC-Lead**	**Lead Char**	***	***	**5.0 mg/l TCLP**
D009	**TC-Mercury**	**Low Mercury**	**< 260 mg/kg**	***	**0.20 mg/l TCLP**
D010	**TC-Selenium**	**NA**	***	***	**5.7 mg/l TCLP**
D011	**TC-Silver**	**NA**	***	***	**5.0 mg/l TCLP**
D012	**Endrin**	**NA**	***	***	**0.13 mg/kg & meet 268.48**
D016	**2,4-D**	**NA**	***	***	**10 mg/kg & meet 268.48**
D018	**Benzene**	**NA**	***	***	**10 mg/kg & meet 268.48**
D019	**Carbon Tetrachloride**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D020	**Chlordane**	**NA**	***	***	**0.26 mg/kg & meet 268.48**
D021	**Chlorobenzene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D022	**Chloroform**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D023	**o-Cresol**	**NA**	***	***	**5.6 mg/kg & meet 268.48**
D026	**Cresol**	**NA**	***	***	**11.2 mg/kg & meet 268.48**
D027	**p-Dichlorobenzene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D028	**1,2-Dichloroethane**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D029	**1,1-Dichlorethylene**	**NA**	***	**	**6.0 mg/kg & meet 268.48**
D030	**2,4-Dinitrotoluene**	**NA**	***	***	**140 mg/kg & meet 268.48**
D031	**Heptachlor**	**NA**	***	***	**0.066 mg/kg & meet 268.48**
D033	**Hexachlorobutadiene**	**NA**	***	***	**5.6 mg/kg & meet 268.48**
D034	**Hexachloroethane**	**NA**	***	***	**30 mg/kg & meet 268.48**
D035	**Methyl Ethyl Ketone**	**NA**	***	***	**36 mg/kg & meet 268.48**
D036	**Nitrobenzene**	**NA**	***	***	**14 mg/kg & meet 268.48**

D037	**Pentachlorophenol**	**NA**	***	***	**7.4 mg/kg & meet 268.48**
D038	**Pyridine**	**NA**	***	***	**16mg/kg & meet 268.48**
D039	**Tetracholorethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D040	**Trichloroethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D043	**Vinyl Chloride**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
F001	**1,1,1-Trichloroethane**	**Spent solvent**	***	***	**6.0 mg/kg**
F002	**Methylene Chloride**	**Spent solvent**	***	***	**30 mg/kg**
F003	**Acetone & Hexone**	**Spent solvent**	***	***	**160 mg/kg**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	***	***	**5.6 mg/kg**
F005	**Methyl Ethyl Ketone**	**Spent solvent**	***	***	**36 mg/**
WT01	**Toxic, EHW**	**NA**	***	***	**None (1)**
WT02	**Toxic, DW**	**NA**	***	***	**None**
WP02	**Persistant, DW**	**NA**	***	***	**None**
WSC2	**Solid Corrosive**	**NA**	***	***	**Remove Solid-Acid Char**

UHCs TBD on a per package basis during waste receipt or from characterization.

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **The organic solids waste stream does not meet the established LDR treatment standards and requires treatment prior to disposal.**

2.4.3 Does this waste stream contain PCBs?

☒Yes ☐No ☐Unknown.

If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?

☒Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.

☒<50 ppm ☒≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?

☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The forecast waste would include similar waste designations (additional waste codes could be included). The waste constituents and concentrations vary between individual waste packages in this waste stream in accordance with WAC 173-303-070(3) and (5). Approximately 4% of the waste contains PCBs in concentrations greater than 50ppm. The majority of this waste will contain organic/carbonaceous waste per the Washington State LDRs.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to March 1995 is currently being recharacterized and will be completed in 2001. Any waste received after March 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **NA**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **598**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection table by fiscal year

	m^3	(and/or)	kg	NA
1998	**46**			☐
1999	**55**			☐
2000	**84**			☐
2001	**73**			☐
2002	**70**			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☒ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Thermal treatment is the planned treatment method; ATG Thermal Treatment Contract is the planned treatment facility (commercial); and the treatment capacity is 717 cubic meters per year beginning in FY 2001.**

4.4 Treatment schedule information: **ATG Thermal Treatment Contract is contracted for a five year base period (FY 2001 - FY 2005) with five - one year option years (FY 2006 - FY 2010). Additional capacity will be procured as-required.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-91-12**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Subject waste will be disposed into Hanford's LLBGs (Subtitle-C and LLW portions) depending on the waste's regulatory status after treatment. Applicable Tri-Party Agreement milestone number is M-91-13.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are ongoing.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **TBD**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-03-B**

1.2 Waste stream name: **Organic Labpacks**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream is generated by numerous activities on the Hanford Facility and by offsite generators. However, the major waste generators are the various onsite analytical laboratories. Hanford began accumulating the subject waste stream and storing it in the CWC buildings in 1987.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Facility or equipment operation and maintenance waste
- ☒ Discarded excess or expired materials
- ☒ R&D/R&D laboratory waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☐ Materials production/recovery effluents
- ☒ Analytical laboratory waste
- ☐ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste stream consists of organic, organic-aqueous and solid labpacks. A maximum of 15 gallons of liquids can be contained in each 55-gallon package. This waste will also contain various debris articles meeting the definition of organic/carbonaceous waste. Significant amounts of inorganic and organic absorbants are dispersed in the packages for control of failed inner containers.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **None**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S3113	**Inorganic Particulates Absorbents**	**30-40%**
S3212	**Organic Absorbents**	**30-40%**

X6100	**Organic Labpacks**	**15-20%**
X6300	**Solid Labpacks**	**5-10%**
S5440	**Predominantly Organic Debris**	**15-20%**

Overall matrix parameter category code: **S6000**

Overall matrix description: **Labpacks**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory of waste has a low to medium confidence level for matrix characteristic data; whereas, the confidence level for the forecast waste is medium. A significant portion of the pre-1995 waste in the CWC inventory will require additional characterization to meet DOT, RCRA and TSCA requirements prior to treatment.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Low TOC**	***	***	**DEACT & meet 268.48**
D002	**Corrosive**	**Corrosive Char**	***	***	**DEACT & meet 268.48**
D004	**TC-Arsenic**	**NA**	***	***	**5.0mg/l TCLP**
D005	**TC-Barium**	**NA**	***	***	**100mg/l TCLP**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**1.0mg/l TCLP**
D007	**TC-Chromium**	**NA**	***	***	**5.0mg/l TCLP**
D008	**TC-Lead**	**Lead Char**	***	***	**5.0mg/l TCLP**
D009	**TC-Mercury**	**Low Mercury**	**< 260 mg/kg**	***	**0.20mg/l TCLP**
D010	**TC-Selenium**	**NA**	***	***	**5.7mg/l TCLP**
D011	**TC-Silver**	**NA**	***	***	**5.0mg/l TCLP**
D012	**Endrin**	**NA**	***	***	**0.13 mg/kg & meet 268.48**
D016	**2,4-D**	**NA**	***	***	**10 mg/kg & meet 268.48**
D018	**Benzene**	**NA**	***	***	**10 mg/kg & meet 268.48**
D019	**Carbon Tetrachloride**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D020	**Chlordane**	**NA**	***	***	**0.26 mg/kg & meet 268.48**
D021	**Chlorobenzene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D022	**Chloroform**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D023	**o-Cresol**	**NA**	***	***	**5.6 mg/kg & meet 268.48**
D026	**Cresol**	**NA**	***	***	**11.2 mg/kg & meet 268.48**
D027	**p-Dichlorobenzene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D028	**1,2-Dichloroethane**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D029	**1,1-Dichlorethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D030	**2,4-Dinitrotoluene**	**NA**	***	***	**140 mg/kg & meet 268.48**
D031	**Heptachlor**	**NA**	***	***	**0.066 mg/kg & meet 268.48**
D033	**Hexachlorobutadiene**	**NA**	***	***	**5.6 mg/kg & meet 268.48**
D034	**Hexachloroethane**	**NA**	***	***	**30 mg/kg & meet 268.48**
D035	**Methyl Ethyl Ketone**	**NA**	***	***	**36 mg/kg & meet 268.48**
D036	**Nitrobenzene**	**NA**	***	***	**14 mg/kg & meet 268.48**
D037	**Pentachlorophenol**	**NA**	***	***	**7.4 mg/kg & meet 268.48**

D038	Pyridine	NA	***	***	16mg/kg & meet 268.48
D039	Tetracholorethylene	NA	***	***	6.0 mg/kg & meet 268.48
D040	Trichloroethylene	NA	***	***	6.0 mg/kg & meet 268.48
D043	Vinyl Chloride	NA	***	***	6.0 mg/kg & meet 268.48
F001	1,1,1-Trichloroethane	Spent solvent	***	***	6.0 mg/kg
F002	Methylene Chloride	Spent solvent	***	***	30 mg/kg
F003	Acetone & Hexone	Spent solvent	***	***	160 mg/kg
F004	o-Cresol & p-Cresol	Spent solvent	***	***	5.6 mg/kg
F005	Methyl Ethyl Ketone	Spent solvent	***	***	36 mg/kg
F022	Process Waste	Tetra-, penta-, or hexachloro-benzenes		***	Various
P012	Arsenic Acid	NA	***	***	5.0 mg/l
P022	Carbon Disulfide	NA	***	***	CMBST
P023	Chloroacetaldehyde	NA	***	***	CMBST
P030	Cyanide	NA	***	***	590/30 mg/kg
P102	Propargyl Alcohol	NA	***	***	CMBST
U001	Acetaldehyde	NA	***	***	CMBST
U002	Acetone	NA	***	***	160 mg/kg
U003	Acetonitrile	NA	***	***	CMBST
U004	Acetophenone	NA	***	***	9.7 mg/kg
U006	Acetyl Chloride	NA	***	***	CMBST
U019	Benzene	NA	***	***	10 mg/kg
U025	Bis(2-Chloroethyl)ether	NA	***	***	6.0 mg/kg
U031	n-Butyl Alcohol	NA	***	***	2.6 mg/kg
U044	Chloroform	NA	***	***	6.0 mg/kg
U056	Cyclohexane	NA	***	***	CMBST
U057	Cyclohexanone	NA	***	***	CMBST
U080	Methylene Chloride	NA	***	***	30 mg/kg
U103	Dimethyl Sulfate	NA	***	***	CMBST
U108	1,4-Dioxane	NA	***	***	CMBST
U112	Ethyl Acetate	NA	***	***	33 mg/kg
U117	Ethyl Ether	NA	***	***	160 mg/kg
U121	Trichloromonofluoromethane	NA	***	***	30 mg/kg
U123	Formic Acid	NA	***	***	CMBST
U133	Hydrazine	NA	***	***	CMBST
U134	Hydrogen Fluoride	NA	***	***	NEUTR
U144	Lead Acetate	NA	***	***	0.37 mg/kg
U154	Methanol	NA	***	***	CMBST
U159	Methyl Ethyl Ketone	NA	***	***	36 mg/kg
U160	Methyl Ethyl Ketone Peroxide	NA	***	***	CMBST
U161	Methyl Isobutyl Ketone	NA	***	***	33 mg/kg
U162	Methyl Methacrylate	NA	***	***	160 mg/kg
U165	Naphthalene	NA	***	***	5.6 mg/kg
U169	Nitrobenzene	NA	***	***	14 mg/kg
U170	p-Nitropropane	NA	***	***	29 mg/kg
U187	Phenacetin	NA	***	***	16 mg/kg
U188	Phenol	NA	***	***	6.2 mg/kg
U189	Phosphorus Sulfide	NA	***	***	CMBST
U196	Pyridine	NA	***	***	16 mg/kg
U203	Safrole	NA	***	***	22 mg/kg
U210	Tetracholorethylene	NA	***	***	6.0 mg/kg
U211	Carbon Tetrachloride	NA	***	***	6.0 mg/kg
U213	Tetrahydrofuran	NA	***	***	CMBST
U218	Thioacetamide	NA	***	***	CMBST
U220	Toluene	NA	***	***	10 mg/kg
U226	1,1,1-Trichloroethane	NA	***	***	6.0 mg/kg
U228	Trichloroethylene	NA	***	***	6.0 mg/kg

U239	**Xylenes**	**NA**	***	***	**30 mg/kg**
U359	**2-Ethoxyethanol**	**NA**	***	***	**CMBST**
WT01	**Toxic, EHW**	**NA**	***	***	**None (1)**
WT02	**Toxic, DW**	**NA**	***	***	**None**
WP01	**Persistant, EHW**	**NA**	***	***	**None (1)**
WP02	**Persistant, DW**	**NA**	***	***	**None**
WSC2	**Solid Corrosive**	**NA**	***	***	**Remove Solid-Acid Char**

UHCs TBD on a per-package basis during waste receipt or from characterization activities.

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Waste does not meet the established LDR treatment standards for any waste codes and requires treatment prior to disposal.**

2.4.3 Does this waste stream contain PCBs?
☒Yes ☐No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☒Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☒<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants noted above are applicable to the existing inventory. The forecast waste would include similar waste designations. The waste constituents and concentrations vary between individual waste packages in this waste stream, in accordance with WAC 173-303-070(3) and (5).**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to March 1995 is currently being recharacterized and will be completed by FY 2001. Any waste received after March 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-09**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **309**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10:

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**33**			☐
1999	**32**			☐
2000	**38**			☐
2001	**38**			☐
2002	**36**			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

- ☐ No treatment required (skip to 5.0)
- ☐ Treating or plan to treat onsite
- ☒ Treating or plan to treat offsite
- ☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Thermal treatment is the planned treatment method; ATG Thermal Treatment Contract is the planned treatment facility (commercial); and the treatment capacity is 717 cubic meters per year beginning in FY 2001. As required, stabilization will follow thermal treatment.**

4.4 Treatment schedule information: **ATG Thermal Treatment Contract is contracted for a five-year base period (FY 2001 - FY 2005) with five - one year option years (FY 2006 - FY 2010). Additional capacity will be procured as-required.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-12**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe: **NA, offsite treatment.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment:
TBD

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Subject waste will be disposed into Hanford's LLBGs (Subtitle-C and LLW portions) depending on the waste's regulatory status after treatment. Applicable Tri-Party Agreement milestone number is M-91-13.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are an ongoing activity.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass):
None

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-04-A**

1.2 Waste stream name: **General Debris**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream consists of hazardous debris including inorganic debris, metal debris, organic debris, plastic/rubber debris, and heterogeneous debris. If the debris is contaminated with PCBs at concentrations greater than 50 ppm it is not included in this waste stream and is considered organic solids. Contaminated steel shielding is also included in this waste stream. This waste stream is generated by numerous activities on the Hanford Facility and by offsite generators.**

Hanford began accumulating the subject waste in the CWC buildings during 1987. The waste is awaiting treatment at Hanford and through commercial treatment contracts.

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **This waste stream includes waste from the Environmental Restoration Program.**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Waste stream is comprised mostly of debris type materials (plastic, wood, rubber, rags, piping, etc).**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **The debris waste is packaged to contact handled (CH) levels. A small portion of the existing inventory may contain waste that is not CH although it is packaged to a CH level.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5300	**Organic Debris**	**56%**
S5110	**Metal Debris**	**20%**
S5120	**Inorganic Non-metal Debris**	**17%**
S5400	**Heterogeneous Debris**	**7%**

Overall matrix parameter category code: **S5000**

Overall matrix description: **Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory has a high confidence level for matrix characteristic data, whereas the confidence level for the forecast waste characteristic data is low to medium.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Ignitable Char**	***	**Treatment Technology**	**Alternative Treatment Stds. For Haz. Debris (40 CFR 268.45)**
D002	**Corrosive**	**Corrosive Char**	***	"	"
D003	**Reactive**	**Reactive Cyanides**	***	"	"
D004	**TC-Arsenic**	**NA**	***	"	"
D005	**TC-Barium**	**NA**	***	"	"
D006	**TC-Cadmium**	**Cadmium Char**	***	"	"
D007	**TC-Chromium**	**NA**	***	"	"
D008	**TC-Lead**	**Lead Char**	***	"	"
D009	**TC-Mercury**	**Low Mercury**	**<260 mg/kg**	"	"
D010	**TC-Selenium**	**NA**	***	"	"
D011	**TC-Silver**	**NA**	***	"	"
D012	**Endrin**	**NA**	***	"	"
D018	**Benzene**	**NA**	***	"	"
D019	**Carbon Tetrachloride**	**NA**	***	"	"
D022	**Chloroform**	**NA**	***	"	"
D026	**Cresol**	**NA**	***	"	"
D027	**p-Dichlorobenzene**	**NA**	***	"	"
D028	**1,2-Dichloroethane**	**NA**	***	"	"
D029	**1,1-Dichlorethylene**	**NA**	***	"	"
D030	**2,4-Dinitrotoluene**	**NA**	***	"	"
D031	**Heptachlor**	**NA**	***	"	"
D033	**Hexachlorobutadiene**	**NA**	***	"	"
D034	**Hexachloroethane**	**NA**	***	"	"
D035	**Methyl Ethyl Ketone**	**NA**	***	"	"
D036	**Nitrobenzene**	**NA**	***	"	"

D037	Pentachlorophenol	NA	***	"	"
D038	Pyridine	NA	***	"	"
D039	Tetracholorethylene	NA	***	"	"
D040	Trichloroethylene	NA	***	"	"
D043	Vinyl Chloride	NA	***	"	"
F001	1,1,1-Trichloroethane	Spent solvent	***	"	"
F002	Methylene Chloride	Spent solvent	***	"	"
F003	Acetone & Hexone	Spent solvent	***	"	"
F004	o-Cresol & p-Cresol	Spent solvent	***	"	"
F005	Methyl Ethyl Ketone	Spent solvnet	***	"	"
P029	Copper Cyanide	NA	***	"	"
P030	Cyanides	NA	***	"	"
P098	Potassium Cyanide	NA	***	"	"
P102	Propargyl Alcohol	NA	***	"	"
P106	Sodium Cyanide	NA	***	"	"
P120	Vanadium Pentoxide	NA	***	"	"
U002	Acetone	NA	***	"	"
U006	Acetyl Chloride	NA	***	"	"
U031	n-Butyl Alcohol	NA	***	"	"
U057	Cyclohexanone	NA	***	"	"
U080	Methylene Chloride	NA	***	"	"
U123	Formic Acid	NA	***	"	"
U151	Mercury	Low Mercury	< 260 mg/kg Hg	"	"
U159	Methyl Ethyl Ketone	NA	***	"	"
U161	Methyl Isobutyl Ketone	NA	***	"	"
U189	Phosphorus Sulfide	NA	***	"	"
U196	Pyridine	NA	***	"	"
U220	Toluene	NA	***	"	"
U239	Xylenes	NA	***	"	"
WT01	Toxic, EHW	NA	***	***	None (1)
WT02	Toxic, DW	NA	***	***	None
WP01	Persistant, EHW	NA	***	***	None (1)
WP02	Persistant, DW	NA	***	***	None
WSC2	Solid Corrosive	NA	***	***	Remove Solid-Acid Characteristic

UHCs Identification not required when using the alternative treatment standards for hazardous debris.

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

The combination of waste codes varies on a per-package basis in accordance with WAC 173-303-070(3) and (5).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **The debris waste stream does not meet the established LDR treatment standards and requires treatment prior to disposal. Furthermore, the stream contains organic/carbonaceous waste that exceeds the State-only LDRs.**

2.4.3 Does this waste stream contain PCBs?

☒Yes ☐No ☐Unknown.

If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☒No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☒<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The forecast waste could designate as D001-D043, F001-F005, PXXX, and UXXX.**

The amount of debris contaminated with <50 ppm PCBs is <1%.

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to 1995 is currently being characterized and will be completed in 2000. Any waste received after 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☒Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-09 and M-91-10**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **2860**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**308**			☐
1999	**415**			☐
2000	**549**			☐
2001	**500**			☐
2002	**614**			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☒Yes ☐No If yes, provide details: **In 1998, 48 m3 of debris will be treated in two different treatment demonstrations, and 460 m3 of debris will be treated commercially.**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☒ Treating or plan to treat onsite
☒ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Macroencapsulation (onsite or commerical) or other debris immobilization technologies are the planned treatment options for debris waste.**

4.4 Treatment schedule information: **Onsite macroencapsulation is planned to operate 1998-2032 and commercial macroencapsulation will be used in years 1999-2001.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-00, M-19-01, M-91-10**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group assesses generation of waste, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment:
FY 1998 Macro-Secure Project: Requires an "organic/carbonaceous LDR waiver" from the EPA Regional Administrator to allow macroencapsulation of 700 drums of hazardous debris containing organic/carbonaceous waste (FY 1998 activity).

FY 1999 - FY 2001 Commercial Non-Thermal Treatment Project: Requires an "organic/carbonaceous LDR waiver" from Ecology to allow macroencapsulation of 1,660 m3 of hazardous debris containing organic/carbonaceous waste (FY 1999 - 2000 activity).

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Hanford LLBG (Subtitle-C portion) disposal. Future plans may include offsite disposal. Applicable Tri-Party Agreement milestone numbers are M-19-00, M-91-10, and M-91-13.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

An assessment was conducted on light ballasts containing PCBs. Funding has been identified for FY 1998 to replace some of the ballasts prior to failure to avoid potential wastes that could otherwise result.

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are an ongoing activity.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **TBD**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-04-B**

1.2 Waste stream name: **FY97 Macroencapsulated Pilot Program**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This treated debris waste orginated from the Backlog Waste Program and was macroencapsualted during FY 1997 under the Macroencapsulation Pilot Program. The waste was orginally placed into storage during FY1994/95. During FY1997, the subject waste was sent to Allied Technology Group (ATG, Richland, WA) for compaction. After compaction, the waste was taken to Hanford's T-Plant Complex were it was macroencapsulated inside polyethyene tubes. These tubes (22 units) were then placed into Hanford's LLBG (SubTitle-C portion) awaiting final disposal operations (scheduled for FY1999).**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **The waste consists of macroencapsulated inorganic debris (pipes, pumps, rubble, etc.) and organic/carbonacous waste debris (PPE, plastic, paper, wood, etc.). The waste meets the defintion of hazardous debris and has been macroencapsualted to meet the Alternative Treatment Standards for Hazardous Debris (40 CFR268.45). The treated waste contains organic/carbonaceous waste for which an Economic Hardship Exemption to the organic/carbonaceous waste LDR was granted by Ecology.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Subject waste has been in contact with tank waste; therefore, similar radiological constituents reside on this waste as found in tank waste; however, all waste is contact-handled. No lead shielding is required for this waste.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
Z1200	**Macroencapsualted Forms**	**100%**

Overall matrix parameter category code: **Z1200**

Overall matrix description: **Macroencapsualted Forms**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **All of the subject waste is macroencapsualted an has been verified through the Waste Specification System. Paperwork associated with disposal is complete and is awaiting the initiation of disposal operations of Hanford's LLBG (Subtitle-C portion).**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1-Trichloro-ethane**	**Spent solvent**	**<100mg/kg**	**Treatment Technology**	**(1)**
F002	**Methylene Chloride**	**Spent solvent**	**<100mg/kg**	"	**(1)**
F003	**Acetone & Hexone**	**Spent solvent**	**<100mg/kg**	"	**(1)**
F004	**o-Cresol & p-Cresol**	**Spent solvent**	**<100mg/kg**	"	**(1)**
F005	**Methyl Ethyl Ketone**	**Spent solvent**	**<100mg/kg**	"	**(1)**
D007	**Chromium**	**NA**	**Unknown**	"	**(1)**
D008	**Lead**	**TC-Lead**	**Unknown**	"	**(1)**
WT01	**Toxic, EHW**	**NA**	**Unknown**	"	**None (2)**
WT02	**Toxic, DW**	**NA**	**Unknown**	"	**None**
WP02	**Persistant, DW**	**NA**	**Unknown**	"	**None**
UHCs	**NA**				

(1) Debris standards in 40 CFR 268.45
(2) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

The combination of waste codes varies on a per-package basis in accordance with WAC 173-303-070(3) and (5).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Waste has been macroencapsulated and meets the Alternative Treatment Standards for Hazardous Debris LDRs.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **Contaminant concentration levels were determined by means of process knowledge.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☒Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if applicable/available) number of containers/tanks in each: **Hanford's LLBG (Subtitle-C portion), 218-W-5 Trench 34**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **185**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	0			☐
1999	0			☐
2000	0			☐
2001	0			☐
2002	0			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details: **Macroencapsulated at Hanford's T-Plant Complex FY 1997).**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available:

4.4 Treatment schedule information:

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting):

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment:

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **These macroencapsulated waste forms are placed into the Subtitle-C portion of Hanford's LLBGs (218-W-5 Trenches 31 and 34). Disposal operations for these trenches are scheduled for FY 1999. Tri-Party Agreement milestone M-91-13 requires**

initiation of disposal of LLMW, and the waste volume counts toward Tri-Party Agreement milestone M-19-00 waste volumes.

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **Since subject waste is treated and awaiting dispsoal, no further waste mimimization activites are planned**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-04-C**

1.2 Waste stream name: **Navy Core Basket**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Waste was generated from the decommisioning of Navy nuclear equipment from the Knolls Atomic Power Laboratory. Waste was received 10/94 and put into the CWC for storage. During 9/97, subject waste was moved from the CWC and placed into Hanford's LLBG (Subtitle-C portion) where it is awaiting final disposal.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **Decommissioned reactor core basket from the Navy.**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **The waste consists of a single item: a decommissioned reactor core basket from the Navy. The waste meets the definition of hazardous debris, and has been macroencapsulated inside a heavy steel shell similar to the Navy submarine reactor compartments. Lead shielding causes this waste to be designated as LLMW when backfilled. Subject waste does not contain organic/carbonaceous waste.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Activated metals are the primary radiological concern with this waste.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
Z1200	**Macroencapsulated Forms**	**100%**

Overall matrix parameter category code: **Z1200**

Overall matrix description: **Macroencapsulated Forms**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **The core basket has been verified through the Waste Specification System and the paperwork associated with disposal is complete. The item is awaiting the initiation of disposal operations of Hanford's LLBG (Subtitle-C portion).**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D008	**State-only Lead**	**NA**	**NA**	**NA**	**None**

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Waste has been macroencapsulated and meets the Alternative Treatment Standards for Hazardous Debris LDRs; furthermore, subject waste does not contain organic/carbonaceous waste.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **None**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☒Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if applicable/available) number of containers/tanks in each:
Hanford's LLBGs (Subtitle-C portion), 218-W-5 Trench 34

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **22**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**0**			☒
1999	**0**			☒
2000	**0**			☒
2001	**0**			☒
2002	**0**			☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☒ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available:

4.4 Treatment schedule information:

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting):

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **The core basket will be disposed in the Subtitle-C portion of Hanford's LLBGs (218-W-5 Trenchs 31 and 34). Disposal operations for these trenches is scheduled for FY 1999. Tri-Party Agreement milestone M-91-13 requires initiation of LLMW disposal.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☐No ☒NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **NA**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-05**

1.2 Waste stream name: **Elemental Lead**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream consists of elemental lead, lead shielding, lead shot, and some miscellaneous debris material mixed in with the lead. Hanford began accumulating LLMW in the CWC buildings during 1987. The waste is awaiting treatment capacity at Hanford or within the DOE Complex.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☐ Materials production/recovery effluents
- ☐ Analytical laboratory waste
- ☒ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **This waste stream includes small quantities of waste from the Environmental Restoration Program.**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Elemental Lead**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste is packaged to CH levels.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
X7210	**Lead**	**100%**

Overall matrix parameter category code: **X7210**

Overall matrix description: **Lead**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory waste has a high confidence level for matrix characteristic data, whereas the confidence level for the forecast waste characteristics is medium.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Ignitable Char**	***	***	**DEACT & meet 268.48**
D002	**Corrosive**	**Corrosive Char**	***	***	**DEACT & meet 268.48**
D004	**TC-Arsenic**	**NA**	***	***	**5.0 mg/l TCLP**
D005	**TC-Barium**	**NA**	***	***	**100 mg/l TCLP**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**1.0 mg/l TCLP**
D007	**TC-Chromium**	**NA**	***	***	**5.0 mg/l TCLP**
D008	**TC-Lead**	**Radioactive Lead Solids**	**NA**	**NA**	**MACRO**
D009	**TC-Mercury**	**Low Mercury**	**<260 mg/kg**	***	**0.20 mg/l TCLP**
D010	**TC-Selenium**	**NA**	***	***	**5.7 mg/l TCLP**
D011	**TC-Silver**	**NA**	***	***	**5.0 mg/l TCLP**
D012	**Endrin**	**NA**	***	***	**0.13 mg/kg & meet 268.48**
D018	**Benzene**	**NA**	***	***	**10 mg/kg & meet 268.48**
D019	**Carbon Tetrachloride**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D022	**Chloroform**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D023	**o-Cresol**	**NA**	***	***	**5.6 mg/kg & meet 268.48**
D028	**1,2-Dichloroethane**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D029	**1,1-Dichlorethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D035	**Methyl Ethyl Ketone**	**NA**	***	***	**36 mg/kg & meet 268.48**
D036	**Nitrobenzene**	**NA**	***	***	**14 mg/kg & meet 268.48**
D038	**Pyridine**	**NA**	***	***	**16mg/kg & meet 268.48**
D039	**Tetracholorethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D040	**Trichloroethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D043	**Vinyl Chloride**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
F001	**Spent Solvent**	**1,1,1-Trichloroethane**	***	***	**6.0 mg/kg**
F002	**Spent Solvent**	**Tethylene chloride**	***	***	**30 mg/kg**
F003	**Spent Solvent**	**Acetone & hexone**	***	***	**160 mg/kg**
F004	**Spent Solvent**	**O-cresol & p-cresol**	***	***	**5.6 mg/kg**
F005	**Spent Solvent**	**Methyl ethyl ketone**	***	***	**36 mg/kg**
P012	**Arsenic Acid**	**NA**	***	***	**5.0 mg/l**
U044	**Chloroform**	**NA**	***	***	**6.0 mg/kg**
U203	**Safrole**	**NA**	***	***	**22 mg/kg**
U228	**Trichloroethylene**	**NA**	***	***	**6.0 mg/kg**
WT01	**Toxic, EHW**	**NA**	***	***	**Detoxify**
WT02	**Toxic, DW**	**NA**	***	***	**None**
WP01	**Persistant, EHW**	**NA**	***	***	**None (1)**
WP02	**Persistant, DW**	**NA**	***	***	**None**

WSC2 Solid Corrosive NA * *** Remove Solid-Acid Char**

UHCs TBD

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **The lead does not meet the established LDR treatment standards and requires macroencapsulation prior to disposal or decontamination for reuse/recycle.**

2.4.3 Does this waste stream contain PCBs?
☒Yes ☐No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☒Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☒<50 ppm ☒≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The forecast waste could designate as D001-D043, F001-F005, PXXX, and UXXX.**

The amount of lead contaminated with PCBs <50 ppm is about 3% of the lead volume; another <1% contains PCBs >50ppm and is State-regulated for PCBs.

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to 1995 is currently being characterized and will be completed in 2000. Any waste received after 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.8.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment

☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-09**

3.6 Current inventory for this stream

Total LDR volume (cubic meters): **290**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**9**			☐
1999	**6**			☐
2000	**11**			☐
2001	**10**			☐
2002	**20**			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☒Yes ☐No If yes, provide details: **In 1998, 60 m3 of lead will be decontaminated at the T Plant complex.**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☒ Treating or plan to treat onsite
☒ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Lead macroencapsulation is the planned treatment for elemental lead. Some lead will be recycled as a demonstration to determine lead return-on-investment.**

4.4 Treatment schedule information: **Macroencapsulation is planned to operate 2000-2032 and the return-on-investment demonstration will be in 1998.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-00 and M-19-01**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group assesses generation of waste, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Hanford LLBGs (Subtitle-C portion) 218-W-5 trenches 31 and 34 (others as applicable). Applicable Tri-Party Agreement milestone numbers include M-19-00 and M-91-13.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

Investigation is underway of ongoing cost-effective technologies for the decontamination of lead. Radiological assay is perfomed to ascertain if it is possible to release the lead. In essense, this would be waste segregation.

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are ongoing.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **TBD**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-06**

1.2 Waste stream name: **Elemental Mercury**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream consists of elemental mercury. Future generation of this waste stream will be for several years from T Plant complex operations. Hanford began accumulating CH-LLMW in the CWC buildings during 1987.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Elemental Mercury**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste stream is contact handled.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
X7100	**Mercury**	**>50%**
S5400	**Heterogeneous Debris**	**<50%**

Overall matrix parameter category code: **X7100**

Overall matrix description: **Mercury**

2.3.2 Confidence level for matrix characteristics data ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory has a high confidence level for matrix characteristic.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Ignitable Char Wastes**	***	***	**DEACT**
D002	**Corrosive**	**Corrosive Char**	***	***	**DEACT & meet 268.48**
D003	**Reactive**	**Reactive Cyanides**	***	***	**590/30 mg/kg**
D004	**TC-Arsenic**	**NA**	***	***	**5.0 mg/l TCLP**
D005	**TC-Barium**	**NA**	***	***	**100 mg/l TCLP**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**1.0 mg/l TCLP**
D007	**TC-Chromium**	**NA**	***	***	**5.0 mg/l TCLP**
D009	**Mercury**	**Radioactive Element Hg**	**NA**	**NA**	**AMLGM**
D010	**TC-Selenium**	**NA**	***	***	**5.7 mg/l TCLP**
D011	**TC-Silver**	**NA**	***	***	**5.0 mg/l TCLP**
D035	**Methyl Ethyl Ketone**	**NA**	***	***	**36 mg/kg & meet 268.48**
F003	**Spent Solvent**	**Acetone & Hexone**	***	***	**160 mg/kg**
U151	**Mercury**	**Radioactive Element Hg**	**NA**	**NA**	**AMLGM**
U239	**Xylenes**	**NA**	***	***	**30 mg/kg**
WT01	**Toxic, EHW**	**NA**	***	***	**None (1)**
WT02	**Toxic, DW**	**NA**	***	***	**None**
WP01	**Persistant, EHW**	**NA**	***	***	**None (1)**
WP02	**Persistant, DW**	**NA**	***	***	**None**
WSC2	**Solid Corrosive**	**NA**	***	***	**Remove Solid-Acid Char**

UHCs TBD

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **The mercury waste stream does not meet established LDR treatment standards and requires treatment prior to disposal.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The forecast waste could designate as D001-D043, F001-F005, PXXX, and UXXX. The waste contaminants listed above vary in concentrations.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☒Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to 1995 is currently being characterized and will be completed in 2000. Any waste received after 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-09**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **2**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**0.008**			☐
1999	**0.005**			☐
2000	**0.005**			☐
2001	**0.003**			☐
2002	**0.003**			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☒ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **WRAP Amalgamation is the planned treatment option for elemental mercury.**

4.4 Treatment schedule information: **The WRAP Amalgamation is planned to operate in years 2002-2032.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-19-00**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group assesses generation of waste, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Hanford LLBGs (Subtitle-C portion) 218-W-5 trenches 31 and 34 (or others as applicable). The applicable Tri-Party Agreement milestone number is M-19-00.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?

☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are ongoing.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **Mercury thermometer released from radioactive control and disposed of as dangerous waste reduced the LDR waste volume by 0.26 m3 in FY 1997.**

6.4.1 Assumptions used in above estimates: **NA**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-07**

1.2 Waste stream name: **M91 MLLW**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream is the remote-handled mixed waste generated on the Hanford Facility and offsite excluding the Long-Length Contaminated Equipment waste stream in RL-MLLW-01. Hanford began accumulating RH-LLMW in the CWC buildings during 1987. The waste is awaiting treatment capacity at Hanford or within the DOE Complex.**

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes:

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **M-91 MLLW is remote handled .**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste is remote handled.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5000	**Debris**	**90%**
S3100	**Inorganic Solids**	**<1%**
X6000	**Labpacks**	**<1%**
X7100	**Mercury**	**<1%**
X7210	**Lead**	**2%**
S3200	**Organic Solids**	**1%**
S4000	**Soil/Gravel**	**5%**

Overall matrix parameter category code: **S5000**

Overall matrix description: **Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory waste has a high confidence level for matrix characteristic data.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Various**	***	***	**Various**
D002	**Corrosive**	**Various**	***	***	**Various**
D003	**Reactive**	**Various**	***	***	**Various**
D004	**TC-Arsenic**	**NA**	***	***	**5.0 mg/l TCLP**
D005	**TC-Barium**	**NA**	***	***	**100 mg/l TCLP**
D006	**TC-Cadmium**	**Various**	***	***	**Various**
D007	**TC-Chromium**	**NA**	***	***	**5.0 mg/l TCLP**
D008	**TC-Lead**	**Various**	***	***	**Various**
D009	**TC-Mercury**	**Various**	***	***	**Various**
D010	**TC-Selenium**	**NA**	***	***	**5.7 mg/l TCLP**
D011	**TC-Silver**	**NA**	***	***	**5.0 mg/l TCLP**
D012	**Endrin**	**NA**	***	***	**0.13 mg/kg & meet 268.48**
D016	**2,4-D**	**NA**	***	***	**10 mg/kg & meet 268.48**
D018	**Benzene**	**NA**	***	***	**10 mg/kg & meet 268.48**
D019	**Carbon Tetrachloride**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D020	**Chlordane**	**NA**	***	***	**0.26 mg/kg & meet 268.48**
D021	**Chlorobenzene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D022	**Chloroform**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D023	**o-Cresol**	**NA**	***	***	**5.6 mg/kg & meet 268.48**
D026	**Cresol**	**NA**	***	***	**11.2 mg/kg & meet 268.48**
D027	**p-Dichlorobenzene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D028	**1,2-Dichloroethane**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D030	**2,4-Dinitrotoluene**	**NA**	***	***	**140 mg/kg & meet 268.48**
D031	**Heptachlor**	**NA**	***	***	**0.066 mg/kg & meet 268.48**
D033	**Hexachlorobutadiene**	**NA**	***	***	**5.6 mg/kg & meet 268.48**
D034	**Hexachloroethane**	**NA**	***	***	**30 mg/kg & meet 268.48**
D035	**Methyl Ethyl Ketone**	**NA**	***	***	**36 mg/kg & meet 268.48**
D036	**Nitrobenzene**	**NA**	***	***	**14 mg/kg & meet 268.48**
D037	**Pentachlorophenol**	**NA**	***	***	**7.4 mg/kg & meet 268.48**
D038	**Pyridine**	**NA**	***	***	**16mg/kg & meet 268.48**
D039	**Tetracholorethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D040	**Trichloroethylene**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
D043	**Vinyl Chloride**	**NA**	***	***	**6.0 mg/kg & meet 268.48**
F001	**Spent Solvent**	**1,1,1-Trichloroethane**	***	***	**6.0 mg/kg**
F002	**Spent Solvent**	**Methylene Chloride**	***	***	**30 mg/kg**

F003	Spent Solvent	Acetone & Hexone	***	***	160 mg/kg
F004	Spent Solvent	o-Cresol & p-Cresol	***	***	5.6 mg/kg
F005	Spent Solvent	Methyl Ethyl Ketone	***	***	36 mg/kg
P012	Arsenic Acid	NA	***	***	5.0 mg/l
P022	Carbon Disulfide	NA	***	***	CMBST
P023	Chloroacetaldehyde	NA	***	***	CMBST
P030	Cyanide	NA	***	***	590/30 mg/kg
P102	Propargyl Alcohol	NA	***	***	CMBST
U001	Acetaldehyde	NA	***	***	CMBST
U002	Acetone	NA	***	***	160 mg/kg
U003	Acetonitrile	NA	***	***	CMBST
U004	Acetophenone	NA	***	***	9.7 mg/kg
U006	Acetyl Chloride	NA	***	***	CMBST
U019	Benzene	NA	***	***	10 mg/kg
U025	bis(2-Chloroethyl)ether	NA	***	***	6.0 mg/kg
U031	n-Butyl Alcohol	NA	***	***	2.6 mg/kg
U044	Chloroform	NA	***	***	6.0 mg/kg
U056	Cyclohexane	NA	***	***	CMBST
U057	Cyclohexanone	NA	***	***	CMBST
U080	Methylene Chloride	NA	***	***	30 mg/kg
U103	Dimethyl Sulfate	NA	***	***	CMBST
U108	1,4-Dioxane	NA	***	***	CMBST
U112	Ethyl Acetate	NA	***	***	33 mg/kg
U117	Ethyl Ether	NA	***	***	160 mg/kg
U121	Trichloromonofluoromethane	NA	***	***	30 mg/kg
U123	Formic Acid	NA	***	***	CMBST
U133	Hydrazine	NA	***	***	CMBST
U134	Hydrogen Fluoride	NA	***	***	NEUTR
U144	Lead Acetate	NA	***	***	0.37 mg/kg
U151	Mercury	Various	***	***	Various
U154	Methanol	NA	***	***	CMBST
U159	Methyl Ethyl Ketone	NA	***	***	36 mg/kg
U160	Methyl Ethyl Ketone Peroxide	NA	***	***	CMBST
U161	Methyl Isobutyl Ketone	NA	***	***	33 mg/kg
U162	Methyl Methacrylate	NA	***	***	160 mg/kg
U165	Naphthalene	NA	***	***	5.6 mg/kg
U169	Nitrobenzene	NA	***	***	14 mg/kg
U170	p-Nitropropane	NA	***	***	29 mg/kg
U187	Phenacetin	NA	***	***	16 mg/kg
U188	Phenol	NA	***	***	6.2 mg/kg
U189	Phosphorus Sulfide	NA	***	***	CMBST
U196	Pyridine	NA	***	***	16 mg/kg
U203	Safrole	NA	***	***	22 mg/kg
U210	Tetracholorethylene	NA	***	***	6.0 mg/kg
U211	Carbon Tetrachloride	NA	***	***	6.0 mg/kg
U213	Tetrahydrofuran	NA	***	***	CMBST
U218	Thioacetamide	NA	***	***	CMBST
U220	Toluene	NA	***	***	10 mg/kg
U226	1,1,1-Trichloroethane	NA	***	***	6.0 mg/kg
U228	Trichloroethylene	NA	***	***	6.0 mg/kg
U239	Xylenes	NA	***	***	30 mg/kg
U359	2-Ethoxyethanol	NA	***	***	CMBST
WT01	Toxic, EHW	NA	***	***	None (1)
WT02	Toxic, DW	NA	***	***	None
WP01	Persistant, EHW	NA	***	***	None (1)
WP02	Persistant, DW	NA	***	***	None

W001	**PCBs**	**2-50 ppm**	*****	*****	**None**
WSC2	**Solid Corrosive**	**NA**	*****	*****	**Remove Solid-Acid Char**

UHCs TBD

(1) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with RCW 70.105.050(2).

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **The M-91 MLLW stream does not meet the established LDR treatment standards and requires treatment prior to disposal.**

2.4.3 Does this waste stream contain PCBs?
☒Yes ☐No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☒Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☒Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☒Low ☐Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The forecast waste could contain EPA Codes D001-D043, F001-F005, PXXX, and UXXX. The waste contaminants listed above vary in concentrations.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **Waste received from 1987 to 1995 will be characterized under Milestone M-91 activities. Any waste received after 1995 has been fully characterized.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **M-91-10**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment

☒ In compliance
☐ Not in compliance. Explain and provide plans to correct in 3.4.2.
☐ No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-09 and M-91-10**

3.6 Current inventory for this stream

Total LDR volume (cubic meters): **211**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?

☒ Yes ☐ No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:

☒ Routine ☐ One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**44**			☐
1999	**122**			☐
2000	**231**			☐
2001	**229**			☐
2002	**216**			☐

3.10 Has there ever been any unusual release of this stream to the environment?

☐ Yes ☒ No

If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?

☐ Yes ☒ No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **M-91 RH treatment is planned for this waste stream.**

4.4 Treatment schedule information: **Operation of the M-91 RH treatment is planned to operate in years 2003-2032.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-91-10, M-91-11-T01, M-91-14-T01, and M-91-15**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group assesses waste generation, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Hanford LLBGs (Subtitle-C portion) 218-W-5 trenches 31 and 34 (others as applicable). The applicable Tri-Party Agreement milestone number is M-91-10.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all mixed waste is segregated and packaged separately from LLW or TRU wastes; the volume of mixed waste is reduced by in-drum compaction when possible, and where it does not interfere with future treatment activities; to minimize the generation of mixed waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; minimization goals are set annually and tracked quarterly; and waste treatment is used to destroy the hazardous constituents, as allowable.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are ongoing.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **TBD**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-MLLW-08**

1.2 Waste stream name: **GTC3**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream consists of Greater Than Class 3 waste. The waste is made up of radioisotope thermoelectric generators (RTG). The first receipt into CWC of this waste was in 1980 and the second was in 1983. No future generation of this stream is expected.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☒ Other (explain): discarded naval equipment

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Greater than Class 3 waste.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste stream is contact handled.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5000	**Debris Waste**	**95%**
X7210	**Lead Shielding**	**5%**

Overall matrix parameter category code: **S5000**

Overall matrix description: **Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **The existing inventory has a high confidence level for matrix characteristic data.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D008	**Lead**	**NA**	**NA**	**NA**	**None (1)**

(1) Lead shielding is a State-only waste when backfilled and is not subject to Federal LDRs.

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **State-only D008. The Radioactive Thermal Generator waste is prohibited from disposal by DOE Orders.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **None**

2.4.6 Will further characterization be performed? ☐Yes ☐No ☒Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **M-91-10**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-09 and M-91-10**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **1**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

- ☒ No treatment required (skip to 5.0)
- ☐ Treating or plan to treat onsite
- ☐ Treating or plan to treat offsite
- ☐ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available:

4.4 Treatment schedule information:

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-91-10, M-91-11-T01, and M-91-14-T01**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☐Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Disposal path will be determined as part of TPA milestone M-91-10.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☐No ☒NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **NA**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-TRUM-01**

1.2 Waste stream name: **Generalized CH-TRUM**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream consists of Hanford Facility contact-handled transuranic mixed (TRUM) waste. Hanford began accumulating subject waste in the CWC buildings during 1987. The waste is awaiting shipment to the Waste Isolation Pilot Plant for disposal.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☒ Discarded excess or expired materials
- ☒ R&D/R&D laboratory waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☒ Materials production/recovery effluents
- ☒ Analytical laboratory waste
- ☒ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste stream consists of Hanford's CH-TRUM waste. The waste has various physical waste matrices and is generated by various generators.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☒TRUM ☐LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste is contact handled.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5000	**Debris Waste**	**78%**
S3110	**Inorganic Particulates**	**22%**
S3120	**Inorganic Abs Liq/Sludges**	**<1%**
X7210	**Lead**	**<1%**
S3220	**Organic Abs Liq/Sludges**	**<1%**

Overall matrix parameter category code: **S5000**

Overall matrix description: **Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **The confidence level for the CH-TRUM waste is medium to high for the existing.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**various**	***	***	**Remove Characteristic (1)**
D002	**Corrosive**	**various**	***	***	**Remove Characteristic (1)**
D004	**TC-Arsenic**	**NA**	***	***	**Exempt (61 FR 60704)**
D005	**TC-Barium**	**NA**	***	***	**Exempt (61 FR 60704)**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**Exempt (61 FR 60704)**
D007	**TC-Chromium**	**NA**	***	***	**Exempt (61 FR 60704)**
D008	**TC-Lead**	**various**	***	***	**Exempt (61 FR 60704)**
D009	**TC-Mercury**	**various**	***	***	**Exempt (61 FR 60704)**
D010	**TC-Selenium**	**NA**	***	***	**Exempt (61 FR 60704)**
D011	**TC-Silver**	**NA**	***	***	**Exempt (61 FR 60704)**
D012	**Endrin**	**NA**	***	***	**Remove Characteristic (1)**
D018	**Benzene**	**NA**	***	***	**Exempt (61 FR 60704)**
D019	**Carbon Tetrachloride**	**NA**	***	***	**Exempt (61 FR 60704)**
D027	**p-Dichlorobenzene**	**NA**	***	***	**Exempt (61 FR 60704)**
D028	**1,2-Dichloroethane**	**NA**	***	***	**Exempt (61 FR 60704)**
D029	**1,1-Dichlorethylene**	**NA**	***	***	**Exempt (61 FR 60704)**
D030	**2,4-Dinitrotoluene**	**NA**	***	***	**Exempt (61 FR 60704)**
D031	**Heptachlor**	**NA**	***	***	**Remove Characteristic (1)**
D033	**Hexachlorobutadiene**	**NA**	***	***	**Remove Characteristic (1)**
D034	**Hexachloroethane**	**NA**	***	***	**Exempt (61 FR 60704)**
D036	**Nitrobenzene**	**NA**	***	***	**Exempt (61 FR 60704)**
D043	**Vinyl Chloride**	**NA**	***	***	**Exempt (61 FR 60704)**
F001	**Spent Solvent**	**1,1,1-Trichloroethane**	***	***	**Exempt (61 FR 60704)**
F002	**Spent Solvent**	**Methylene Chloride**	***	***	**Exempt (61 FR 60704)**
F003	**Spent Solvent**	**Acetone & Hexone**	***	***	**Exempt (61 FR 60704)**
F004	**Spent Solvent**	**o-Cresol & p-Cresol**	***	***	**Exempt (61 FR 60704)**
F005	**Spent Solvent**	**Methyl Ethyl Ketone**	***	***	**Exempt (61 FR 60704)**
WT01	**Toxic, EHW**	**NA**	***	***	**NA**
WT02	**Toxic, DW**	**NA**	***	***	**NA**
WP01	**Persistant, EHW**	**NA**	***	***	**NA**
WP02	**Persistant, DW**	**NA**	***	***	**NA**
WSC2	**Solid Corrosive**	**NA**	***	***	**NA**

UHCs **Not applicable to waste destined for the WIPP facility.**

(1) **Treatment standards based on WIPP facility waste acceptance criteria.**

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **This waste stream must be treated for the waste codes D001, D002, D012, D031, and D033 prior to shipment to WIPP for disposal.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The forecast waste could designate as D001-D043, F001-F005, all PXXX, and all UXXX. The waste contaminants listed above vary in concentrations.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **TRU and TRUM waste must undergo characterization verification in the WRAP 1 facility to certify it for disposal at the WIPP facility.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **M-91-01, M-91-02, and M-91-03**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
CWC

3.4 DOE storage method compliance assessment

☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-01, M-91-02, M-91-03**

3.6 Current inventory for this stream

Total LDR volume (cubic meters): **274**
Date of inventory values: **9/30/97**
Comments on waste inventory: **Based on inventory residing at the CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?

☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:

☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**164**			☐
1999	**166**			☐
2000	**123**			☐
2001	**290**			☐
2002	**302**			☐

3.10 Has there ever been any unusual release of this stream to the environment?

☐Yes ☒No

If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?

☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **WRAP 1 is currently planned to treat the D001 and D002 waste codes. Treatment for the remainder waste codes is TBD.**

4.4 Treatment schedule information: **WRAP 1 is scheduled to start treatment by FY 1999.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-91-01, M-91-02, and M-91-03**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group assesses waste generation, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **TRUM waste will be disposed of at the WIPP facility and the schedule for planned shipments is 1999 through 2032.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all LLW (includes mixed constituents) is segregated and packaged separately from the TRU waste fraction; to minimize the generation of TRUM waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; and minimization goals are set annually and tracked quarterly.**

The return-on-investment program will fund a project to deploy a portable nondestructive assay system that permits plutonium-containing items to be individually assayed in a glovebox without having to perform a waste-generating seal-out/seal-in process. The annual waste reduction is estimated to be 14 m3 and the system is scheduled for delivery in June 1998.

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are ongoing.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **TBD**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-TRUM-02**

1.2 Waste stream name: **Generalized RH-TRUM**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream will consist of Hanford Facility remote-handled TRUM waste. Currently, there is no RH-TRUM waste being stored in above-ground storage. It is possible that some RH-TRUM resides in the 200W Area caissons. However, the waste would have been deposited before 1987 and would only become TRUM waste if retrieved.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☒ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste stream consists of Hanford's RH-TRUM waste. The waste would have various physical waste matrices and would be generated by various generators.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☒TRUM ☐LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste is remote handled.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5000	**Debris Waste**	**50 - 70%**
S3100	**Inorganic Solids**	**20 - 30%**
S3200	**Organic Solids**	**5 - 10%**
X7210	**Lead**	**5 - 10%**

Overall matrix parameter category code: **S5000**

Overall matrix description: **Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☒Low ☐Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **Since all of the RH-TRUM waste is yet-to-be-generated (i.e., forecasted), the matrix characteristics are assumed based primarily on information from generators.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D004	**TC-Arsenic**	**NA**	***	***	**Exempt (61 FR 60704)**
D005	**TC-Barium**	**NA**	***	***	**Exempt (61 FR 60704)**
D006	**TC-Cadmium**	**Cadmium Char**	***	***	**Exempt (61 FR 60704)**
D007	**TC-Chromium**	**NA**	***	***	**Exempt (61 FR 60704)**
D008	**TC-Lead**	**Various**	***	***	**Exempt (61 FR 60704)**
D009	**TC-Mercury**	**Various**	***	***	**Exempt (61 FR 60704)**
D010	**TC-Selenium**	**NA**	***	***	**Exempt (61 FR 60704)**
D011	**TC-Silver**	**NA**	***	***	**Exempt (61 FR 60704)**
F001	**Spent Solvent**	**1,1,1-Trichloroethane**	***	***	**Exempt (61 FR 60704)**
F002	**Spent Solvent**	**Methylene Chloride**	***	***	**Exempt (61 FR 60704)**
F003	**Spent Solvent**	**Acetone & Hexone**	***	***	**Exempt (61 FR 60704)**
F004	**Spent Solvent**	**o-Cresol & p-Cresol**	***	***	**Exempt (61 FR 60704)**
F005	**Spent Solvent**	**Methyl Ethyl Ketone**	***	***	**Exempt (61 FR 60704)**

UHCs TBD

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Waste is exempt from Federal LDRs when being disposed of at the WIPP facility.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☒Low ☐Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are assumed based primarily on information from generators.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **TRU and TRUM waste must undergo characterization verification to certify it for disposal at the WIPP facility.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **M-91-01, M-91-03, M-91-06-T01, and M-91-03-T01**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☐Yes ☒No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:

3.4 DOE storage method compliance assessment
☐In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment:

3.4.2 Compliance assessment comments (explain future plans):

3.5 Applicable Tri-Party Agreement milestones related to storage:

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **0**
Date of inventory values: **9/30/97**
Comments on waste inventory: **None**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	4			☐
1999	4			☐
2000	4			☐
2001	168			☐
2002	177			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Treatment will be evaluated per M-91 milestones.**

4.4 Treatment schedule information: **Treatment schedule per M-91 milestones.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-91-01, M-91-03, M-91-06-T01, and M-91-08-T01**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.
If yes, please describe: **A waste minimization group assesses waste generation, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **RH-TRUM waste will be disposed of at the WIPP facility and the schedule for planned shipments is 2007 through 2032.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all LLW (includes mixed constituents) is segregated and packaged separately from the TRU waste fraction; to minimize the generation of TRUM waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; and minimization goals are set annually and tracked quarterly.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are ongoing.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **TBD**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **RL-TRUM-03**

1.2 Waste stream name: **CH/RH-TRUM w/ PCBs**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **This waste stream consists of Hanford Facility TRUM waste that contains PCBs. This waste stream must be treated to TSCA standards for PCBs before it can be accepted at WIPP.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☒ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☒ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **This waste stream consists of Hanford's TRUM waste that contains PCBs.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☒TRUM ☐LLMW
☒CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste is remote and contact handled.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5000	**Debris Waste**	**99%**
S3000	**Homogeneous Solids**	**<1%**

Overall matrix parameter category code: **S5000**

Overall matrix description: **Debris Waste**

2.3.2 Confidence level for matrix characteristics data ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level:

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D001	**Ignitable**	**Various**	***	***	**Remove Characteristic (1)**
D002	**Corrosive**	**Various**	***	***	**Remove Characteristic (1)**
D004	**TC-Arsenic**	**NA**	***	***	**Exempt (61 FR 60704)**
D005	**TC-Barium**	**NA**	***	***	**Exempt (61 FR 60704)**
D006	**TC-Cadmium**	**CadmiumChar**	***	***	**Exempt (61 FR 60704)**
D007	**TC-Chromium**	**NA**	***	***	**Exempt (61 FR 60704)**
D008	**TC-Lead**	**Various**	***	***	**Exempt (61 FR 60704)**
D009	**TC-Mercury**	**Various**	***	***	**Exempt (61 FR 60704)**
D010	**TC-Selenium**	**NA**	***	***	**Exempt (61 FR 60704)**
D011	**TC-Silver**	**NA**	***	***	**Exempt (61 FR 60704)**
D018	**Benzene**	**NA**	***	***	**Exempt (61 FR 60704)**
D019	**Carbon Tetrachloride**	**NA**	***	***	**Exempt (61 FR 60704)**
D027	**p-Dichlorobenzene**	**NA**	***	***	**Exempt (61 FR 60704)**
D028	**1,2-Dichloroethane**	**NA**	***	***	**Exempt (61 FR 60704)**
D029	**1,1-Dichlorethylene**	**NA**	***	***	**Exempt (61 FR 60704)**
D030	**2,4-Dinitrotoluene**	**NA**	***	***	**Exempt (61 FR 60704)**
D031	**Heptachlor**	**NA**	***	***	**Remove Characteristic (1)**
D033	**Hexachlorobutadiene**	**NA**	***	***	**Remove Characteristic (1)**
D034	**Hexachloroethane**	**NA**	***	***	**Exempt (61 FR 60704)**
D036	**Nitrobenzene**	**NA**	***	***	**Exempt (61 FR 60704)**
D043	**Vinyl Chloride**	**NA**	***	***	**Exempt (61 FR 60704)**
F001	**Spent Solvent**	**1,1,1-Trichloroethane**	***	***	**Exempt (61 FR 60704)**
F002	**Spent Solvent**	**Methylene Chloride**	***	***	**Exempt (61 FR 60704)**
F003	**Spent Solvent**	**Acetone & Hexone**	***	***	**Exempt (61 FR 60704)**
F004	**Spent Solvent**	**o-Cresol & p-Cresol**	***	***	**Exempt (61 FR 60704)**
F005	**Spent Solvent**	**Methyl Mthyl Ketone**	***	***	**Exempt (61 FR 60704)**
WT01	**Toxic, EHW**	**NA**	***	***	**NA**
WT02	**Toxic, DW**	**NA**	***	***	**NA**
WP01	**Persistant, EHW**	**NA**	***	***	**NA**
WP02	**Persistant, DW**	**NA**	***	***	**NA**
WSC2	**Solid Corrosive**	**NA**	***	***	**NA**

UHCs Not applicable to wastes destined for the WIPP facility

(1) Treatment standards based on WIPP facility waste acceptance criteria.

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **TBD**

2.4.3 Does this waste stream contain PCBs?
☒Yes ☐No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☒Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☒<50 ppm ☒≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminants listed above are applicable to the existing inventory. The waste contaminants listed above vary in concentrations.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **The path forward for this waste stream is unknown at this time since the WIPP facility cannot receive TRU waste with TSCA levels of PCBs. The PCBs must be destroyed to meet the WIPP facility waste acceptance criteria.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **M-91-01, M-91-03, M-91-06-T01, and M-91-08-T01**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **CWC**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board)**

3.4.2 Compliance assessment comments (explain future plans): **Various levels of assessment will be performed as an ongoing activity for storage compliance.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-91-01, M-91-03, M-91-06-T01, M-91-08-T01**

3.6 Current inventory for this stream

Total LDR volume (cubic meters): **73**

Date of inventory values: **9/30/97**

Comments on waste inventory: **Based on inventory residing at the LLBG (LLW portion) and CWC reported in the Solid Waste Information Tracking System (SWITS).**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?

☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:

☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?

☐Yes ☒No

If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?

☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

- ☐ No treatment required (skip to 5.0)
- ☐ Treating or plan to treat onsite
- ☐ Treating or plan to treat offsite
- ☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **The treatment/disposal options for this waste have not been determined and are still being assessed.**

4.4 Treatment schedule information: **Treatment schedule is specified in M-91 milestones.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-91-01, M-91-03, M-91-06-T01, and M-91-08-T01**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☒Yes ☐No ☐Unknown.

If yes, please describe: **A waste minimization group assesses waste generation, technologies, and treatment options to minimize waste.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Following PCB treatment, waste will be disposed of at the WIPP facility.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **To the extent practical, all LLW (includes mixed constituents) is segregated and packaged separately from the TRU waste fraction; to minimize the generation of TRUM waste, generators actively seek nondangerous alternatives for the dangerous constituents in their processes; and minimization goals are set annually and tracked quarterly.**

6.3 Schedule for implementing waste minimization methods: **Waste minimization activities are ongoing.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **TBD**

6.4.1 Assumptions used in above estimates: **TBD**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **DST-1**

1.2 Waste stream name: **Double Shell Tanks**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **The DST system contains wastes from current operations (cleanup waste) and past chemical separation processes (legacy waste). The major contributors to the waste stored in the DST system are PUREX, the Plutonium Finishing Plant, B Plant and liquids from the SST system. Smaller amounts of other miscellaneous wastes such as laboratory wastes and wastes from the clean out of facilities in the 100, 200, 300, and 400 areas are stored in DSTs. Waste streams are treated with sodium hydroxide and sodium nitrite to minimize tank corrosion and to address compatibility issues. Wastes have been stored in the DST system from 1970 to the present.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☒ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☒ Materials production/recovery effluents
- ☒ Analytical laboratory waste
- ☐ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Basic Aqueous Slurry with a layer of settled solids (sludge).**

2.2 Radiological characteristics

2.2.1 Waste type ☒HLW ☒TRUM ☐LLMW ☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **DST system wastes contain the following major radionuclidies: 3H, 14C, 60Co, 63Ni, 90Sr, 90Y, 93Zr, 93mNb, 99Tc, 106Ru, 113mCd, 125Sb, 126Sn, 129I, 134Cs, 137Cs, 137mBa, 151Sm, 152Eu, 154Eu, 155Eu, 234U, 235U, 238U, 238Pu, 239Pu, 240Pu, 241Am, and 241Pu.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
L1220	**Basic Aqueous Slurry**	**77%**
S9000	**Unknown/Other Solids**	**23%**

Overall matrix parameter category code: **L1220**

Overall matrix description: **Basic Aqueous Slurry (precipitated metal salts with layer of sludge)**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **The major constituents of DST system wastes are water and sodium salts of aluminate, nitrate, nitrite, phosphate, hydroxide, carbonate, and sulfate. Some calcium and potassium salts are also present. Complexed waste in the DSTs contain sodium salts of chelating agents ethylenediamine-tetraacetic acid and n-hydroxyethylenediamine-tetraacetic acid. There may also be detectable concentrations of halogenated and nonhalogenated organic compounds and heavy metals such as lead, chromium and cadmium.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1 Trichlorethane**	**Spent solvents**	**TBD**	**TBD**	**6.0 mg/kg**
F002	**Methylene Chloride**	**Spent solvents**	**TBD**	**TBD**	**30 mg/kg**
F003	**Acetone**	**Spent solvents**	**TBD**	**TBD**	**160 mg/kg**
	Methyl Isobutyl Ketone	**Spent solvents**	**TBD**	**TBD**	**33 mg/kg**
F004	**Cresols**	**Spent solvents**	**TBD**	**TBD**	**5.6 mg/kg**
F005	**Methyl Ethyl Ketone**	**Spent solvents**	**TBD**	**TBD**	**36 mg/kg**
D001	**Ignitability**	**Low TOC ignitable characteristic liquid**	**NA**	**TBD**	**Deactivation (2)**
D002	**Corrosivity**	**Radioactive (1)**	**> 12.5**	**TBD**	**HLVIT**
D003	**Reactivity**	**Reactive Cyanides**	**TBD**	**TBD**	**Meet Cyanide conc. std.**
D004	**Arsenic**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D005	**Barium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D006	**Cadmium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D007	**Chromium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D008	**Lead**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D009	**Mercury**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D010	**Selenium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D011	**Silver**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D018	**Benzene**		**TBD**	**TBD**	**10 mg/kg (2)**
D019	**Carbon Tetrachloride**		**TBD**	**TBD**	**6.0 mg/kg (2)**
D022	**Chloroform**		**TBD**	**TBD**	**6.0 mg/kg (2)**
D028	**1,2-Dichloroethane**		**TBD**	**TBD**	**6.0 mg/kg (2)**
D029	**1,1-Dichlorothylene**		**TBD**	**TBD**	**6.0 mg/kg (2)**

D030 2,4-Dinitrotoluene	**TBD**	**TBD**	**140 mg/kg (2)**
D033 Hexachlorobutadiene	**TBD**	**TBD**	**5.6 mg/kg (2)**
D034 Hexachloroethane	**TBD**	**TBD**	**30 mg/kg (2)**
D035 Methyl ethly ketone	**TBD**	**TBD**	**36 mg/kg (2)**
D036 Nitrobenzene	**TBD**	**TBD**	**14 mg/kg (2)**
D038 Pyridine	**TBD**	**TBD**	**16 mg/kg (2)**
D039 Tetrachloroethylene	**TBD**	**TBD**	**6.0 mg/kg (2)**
D040 Trichloroethylene	**TBD**	**TBD**	**6.0 mg/kg (2)**
D041 2,4,5-Trichlorophenol	**TBD**	**TBD**	**7.4 mg/kg (2)**
D043 Vinyl chloride	**TBD**	**TBD**	**6.0 mg/kg (2)**
WT01 Toxic Dangerous wastes Extremely hazardous wastes	**TBD**	**TBD**	**None (3)**
WT02 Toxic Dangerous wastes Dangerous wastes	**TBD**	**TBD**	**None**
WP01 Persistent Dangerous wastes Extremely hazardous wastes	**TBD**	**TBD**	**None (3)**
WP02 Persistent Dangerous wastes	**TBD**	**TBD**	**None**

(1) Radioactive high-level wastes generated during the reprocessing of fuel rods.
(2) and meet 40CFR268.48
(3) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with Revised Code of Washington 70.105.050(2)

UHCs See comment below

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☐No ☒Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☒No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☒Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The waste codes assigned to DST system waste are based on historical knowledge, and additional waste codes may be added or deleted based on the ongoing characterization program. Refer to Table 3-1 for the estimated mass of chemical components of DST and SST system waste.**

Since 1995, LDR requirements have been documented on profile sheets for waste sent to the DST system. On September 25, 1995, waste acceptance criteria for waste entering the DST system specifically required the identification of UHCs. There is no documentation of LDR requirements for waste placed in the SST system and for waste sent to the DST system prior to 1995. Due to the lack of documentation to the contrary, the position has been taken that waste in the DST system does

not meet any of the UHC standards. However, a list is kept of the UHCs that have been documented since 1995. At this time, all UHCs are considered reasonably expected to be present in the waste.

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **The DSTs are being characterized per the Tri-Party Agreement milestone schedule and work plan.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **M-44-00**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☒Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **200 East Area: AN Farm - 7 Tanks, AP Farm - 8 Tanks , AW Farm - 6 Tanks, AY Farm - 2 Tanks, AZ Farm - 2 Tanks. 200-West Area: SY Farm - 3 Tanks. There is a total of 28 tanks.**

3.4 DOE storage method compliance assessment
☐In compliance
☒Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board).**

3.4.2 Compliance assessment comments (explain future plans): **Integrity Assessment, planned for FY 2000, is not complete.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-41-00**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **69,261 (Reference: FDH 1998)**
Date of inventory values: **12/97**
Comments on waste inventory: **None**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☒One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998	**14,900**			☐
1999	**13,400**			☐
2000	**4,300**			☐
2001	**7,900**			☐
2002	**5,000**			☐

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details: ***Note: DST system wastes are not currently being treated for LDR standards.**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **DST system wastes will be retrieved, pretreated, and solidified for disposal. The wastes may be vitrified in a process that will destroy or extract organic and cyanide constituents to below treatment standards, neutralize or deactivate dangerous waste and extremely hazardous waste and immobilize toxic metals.**

4.4 Treatment schedule information: **To be determined. Negotiated through the Tri-Party Agreement.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-50-00, M-51-00, M-60-00, and M-61-00**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **Any required will be applied for in accordance with the procedures detailed in the Tri-Party Agreement.**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **In accordance with current plans, the LLW fraction will be disposed of onsite in a retrievable form. The vitrified HLW fraction will be stored on site until the Geologic Repository Program is available to receive wastes for disposal.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **Some of the waste sent to the DST system is reduced at the generating facility through pretreatment and recycling of streams. Waste is also minimized by treatment at the 242-A Evaporator. The frequency and volumes of flush solutions has also been minimized.**

The waste minimization assessment examined low-level mixed effluent that is transferred to the DST system. The low-level mixed effluents that enter the DST system come in contact with existing wastes and all DST system waste must therefore be managed as HLW. The assessment looked at the following options to reduce effluents managed as HLW:

- **Recyclable phase transition gel**
- **Filtration**
- **Carbon adsorption**
- **Ion exchange**
- **Reverse osmosis**
- **Ultrafiltration**
- **Pulse dryer/evaporation**

6.3 Schedule for implementing waste minimization methods: **These activities are already underway.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **The DST volume was reduced by approximately 2,900 cubic meters during the 1997 calendar year.**

6.4.1 Assumptions used in above estimates: **None**

Table 3-1. Estimated Mass of Nonradioactive Chemical Components of Single-Shell Tank and Double-Shell Tank Systems Waste. (2 sheets)

Chemical (metric tons)	Single-shell tank system				Double-shell tank system		
	Sludge	Salt cake	Interstitial liquid	Total	Soluble	Insoluble	Total
Ag^{+}					3.28 E-01	1.38 E+00	1.70 E+00
$Al(OH)_4^{-}$	6.25 E+02	1.25 E+03	4.57 E+02	2.33 E+03	5.09 E+03		5.09 E+03
Al^{-3} (1)	1.99 E+03			1.99 E+03		6.78 E+01	6.78 E+01
As^{+5}					7.70 E-01	4.98 E-01	1.27 E+00
B^{+3}					5.19 E-01	9.94 E-01	1.51 E+00
Ba^{+2}					7.91 E-01	3.09 E+00	3.88 E+00
Be^{-2}					8.19 E-02	7.61 E-03	8.95 E-02
Bi^{+3}	2.61 E+02			2.61 E+02	2.2.6 E+00		2.2.6 E+00
Ca^{-2}	1.28 E+02			1.28 E+02	1.03 E+01	1.15 E+01	2.18 E+01
Cd^{-2}	3.84 E+00			3.84 E+00	1.67 E-01	6.01 E+00	6.18 E+00
Ce^{+3}	2.35 E+02			2.35 E+02	2.26 E-02	3.04 E+00	3.07 E+02
Cl^{-}	4.00 E+01			4.00 E+01	2.73 E+02	1.49 E+00	2.74 E+02
CO_3^{-2}	1.15 E+03	4.13 E+02	3.96 E+01	1.61 E+03	1.92 E+03	5.83 E+01	1.98 E+03
Cr^{-3}	8.63 E+01			8.63 E+01		3.41 E+01	3.41 E+01
CrO_4^{-2}			2.41 E+01	2.41 E+01	1.20 E+02		1.20 E+02
Cu^{+2}					1.77 E-01	7.46 E-01	9.23 E-01
F^{-}	8.00 E+02		5.00 E+01	8.05 E+02	3.52 E+02	1.91 E+01	3.71 E+02
$Fe(CN)_6^{-4}$	3.22 E+02			3.22 E+02			
Fe^{+3}	6.27 E+02			6.27 E+02	8.09 E+00	1.42 E+02	1.50 E+02
Hg^{-}	9.00 E-01			9.00 E-01	5.84 E-02		5.84 E-02
K^{-}					5.46 E+02	2.02 E+01	5.66 E+02
La^{-}					2.19 E-01	2.10 E+01	2.12 E+01
Li^{+}					5.77 E-03	2.46 E-02	3.04 E-02
Mg^{+2}					9.65 E-01	1.10 E+01	1.20 E+01
Mn^{4}	1.20 E+02			1.20 E+02	7.69 E+00	1.80 E+01	2.57 E+01
Mo^{+6}					4.87 E+00	8.01 E-01	5.67 E+00
Na^{+}	1.58 E+04	3.39 E+04	2.30 E+03	5.48 E+04	1.40 E+04	2.30 E+02	1.43 E+04
Ni^{+2}	1.78 E+02			1.78 E+02	4.07 E+00	6.57 E+00	1.06 E+01
NO_2^{-}	2.00 E+03	1.53 E+03	1.27 E+03	4.80 E+03	4.80 E+03	8.42 E+00	4.81 E+03
OH^{-}	4.22 E+03	8.51 E+02	3.15 E+02	5.39 E+03	2.33 E+03	1.23 E+02	2.45 E+03
Pb^{+4}					1.96 E+00	3.28 E+00	5.24 E+00
PO_4^{-3}	3.89 E+03	6.43 E+02	8.58 E+01	4.62 E+03	3.29 E+02	2.16 E+01	3.15 E+02
SiO_4^{-2}	1.21 E+03			1.21 E+03	1.53 E+01	2.14 E+02	2.29 E+02
SO_4^{-2}	5.01 E+02	1.15 E+03		1.65 E+03	3.86 E+02	6.68 E+00	3.93 E+02
Sr^{+2}	3.60 E+01			3.60 E+01			
TOC(2)			2.00 E+02	2.00 E+02	1.26 E+03	6.84 E+01	1.33 E+03
UO_2^{+2}					3.54 E+00	2.68 E+01	3.03 E+01
V^{+5}					6.20 E-02	1.88 E-01	2.50 E-01
W^{+4}	1.44 E+01			1.44 E+01	7.47 E-01		7.47 E-01
Zn^{+2}					3.59 E+00	9.45 E-01	4.54 E+00
Zr^{+4}	2.46 E+02			2.46 E+02	4.48 E-01	2.77 E+02	2.77 E+02
Total w/o H_2O	4.93 E+04	1.23 E+05	6.40 E+04	1.79 E+05	4.18 E+04	1.45 E+03	4.32 E+04
H_2O	2.62 E+04	1.40 E+04	5.16 E+03	4.54 E+04	8.95 E+04		8.95 E+04
Total	7.55 E+04	1.37 E+05	1.16 E+04	2.24 E+05	1.31 E+05	1.45 E+03	1.33 E+05

(1) Al^{+} includes the aluminum present in cancrinite and $Al(OH)_3$

(2) TOC includes HEDTA, EDTA, hydroxyacetic acid, citric acid, and other degradation products.

Reference: Josephson, W. S., 1996, *Sampling and Analysis Plan for Mixed Waste Treatment*, WHC-SD-WM-TP-442, Westinghouse Hanford Company, Richland, Washington.

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **SST-1**

1.2 Waste stream name: **Single Shell Tanks**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **The SST system waste consists of radioactive and chemically hazardous waste generated as a byproduct of processing spent nuclear fuel to recover plutonium, uranium, and neptunium. A variety of analytical, decladding, and separation processes and associated sitewide operations make up the waste which has been placed into the SST system. Four major operations, the bismuth phosphate process, the reduction-oxidation process, the PUREX process, and the tributyl phosphate process make up the majority of the waste in the SST system. Small amounts of waste from research and development programs, facility and equipment decontamination, lab activities, and the Plutonium Finishing Plant is also stored in the SST system. The aqueous waste was made alkaline before storage. Waste was placed in the SST system between 1944 and 1980. Additions to the SST system were stopped in 1980, except for the addition of water for cooling purposes.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☒ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Basic Aqueous Slurry with layers of saltcake and sludge. Sludge is defined as solids (i.e., hydrous metal oxides) precipitated from the neutralization of acid wastes. Saltcake is defined as the various salts formed from the evaporation of water.**

2.2 Radiological characteristics

2.2.1 Waste type ☒HLW ☐TRUM ☐LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **SST system wastes contain the following major radionuclides: 3H, 14C, 90Sr, 90Y, 129I, 137Cs, 137mBa, 151Sm, 238Pu, 239Pu, 240Pu, 241Pu, 241Am, and 242Am.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
L1220	**Basic Aqueous Slurry**	**2%**
S9000	**Unknown/Other Solids**	**98%**

Overall matrix parameter category code: **S9000**

Overall matrix description: **Unknown/Other Solids (Saltcake and sludge with basic aqueous slurry).**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **None**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1 Trichlorethane**	**Spent solvents**	**TBD**	**TBD**	**6.0 mg/kg**
F002	**Methylene Chloride**	**Spent solvents**	**TBD**	**TBD**	**30 mg/kg**
F003	**Acetone**	**Spent solvents**	**TBD**	**TBD**	**160 mg/kg**
	Methyl Isobutyl Ketone	**Spent solvents**	**TBD**	**TBD**	**33 mg/kg**
F004	**Cresols**	**Spent solvents**	**TBD**	**TBD**	**5.6 mg/kg**
F005	**Methyl Ethyl Ketone**	**Spent solvents**	**TBD**	**TBD**	**36 mg/kg**
D001	**Ignitability**	**Low TOC ignitable characteristic liquid**	**NA**	**TBD**	**Deactivation (2)**
D002	**Corrosivity**	**Radioactive (1)**	**> 12.5**	**TBD**	**HLVIT**
D003	**Reactivity**	**Reactive Cyanides**	**TBD**	**TBD**	**Meet Cyanide conc. std.**
D004	**Arsenic**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D005	**Barium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D006	**Cadmium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D007	**Chromium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D008	**Lead**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D009	**Mercury**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D010	**Selenium**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D011	**Silver**	**Radioactive (1)**	**TBD**	**TBD**	**HLVIT**
D018	**Benzene**		**TBD**	**TBD**	**10 mg/kg (2)**
D019	**Carbon Tetrachloride**		**TBD**	**TBD**	**6.0 mg/kg (2)**
D022	**Chloroform**		**TBD**	**TBD**	**6.0 mg/kg (2)**
D028	**1,2-Dichloroethane**		**TBD**	**TBD**	**6.0 mg/kg (2)**
D029	**1,1-Dichlorothylene**		**TBD**	**TBD**	**6.0 mg/kg (2)**
D030	**2,4-Dinitrotoluene**		**TBD**	**TBD**	**140 mg/kg (2)**
D033	**Hexachlorobutadiene**		**TBD**	**TBD**	**5.6 mg/kg (2)**
D034	**Hexachloroethane**		**TBD**	**TBD**	**30 mg/kg (2)**
D035	**Methyl ethly ketone**		**TBD**	**TBD**	**36 mg/kg (2)**

D036	**Nitrobenzene**	**TBD**	**TBD**	**14 mg/kg (2)**
D038	**Pyridine**	**TBD**	**TBD**	**16 mg/kg (2)**
D039	**Tetrachloroethylene**	**TBD**	**TBD**	**6.0 mg/kg (2)**
D040	**Trichloroethylene**	**TBD**	**TBD**	**6.0 mg/kg (2)**
D041	**2,4,5-Trichlorophenol**	**TBD**	**TBD**	**7.4 mg/kg (2)**
D043	**Vinyl chloride**	**TBD**	**TBD**	**6.0 mg/kg (2)**
WT01	**Toxic Dangerous wastes Extremely hazardous wastes**	**TBD**	**TBD**	**None (3)**
WT02	**Toxic Dangerous wastes Dangerous wastes**	**TBD**	**TBD**	**None**
WP01	**Persistent Dangerous wastes Extremely hazardous wastes**	**TBD**	**TBD**	**None (3)**
WP02	**Persistent Dangerous wastes**	**TBD**	**TBD**	**None**

(1) Radioactive high-level wastes generated during the reprocessing of fuel rods.
(2) and meet 40CFR268.48
(3) Mixed extremely hazardous wastes may be land-disposed in Washington State in DOE facilities in accordance with Revised Code of Washington 70.105.050(2)

UHCs See comment below

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☐No ☒Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☒No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☒Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The wastes in the SSTs are being sampled, analyzed, and characterized. Refer to Table 3-1 for the estimated mass of chemical components of DST and SST system waste.**

Waste was sent to the SST system prior to the enactment of LDR requirements, so pertinent LDR requirements were not documented. When SST system waste is transferred to the DST system, known LDR requirements are documented on profile sheets based on the Part A, Form 3 Permit Application for the SST system. Typically, no UHCs are identified because there is little or no analytical information on the concentrations of UHCs. At this time, all UHCs are considered reasonably expected to be present in the waste.

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **The SSTs are being characterized per the Tri-Party Agreement milestone schedule and work plan.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **M-44-00**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☒Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **200 East Area: A Farm - 6 tanks, AX Farm - 4 tanks, B Farm - 16 tanks, BX Farm - 12 tanks, BY Farm - 12 tanks, C Farm - 16 tanks. 200-West Area: S Farm - 12 tanks, SX Farm - 15 tanks, T Farm - 16 tanks, TX Farm - 18 tanks, TY Farm - 6 tanks, U Farm -16 tanks. The tanks range from 210 m3 to 3,800 m3 in capacity, and there are 149 tanks in total.**

3.4 DOE storage method compliance assessment
☐In compliance
☒Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Currently ongoing (FDH Facility Evaluation Board).**

3.4.2 Compliance assessment comments (explain future plans): **The SST system will be closed in accordance with schedules negotiated in the Tri-Party Agreement. The SSTs were reviewed for compliance with interim status dangerous waste regulations in accordance with Tri-Party Agreement milestone, with the exception of secondary containment and integrity assessments. Compliance action schedules and actions for limited compliance with the interim status requirements during the closure period are being negotiated.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-41-00**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **133,800**
Date of inventory values: **12/97**
Comments on waste inventory: **None**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☒Yes ☐No
If yes, summarize releases and quantities: **See Table 3-2.**

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details: ***Note: SST system wastes are not currently being treated for LDR standards.**

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

- ☐ No treatment required (skip to 5.0)
- ☐ Treating or plan to treat onsite
- ☐ Treating or plan to treat offsite
- ☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Wastes in the SST system will undergo retrieval, treatment, and disposal per the DST system waste disposal plan. This may include pretreatment, and vitrification, which will destroy or extract organic and cyanide constituents to below treatment standards, neutralize or deactivate dangerous waste and extremely hazardous waste, and immobilize toxic metals.**

4.4 Treatment schedule information: **To be determined. Negotiated through the Tri-Party Agreement.**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-50-00, M-60-00, and M-61-00**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **Any required will be applied for in accordance with the procedures detailed in the Tri-Party Agreement.**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **In accordance with current plans, the LLW fraction will be disposed of onsite in a retrievable form. The vitrified HLW fraction will be stored on site until the Geologic Repository Program is available to receive wastes for disposal.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☒No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream:. **This stream is no longer being generated.**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

Table 3-2. Hanford Facility Single-Shell Tank System Releases.[a]

Tank	Volume (m^3)	Leak reported	Tank	Volume (m^3)	Leak reported
241-A-103	21	1987	241-SX-107	<19	1964
241-A-104	2 to 10	1975	241-SX-108	9 to 133	1962
241-A-105	38 to 1048	1963	241-SX-109	38	1965, 1996
241-AX-102	11	1988	241-SX-110	21	1976
241-AX-104[b]	–	1977	241-SX-111	2 to 8	1974
241-B-101[b]	–	1974	241-SX-112	114	1969
241-B-103[b]	–	1978	241-SX-113	57	1962
241-B-105[b]	–	1978	241-SX-114[b]	–	1972
241-B-107	30	1980	241-SX-115	189	196
241-B-110	38	1981	241-T-101	28	1992
241-B-111[b]	–	1978	241-T-103	< 4	1974
241-B112	8	1978	241-T-106	435	1973
241-B-201	5	1980	241-T-107[b]	–	1984
241-B-203	1	1983	241-T-108	< 4	1974
241-B-204	2	1984	241-T-109	< 4	1974
241-BX-101[b]	–	1972	241-T-111	< 4	1979, 1994
241-BX-102	265	1971	241-TX-105[b]	–	1977
241-BX-108	10	1974	241-TX-107	10	1984
241-BX-110[b]	–	1976	241-TX-110[b]	–	1977
241-BX-111[b]	–	1984	241-TX-113[b]	–	1974
241-BY-103	<19	1973	241-TX-114[b]	–	1974
241-BY-105[b]	–	1984	241-TX-115[b]	–	1977
241-BY-106[b]	–	1984	241-TX-116[b]	–	1977
241-BY-107	57	1984	241-TX-117[b]	–	1977
241-BY-108	<19	1972	241-TY-101	< 4	1973
241-C-101	76	1980	241-TY-103	11	1973
241-C-110	8	1984	241-TY-104	5	1981
241-C-111	21	1968	241-TY-105	133	1960
241-C-201	2	1988	241-TY-106	76	1959
241-C-202	2	1988	241-U-101	114	1959
241-C-203	2	1984	241-U-104	208	1961
241-C-204	1	1988	241-U-110	19 to 31	1975
241-S-104	91	1968	241-U-112	32	1980
241-SX-104	23	1988	Total	2862 to 4022	

[a]After some tanks were declared to be leaking, water may have been added to aid evaporative cooling. Some of this water is thought to have not evaporated, but leaked into the ground. As of October 1990, estimates of the volume leaked ranged from 190 to 3000 cubic meters. The volumes provided and the date of initial release are being continually evaluated and refined and may be revised for improved accuracy. In addition, documents show that from 1946 to 1966, 456,700 cubic meters (120,661,000 gallons) of liquid waste were intentionally discharged from SSTs at the Hanford Facility directly to the ground on the 200 Area plateau (WHC 1991c). Most of this waste was discharged from 1946 to 1958 as a result of the early plutonium and uranium recover processes conducted in the 221-B Facility (B Plant), 221-T Facility (T Plant), and 221-U Facility (U Plant). In addition, from 1960 to 1966 laboratory waste from the 300 Area and equipment decontamination waste from the 200 West Area were routed through SSTs before discharge to the ground. No waste has been intentionally discharged to the ground from SSTs since 1966, and no waste has ever been discharged directly to the ground from the newer DST system.

[b]Individual release volumes for these tanks have not been determined. The total volume is estimated to be 570 cubic meters.

Reference: FDH, 1998, *Waste Tank Summary Report for Month Ending December 31, 1997*, HNF-EP-0182-117, prepared by Lockheed Martin Hanford Corporation for Fluor Daniel Hanford Company., Richland, Washington.

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **PUREX-1**

1.2 Waste stream name: **PUREX Containment Building**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Concrete rubble from the E-Cell canyon floor was placed in a metal box during the floor renovation. The waste was generated in September, 1989.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Trace chromium as a corrosion product in concrete debris.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☒TRUM ☒LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Approximately 500 Rad/hr.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5121	**Concrete Debris**	**99.9**

Overall matrix parameter category code: **S5121**

Overall matrix description: **Concrete Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **None**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D007	**Chromium**	**Chromium**	**~1000ppm**	**Analytical Results**	**Debris standard in 40 CFR 268.45**

UHCs **Not applicable to this waste**

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **Based on laboratory analysis.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐ Container (pad) ☐ Container (covered) ☐ Container (retrievably buried)
☐ Tank ☐ Waste pile ☐ Surface impoundment
☒ Other (explain): **Containment Building**

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
202A PUREX facility , F-Cell canyon floor

3.4 DOE storage method compliance assessment
☐ In compliance
☐ Not in compliance. Explain and provide plans to correct in 3.4.2.
☒ No assessment completed

3.4.1 Date of most recent assessment:

3.4.2 Compliance assessment comments (explain future plans): **None**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **1.**
Date of inventory values: **9/30/97**
Comments on waste inventory: **None**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐ Yes ☒ No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐ Routine ☐ One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐ Yes ☒ No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐ Yes ☒ No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite

☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **None**

4.4 Treatment schedule information: **None**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **None**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **Unknown**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Unknown, however the most likely disposal location is the LLBG Subtitle-C or LLBG LLW portion.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☒No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **None**

6.3 Schedule for implementing waste minimization methods: **None**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **PUREX-2**

1.2 Waste stream name: **PUREX Storage Tunnels**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **The bulk of the waste is failed equipment from the PUREX facility. However, waste from other Hanford Facility locations, including 324 and 327 research and development laboratories, has been placed in the tunnels. Failed rail cars are also in the tunnels.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☒ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Varies from very large equipment vessels with lead counterweights to very fine powder in canisters.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☒TRUM ☒LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Varies from medium (~1 rad/hr) to very high (>1,000 rad/hr).**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5111	**Stainless steel and/or iron**	**99.9**
S5112 or S5113	**Stainless steel and/or iron with metallic lead and/or cadmium**	**1 - 99.9**
X7211 or X7220	**Lead or cadmium, separated**	**1 - 99.9**
X7100	**Mercury in stainless steel containers**	**100**

S3117	**Vitrified test wastes from R&D Labs**	**90 - 99.9**
U9999	**Contaminated dust/corrosion products**	**99 - 99.9**
U9999	**Absorbed mineral oil**	**90 - 99.9**

Overall matrix parameter category code: **NA, see below**

Overall matrix description: **NA, see below**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **Several different waste types are included in this stream. Therefore, no overall code was assigned. The matrix constituent table considers each waste type separately, so the percentages add to over 100.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D005	**Barium**	**Barium**	**100-1000s ppm**	**Analytical/proc. know.**	**100 mg/L TCLP**
D006	**Cadmium**	**Cadmium**		**Analytical/proc. know.**	**1.0 mg/L TCLP**
D007	**Chromium**	**Chromium**	**5 - 1000s ppm**	**Analytical/proc. know.**	**5.0 mg/L TCLP**
D008	**Lead**	**Rad. Lead Solids**		**Process knowledge**	**MACRO**
D009	**Mercury**	**High Hg Inorganic**		**Process knowledge**	**RMERC**
D010	**Selenium**	**Selenium**		**Process knowledge**	**5.7 mg/L TCLP**
D011	**Silver**	**Silver**	**5 - 1000's ppm**	**Process knowledge**	**5.0 mg/L TCLP**
D001	**Oxidizer**	**Low TOC**		**Process knowledge**	**DEACT & meet 40 CFR 268.48**
WT02	**Toxic (mineral oil)**			**Process knowledge**	**None**

UHCs are not currently applicable to this waste except for DOO1 wastes.
UHCs must be determined for the D001-designated PUREX Tunnels waste.

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **Confidence varies depending on waste item. Contaminants vary with different containers/equipment. (Not all of the waste would have all waste codes). D001 nitrate residue is from nitric acid.**

2.4.6 Will further characterization be performed? ☐Yes ☐No ☒Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☒Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☒Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
PUREX #1 Storage Tunnel (218-E-14) 8 rail cars
PUREX #2 Storage Tunnel (218-E-15) 28 rail cars (40 positions available)

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **March 1996, DOE/EM-0280, Complex-wide review of DOE's LLW management, environment, safety, and health vulnerabilities.**

3.4.2 Compliance assessment comments (explain future plans): **Method of storage identified in PUREX Tunnels portion of the Hanford Facility Part B permit application. Continue storage as is until waste can be dispositioned. If additional waste is placed in the tunnels, the need for waste acceptance criteria will be evaluated.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **None**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **Hg, 0.01, Pb 0.89, Ag 0.07, Cd 0.008, Ba 0.0008, Cr 0.0001, Mineral Oil 0.007. Total volume including equipment, containers, etc, is estimated at 2,800 m3.**

Date of inventory values: **Jan. 98**
Comments on waste inventory: **Estimated**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☒One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999	400			☐
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities: **Note for 3.10, above: 400 m3 generation projection is for additional waste from 324/327 buildings including dust and corrosion products contaminated with heavy metals and failed equipment.**

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **None**

4.4 Treatment schedule information: **None**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **None**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None identified**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Unknown, however the most likely disposal location is the LLBG Subtitle-C or LLBG LLW trenches.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☒No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **None**

6.3 Schedule for implementing waste minimization methods: **None**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **324 REC**

1.2 Waste stream name: **324 Building Radiochemical Engineering Cell**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **A variety of high-activity radioactive wastes containing regulated quantities of predominantly toxic heavy metals, generated during research and development activities ongoing since the mid-1960s and the processing of 324 Building High-Level Vault (HLV) waste.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☒ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Most of the materials now in the Radiochemical Engineering Cells (REC) accumulated during research activities from 1965 to 1987, except for solid residues from the treatment of HLV tank waste. Over the 20+ years of these engineering demonstrations, equipment (such as tools, manipulator boots, and construction materials) were dropped, and liquids (such as feed materials and samples) leaked onto the floor. In addition, particulate materials (essentially dust) and filters introduced with normal air flow into the cell became contaminated. This waste also includes elemental lead, used as shielding and counterbalances.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **This waste consists of approximately 1,479 kCi of primarily Sr and Cs.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5111	**Metal debris without Pb or Cd**	**38**

S5112	**Metal debris with Pb**	**39**
S5410	**Composite Filters**	**23**

Overall matrix parameter category code: **S5110**

Overall matrix description: **Metal debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **None**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D006	**Cadmium**	**Cadmium**	**1.0 ppm**	**Smpl. Anal. (1 container)**	**(1)**
D007	**Chromium**	**Chromium**	**6.3 ppm**	**Smpl. Anal. (1 container)**	**(1)**
D008	**Lead**	**Rad. Lead Solids**		**Smpl. Anal. (5 containers)**	**MACRO**
D008	**Lead**	**Lead**		**Process Knowledge**	**(1)**

At present, UHCs are not applicable to this waste.

(1) Debris standards in 40 CFR 268.45

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **None**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule:

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers:

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☒Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
324 Facility REC

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **Dec. 1997**

3.4.2 Compliance assessment comments (explain future plans): **Conduced by FDH Facility Evaluation Board. Results not yet available, but storage compliance is not believed to be an issue. The 324 Facility REC is not a TSD unit.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-89-00**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **approx. 2.62**
Date of inventory values: **9/30/97**
Comments on waste inventory: **This waste has not been containerized for transport**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☒One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Milestone M-89-02 provides for removal of all REC B-Cell mixed waste and equipment by May 31, 1999. The 324 Facility will not treat this waste prior to transfer to permitted storage. Waste will be moved from the 324 Facility REC to either the CWC or the PUREX Storage Tunnels.**

4.4 Treatment schedule information: **NA**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **NA**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe: **Treatment method unknown.**

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **None known at this time.**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Some 324 mixed waste will be shipped to the PUREX tunnels and the CWC for interim storage. Waste will be treated and disposed in accordance with the proposed treatment scenarios for these units. Disposal will be in the LLBG Subtitle-C or LLBG unlined trenches depending on regulatory status of the waste after treatment.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☒No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **Waste reduction has been accomplished through waste segregation. Waste volume has been reduced by approximately 35 percent during cleanout of the REC. Also, analytical data shown that 50 percent less waste is present than was previously believed present. Funding is currently being sought through the return-on-investment program to install a waste compactor in the shielded airlock at the 324 REC.**

6.3 Schedule for implementing waste minimization methods: **There is no schedule for additional minimization.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass):
None

6.4.1 Assumptions used in above estimates: **NA**

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WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **B PLANT-1**

1.2 Waste stream name: **B Plant Cell 4 Waste**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **WESF hot cell maintenance waste (i.e., manipulator boots, light bulbs, HEPA filters, misc. debris). Containerized in drums. Drums placed in storage from 1988 to 1997.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☐ Materials production/recovery effluents
- ☐ Analytical laboratory waste
- ☐ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Radioactive lead solder from incandescent light bulbs, other miscellaneous radioactive maintenance waste.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **High personnel dose potential, remote handled. Range from 200 mR to 500 R at 30 cm. Confidence high.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5110	**Inorganic Debris**	**>99**
X7210	**Elemental Lead**	**<1**

Overall matrix parameter category code: **S5110**

Overall matrix description: **Inorganic Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Lead component represents <1% of the entire waste matrix as it is mixed with other miscellaneous non-hazardous radioactive materials in the drum due to packaging constraints in WESF. The lead component is lead solder from contaminated light bulbs. However, due to the packaging constraints, if a drum contains lead in any proportions, the entire drum is managed appropriately for the lead component.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
D008	**Lead-Contaminated Waste**	**Lead Char.**	**>5mg/l**	**Process Knowledge**	**5.0 mg/L**

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☐Medium ☒High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **None**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **NA**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **NA**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☒Other (explain): **Container storage in a 8m x 4m x 6m deep concrete process cell in B Plant.**

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
B Plant Complex, Cell 4. 7 drums mixed waste, 36 drums highly radioactive LLW.

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **2/97**

3.4.2 Compliance assessment comments (explain future plans): **None noted.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-82-00**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **1.4**
Date of inventory values: **1/20/98**
Comments on waste inventory: **NA**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

- ☐ No treatment required (skip to 5.0)
- ☐ Treating or plan to treat onsite
- ☐ Treating or plan to treat offsite
- ☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **TBD**

4.4 Treatment schedule information: **TBD**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-20-21A, "Submit B Plant Pre-Closure Plan"**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **NA**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Waste will be disposed of in the LLBG Subtitle-C or LLBG LLW trenches depending on the treatment performed.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☐No ☒NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **No additional waste planned to be received in Cell 4**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **B PLANT-2**

1.2 Waste stream name: **B Plant Containment Building Storage**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Stream consists of failed equipment (e.g., process jumpers, pumps, etc.) used in the 221-B canyon. Waste has been, and will continue to be generated until September 1998 and stored in the B Plant Complex.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☒ Other (explain): Facility Deactivation
- ☐ Materials production/recovery effluents
- ☐ Analytical laboratory waste
- ☐ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Contaminated debris/equipment derived from the processing of "F" listed wastes for the recovery of strontium and cesium. Also contains elemental lead used for counterbalances and shielding.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☐CH ☒RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Highly radioactive, remote handled. Confidence high.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5110	**Inorganic Debris**	**99**
X7210	**Elemental Lead**	**1**

Overall matrix parameter category code: **S5100**

Overall matrix description: **Inorganic Debris**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **Waste inventories are currently maintained by estimates of mass. An exact determination of constituent percentages would require investigation of all drawings. This effort is currently cost and time prohibitive. Percentages are based on engineering estimates.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA

☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1-Trichloroethane**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F002	**Methylene Chloride**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F003	**Acetone, Hexone**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F004	**o-Cresol, p-Cresol**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F005	**Methyl Ethyl Ketone**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
D008	**Radioactive Lead**	**Rad. Lead Solids**	**>5 mg/l**	**Process Knowledge**	**Macro**

UHCs are not applicable to this waste unless waste is determined to be corrosive.

(1) F001 through F005 Solvent Wastes

(2) Debris standards in 40 CFR 268.48

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Unknown. Listed waste codes are identified as the waste stored in this unit is derived from the processing of "F" listed waste.**

2.4.3 Does this waste stream contain PCBs?

☐Yes ☒No ☐Unknown.

If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?

☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.

☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?

☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **Potential exists for other waste characteristics to exist such as corrosivity. However, until each individual component in storage is evaluated for additional characteristics, an assumption has been made that it is unlikely additional waste codes will be required.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **NA**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **NA**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☒Other (explain): **Containment Building**

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
B Plant Complex, 221-B Canyon

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **2/97**

3.4.2 Compliance assessment comments (explain future plans): **NA**

3.5 Applicable Tri-Party Agreement milestones related to storage: **M-82-00 Agreement Package**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **Unavailable**
Date of inventory values: **NA**
Comments on waste inventory: **Quantity estimated at 293,447 kg. However, a determination of waste volume would require specific drawing information. At this time, obtaining this information is cost and schedule prohibitive.**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998			**97,000**	☐
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No

If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Unknown**

4.4 Treatment schedule information: **Unknown**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **M-20-21A**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **NA**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Waste will be disposed of in the LLBG Subtitle-C or LLBG LLW trenches depending on the treatment performed.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☒No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **B Plant minimizes as much as practical the use of new equipment in the 221-B canyon.**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **T-Dragoff**

1.2 Waste stream name: **T Plant Complex Drag-off Box**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Primarily miscellaneous pieces of equipment accumulated over a period of years that have not been completely characterized.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☒ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Miscellaneous pieces of equipment that have not been completely characterized.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Radionuclides that may be present include C-14, Na-22, Co-60, Sr-90, Zr-95, Tc-99, Cs-137, Eu-152, Eu-154, Eu-155, Np-237, Pu-239, and Am-241. There is low confidence in the radiological characterization since the waste equipment is old and there is limited information on use of the equipment.**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5111	**Metal debris without lead or cadmium**	**50%**
S5330	**Paper/cloth debris**	**20%**
S5312	**HOC plastic debris**	**29%**
S5122	**Glass debris**	**1%**

Overall matrix parameter category code: **S5111**

Overall matrix description: **Metal debris without lead or cadmium**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☒Medium ☐High

2.3.3 Comments on matrix characteristics and/or confidence level: **The matrix characteristics were based on material removed from the drag-off box in the past. Material removed in the future may not have the same characteristics.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1 Trichloroethane**	**(1)**	**0.002%**	**Process Knowledge**	**(2)**
F002	**Methylene Chloride**	**(1)**	**0.002%**	**Process knowledge**	**(2)**
F003	**Acetone**	**(1)**	**0.002%**	**Process knowledge**	**(2)**
F004	**Cresol/Cresylic Acid**	**(1)**	**0.002%**	**Process knowledge**	**(2)**
F005	**Methyl Ethyl Ketone**	**(1)**	**0.002%**	**Process Knowledge**	**(2)**

UHCs are not applicable to this waste.

(1) F001 through F005 Solvent Waste
(2) Debris standards in 40 CFR 268.45

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None, if debris treatment standards are used.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☒Low ☐Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **A standard or default estimate of "listed" constituents was used. The waste probably does not contain any of the regulated contaminants, but since the waste may have come into contact with the contaminants in the past, the waste must be considered to contain a minimal percentage of the contaminants.**

2.4.6 Will further characterization be performed? ☒Yes ☐No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **If possible, LLW will be segregated from mixed waste. Funding has been requested for FY 1999.**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **NA**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☐Container (pad) ☒Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☒Other (explain): **Container is stored within a "containment building."**

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each: **T Plant Complex, Building 221-T, one container**

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **An assessment was performed by the FDH Facility Evaluation Board from 1/12/98 to 1/23/98; A DOE conduct of operations assessment was completed from 11/11/98 to 11/13/98; and there are ongoing assessments as part of a self assessment program.**

3.4.2 Compliance assessment comments (explain future plans): **Facility Evaluation Board assessments are expected to be performed annually; and, self assessments will continue.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **NA**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **Approximately 10.0**
Date of inventory values: **1/29/ 98**
Comments on waste inventory: **NA**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐Yes ☒No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐Routine ☒One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No

If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

- ☐ No treatment required (skip to 5.0)
- ☐ Treating or plan to treat onsite
- ☐ Treating or plan to treat offsite
- ☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **The waste may have to be treated before disposal, but treatment has not been planned.**

4.4 Treatment schedule information: **NA**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **NA**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **NA**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Will be disposed of into the LLBG Subtitle-C or LLBG LLW trenches depending on the type of treatment performed.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☒Yes ☐No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **The waste is to be sorted to separate low-level waste from mixed waste. This will reduce the quantity of mixed waste that must be treated and save money.**

6.3 Schedule for implementing waste minimization methods: **There is no schedule for continuing or completing this work.**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **13.6 m3.**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **T-Tank**

1.2 Waste stream name: **T Plant Complex Tank Trailer Waste**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **The tank trailer (approx. 5,000 gal capacity) contains liquid and sludge from the 222-S Laboratory complex, 219-S tank. The tank trailer was used to transfer waste to the DST system. The tank has been emptied as far as the DST system equipment was able. The tank trailer was received at T Plant on 3/6/97.**

1.3.2 Source category(s)

- ☐ Pollution control or waste treatment process
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ R&D/R&D laboratory waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Other (explain):
- ☐ Materials production/recovery effluents
- ☒ Analytical laboratory waste
- ☐ Remediation/D&D waste
- ☐ Source unknown

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content):

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **Sr-90 - 6.33e-4 Ci; Cs-137 - 6.75e-4; total beta/gamma - 2.58e-3**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
L1120	**Basic wastewater, or**	**100**
L1220	**Basic aqueous slurry**	

Overall matrix parameter category code: **L1**

Overall matrix description: **Aqueous Liquids/Slurries**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level: **Tank trailer is relatively new, history of waste is well known.**

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☒Wastewater ☐Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1 Trichloroethane**	**(1)**	**0.00001%**	**Process Knowledge**	**.0054 mg/L**
F002	**Methylene Chloride**	**(1)**	**0.00001%**	**Process Knowledge**	**.0089 mg/L**
F003	**Acetone**	**(1)**	**0.00001%**	**Process Knowledge**	**.28 mg/L**
F003	**Methyl Isobutyl Ketone**	**(1)**	**0.00001%**	**Process Knowledge**	**.14 mg/L**
F004	**Cresol/Cresylic Acid**	**(1)**	**0.00001%**	**Process Knowledge**	**.88 mg/L**
F005	**Methyl Ethyl Ketone**	**(1)**	**0.00001%**	**Process Knowledge**	**.28 mg/L**
D002	**Non-CWA Char. Waste**		**pH 13.6**	**Analysis**	**DEACT and meet 268.48**
D007	**Chromium**	**Chromium**	**39.6 mg/L**	**Analysis**	**5 mg/L**

UHCs have not been determined for this waste stream
(1) F001 through F005 spent solvents.

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **Waste probably meets treatment standards as generated for F001 through F005.**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **The regulated contaminant concentrations for "listed" wastes are estimates. The waste may contain little or none of these contaminants. Wastewater treatability group status must be verified.**

2.4.6 Will further characterization be performed? ☐Yes ☒No ☐Unknown

2.4.6.1 If yes, provide details and schedule: **TBD**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **None**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☒Container (pad) ☐Container (covered) ☐Container (retrievably buried)
☐Tank ☐Waste pile ☐Surface impoundment
☐Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
T Plant Complex

3.4 DOE storage method compliance assessment
☒In compliance
☐Not in compliance. Explain and provide plans to correct in 3.4.2.
☐No assessment completed

3.4.1 Date of most recent assessment: **An assessment was performed by the FDH Facility Evaluation Board from 1/12/98 to 1/23/98; A DOE conduct of operations assessment was completed from 11/11/98 to 11/13/98; and, there are ongoing assessments as part of a self assessment program.**

3.4.2 Compliance assessment comments (explain future plans): **Facility Evaluation Board assessments are expected to be performed annually; and, self assessments will continue.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **NA**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **Approximately 0.75 cubic meter (757 kg)**
Date of inventory values: **1/28/98**
Comments on waste inventory: **This waste was generated at 222S Laboratory Complx and the future generation of waste will be based on the need to transport waste to the DST system via tank trailer.**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☒Yes ☐No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☒Routine ☐One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐Yes ☒No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐Yes ☒No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

- ☐ No treatment required (skip to 5.0)
- ☐ Treating or plan to treat onsite
- ☐ Treating or plan to treat offsite
- ☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Unknown. Currently evaluating the feasibility of removing the heel at the T Plant Complex.**

4.4 Treatment schedule information: **TBD**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **NA**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **NA**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Unknown, if PCBs are present. If PCBs are not present, the DST system will be able to accept the waste.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☒No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **Recommended use of a tank trailer for processing 222-S Laboratory Complex waste has been curtailed due to the installation of a dedicated line from the 222-S Laboratory Complex to the DST system. An opportunity assessment is in progress to study liquid waste generation in the laboratory.**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **It is estimated that the waste reduction is approximately 2000 gal per year. This is based on avoiding two 1000 gal flushes that would have been required if transfers were made by using the tanker instead of the dedicated line.**

6.4.1 Assumptions used in above estimates: **NA**

WASTE STREAM PROFILE SHEET

1.0 WASTE STREAM IDENTIFICATION AND SOURCE

1.1 Waste stream ID: **T-Condenser**

1.2 Waste stream name: **T Plant Complex EC-1 Condenser**

1.3 Waste stream source information

1.3.1 Stream source and history description. Include how the waste was managed prior to storage, timeframe when waste was placed into storage. **Old condenser from the 242-A Evaporator. The condenser was received at T Plant in 1995.**

1.3.2 Source category(s)

- ☒ Pollution control or waste treatment process
- ☐ Materials production/recovery effluents
- ☐ Facility or equipment operation and maintenance waste
- ☐ Discarded excess or expired materials
- ☐ Analytical laboratory waste
- ☐ R&D/R&D laboratory waste
- ☐ Remediation/D&D waste
- ☐ Spill clean-ups or emergency response actions
- ☐ Source unknown
- ☐ Other (explain):

1.3.3 Additional notes: **None**

2.0 WASTE STREAM CHARACTERIZATION

2.1 Waste stream description (content): **Big piece of steel equipment contaminated with listed mixed waste.**

2.2 Radiological characteristics

2.2.1 Waste type ☐HLW ☐TRUM ☒LLMW
☒CH ☐RH

2.2.2 Comments on radiological characteristics (e.g., more specific content, treatment concerns caused by radiation, confidence level): **The dose rate is 12.0 mRem (there is uncertainty about these units).**

2.3 Matrix characteristics (physical content)

2.3.1 Matrix constituent table (comprising at least 1% of the total volume or mass)

Matrix Parameter Category Code	Matrix Constituent Description	Typical or Range (%)
S5111	**Metal debris without lead or cadmium**	**100**

Overall matrix parameter category code: **S5111**

Overall matrix description: **Metal debris without lead or cadmium**

2.3.2 Confidence level for matrix characteristics data in 2.3.1 ☐Low ☐Medium ☒High

2.3.3 Comments on matrix characteristics and/or confidence level:

2.4 Regulated contaminant characteristics

2.4.1 Wastewater/non-wastewater under RCRA
☐Wastewater ☒Non-wastewater ☐Unknown

2.4.2 Regulated contaminant table including treatment requirements, and UHCs if applicable

EPA/ State Code	Waste Description	LDR Sub-Cat.	Concentration (Typical or Range)*	Basis	LDR Concentration Limit or Technology Code
F001	**1,1,1 Trichloroethane**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F002	**Methylene Chloride**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F003	**Acetone**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F003	**Methyl Isobutyl Ketone**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F004	**Cresol/Cresylic Acid**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**
F005	**Methyl Ethyl Ketone**	**(1)**	**Unknown**	**Process Knowledge**	**(2)**

UHCs are not applicable to this waste.
(1) F001 through F005 spent solvents
(2) Debris standards in 40 CFR 288.45

* If waste isn't consistent in concentration, this may not apply. Describe in 2.4.5.

2.4.2.1 List any waste codes from 2.4.2 for which the stream already meets established LDR treatment standards: **None**

2.4.3 Does this waste stream contain PCBs?
☐Yes ☒No ☐Unknown.
If no, skip to 2.4.4.

2.4.3.1 Is waste stream subject to TSCA regulations for PCBs?
☐Yes ☐No ☐Unknown

2.4.3.2 Indicate the PCB concentration range.
☐<50 ppm ☐≥50 ppm ☐Unknown

2.4.4 What is the confidence level for the regulated contaminant characteristic data?
☐Low ☒Medium ☐High

2.4.5 Comments on regulated contaminant characteristics and/or confidence level: **None**

2.4.6 Will further characterization be performed? ☐Yes ☐No ☒Unknown

2.4.6.1 If yes, provide details and schedule: **NA**

2.4.6.2 If yes, provide Tri-Party Agreement milestone numbers: **NA**

3.0 WASTE STREAM STORAGE, INVENTORY, AND GENERATION

3.1 Is this waste stream currently stored? ☒Yes ☐No If no, skip to 3.7.

3.2 Current storage method

☒ Container (pad) ☐ Container (covered) ☐ Container (retrievably buried)
☐ Tank ☐ Waste pile ☐ Surface impoundment
☐ Other (explain):

3.3 TSD unit name and building number and (if available/applicable) number of containers/tanks in each:
T Plant Complex

3.4 DOE storage method compliance assessment
☒ In compliance
☐ Not in compliance. Explain and provide plans to correct in 3.4.2.
☐ No assessment completed

3.4.1 Date of most recent assessment: **An assessment was performed by the FDH Facility Evaluation Board from 1/12/98 to 1/23/98; A DOE conduct of operations assessment was completed from 11/11/98 to 11/13/98; and there are ongoing assessments as part of a self assessment program.**

3.4.2 Compliance assessment comments (explain future plans): **Facility Evaluation Board assessments are expected to be performed annually; and self assessments will continue.**

3.5 Applicable Tri-Party Agreement milestones related to storage: **NA**

3.6 Current inventory for this stream
Total LDR volume (cubic meters): **32.11**
Date of inventory values: **1/28/98**

Comments on waste inventory: **NA**

3.7 Is this waste stream currently generated; if not, will this waste stream be generated in the next 5 years?
☐ Yes ☒ No. If no, skip to 3.10.

3.8 The current or future generation of this waste is best described as:
☐ Routine ☒ One-time or sporadic

3.9 Estimated generation projection by fiscal year

	m^3	(and/or)	kg	NA
1998				☒
1999				☒
2000				☒
2001				☒
2002				☒

3.10 Has there ever been any unusual release of this stream to the environment?
☐ Yes ☒ No
If yes, summarize releases and quantities:

4.0 WASTE STREAM TREATMENT

4.1 Is this stream currently being treated?
☐ Yes ☒ No If yes, provide details:

4.2 Planned treatment: Check the appropriate box indicating future plans for treating this waste stream to meet applicable regulations, including LDR treatment standards.

☐ No treatment required (skip to 5.0)
☐ Treating or plan to treat onsite
☐ Treating or plan to treat offsite
☒ Treatment options still being assessed

4.3 Planned treatment method, facility, extent of treatment capacity available: **Treatment in accordance with alternative debris standards is likely.**

4.4 Treatment schedule information: **NA**

4.5 Applicable treatment Tri-Party Agreement milestone numbers (including permitting): **NA**

4.6 If treating or planning to treat on site, was or will waste minimization be addressed in developing and/or selecting the treatment method? ☐Yes ☐No ☒Unknown.
If yes, please describe:

4.7 Treatability equivalency petitions, rulemaking petitions, and case-by-case exemptions needed for treatment: **NA**

5.0 WASTE STREAM DISPOSAL

5.1 After treatment, how will the waste stream be disposed of(include description, locations, milestone numbers, variances required, etc., as applicable): **Disposal to the LLBG Subtitle-C or LLBG LLW trenches depending on the type of treatment performed.**

6.0 WASTE MINIMIZATION

6.1 Has a waste minimization assessment been completed for this stream?
☐Yes ☒No ☐NA

6.2 Explain any waste minimization activities (e.g., process changes) under way or to be implemented for generation of this stream: **NA**

6.3 Schedule for implementing waste minimization methods: **NA**

6.4 Waste reduction achieved during the calendar year and projected future reductions (volume or mass): **NA**

6.4.1 Assumptions used in above estimates: **NA**

4.0 ADDITIONAL WASTE STREAM INFORMATION

The information in this chapter augments and supports the information in the Waste Stream Profile Sheets in Chapter 3. The format and included subsections vary by waste stream, although generation, storage, and treatment are discussed for all streams.

4.1 THE HANFORD FACILITY'S SOLID LOW-LEVEL MIXED WASTE

This section covers waste streams RL-MLLW-01 through RL-MLLW-08.

4.1.1 LLMW Summary

LLMW contains concentrations of both low-level radioactive materials and hazardous chemicals. The radioactive component is identified by DOE Order 5820.2A (DOE 1988), and the hazardous component is identified by any or all of the following statutes: RCRA, TSCA, and state regulations. This waste category pertains only to solid waste meeting the nonwastewater treatability group as defined by the federal LDR requirements.

The Hanford Facility's solid LLMW is generated by numerous onsite generator activities and offsite generators authorized by the DOE to ship waste to the Hanford Facility. Currently, the waste is put into aboveground buildings and modules at the CWC located in the 200 West Area. The CWC is operated under interim status until its incorporation into the Hanford Facility RCRA permit this year. The waste received at the CWC is generated by ongoing operations (e.g., facility stabilization, waste management, SST and DST system operations, etc.) and research and development activities (e.g., SST waste sampling and analysis). Offsite waste has come primarily from DOE research facilities and other DOE processing sites. The characteristics of the LLMW received at the CWC vary greatly; ranging from "derived-from" debris waste to concentrated discarded chemicals ("P" and "U" coded waste). The LLMW contains a variety of contaminated materials, including personal protective equipment, air filters, cleaning solutions, engine oils and grease, spent or unused chemicals, paint residues, soils, construction and building materials, water-treatment secondaries, and decommissioning plant equipment.

As of September 30, 1997, approximately 8586 cubic meters of LLMW are stored at the CWC. Of this volume, approximately 1425 cubic meters currently meet Federal and State LDRs and approximately 7161 cubic meters require treatments before land disposal. During the next 5 years, approximately 6102 cubic meters of LLMW are forecast to be generated by both onsite generator activities and offsite generators. Of this volume, approximately 1532 cubic meters currently meet Federal and State LDRs and approximately 4570 cubic meters would require treatment before land disposal. The LLMW is divided into eight waste stream profile sheets based on the waste's physical, chemical, radiological, and LDR treatment dispositions. These profile sheets, titled RL-MLLW-01 through RL-MLLW-08, are summarized in Table 4-1.

Waste generation information and records are maintained in the computerized Solid Waste Information and Tracking System database (SWITS), and in the TSD unit operating record. The TSD unit operating record contains the official quality records for the CWC. SWITS readily tracks and summarizes waste inventories and physical, chemical, and radiological information.

Table 4-1. Waste Stream Summaries.

Waste Stream	Description	Inventory FY 1996 (m^3)	Waste Receipts FY 1997 (m^3)	Inventory FY 1997 (m^3)	5-Year Forecast Generation (m^3)	Subtotals (m^3)
RL-MLLW-01	LDR-compliant solids	1393	32	1425	1846	3271
RL-MLLW-02	Inorganic solids	2648	35	2683	469	3152
RL-MLLW-03	Organic solids	850	57	907	505	1412
RL-MLLW-04	Debris	2711	356	3067	2387	5454
RL-MLLW-05	Elemental lead	255	35	290	56	346
RL-MLLW-06	Elemental mercury	2	0	2	0	2
RL-MLLW-07	M-91 MLLW	175	36	211	842	1053
RL-MLLW-08	GTC3 waste	1	0	1	0	1
	Total	8035	551	8586	6105	14,691

FY fiscal year
LDR land disposal restrictions
MLLW mixed low-level waste

4.1.2 LLMW Generation

During FY 1997, the majority of LLMW shipped to the CWC was generated in small quantities by routine plant operation and maintenance activities. Generation rates and type of waste generated by each location vary greatly. The following 18 locations for onsite generation activity at the Hanford Facility and 2 offsite generators sent waste to the CWC during FY 1997.

- Onsite. Bechtel Hanford, Inc., the Fast Flux Test Facility, 309 Building, 300 Area Fuels Fabrication, 324 Building, Plutonium Finishing Plant, 327 Building, B Plant, PUREX, Pacific Northwest National Laboratory, K-Basins, DST system, SST system, T Plant, 222-S Laboratory, Waste Sampling and Characterization Facility, 1706KE, and well drilling services

- Offsite Battelle Columbus Laboratory and Idaho National Environmental Engineering Laboratory (i.e., Bettis fly-ash)

The overall volume of mixed waste generated and received by the CWC during FY 1997 was 551 cubic meters (see Table 4-1). Approximately 65 percent were debris waste. The DST and SST systems were the largest LLMW generation location during the period; PFP was second.

Offsite receipts totaled 2.5 cubic meters with approximately 1 cubic meter of this to be returned to Bettis after treatment in FY 1998.

Approximately 30 cubic meters of PCB-contaminated LLW and LLMW were generated during the period. The PCB-contaminated waste was generated by maintenance and periodic flushing of PCB hydraulic systems, failure of transformers and capacitors, and removal of PCB ballasts from light fixtures located in radioactively contaminated areas. The waste is packaged and shipped to the CWC for storage. Future generation of PCB-contaminated waste is expected to vary. Hanford Facility cleanup efforts may identify PCB-contaminated areas that will require cleanup and packaging.

4.1.2.1 RL-MLLW-01–LDR-Compliant Solids. This waste stream comprises various substreams that either currently meet the LDRs in the regulations or are disposable through specific regulatory action (i.e., contained-in determination, variance, delisting, etc.). The following eight profile sheets make up this category.

A. Backlog Soils. Backlog soils consist of 230 cubic meters of dirt, sand, gravel, and rocks excavated from various SST and DST system locations on the Hanford Facility. The waste was part of the Backlog Waste Program and was originally designated with listed waste codes F001 through F005 as being derived from SST and DST system waste. A contained-in determination was obtained from Ecology in 1997 for the waste, which is scheduled for disposal in the low-level burial grounds (LLBG) (LLW portion) during FY 1998.

B. 200ETF Dryer Solids. This stream contains 383 cubic meters (70 cubic meters existing, 313 cubic meters forecast) of inorganic particulates from the Hanford Facility's 200 Area ETF (200ETF). The waste is generated from the ETF's thin-film dryer as a powder. It is designated with waste codes F001 through F005 because it is derived from TWRS SST and DST system waste. However, the hazardous constituents are below the LDR limits and the waste can be directly disposed of into the Hanford Facility's LLBG (Subtitle-C portion). Currently the waste is stored in the CWC awaiting startup of the LLBG (Subtitle-C portion) (expected by FY 1999).

C. SST and DST System Long-Length Contaminated Equipment. Long-length contaminated equipment (LLCE) consists of 1613 cubic meters (81 cubic meters existing, 1532 cubic meters forecast) of LLCE items removed from waste tanks. The LLCE items meet the definition of debris; they are packaged in cylindrical containers up to 80 ft long. Existing LLCE items have been macroencapsulated and are awaiting disposal at the LLBG (Subtitle-C portion) (by FY 1999). Future-generated LLCE items will be macroencapsulated before being sent to the LLBG (Subtitle-C portion) for disposal.

D. 183-H Solidified Liquids. This stream consists of 844 cubic meters of stabilized liquids generated during cleanout of the 183-H Solar Basins located at the H Reactor in the 100-H Area. The liquids were stabilized with a portland cement-based product (Sorbond LPC-II) and packaged in 55-gal drums. Stabilization was approved by the EPA during 1996 as an alternative treatment method to combustion, as specified by the U123 (formic acid) waste code designation. This waste is scheduled for disposal into the LLBG (Subtitle-C portion) by FY 2000.

E. SST and DST System Soils. This stream consists of 25 cubic meters of dirt, sand, gravel, and rocks excavated from SST and DST system farms on the Hanford Facility. This waste was generated after the Backlog Waste Program was completed, but came from the same sites as the backlog soils. The waste is designated with listed waste codes F001 through F005 as being derived from SST and DST system waste. A contained-in determination will be pursued so the waste can be disposed of directly into LLBGs (LLW portion). Disposal currently is scheduled for FY 2001.

F. State-Only Waste. State-only waste is 86 cubic meters of existing waste designated with State-Only dangerous waste codes that are not subject to any LDRs (i.e., WT02, WP02). Once the waste has been verified, the portion of waste that qualifies will be disposed of in the LLBG (Subtitle-C portion). The activity is scheduled for FY 2001.

G. 183-H Empty Bags. This stream consisted of 90 cubic meters of empty plastic bags originating from the clean out of the 183-H Solar Basins that were located in the 100-H Area. The bags were anticipated to meet the RCRA/WAC definition of an empty container. Initial reviews indicate that little or none of the waste will qualify as RCRA empty bags. The waste in this stream will transfer to stream RL-MLLW-04-A in FY 1999.

H. WC01/WC02 HEPA Filters. This stream consists of 196 cubic meters of HEPA filters and other miscellaneous debris items that were designated with deregulated Washington State waste codes WC01 or WC02. The filters were received into the CWC from FY 1987 through FY 1995. The dangerous waste regulations deregulated these waste codes during the November 1995 amendment to the WAC. Waste residing in the CWC that meets only the WC01/WC02 designation was verified and disposed of into the LLBG (LLW portion) during FY 1997.

4.1.2.2 RL-MLLW-02 - Inorganic Solids. This waste stream consists of inorganic-based waste contaminated with heavy metals. The waste requires treatment to meet all applicable federal and state LDRs. This waste stream profile sheet contains the following three substreams: 183-H Solar Basin solids, general inorganic solids, and inorganic lab packs.

A. 183-H Solar Basin Solids. This stream consists of 2452 cubic meters of inorganic sludge and salt originating from the clean out of the 183-H Solar Basins. If the waste requires treatment, it will be stabilized. Stabilization was approved by the EPA during 1996 as an alternative treatment method to combustion as specified by the U123 (formic acid) waste code designation.

Treatment of this stream is currently on hold pending an RL review of alternative disposition paths for the waste. RL has not provided guidance or a schedule for planning for disposition of the waste.

B. General Inorganic Solids. This stream consists of 620 cubic meters (182 cubic meters existing, 438 cubic meters forecast) of inorganic sludge, salt, soil, and resins contaminated with RCRA-listed heavy metals and/or having certain ignitable or corrosive characteristics. The waste is generated from many sources and contains a variety of contaminates. The waste requires deactivation and/or stabilization (i.e., specified treatment). Stabilization is a best demonstrated available technology for treating the waste. Treatment of this waste is scheduled to begin during FY 1999.

C. Inorganic Lab Packs. This stream consists of 80 cubic meters (49 cubic meters existing, 31 cubic meters forecast) of various types of inorganic liquid waste packaged in accordance with the "lab pack" criteria (WAC 173-303-161). This waste stream mainly consists of aqueous solutions contaminated with toxic-characteristic heavy metals and/or having certain ignitable or corrosive characteristics. The waste is generated by various onsite and offsite laboratories. The waste requires deactivation and/or stabilization treatment. Because the waste contains certain metals, these lab packs are not amenable to combustion (i.e., thermal treatment is not permissible because dilution is prohibited). Treatment of this waste is scheduled to begin after FY 2002.

4.1.2.3 RL-MLLW-03 - Organic Solids. These waste stream profile sheets cover various organic- and inorganic-based waste types mainly contaminated with organic waste constituents. The waste requires treatment to meet all applicable Federal and State LDRs. These streams contain the following two substreams: general organic solids and organic lab packs.

A. General Organic Solids. This stream consists of 926 cubic meters (598 cubic meters existing, 328 cubic meters forecast) of sludge, salts, particulates, soil, and resins contaminated mainly with organic constituents including PCBs. The waste comes from many sources and contains a variety of contaminants. The waste requires combustion treatment. Treatment is scheduled to begin during FY 2001.

B. Organic Lab Packs. This stream contains 486 cubic meters (309 cubic meters existing, 177 cubic meters forecast) of various types of organic liquid waste packaged in accordance with the "lab pack" criteria. This waste consists of mainly "derived from" aqueous characterization samples, PCB-contaminated oils and solutions and spent or discarded organic-based "listed" chemicals. The waste comes from many sources and contains a variety of contaminates. The waste requires combustion treatment (e.g., alternative lab pack treatment standards). Treatment is scheduled to begin during FY 2001.

4.1.2.4 RL-MLLW-04. These waste stream profile sheets cover organic and inorganic debris waste. This category contains three streams: general debris, FY 97 macroencapsulated pilot program, and navy core basket.

A. General Debris. This waste stream profile sheet covers waste meeting the definition of debris. Currently, 2860 cubic meters are in storage and 2338 cubic meters are forecast for the 5-year period. The waste contains organic (plastic, paper, rubber, vegetation), inorganic (concrete, brick), and metallic (stainless and carbon steel, tin) constituents. The organic constituents make up the majority of the waste stream volume, therefore the state-only organic/carbonaceous LDR (WAC 173-303-140(3)(c)) standard applies. The primary treatment path for this waste stream is debris macroencapsulation; however, the organic/carbonaceous LDR requires that either the waste be incinerated or treatment variances be obtained to use macroencapsulation. Debris macroencapsulation began in FY 1996 and will continue indefinitely.

B. FY97 Macroencapsulated Pilot Program. This waste stream profile sheet covers 185 cubic meters of debris waste encapsulated during FY 1997 under the Macroencapsulation Pilot Program. This waste was generated by the Backlog Waste Program and was placed into CWC storage during FY 1994 and FY 1995. The waste consists of inorganic debris (pipes, pumps, rubble, etc.) and organic/carbonaceous debris (personal protective equipment, plastic, paper, wood, etc.). The waste met the definition of hazardous debris and can be macroencapsulated in accordance with the requirements set forth in the "Alternative Treatment Standards for Hazardous Debris," 40 CFR 268.45). To enable this treatment to go forward, Ecology granted an economic hardship exemption to the state organic/carbonaceous waste LDR.

The waste was sent to ATG where it was compacted. After compaction, it was taken to the T Plant complex where it was macroencapsulated inside polyethylene tubes. The total disposal volume consists of 22 tubes or 64 cubic meters. The treated waste was moved to the LLBG (Subtitle C portion) where it will remain until disposal operations begin. Disposal operations are scheduled to begin in FY 1999.

C. Navy Core Basket. This waste stream profile sheet covers a decommissioned reactor core basket from the U.S. Navy. It was generated from the Knolls Atomic Power Laboratory and received into the CWC during October 1994. The waste meets the definition of hazardous debris and has been macroencapsulated inside a heavy steel shell similar to the U.S. Navy submarine reactor compartments. The core basket contains activated metals and some lead shielding, which causes it to be designated as LLMW. During FY 1997, the core basket was moved from the CWC to the LLBG (Subtitle-C portion) where it awaits final disposal, scheduled for FY 1999.

4.1.2.5 RL-MLLW-05 - Elemental Lead. This waste stream consists of radioactive lead solids and/or debris waste containing radioactive lead solids. Currently 290 cubic meters are in storage and 56 cubic meters are forecast for the 5-year period. The physical forms of lead include bricks, sheets, pipe, shot, composites (e.g., lead lined steel doors, blankets, shield walls) and lead-containing articles (light bulbs, printed circuit boards). The primary path for this waste stream is the specified RCRA treatment, macroencapsulation. Some of the lead will be recycled through decontamination efforts. Decontamination efforts are scheduled to begin during FY 1998 and macroencapsulation is to begin by FY 2001.

4.1.2.6 RL-MLLW-06 - Elemental Mercury. This waste stream consists of elemental mercury contaminated with radioactive materials. Currently about 2 cubic meters are in storage and less than 1 cubic meter is forecast for the 5-year period. The physical forms include liquid mercury in lab packs and some amalgamated mercury. The treatment path for this waste stream is the specified RCRA treatment, amalgamation, followed by stabilization as applicable. Treatment of this waste is scheduled to begin after FY 2002.

4.1.2.7 RL-MLLW-07 - M-91 MLLW. This waste stream consists of LLMW debris, inorganic solids, organic solids, and elemental lead. The material is in either remote handled (≤200 mR/package surface dose rate) or large-container (>6 ft by 6 ft by 10 ft) contact-handled (<200 mR/package surface dose rate) packages. Currently 211 cubic meters are in storage and 841 cubic meters are forecast during the 5-year period. The waste requires treatment to meet all applicable federal and state LDRs. However, because of health, safety, and/or physical facility restraints associated with treating subject waste, the waste will remain in storage until treatment technologies and capacity can accommodate the associated waste volumes. Tri-Party Agreement M-91 milestones address the path-forward for this waste stream.

4.1.2.8 RL-MLLW-08 - GTC3 MLLW. This waste stream is LLMW that exceeds the *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993) for Class 3 radioactive material limits. Disposal is currently prohibited by DOE orders. Currently 1.4 cubic meters of this waste, consisting of two radioisotope thermoelectric generators received in the early 1980s from the U.S. Navy are in CWC storage as LLW. When the waste is backfilled, this waste will be designated as mixed waste because of the lead shielding components in the generators (D008). Waste stream disposition is pending changes to DOE policy affecting GTC3 waste. The disposition path forward is covered under Tri-Party Agreement M-91 milestones.

4.1.3 LLMW Characterization

From the *Sampling and Analysis Plan for Mixed Waste Treatment* (Josephson 1996), the Hanford Facility's solid mixed waste is chronologically composed of two categories: newly generated waste and unverified waste. Waste accepted before the *Waste Specification System* (WSS) (Kirkpatrick and Oswald 1995) was implemented is called unverified mixed waste. It spans the period between 1987 when LLMW was first put into storage through February 1995. Waste accepted after implementation of the WSS is called newly generated waste. These waste characterization categories are summarized in Sections 4.1.3.1 and 4.1.3.2.

4.1.3.1 Newly Generated Waste Characterization and Designation. This section discusses waste designation and characterization activities performed by the generators of the waste and TSD unit receiving the waste.

Before any waste is accepted at the CWC, it must be characterized and packaged as described in the *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993). These criteria require that the waste generator characterize each individual container of waste with sufficient accuracy to permit proper segregation, storage, treatment, certification, shipment, and, if applicable, disposal. The characterization shall ensure that, on generation and after processing, the actual physical, chemical, and radiological characteristics are recorded and known during all stages of the waste management process.

Waste is designated based on the information provided by the generator. Waste designation is performed by the waste analysis organization as part of a waste acceptance evaluation in accordance with the *Hanford Site Solid Waste Acceptance Criteria*, and recorded in the SWITS database. This SWITS database includes Washington State and RCRA waste codes resulting from designations based on process knowledge and sample analysis. Each waste stream shipped from a generator to a Hanford Facility TSD must pass a formal compliance assessment before shipment in accordance with the implementing procedures of DOE Order 5820.2A.

The dangerous waste designation of each waste package is determined at its point of generation based on process knowledge of the waste placed in the container. The waste is sampled and analyzed if sufficient process knowledge is unavailable.

- **Process Knowledge**. The waste characterization is typically determined by the waste generator based on documented knowledge of the process generating the waste. Process knowledge is backed by acceptable evidence that relates the characterization to a definite process generating the waste. The generators of all waste shipped to the CWC are periodically audited to ensure that waste is being managed in accordance with *Hanford Site Solid Waste Acceptance Criteria.*

  Process knowledge has been used to characterize PCB-contaminated LLW currently in storage. Equipment containing PCBs, such as hydraulic systems, transformers, capacitors, and fluorescent light ballasts have been clearly identified. These systems are managed in accordance with 40 CFR 761; waste is immediately handled and packaged as PCB LLW material.

- **Sample Analyses**. If process knowledge is not sufficient to fully characterize a waste package, the generator must augment the characterization with sampling and analysis. This is normally required only for characteristic waste constituents (i.e., D001 through D043). The level of analytical data quality is determined by the receiving TSD unit's waste acceptance criteria. The generator also uses sampling and analysis to determine whether its "listed" waste constituents are below the numerical LDR values, thus enabling it to send the waste to CWC ready for Subtitle-C disposal. The generator of waste shipped to the CWC is audited periodically to ensure that waste is being managed in accordance with *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993).

  Hydraulic systems and transformers have been sampled to determine PCB concentrations. Any waste resulting from the management of these systems is designated based on the concentration of PCBs in the source system. Light ballasts are designated based on data from the manufacturers.

Acceptance of newly generated waste requires the generator to complete and sign an LDR notification/certification before the CWC can receive the waste. Acceptance of waste shipped from locations outside the Hanford Facility's 200 Area normally requires that a uniform hazardous waste manifest be prepared for the shipment. This meets the U.S. Department of Transportation and Hanford Facility transportation requirements. Waste generated inside the 200 Area normally is accepted by the onsite waste-transfer protocol as specified by the Hanford Facility's transportation requirements.

An integral component in the waste designation process is the use of Waste Specification Records (WSRd) as described in the Hanford Facility's WSS. The WSRds functionally categorize waste being received from various generators into streams requiring similar management. WSRds specify the waste's general radiological description; hazardous constituents; allowable waste codes; recommended packaging, storage, and treatment requirements, and any special handling and/or storage instructions that apply. The WSRds are not location specific and are used for waste from many sources.

4.1.3.2 Unverified Waste Characterization and Designation. This section covers waste designation and characterization activities performed by the CWC TSD unit on unverified waste in storage.

Unverified LLMW is the principal sampling and analysis problem confronting the CWC TSD unit. Unverified LLMW receipts were governed by individual acceptance documents called storage disposal approval records (SDAR). The SDARs conveyed acceptance criteria to meet safe handling and storage requirements; they do not meet treatment and disposal requirements. Furthermore, because the unverified waste has been in storage for many years, changes in the regulations (e.g., UHCs, State LDRs, etc.) may have made the original waste designation incomplete or obsolete.

In 1996, to address issues of unverified waste, a plan for sampling and analyzing mixed waste treatment was implemented. This plan expands on the WSS by using sorting algorithm software to assign special unverified WSRds to this waste. Once an unverified WSRd is assigned to a waste package, all packages with the same unverified WSRd are scheduled for characterization verification. Basically, characterization verification consists of reviewing the original characterization records, performing real-time radiography on a specified quantity of packages, sampling, and analyzing the waste as needed, then accepting the packages under the newly generated waste acceptance protocol (the WSS). Once the waste has been accepted, the unverified WSRd is converted to the applicable WSS WSRd. Characterization verification began in FY 1997; it will continue until all the unverified waste meets the WSS acceptance criteria. This activity currently is scheduled for completion by FY 2002.

4.1.3.3 Uncertainty of Waste Characterization or Designation. When the waste was first put into storage, the waste characterization and designation were appropriate and compliant for storage purposes. However, because of changes in designation regulations and acceptance rigor, unverified waste will require characterization verification before it can be sent to the proper treatment and/or disposal unit. While waiting for the characterization verifications, the unverified waste does not pose a health or environmental threat.

4.1.4 LLMW Storage

This section describes the storage unit used to store waste streams RL-MLLW-01 through RL-MLLW-08.

4.1.4.1 Description of Storage Units and Capacities. The waste resides in the CWC located in the 200 West Area. The CWC is an interim-status TSD storage unit and will be incorporated into the Hanford Facility RCRA Permit in 1999. It consists of the following storage buildings and modules.

2401W and 2402W through WL Series MW Storage Buildings. This complex consists of 13 individual storage buildings designed to store contact-handled LLMW, TRUM, and PCB waste. Each building has 372 square meters of floor space that can hold approximately 1000 55-gal drum equivalents of waste. These buildings provide a combined storage capacity of 13,000 drum equivalents. The 2401W building became operational during the mid 1980s to store radioactively contaminated PCB waste; the other 12 buildings (2402W series) were built between 1988 and 1990.

2403WA-WC Series MW Storage Buildings. This complex consists of three individual storage buildings designed to store contact-handled LLMW and TRUM waste. (TSCA-regulated PCB waste would require additional secondary containment if placed in the buildings.) Each building has 3160 square meters of floor space that can hold approximately 11,600 drum equivalents. These buildings provide a combined storage capacity of 34,800 drum equivalents. They became operational during 1991.

2403WD MW Storage Building. This storage building was designed to store contact-handled LLMW, TRUM, and PCB waste. (TSCA-regulated PCB waste would require additional secondary containment if placed in the buildings.) The 2403WD building has 5135 m^2 of floor space that can hold approximately 17,500 drum equivalents. The building became operational during 1991.

2404WA-WC Series MW Storage Buildings. This complex consists of three individual storage buildings designed to store contact-handled LLMW, TRUM, and PCB waste. Each building has 2000 square meters of floor space that can hold approximately 4600 drum equivalents. These buildings provide a combined storage capacity of 13,800 drum equivalents. They became operational during 1997.

Flammable Mixed-Waste Storage Modules (FS-01-FS-24). This complex consists of 27 individual modules designed to store flammable LLW, TRU waste, mixed LLW, TRU-mixed waste, and PCBs with flash points below 38 °C. Each unit can hold approximately 22 drum equivalents for a total capacity of 528 drum equivalents. The modules are small preengineered buildings with 16.3 square meters of floor space each.

Alkali Metal Waste Storage Modules (AMW-01-AMW-04). This complex consists of four individual modules designed to store contaminated alkali metal (sodium, lithium., etc.) waste. Each unit can hold approximately 21 drum equivalents for a total capacity of 84 drum equivalents. The modules are small preengineered buildings with 16.3 square meters of floor space each.

Waste Unloading and Staging Area. This pad is 836 cubic meters in area and can hold approximately 2500 drums stacked two high. This pad is not intended for long-term storage.

LLBGs (Subtitle-C Portion) (218-W-5 T31 and T34). This complex consists of two individual RCRA-compliant disposal trenches currently used for storage only. Containerized treated LLMW is placed into Trench 34 awaiting the start of disposal operations (scheduled for FY 2000). Each trench has approximately 2300 square meters of RCRA-compliant storage area and can effectively hold approximately 5000 drum equivalents in the storage mode. These storage units became operational during 1997 and will eventually transition to disposal.

4.1.4.2 CWC Storage Capacity and Existing Stored Volume. The CWC currently has approximately 80,000 drum equivalents (approximately 16,800 cubic meters) of long-term (i.e., inside building storage) storage capacity for mixed, PCB, and TRU waste. The amount of waste currently stored in the CWC is approximately 48,850 drum equivalents (10,255 cubic meters). As of September 30, 1997, this includes 8180 cubic meters of LLMW, 240 cubic meters of LLMW with PCBs, 1160 cubic meters of TRUM, 75 cubic meters of TRUM with PCBs, and 600 cubic meters of LLW. This means that the CWC is 60 to 65 percent full.

Except for low-flash-point modules, which are procured as needed, no plans have been made to build additional long-term storage buildings. The current mixed waste treatment activities and plans would maintain the stored waste volume below the CWC capacity. This situation is contingent on no major increase to current waste forecasts, no change to the LLCE item direct-disposal baseline, and no treatment program funding shortfalls. The capacity of the CWC to store mixed waste will be evaluated periodically. If changes to the current programmatic baseline affect the long-term storage capacity needs at the CWC, these will be addressed through the DOE.

4.1.5 LLMW Treatment

Sections 4.1.5.1 through 4.1.5.8 describe the treatment activities for waste streams RL-MLLW-01 through RL-MLLW-08.

4.1.5.1 FY 1997 and First Quarter FY 1998 Treatment Activities. During FY 1997 and the first quarter of FY 1998, the following low-level mixed waste treatment activities took place:

Debris Macroencapsulation. This activity used the alternative treatment standards for hazardous debris to treat 880 drums (185 cubic meters) of waste stream RL-MLLW-04 (Debris). The drums were compacted at ATG, an offsite facility, under a technology demonstration activity. The compacted waste was shipped to the T Plant complex where it was macroencapsulated into high-density polyethylene tubes. The treated waste was placed into theLLBG (Subtitle C portion) for interim storage until disposal operations begin.

LLCE Macroencapsulation. Four LLCE items from the SST and DST system farms were macroencapsulated under the alternative treatment standards for hazardous debris. Treatment consisted of completely encapsulating the debris inside a container and filling the voids around the equipment item with grout. This activity also was performed at the T Plant complex; it was preceded by a FY-1996 activity that macroencapsulated six other LLCE items. The FY-1996 and -1997 activities prepared approximately 81 cubic meters of waste for disposal. This waste is included in the RL-MLLW-01-C waste stream volume. It was placed into the LLBG (Subtitle-C portion) for interim storage until disposal operations begin.

Battelle Columbus Waste. Sixteen 55-gal drums of lead-contaminated drain line system sludge and excavation soil were stabilized at the T Plant complex during FY 1997. The waste was stabilized using a portland cement-based grout stabilizer. Because the waste was designated with only the D008 characteristic waste code, once it was treated for that characteristic and passed TCLP testing requirements, it was disposed of into the LLBG (LLW portion). This activity disposed of approximately 3 cubic meters of waste.

Backlog Soils Disposal. Before 1993, the cleanup of various contaminated areas in the SST and DST system generated 260 cubic meters of soil in drums and boxes. The waste was originally designated with listed waste codes F001 through F005 because it was associated with (derived from) the SST and DST system waste. The DOE obtained a "contained-in" determination from Ecology in March 1997 to allow disposal of the waste into the LLBGs (LLW portion). During FY 1997, approximately 30 cubic meters of this waste were disposed of; another 200 cubic meters are scheduled for disposal during FY 1998. The remaining 30 cubic meters have TSCA-driven concerns about PCB contamination that must be addressed before disposal can take place. This waste is part of the RL-MLLW-01-A waste stream. The waste volume that has been disposed of is not included in the inventory.

HEPA Filter Disposal. Spent HEPA filters generated at various locations at the Hanford Facility contained particulates from filtration system performance testing. These filters were designated with the state-only "carcinogenic" waste codes (WC01 and WC02). During changes to the State "Dangerous Waste Regulations," these codes were removed. Therefore, the waste residing at the CWC designated with these waste codes could be disposed of as LLW. During FY 1997, 196 cubic meters of this waste were identified, retrieved, verified, and redesignated for disposal in the LLBG (LLW portion). This waste was part of the RL-MLLW-01-H waste stream. The waste volume that was disposed of in FY 1997 is not included in the inventory for the end of FY 1997.

Idaho National Environmental Engineering Laboratory/Bettis Flyash. The Idaho National Environmental Engineering Laboratory (INEEL) sent 0.9 cubic meter of flyash and inorganic nonincinerables during September 1997. The original waste was generated by Bettis Atomic Power Laboratory and was incinerated at INEEL's Waste Experimental Reduction Facility (WERF). The waste was received by the T Plant complex where it will undergo stabilization treatment. Treatment will be completed druing the first half of FY 1998; the treated waste will be sent back to Bettis Atomic Power Laboratory by July 31, 1998.

4.1.5.2 Planned Treatment Activities. To meet regulatory and consent agreements, a significant amount of the waste currently being stored and newly generated waste will need to be treated during the next 8 years. The Tri-Party Agreement has several milestones influencing LLMW treatment and disposal. The milestones specifying LLMW disposition volumes and schedule are summarized in the following paragraphs.

M-19-00: For CH-LLMW, this milestone requires that the cumulative volume treatment and direct-disposal waste be at least 246 cubic meters by the end of FY 2000. It must be 822 cubic meters by the end of FY 2001 and 1644 cubic meters by September 30, 2002.

M-19-01 This milestone requires that treatment of CH-LLMW begin on or before September 30, 1999.

M-91-12 This milestone requires that thermal treatment for CH-LLMW begin by December 2000. At least 600 cubic meters of CH-LLMW must be provided for thermal treatment by December 2005.

M-91-13 This milestone requires disposal of CH-LLMW to begin by June 2001.

M-91-14 This milestone requires that acquisition of facilities be completed and treatment of RH and large-container CH-LLMW initiated by June 2008.

To meet these commitments, the Hanford Facility is following a dynamic program to obtain treatment and/or disposal pathways for LLMW. With the exception of RL-MLLW-08 (GTC3), treatment and disposal pathways have been determined for each waste stream. The Hanford Facility's LLMW baseline disposition map[1] (see Figure 4-1) depicts these implementing pathways. Table 4-2 shows the current disposition schedule and associated waste volumes.

4.1.5.3 Treatment Projects/Programs. The following summarizes the various treatment projects and programs being pursued at the Hanford Facility to disposition waste streams RL-MLLW-01 through RL-MLLW-07. A disposition path forward has not been established for the RL-MLLW-08 waste stream because the *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993) prohibit disposing of GTC-C waste, which includes most GTC-3 waste.

Waste Receiving and Processing Facility Module 1 (WRAP-1): The WRAP-1 facility is located in the 200 West Area. It became operational in March 1997 with the startup of its nondestructive evaluation and nondestructive analysis (NDE/NDA) line. LLW processing and verification are scheduled to begin during 1998. TRUM processing is scheduled to begin in FY 1999. LLMW treatment also will begin in FY 1998 with the macroencapsulation of debris. WRAP-1 will accept contact-handled TRUM and LLMW in both box and drum forms. Capabilities are limited to NDE/NDA of boxes. They include NDE/NDA, segregation, decontamination, characterization, verification, and treatment of drummed waste. Operations other than NDE/NDA are performed in the TRU and LLMW restricted waste gloveboxes. Waste treatment capabilities include neutralization, stabilization, amalgamation, macroencapsulation, and controlled reaction with water.

Thermal Treatment Program. The thermal treatment program consists of two private and two DOE-complex facilities. Each waste package requiring thermal treatment (stream RL-MLLW-03) will be evaluated and assigned to the best alternative. The private facilities are the ATG Richland thermal treatment facility and the DSSI incinerator in Oak Ridge, Tennessee. The DOE complex facilities are the WERF incinerator at the INEEL and the incinerator at Oak Ridge National Laboratory operated under the TSCA. Currently only the ATG and WERF facilities are used in the baseline dispositions.

ATG Richland Thermal Treatment Facility. The ATG Richland thermal treatment facility will be able to treat mixed waste and alpha-contaminated PCB waste in solid, absorbed liquid, and laboratory packed-liquid forms. Incoming waste will be segregated into two fractions,. One will require thermal treatment and the other may be treated by less expensive low-temperature methods. For the thermal treatment fraction, ATG will thermally destroy organic hazardous constituents and radionuclides in a grouted final form as needed to stabilize any metals.

[1]Note: The LLMW baseline disposition map covers all LLMW that is forecasted for the life cycle of the Environmental Management function at the Hanford Facility (i.e., through FY 2046).

Figure 4-1. Hanford LLMW Baseline Disposition Map. (2 sheets)

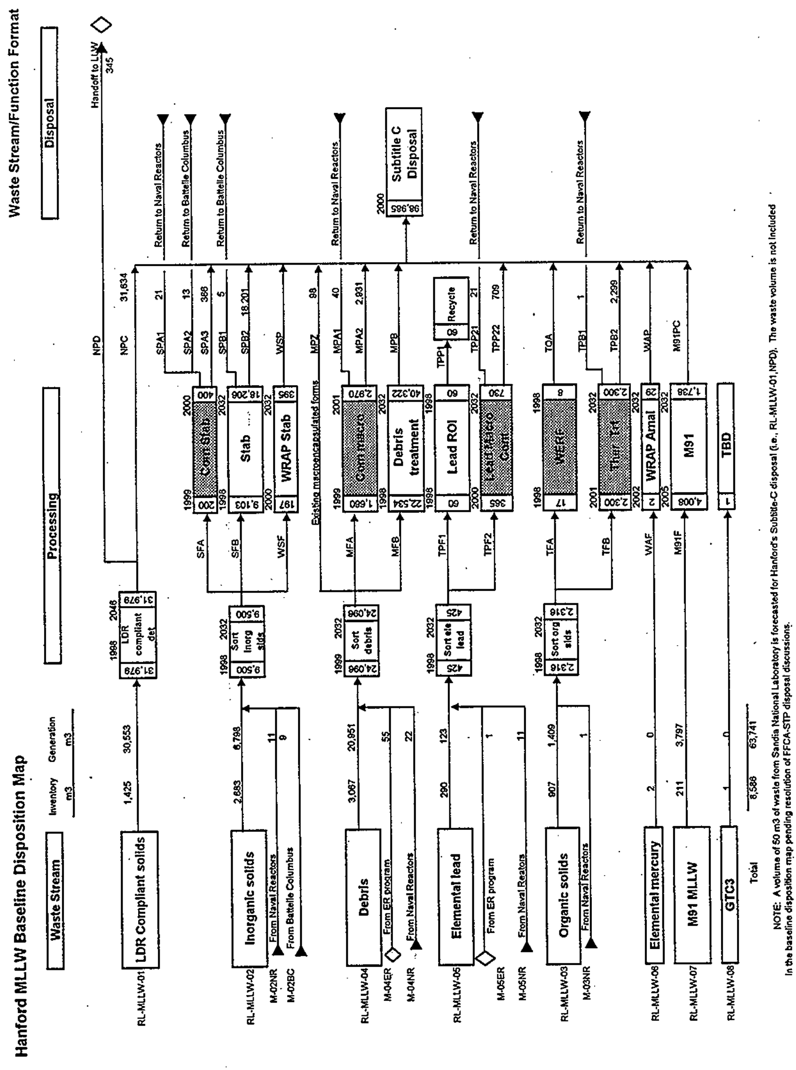


Figure 4-1. Hanford LLMW Baseline Disposition Map. (2 sheets)

Key:

The numbers on the left refer to waste streams as used in this report.

Shaded boxes indicate commercial or offsite treatment.

Numbers above boxed indicate the years for the start and end of processes.

Numbers inside boxes on the left and right vertically represent cubic meters of waste at the beginning and end of processes. Numbers above flowchart arrows represent cubic meters of waste in inventory, projected to be generated, or projected for disposal.

Inventory is as of September 30, 1997.

Generation refers to generation in the years 1998 to 2046.

Codes before and after process boxes (e.g., SFA) generally have the following meaning:

The first part of the code denotes the process:

N	no treatment
S	stabilization
M	macroencapsulation
M91	Tri-Party Agreement milestone M-91, Difficult-to-Treat Waste
T	thermal treatment
TP	lead
WA	WRAP amalgamation
WS	WRAP stabilization

The next part of the code is either F for feed or P for product.

The last part of the code (optional) is sequential (e.g., A, B, C or 1, 2, 3).

Com Macro	commercial macroencapsulation
Com Stab	commercial stabilization
FFCA-STP	Federal Facility Compliance Act Site Treatment Plan
GTC3	Greater than Class 3 (regulatory criteria)
Lead Macro Cont	lead macroencapsulation contract
LDR compliant det	determination of compliance with land disposal restriction regulations
LLW	Low-Level Waste (program)
M91	Tri-Party Agreement milestone M-91
MLLW , LLMW	mixed low-level waste
ROI	return on investment
Sort ele lead	sort elemental lead
Sort inorg slds	sort inorganic solids
Sort org slds	sort organic solids
Stab	stabilization
TBD	to be determined
Ther Trt	thermal treatment
WERF	Waste Experimental Reduction Facility
WRAP Amal	Waste Receiving and Processing Facility amalgamation
WRAP Stab	Waste Receiving and Processing Facility stabilization

Table 4-2. Waste Treatment Schedule and Volume.

Hanford Facility waste Stream ID	Waste stream title	Description	LLMW treatment and disposal volumes					
			FY 1997 (m^3)	FY 1998 (m^3)	FY 1999 (m^3)	FY2000 (m^3)	FY2001 (m^3)	FY2002 (m^3)
RL-MLLW-01	LDR-compliant solids	A. Backlog soils	56	230	0	0	0	0
		B. 200 ETF dryer solids	0	0	0	0	82	117
		C. SST and DST system long-length contaminated equipment	28	0	0	54	700	693
		D. 183H Solar Basin solidified liquids	0	0	0	844	0	0
		E. SST and DST system soils	0	0	0	0	25	0
		F. State-only waste	0	0	0	0	86	0
		G. 183H empty bags	0	0	0	0	0	0
		H. WC01/02 HEPA filters	196	0	0	0	0	0
		Subtotal	280	230	0	898	893	810
RL-MLLW-02	Inorganic solids	A. 183H Solar Basin solids	0	0	0	0	0	0
		B. General inorganic solids	3	0	90	0	50	50
		C. Inorganic lab packs	0	0	10	0	10	10
		Subtotal	3	0	100	0	60	60
RL-MLLW-03	Organic solids	A. General organic solids	0	0	0	0	334	370
		B. Organic lab packs	0	0	0	0	200	200
		Subtotal	0	0	0	0	534	570
RL-MLLW-04	Debris	A. General debris	0	0	508	500	762	762
		B. Macroencapsulation pilot program	0	0	185	0	0	0
		C. Navy core basket	0	0	22	0	0	0
		Subtotal	0	0	715	500	762	762
RL-MLLW-05	Elemental Lead	Elemental lead	0	60	0	0	0	0
RL-MLLW-06	Elemental mercury	Elemental mercury	0	0	0	0	0	0
RL-MLLW-07	M91 MLLW	Generalized RH	0	0	0	0	0	0
RL-MLLW-08	GTC3	GTC3	0	0	0	0	0	0
		Total	283	290	815	1398	2249	2202

DST double-shell tank
ETF Effluent Treatment Facility
FY fiscal year
HEPA high-efficiency particulate air (filters)
LDR land disposal restrictions
MLLW mixed low-level waste
RH remote handled
SST single-shell tank
TF tank farm

A contract is in place with the ATG facility to begin thermal treatment of Hanford Facility waste during FY 2001. The contract is for a 5-year base period with five 1-year options. The contract will allow thermal treatment of up to 717 cubic meters of waste during each base-period year (FY 2001through FY 2005) and up to 310 cubic meters during each option year.

WERF Incinerator. The WERF incinerator at the Idaho National Environmental Engineering Laboratory can treat combustible mixed waste in solid or absorbed liquid forms. The WERF incinerator does not accept PCB waste. The WERF incinerator has limited capability for segregating waste into combustible and noncombustible fractions. Combustible fractions are packed into incinerable boxes (0.6 ft^3) and mechanically fed into a controlled-air incinerator. Noncombustible waste is returned to the generator. The WERF incinerator is currently operating and can process up to 518 cubic meters of waste annually. The Hanford Facility is scheduled to have 16 cubic meters of waste incinerated at the WERF facility during FY 1998.

Non-Thermal Treatment Program. The Non-Thermal Treatment program was initiated after the WRAP Module 2A project was terminated in December 1994. The program is scoped to disposition waste that was originally assigned to WRAP 2A. The program consists of three components: commercial treatment, onsite treatment, and direct disposal. Waste that does not require thermal treatment will be evaluated container by container and assigned to the best disposition path.

Commercial Treatment. This component will procure treatment services to meet RCRA and WAC requirements. Targeted technologies include macroencapsulation for debris and elemental lead waste and stabilization for particulates, soil, and sludge. The waste may be treated at the vendor's site under the vendor's RCRA permit, or by the vendor at the Hanford Facility under the Hanford Facility RCRA permit. Contracts will be placed for individual streams, so the best treatment process and location can be selected for each stream. Waste streams designated for commercial treatment are generally those with large volumes that would require substantial capital investment or new facilities to treat effectively. Treatment will begin no later than September 1999, as required by Tri-Party Agreement milestone M-19-01.

A commercial contract has been awarded to the ATG in Richland, Washington, to treat up to 200 cubic meters of inorganic solids (RL-MLLW-02) and 1660 cubic meters of debris (RL MLLW-04). Treatment is to begin by January 1999, and will continue for up to 3 years if contracts are awarded for option treatment quantities.

Onsite Treatment. This component will use existing small-scale macroencapsulation, neutralization, and stabilization capabilities at the T Plant complex to treat specialty waste streams. This component is separate from amalgamation, neutralization, and stabilization treatment at WRAP 1. Waste streams designated for onsite treatment are generally those with small volumes that would not require substantial capital investment or new facilities for effective treatment or those that require significant pretreatment characterization and sorting (e.g., lab packs). This component is currently operating.

Direct Disposal. This component seeks to meet LDR treatment standards without additional treatment, as recommended by the report from RL's direct disposal team (RL 1995). Typically, direct disposal efforts use sampling and analysis to demonstrate that waste meets LDR treatment standards or pursues regulatory relief of LDR treatment standards when technically advisable. Waste streams designated for direct disposal are those where existing analytical data or process knowledge indicate that the concentration of hazardous constituents is small or those where some type of treatment has already been performed. Direct disposal waste volumes are included in waste stream RL-MLLW-01-A and -E.

Milestone M-91 Program. This program is the successor to the M-33 milestone discussions and will develop treatment capability for remote-handled and large-size TRU, TRUM, LLMW, and GTC3 waste. Treatment alternatives will be evaluated by developing separate project management plans for TRU and TRUM and for LLMW and GTC3 waste. For each waste type, the preferred alternative developed in the project management plan will be constructed or procured. TRU and TRUM processing capability will start no later than June 2005. LLMW and GTC3 treatment capability will start no later than June 2008.

4.1.6 LLMW Accelerated and Alternative Treatment

RL is pursuing alternative treatment requirements through its Direct Disposal Team report (RL 1995) to minimize and thereby accelerate treatment. Accelerated treatment plans and scoping studies also have been pursued by DOE-HQ, RL, and the Facility's contractors to meet the "10-year plan" objectives laid out by the DOE Office of Environmental Restoration and Waste Management during 1996 and 1997.

4.1.7 LLMW Waste Reduction

All plants and processes that generate waste shipped to the CWC are required to have a waste minimization program and waste specification summaries in place. The implementation and effectiveness of these programs are audited regularly.

4.1.8 LLMW Treatability Variances, Equivalency Petitions, Rulemaking Petitions, and Case-by-Case Exemptions

The Tri-Party Agreement requires treatment and disposal capacity for a significant fraction of the Hanford Facility's solid LLMW. However, because of technology, treatment capacity, and federal budget limitations, the waste must remain in storage.

If treatability variances, equivalency petitions, rulemaking petitions, or case-by-case exemptions are required because of delays in the development of treatment, storage, or disposal capacity or the demonstrated need for using alternative treatment technologies, they will be applied for in accordance with the procedures detailed in the Tri-Party Agreement and/or regulations.

The following list summarizes approved variances, alternative treatments, and contained-in determinations.

- A treatment equivalency petition has been approved by EPA and Ecology for treating the formic acid in the 183-H Solar Basin waste. The treatment equivalency allows for nonthermal "stabilization" treatment in lieu of thermal "combustion" treatment.

- In February 1997, Ecology granted a "contained-in" determination for 828 drums of backlog waste soil from the SST and DST systems. This determination allowed waste codes F001 through F005 to be removed from these drums. State only dangerous waste codes also are not required for PCBs in the waste; however, all soil containing PCBs with concentrations higher than 50 parts per million still must be managed in accordance with the TSCA. This determination was the result of reviewing analytical data from soil samples.

- In March 1997, Ecology granted DOE an exemption to the organic/carbonaceous state-only LDR for 880 drums of Hanford Facility debris mixed waste. The exemption allowed the use of debris "macroencapsulation" treatment in lieu of thermal "incineration" treatment. The macroencapsulation treatment activity was performed during FY 1997.

The required treatment for certain PCB waste is incineration. Currently, no facilities are available for incineration of mixed PCB waste. However, beginning in FY 2001, a commercial thermal treatment vendor will begin to treat some of the Hanford Facility's PCB waste. The treatment contract has enough capacity specified to dispose of all the PCB-laden CH-LLMW at the Hanford Facility. The M-91 series of Tri-Party Agreement milestones will address treatment capacity issues.

The PCB waste will be stored at the CWC until the contracted thermal treatment facilities come on line. The EPA and DOE Headquarters entered into the *Federal Facility Compliance Agreement on Storage of Polychlorinated Biphenyls* in 1996 (EPA et al 1996), which allows DOE to store PCB-contaminated radioactive waste at the CWC for longer than 1 year. The agreement requires submittal of an annual status report that describes efforts to find or develop treatment capabilities.

4.2 TRUM WASTE SUMMARY

Transuranic mixed waste contains concentrations of both transuranic radioactive materials and hazardous chemicals, including PCBs. The radioactive component is identified by DOE Order 5820.2A. The hazardous component is identified by RCRA and/or TSCA regulations. This waste category pertains only to solid waste meeting the nonwastewater treatability group as defined by federal LDR requirements.

TRU waste generation began in 1970. The waste was put into trenches through 1985. In 1987, the practice was discontinued and TRU waste was stored in the Transuranic Storage and Assay Facility (TRUSAF). With adoption of the RCRA on the Hanford Facility in 1987, TRU waste that also contained RCRA-defined hazardous waste constituents was designated as TRU-mixed waste (TRUM). During FY 1997, TRUM waste was removed from the TRUSAF and into the CWC. This was done to consolidate all the aboveground storage in a central location and reduce the operational mortgage incurred by the TRUSAF on the Solid Waste program.

The retrievably stored waste at the Hanford Facility was not segregated based on its physical or chemical characteristics. The waste containers are filled with mixtures of materials. These include failed process equipment including pumps, resin columns, and tanks; laboratory and room trash including paper, plastic, glassware, cloth, solidified liquids, and animal carcasses; and decontamination and decommissioning rubble including concrete, piping, and soil. The waste is contained primarily in 0.21 cubic meter drums and metal or wooden boxes. Waste also is contained in casks, concrete boxes, concreted culverts, and other miscellaneous containers. Approximately 14,820 cubic meters of TRU waste has been placed in retrievable storage in the 200 Areas in more than 38,700 containers. The TRU waste has been placed in shallow land trenches, concrete lined "V" trenches, and earth-covered asphalt pads and caissons with the intent of retrieving it in the future. Approximately 300 waste packages have been relocated from retrievable storage during the last 4 years. Most of the waste retrieved was verified as LLW and disposed of in the LLBG (LLW portion). However, 18 packages were verified to be TRU and 1 package was verified to be LLMW from the relocation efforts. These 19 packages were relocated to the CWC. The disposition path for this waste will be determined by the Retrieval Characterization program, as specified under the M-91 milestone series of Tri-Party Agreement compliance agreements. The purpose of the Retrieval Characterization program is to determine the actual waste type (e.g., TRU, LLW) and designate it to the current protocol for the waste specification system. Once the waste has been characterized, it will be sent to the most applicable waste stream for disposition.

The CWC is operated under interim status and will be incorporated into the Hanford Facility RCRA permit. The waste received at the CWC is generated by onsite operations (e.g., facility stabilization, waste management, tank farm operations, etc.). Offsite waste was primarily from DOE research facilities and small DOE processing sites; however, waste receipts were curtailed in late 1989 pending the startup of the WIPP.

The hazardous characteristics of the TRUM waste received at the CWC are highly varied. Much of the newly generated waste is designated with waste codes F001 through F005 because of the "derived-from" rule. Otherwise, the waste is designated with many of the organic or metal hazardous characteristic constituents. The TRUM waste is composed of contaminated materials, including personal protective equipment, air and water filters, storage basin sediment and sludge, glovebox sweeps and rags, and metal debris from plutonium processing equipment.

As of September 30, 1997, approximately 350 cubic meters of TRUM are stored at the CWC and 14,820 cubic meters of suspect TRUM waste remain in retrievable storage. Because TRUM waste is to be disposed of at the WIPP facility outside Washington State, compliance to state-only LDRs will not be required. In addition, the WIPP facility has been exempted from federal LDRs. Any treatment performed on TRUM will be to meet transportation requirements or WIPP facility waste acceptance requirements. Of the TRUM stored in the CWC, approximately 250 cubic meters currently meet the WIPP facility acceptable RCRA hazardous waste codes (DOE 1996) and 97 cubic meters either carry RCRA waste codes or contain PCBs not acceptable by the WIPP. For the retrievably stored TRUM, the volume of TRU mixed in the waste stream will not be determined until the waste is retrieved and recharacterized.

The TRUM is divided into three waste streams based on the radiological handling, waste storage mode, and/or hazardous contaminates. The waste streams, RL-TRUM-01 through RL-TRUM-03, are summarized in Table 4-3.

Waste generation information and records are maintained in the SWITS database and in the TSD. SWITS provides a system to readily track and summarize waste inventories and physical, chemical, and radiological information.

Table 4-3. TRUM Waste Streams.

Waste Streams	Description	Inventory FY1996 (m^3)	Waste Receipts FY1997 (m^3)	Inventory FY1997 (m^3)	5-yr Forecast Generation (m^3)	Sub-Totals (m^3)
RL-TRUM-01	Generalized CH-TRUM	257	17	274	1045	1319
RL-TRUM-02	Generalized RH-TRUM	0	0	0	357	357
RL-TRUM-03	CH/RH-TRUM with PCBs	73	0	73	0	73
	Total	330	17	347	1402	1749

CH contact-handled
PCB polychlorinated biphenyl
RH remote-handled
TRUM transuranic mixed waste

4.2.1 TRUM Generation

During FY 1997, the majority of TRUM shipped to the CWC was generated in small quantities by routine plant operation and maintenance activities. The following onsite generating locations sent waste to the CWC during FY 1997.

Onsite:	BHI	(0.8 cubic meters)
	BWHC-PFP	(9.6 cubic meters)
	BWHC-PUREX	(1.0 cubic meters)
	Pacific Northwest National Laboratory	(5.8 cubic meters)
Offsite:	None.	

The overall volume of TRUM waste generated and received by the CWC during FY 1997 was 17 cubic meters (see Table 4-3). Debris accounted for approximately 90 percent of the waste received. The PFP was the largest generating location during the period, followed by the Pacific Northwest National Laboratory. No PCB-contaminated TRUM waste was generated during the period.

As summarized in the waste stream profile sheets in Chapter 3 and in Table 4-3, the TRUM is divided into three waste streams based on the wastes radiological, RCRA, TSCA, and/or WIPP facility dispositions. The waste streams are described in the following paragraphs.

4.2.1.1 RL-TRUM-01 - GENERALIZED CH-TRUM. This waste stream consists of all physical forms of contact-handled TRU containing RCRA hazardous waste constituents (e.g., debris and inorganic and organic particulates). This waste group does not include TSCA-regulated levels of PCBs. Currently, 267 cubic meters are in storage; 1045 cubic meters are forecast during the 5-year reporting period. The waste is contained primarily in 0.208 liter drums; however, some boxes have volumes approaching 10 cubic meters each.

Because TRUM waste is to be disposed of at the WIPP facility out of state, compliance with state-only LDRs will not be required. Furthermore, the U.S. Congress has exempted the WIPP facility from the federal LDRs. Of the CH-TRUM being stored in CWC, approximately 243 cubic meters currently are designated with WIPP-acceptable RCRA hazardous waste codes and 24 cubic meters contain RCRA waste codes not currently acceptable by the WIPP. The waste that is not acceptable by the WIPP will be treated in the WRAP-1 facility during WIPP certification activities.

4.2.1.2 RL-TRUM-02 - Generalized RH-TRUM. This waste stream consists of all physical forms (e.g., debris and inorganic and organic particulates) of remote-handled TRU containing RCRA hazardous waste constituents. This waste group does not include TSCA-regulated levels of PCBs. Currently, no RH-TRUM is in aboveground storage; 357 cubic meters are forecast during the 5-year reporting period. Some RH-TRUM could reside in the 200 West Area caissons; however, this waste would have been deposited before 1987 and would only become TRUM if it is retrieved.

As with waste stream RL-TRUM-01, this waste stream is to be disposed of at the WIPP facility; therefore, compliance with state-only LDRs will not be required. Furthermore, the U.S. Congress has exempted the WIPP facility from the federal RCRA LDRs. Because most of the forecast RH-TRUM waste is scheduled to come from SST and DST system operations, little of the forecast waste expected to require treatment. All the waste will require U.S. Department of Transportation and WIPP certification before being shipped to WIPP. If some of this waste requires treatment, it will be treated during certification activities. Currently, neither the Hanford Facility nor the DOE complex has enough treatment or certification capacity to prepare this waste for shipment to WIPP. However, the Tri-Party Agreement M-91 series of compliance agreements addresses the development of this capacity.

4.2.1.3 RL-TRUM-03 - CH/RH-TRUM with PCBs. This waste stream consists of all physical forms (e.g., debris, inorganic and organic particulates, liquids) of contact- and remote-handled TRU and TRUM waste containing TSCA-regulated PCBs. Some of the waste also contains RCRA hazardous waste constituents. Currently 73 cubic meters are in storage; no additional waste is forecast during the 5-year reporting period. The majority is contact-handled waste from the PFP.

Currently, no disposal path forward has been identified for this waste. This is because the WIPP is not being permitted to accept TRUM with TSCA-regulated PCBs, and TRU waste disposal is prohibited at all other DOE sites and facilities. No time frame has been established to provide a disposal path forward for this waste.

4.2.2 TRUM Characterization

TRU and TRUM waste will require WIPP facility certification for shipment to and disposal at the WIPP facility. WIPP facility certification is independent from the waste characterization and designation activity that authorizes waste receipt from various generators for storage at the CWC.

4.2.2.1 TRUM Waste Characterization and Designation for Storage. TRUM waste is accepted for storage by implementation of the WSS (Kirkpatrick and Oswald 1995). This section covers waste designation and characterization activities performed by the onsite organization or offsite generators and by the storage or treatment unit receiving the waste.

Before any waste is accepted at the CWC, it is characterized and packaged as described in the *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993). These criteria require that the generator of the waste characterize each individual container with sufficient accuracy to permit proper segregation, storage, treatment, certification, shipment, and, if applicable, disposal. The characterization ensures that, on generation and after processing, the actual physical, chemical, and radiological characteristics are recorded and known during all stages of the waste management process.

Waste is designated based on the information provided by the generator. The waste analysis organization assigns the waste designation as part of a waste acceptance evaluation in accordance with the *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993). The designation is recorded in the SWITS database, which includes Washington State and RCRA waste codes resulting from designations based on process knowledge and sample analysis. Each waste stream shipped from a generator to a Hanford Facility TSD is required to pass a formal compliance assessment before shipment in accordance with the implementing procedures of DOE Order 5820.2A.

The dangerous waste designation of each waste package is determined at its point of generation based on process knowledge of the waste placed in the container. The package is sampled and analyzed if sufficient process knowledge is unavailable.

Process Knowledge. The waste characterization is typically determined by the waste generator based on documented knowledge of the process generating the waste (i.e., process knowledge). Process knowledge is backed up by acceptable evidence that relates the characterization to a definite process that generated the waste. The generators of all waste shipped to the CWC are periodically audited to ensure that waste is managed in accordance with *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993).

Process knowledge has been used to characterize PCB-contaminated TRU waste currently in storage. Equipment containing PCBs, such as hydraulic systems, transformers, capacitors, and fluorescent light ballasts, have been identified clearly. These systems are managed in accordance with 40 CFR 761; waste is immediately handled and packaged as PCB TRU material.

Sample Analyses. If process knowledge is not sufficient to fully characterize a waste package, the generator must augment the characterization with sampling and analysis. This is normally required only for characteristic waste constituents (i.e., D001 through D043). The quality level of analytical data is determined by the receiving TSD unit's waste acceptance criteria. The generators of waste shipped to the CWC are periodically audited to ensure that waste is managed in accordance with *Hanford Site Solid Waste Acceptance Criteria* (WHC 1993).

Hydraulic systems and transformers have been sampled to determine PCB concentrations. Any waste resulting from the management of these systems is designated based on the concentration of PCBs in the source system. Light ballasts are designated based on data from the manufacturers.

Acceptance of waste shipped from locations outside the Hanford Facility's 200 Area normally requires completion of a uniform hazardous waste manifest for the shipment, as required by the U.S. Department of Transportation and Facility transportation requirements. Waste generated at the Facility normally is shipped by the onsite waste-transfer protocol as specified by the Facility's transportation requirements.

An integral component in the waste designation process is the use of WSRds as described in the Hanford Facility's WSS. WSRds functionally categorize waste received from various generators into streams requiring similar management. WSRds specify the waste's general radiological description; hazardous constituents; allowable waste codes; recommended packaging, storage, and treatment requirements; and any special handling and/or storage instructions applicable to the waste. WSRds are not location specific, and therefore are used for waste from many sources.

4.2.2.2 WIPP Certification. TRU waste certification from WIPP involves proving that the TRU waste sent to Carlsbad, New Mexico, meets the WIPP waste acceptance criteria without opening the containers. The certification process is primarily a quality assurance exercise with a focus on complying with the *Transuranic Waste Characterization Quality Assurance Program Plan* (CAO 1996) for the WIPP. The process also will require complying with Hanford Facility-specific and waste-specific certification documents are not yet written. When completed, the certification documents will comply with CAO (1996).

In addition to the base certification documents, a number of items must be completed before the TRU Waste Certification process can be approved. These items have not been written, but are expected to include the following:

- Certification of acceptable knowledge of the waste inside the containers
- Hanford Facility procedures that reflect the requirements of the quality assurance program plan and WIPP waste acceptance criteria
- Demonstrations to confirm that personnel, laboratories, and equipment performing NDA and RCRA and head space gas sampling comply with CAO (1996)
- A sampling plan and a transportation packaging plan
- Data interface with WIPP
- Carlsbad Area Office certification audits.

Once the audits have been successfully completed, the Carlsbad Area Office will approve the certification process at the Facility with annual audits to ensure compliance.

4.2.2.3 Uncertainty of Waste Characterization and Designation. When the waste was placed in storage, the waste characterization and designation was appropriate and compliant for storage purposes. However, changes in designation regulations, acceptance criteria, and WIPP certification have made that characterization obsolete. Additional characterization will be required before the waste can be sent to the WIPP facility. The need to perform additional characterization on the TRUM waste does not pose a health or environmental threat.

4.2.3 TRUM Storage

This section describes the storage units used to store waste streams RL-TRUM-01 through RL-TRUM-03. The waste currently is stored in one or more buildings located at the CWC. However, some TRUM was stored at the TRUSAF during FY 1997.

4.2.3.1 Description of Storage Units and Capacities. The waste is held in one or more buildings located at the CWC, an authorized interim-status RCRA storage unit under the umbrella of the Hanford Facility RCRA Permit. The CWC consists of many storage buildings and modules. These are briefly described in the following paragraphs:

2401W and 2402W through 2402WL Series Mixed Waste Storage Buildings. This complex consists of 13 individual storage buildings designed to store contact-handled LLMW and TRUM and PCB waste. Each building has 372 square meters of floor space that can hold approximately 1000 55-gal-drum equivalents of waste. These buildings provide a combined storage capacity of 13,000 drum equivalents. The 2401W building became operational during the mid-1980s to store radioactively contaminated PCB waste; the 11 buildings in the 2402W series were built between 1988 and 1990.

2403WA - WC Series MW Storage Buildings. This complex consists of three individual storage buildings designed to store contact-handled LLMW, TRUM, and PCB waste. (TSCA-regulated PCB waste would require additional secondary containment if placed into the buildings.) TSCA PCBs are not allowed in these buildings. Each building has 3160 square meters of floor space that can hold approximately 11,600 drum equivalents. These buildings, with a combined storage capacity of 34,800 drum equivalents, became operational during 1991.

2403WD MW Storage Building. This storage building is designed to store contact-handled LLMW and TRUM and PCB waste. (TSCA-regulated PCB waste would require additional secondary containment if placed in the buildings.) TSCA PCBs are not allowed in this building. The 2403WD Building contains 5135 square meters of floor space that can hold approximately 17,500 drum equivalents. This building became operational during 1991.

2404WA - WC Series MW Storage Buildings. This complex consists of three individual storage buildings designed to store contact-handled LLMW and TRUM and PCB waste. Each building has 2000 square meters of floor space that can hold approximately 4600 drum equivalents. These buildings, with a combined storage capacity of 13,800 drum equivalents, became operational during 1997.

Flammable Mixed-Waste Storage Modules (FS-01-FS-24). This complex consists of 24 individual modules designed to store flammable LLW, TRU waste, LLMW, and TRUM and PCB waste with flash points below 38 °C. Each unit can hold approximately 22 drum equivalents for a total capacity of 528 drum equivalents. The modules are small preengineered buildings, each with 16.3 square meters of floor space.

Waste Unloading and Staging Area. This pad is 836 square meters in area and can hold approximately 2500 drums stacked two high. This pad is not intended for long-term storage.

TRUSAF (224-T Building). The TRUSAF is an authorized interim-status RCRA storage unit under the umbrella of the Hanford Facility RCRA Permit. The TRUSAF has approximately 1068 square meters of space to store up to 420 cubic meters, approximately 2000 drums, of waste. During FY 1997, all TRUM waste was moved from the TRUSAF to the CWC. This was done to reduce the mortgage costs associated with operating the TRUSAF. Assay work that was performed at the TRUSAF is now performed at the WRAP-1 facility. The facility closure schedule has not been determined, but a closure plan will be incorporated into the Hanford Facility RCRA permit in 1999.

4.2.3.2 CWC Storage Capacity and Existing Stored Volume. The CWC currently has approximately 80,000 drum equivalents (approximately 16,800 cubic meters) of long-term (i.e., inside building) storage capacity for mixed, PCB, and TRU waste. The amount of waste currently stored in the CWC is approximately 48,850 drum equivalents (10,270 cubic meters). As of September 30, 1997, this consists of 8350 cubic meters of LLMW, 236 cubic meters of LLMW with PCBs, 275 cubic meters of TRUM, 73 cubic meters of TRUM with PCBs, 1156 cubic meters of TRU and 180 cubic meters of LLW. The CWC is currently 60 to 65 percent full.

Except for low-flash-point modules, which are procured as needed, no additional long-term storage buildings are planned. The current mixed waste treatment activities and plans would maintain the stored waste volume below the CWC's capacity. This is contingent on no major increase to current waste forecasts, no change to the LLCE item direct-disposal baseline, and no treatment program funding shortfalls. The capacity of the CWC to store mixed waste will be evaluated periodically. If changes to the current programmatic baseline affect the long-term storage capacity needs at the CWC, these will be addressed through the DOE.

4.2.4 TRUM Treatment and WIPP Certification

4.2.4.1 FY 1997 Treatment Activities. No treatment or WIPP certification activities were performed during the reporting period.

4.2.4.2 Planned Treatment Activities. To meet consent agreements, TRU waste will need to be prepared, shipped, and disposed of at the WIPP facility. The Tri-Party Agreement has several milestones influencing TRUM waste disposition, the ones specifying TRUM disposition are as follows:

- **M-91-01**. Complete acquisition of facilities necessary for storage and treatment or processing before disposal of all Hanford Facility post-1970 TRU/TRUM by December 2000.

- **M-91-02**. Initiate processing of CH-TRUM waste at WRAP-1 by December 1998.

- **M-91-03**. Submit Hanford Facility TRU/TRUM waste project management plan to Ecology by June 2000.

- **M-91-04**. Complete construction of small-container CH-TRUM retrieval facilities and initiate retrieval from the 200 Area burial grounds by September 2000.

- **M-91-05-T01**. Complete a TRU/TRUM waste retrieval and processing facility engineering study or functional design criteria study and submit it to Ecology by December 2002.

- **M-91-06-T01**. Award necessary contracts for processing remote-handled and large-size TRUM waste packages by September 2003.

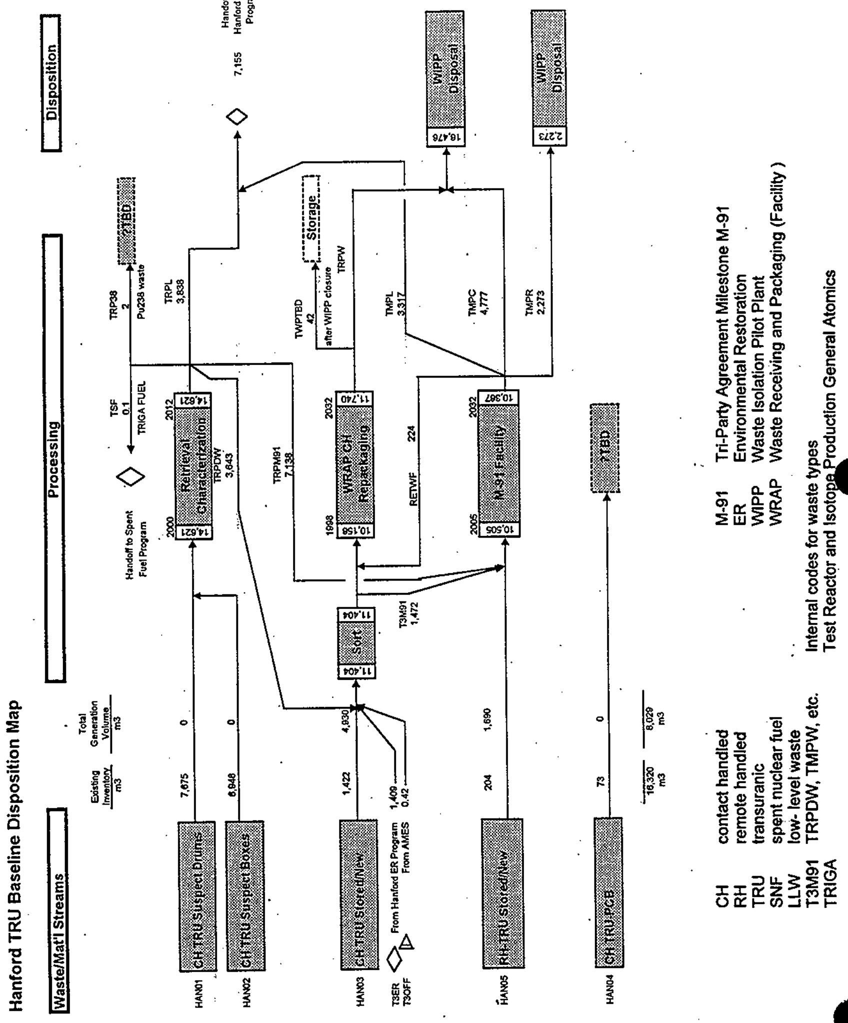
- **M-91-07**. Complete Project W-113 for post-1970 CH-TRUM waste retrieval by September 2004.

- **M-91-08-T01**. Complete construction and initiate hot operations of processing facility for remote-handled and large-size TRUM by June 2005.

The DOE is actively pursuing these compliance agreements for the Hanford Facility. WRAP-1 began its LLW activities and funding has been obtained to begin the TRUM waste certification program. The Hanford Facility's TRUM waste baseline disposition map (Figure 4-2) depicts the established path forward for treatment and disposal, and Table 4-4 shows the current disposition schedule and associated waste volumes. (Figure 4-2 shows TRU waste, not included elsewhere in this report, as well as TRUM waste.)

4.2.4.3 Accelerated and Alternative Treatment. RL and its contractors have actively pursued and obtained funding to begin the TRUM disposition program in FY 1998 instead of FY 1999. The program will begin with two parts. The first is to initiate the TRUM Waste WIPP facility certification program by putting in place the onsite certification, quality assurance, and operations procedures for WIPP facility certification. The second is to perform a technology and trade-off study for the various retrieval approaches to be used on the W-113 Project (Suspect TRU Retrieval). Savings from other waste management programs and activities were redirected to or approved for this program.

Figure 4-2. Hanford Facility TRU Waste Baseline Disposition Map.



4.2.5 TRUM Waste Reduction

All plants and processes that generate waste shipped to the CWC are required to have a waste minimization program and a TRUM waste certification plan in place. The effectiveness and implementation of these programs are regularly audited.

Table 4-4. TRUM Disposition Schedule and Waste Volume.

Waste stream ID	Waste stream title	TRU waste disposition to WIPP volumes[1]					
		FY 1997 (m^3)	FY 1998 (m^3)	FY 1999 (m^3)	FY 2000 (m^3)	FY 2001 (m^3)	FY 2002 (m^3)
RL-TRUM-01	Generalized CH-TRUM	0	0	298	648	583	459
RL-TRUM-02	Generalized RH-TRUM	0	0	0	0	0	0
RL-TRUM-03	CH/RH-TRUM with PCBs	0	0	0	0	0	0
	Total	0	0	298	648	583	459

[1]Dispositioned waste volumes include TRU and TRUM waste. No determination has been made on how much of each waste type will be sent or when it will be sent.

CH contact handled
FY fiscal year
PCB polychlorinated biphenyl
RH remote handled
TRU transuranic
TRUM transuranic mixed
WIPP Waste Isolation Pilot Plant

4.2.6 TRUM Treatability Variances, Equivalency Petitions, Rulemaking Petitions, and Case-by-Case Exemptions

The Hanford Facility and the DOE complex have limited capacity for preparing TRUM waste for WIPP disposal. In addition, the WIPP facility has not yet received approval to accept waste. Therefore, the TRUM waste must be stored. The WIPP facility is scheduled to begin accepting certified TRU waste by May 1998. However, only nonmixed TRU waste will be accepted during the initial operations because the WIPP facility has not yet received a RCRA permit to receive and dispose of TRUM waste.

If additional time extensions are required because of delays in developing WIPP certification capacity for TRUM waste, they will be applied for in accordance with the procedures detailed in the Tri-Party Agreement and regulations. Because waste destined for the WIPP facility is not subject to federal and state-only LDRs, variances and other petitions are not anticipated.

4.3 DOUBLE-SHELL TANK SYSTEM WASTE

This section covers waste stream DST-1. The DST system consists of 28 DSTs with a total capacity of 118,000 cubic meters. The waste stored in these tanks is alkaline liquids and solids generated during the past production of nuclear materials. Waste has been received from operations in the 100, 200, 300, and 400 Areas of the Hanford Facility. The DST system waste consists of legacy and cleanup waste. Legacy waste has been generated from the PUREX process, B Plant operations, PFP operations, research and development programs, and laboratories. Liquid supernatant and interstitial liquids from the SST system are stored in the DST system. Cleanup waste came from the decontamination and decommissioning of plants and equipment.

4.3.1 DST System Generation

The DST system contains legacy waste from past chemical separations processes and cleanup waste from current operations. The major legacy waste contributors were the PUREX process, B plant operations, PFP operations, and SST waste from the bismuth phosphate separations, uranium recovery, and reduction-oxidation extraction processes. Cleanup waste came from the cleanup of various Facility locations.

The PUREX plant, operating from 1956 to 1992, received irradiated fuel from the Hanford Facility reactors. The fuel was dissolved in nitric acid, and processed through several solvent extraction steps to separate the plutonium, uranium, and neptunium from other fission products. The PUREX process waste consists of three major types of waste; aging waste from the first decontamination cycle, process condensate, and ammonia scrubber feed. The aging waste contains most of the fission products in nitric acid. When the stream was determined to be waste, it was treated with sugar to destroy most of the nitric acid, then with sodium hydroxide and sodium nitrite to meet DST system storage specifications. Condensing vapors from the PUREX uranium-nitric acid product and recycle streams generated process condensate. The ammonia scrubber feed was generated when water was sprayed to adsorb ammonia gas generated by the decladding and metathesis reaction from the dissolver off gas stream.

B Plant recovered cesium and strontium from legacy waste. A B Plant fractionation process separated high-heat-producing isotopes from the waste. The strontium was separated by an extraction process using complexing agents (e.g., ethylene-diaminetetraacetic acid, n-hydroxyethylethylenediamine-tetraacetic acid, and citrate) to prevent transition metal extraction. The cesium was extracted and purified by ion exchange. The cesium and strontium were converted to fluoride and chloride salts, which were encapsulated in the Waste Encapsulation and Storage Facility (WESF), part of the B Plant Complex. Sodium hydroxide or sodium carbonate was added to the waste to create an alkaline solution and minimize tank corrosion.

The PFP, which operated from 1949 to the present, converted plutonium in solution to plutonium metal. The process consisted of precipitation, solvent exchange, and ion exchange, producing waste high in metallic nitrates. The current waste stream is a low-salt stream from operating the building systems and stabilization operations.

The products of bismuth phosphate separations, uranium recovery, and reduction-oxidation are part of the SST system waste, which was transferred to the DST system during the interim stabilization of the SST system.

Cleanup waste originated from Hanford Facility locations including, but not limited to, PUREX, B Plant, T Plant, the 222-S Laboratory, the 340 Facility, and the 242-A Evaporator. Cleanup waste from these units varies in composition but consists primarily of dilute inorganic aqueous material. Activities generating this waste include vessel and pipe decontamination, waste concentration in the 242-A Evaporator, and other miscellaneous decommissioning activities. The waste stream includes wastewater, flush water, and liquids generated from analytical laboratories.

See Table 4-5 for an historical summary of DST system waste generation by various Hanford Facility locations. Further historical information on SST and DST systems is given in WHC (1990b) and WHC (1991).

Table 4-5. Waste Generation for Various Locations and Programs (cubic meters).

FY	B Plant	PUREX	Tank farms	SST to DST pumping	UO_3 Plant	PFP	T Plant	S Plant (Laboratories)	100 Area	300 Area	400 Area	Total
1990	2393	6882	1226	0	0	53	151	121	193	136	0	11,155
1991	1317	984	776	859	0	0	140	170	0	208	0	4454
1992	435	363	155	859	0	136	250	106	0	132	30	2065
1993	511	291	144	458	0	19	257	38	0	87	45	1532[a]
1994	53	276	140	140	0	26	76	76	0	110	42	1635
1995	129	1154	836	360	0	0	83	83	0	220	0	3225
1996	359	621	1196	500	0	15	91	106	0	197	0	2797
1997	292	0	72	617	0	0	64	27	0	98	0	1170

Note: All generation quantities include the volume of any flush water.

[a]In addition to the waste categories in the table, in 1993, approximately 1336 cubic meters of water was added to DSTs. This water was used to test the upgraded 242-A Evaporator components before restart.

DST double-shell tank
PFP Plutonium Finishing Plant
PUREX Plutonium-Uranium Extraction (Plant)
SST single-shell tank
UO_3 Uranium Oxide (Plant)

4.3.2 DST System Storage

4.3.2.1 Storage Facilities. The 200 Areas contain six DST system farms. Each farm consists of a steel tank in a secondary steel liner inside a reinforced concrete tank buried underground. These tanks are under an interim-status permit for the storage of high-level radioactive mixed waste. Table 4-6 lists the location of each farm and the number of tanks in that farm.

Table 4-6. DST System Summary.

Tank farm	Location	Number of tanks
AN	200 East Area	7
AP	200 East Area	8
AW	200 East Area	6
AY	200 East Area	2
AZ	200 East Area	2
SY	200 West Area	3

4.3.2.2 Storage Capacity. The DST system farms contain 24 DSTs that hold 4300 cubic meters each and 4 DSTs that hold 3700 cubic meters each. The total capacity of the DST system is 118,000 cubic meters. As of December 1997, the system contained 69,500 cubic meters of waste. The DST system was expected to be out of space by 1998. However, with at least one evaporator run per year and waste minimization, the DST system now is predicted to have room for more waste until after the year 2000. See Figure 4-3 for a current summary of DST system space. This estimate is based on the evaporator continuing to have at least one campaign per year and waste minimization efforts continuing.

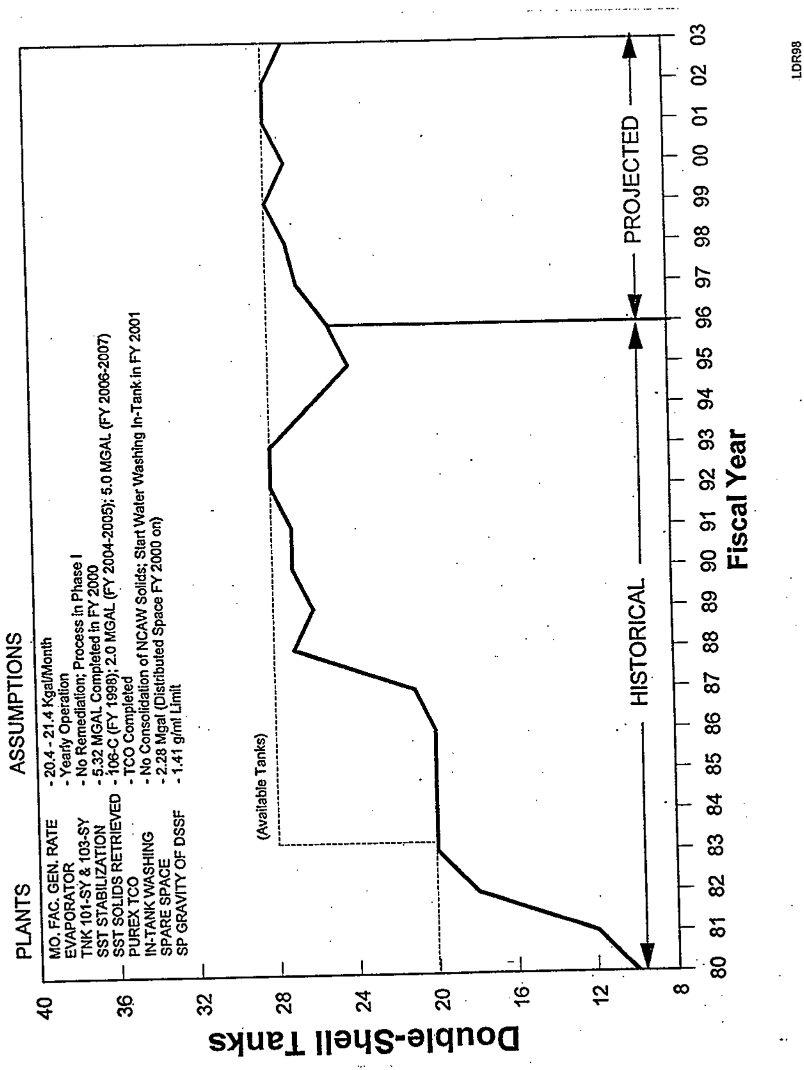
4.3.3 DST System Characterization

As described in Chapter 1, several processes contributed to DST system waste. In addition, waste management practices have mingled the types of waste in the system. Therefore, a detailed, quantified characterization of the tanks' contents based strictly on process knowledge is not possible. Stratification and segregation have occurred in the tanks as solids settled out. The consistency of the waste ranges from liquid supernatant to thick sludge to crust formed as a top layer. The DST system waste is described qualitatively based on historical data and sample analysis.

DST system waste can be categorized into several types, each with a specific history and character.

4.3.3.1 Double-Shell Slurry Feed and Double-Shell Slurry Waste. Double-shell slurry feed (DSSF) is generated by concentrating the dilute waste streams generated by the operating plants to conserve storage space. The DSSF waste has been evaporated to the sodium aluminate phase boundary, so it contains no aluminate solids. Double-shell slurry is a more concentrated waste form produced by evaporating DSSF past the aluminate boundary. Double-shell slurry contains aluminate solids and has a much higher viscosity than DSSF.

Figure 4.-3. DST Space Summary.



4.3.3.2 Neutralized Current Acid Waste. The neutralized current acid waste, also known as PUREX aging waste, consists of water, aluminum hydroxide, sodium nitrate, sodium hydroxide, sodium fluoride, cadmium nitrate, sodium nitrite, and most radionuclides from irradiated fuel. Before 1989, process samples analyzed in the laboratory were recycled to the process system. This practice may have allowed chemicals added to the samples for analysis to enter the aging waste stream. However, sample analysis has never confirmed the presence of these chemicals.

4.3.3.3 Neutralized Cladding Removal Solids Waste. Cladding removal waste resulted from dissolving the zircaloy cladding on the irradiated nuclear fuel. Neutralizing this waste precipitated most of the zirconium, creating slurry.

4.3.3.4 Plutonium Finishing Plant Waste. The PFP waste originated from the conversion of plutonium nitrate to oxide or metal and includes TRU laboratory waste and high-salt solvent extraction waste.

4.3.3.5 Complexant Concentrate Waste. The complexant concentrate waste results from the concentration of waste containing a large amount of organic complexing agents. The organic complexing compounds were introduced to the waste during strontium recovery at B Plant.

4.3.3.6 Basis for Waste Designation. In accordance with Tri-Party Agreement Milestone M-44-00, the data-quality-objective process will be used to establish the necessary sampling and analyses for designation and to determine whether all applicable treatment standards for waste are being met. The process also will determine which underlying hazardous constituents must be quantified to determine compliance with 58 FR 29860 and 59 FR 47982 based on knowledge supplied by the Hanford Facility generating locations at the point of generation.

The waste codes assigned to waste stored in the DST system are based on historical knowledge of waste received into the system and the characteristics the waste displays in storage. Waste codes assigned to waste in storage are a subset of the waste codes identified on the DST system Part A Form 3 Permit application. Additional waste codes can be added or deleted based on the ongoing characterization program. The codes are meant to encompass the entire DST system. Sampling and analysis of the DST system waste is under way and will continue based on the priorities determined using systems engineering.

Since 1995, waste designation and LDR information on waste shipped to the DST system has been documented on "profile sheets" that are different from those included in Chapter 3. The information required in these sheets is specified in the DST waste analysis plan. DST system acceptance criteria specifically require that all LDR requirements be identified. LDR requirements for waste in the DST system before 1995 are not documented.

4.3.4 DST System Treatment

The DST system waste will be treated and disposed of using processes and facilities adopted by the Tri-Party Agreement. Currently the plan is to separate the DST system waste into

LLW and HLW/TRU fractions. This waste then will be solidified and stored in long-term storage in TSD units. Figure 4-4 is a flowchart summarizing current treatment plans.

The current Tri-Party Agreement plan is to separate the DST system waste into LLW and HLW/TRU fractions, so the bulk of the radionuclides are in the HLW. The HLW stream will be treated to further reduce its volume and increase radionuclide loading if necessary. The LLW will have enough radionuclides removed to meet the U.S. Nuclear Regulatory Commission's "incidental waste" classification and the DOE's as low as reasonably achievable (ALARA) policy.

Further work is expected to determine what fraction of DST system waste is subject to the specified technology, high-level waste vitrification, after pretreatment. Regardless of what fraction of the DST system waste is subject to high-level waste vitrification, current federal LDR requirements impose sampling and analysis requirements on the treated waste before disposal.

In separate onsite TSD units, both the LLW and HLW fractions will be vitrified. This process destroys or extracts organic constituents and cyanide to below treatment standards, neutralizes or deactivates dangerous waste and extremely hazardous waste, and immobilizes toxic metals. The LLW fraction will be disposed of near the surface on the Hanford Facility. The vitrified HLW stream will be stored on site until the geologic repository is available to receive the waste for disposal.

DOE's current plan is to award private contracts[1] for the SST and DST system treatment facilities. DOE is awarding the contracts for treatment of the SST and DST system waste in two phases. The first phase will be a Proof of Concept-Commercial Demonstration Phase. In this phase, DOE has selected Lockheed Martin Advanced Environmental Systems and British Nuclear Fuels Limited as prime contractors to design and permit onsite TSD units to pretreat waste and vitrify the low-level fraction. Following design activities that result in acceptable permit applications, one or more contractors will be selected to construct, operate, and deactivate a facility. Phase II will be the full-scale production phase.

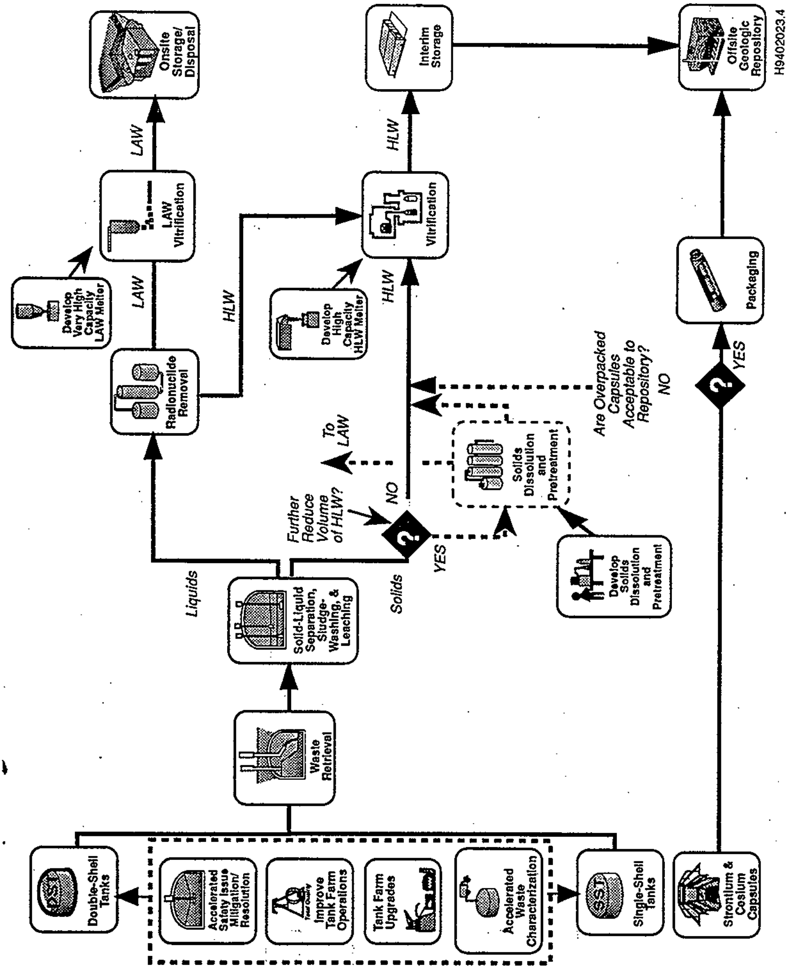
Treatment of DST system waste is on a schedule based primarily on Tri-Party Agreement Milestones M-50-00 (HLW pretreatment), M-60-00 (LLW vitrification), and M-51-00 (HLW vitrification). Because of budget limitations, accelerating treatment beyond these milestone dates is not realistic.

4.3.5 DST SystemTreatability Variances, Equivalency Petitions, Rulemaking Petitions, and Case-by-Case Exemptions

Because the DST system waste is a listed waste, further regulatory action is anticipated so the waste can be disposed of at the geologic repository.

[1] Offsite and private contractors are subject to the same LDRs as government contractors.

Figure 4-4. Hanford Tank Waste Remediation System.



4.4 SINGLE-SHELL TANK SYSTEM WASTE

This section covers waste stream SST-1. The SST system consists of 149 tanks located in 12 tank farms with 2 to 18 tanks each, in the 200 Areas. The amount of waste contained in the tanks varies from 5 to 95 percent of each tank's capacity; the consistency of the waste varies from pumpable liquid to sludge to hard salt cake. These tanks have held chemically hazardous and radioactive waste generated as a byproduct of processing spent nuclear fuel to recover plutonium, uranium, and neptunium since 1944.

4.4.1 SST System Generation

Waste has been generated through a variety of analytical, decladding, and separation processes and associated Facility-wide operations. Four major chemical processing operations; the bismuth phosphate, reduction-oxidation, PUREX, and tributyl phosphate processes, produced waste stored in the SST system. The bismuth phosphate, reduction-oxidation, and PUREX processes were specifically designed for plutonium recovery. The initial bismuth phosphate chemical separation process produced large volumes of dilute, low-heat waste. The tributyl phosphate solvent extraction process was designed to recover the relatively large amounts of uranium that remained in waste from the bismuth phosphate process. The bismuth phosphate process was superseded by the reduction-oxidation process, which was superseded by the PUREX process.

The bismuth phosphate process, which was used from 1943 to 1957, was used at B Plant and T Plant to separate plutonium from uranium in irradiated fuel by coprecipitation with bismuth phosphate from a uranyl nitrate solution. The plutonium was further separated from fission products by successive precipitation cycles using bismuth phosphate and lanthanum fluoride. Waste containing uranium, acid, and many of the fission products was neutralized and stored in the SST system.

The bismuth phosphate metal waste initially was stored in separate tanks, however, the metal waste was reprocessed to recover the uranium and the supernatant was scavenged and disposed of to the cribs, leaving very little of the original waste.

The uranium recovery process operated in U Plant from 1952 to 1958 and in the PUREX Plant from 1956 to 1958. In this process, waste was sluiced from the tank, dissolved in nitric acid, and run through a solvent extraction process using tributyl phosphate in a kerosene-like solvent. The U Plant process recovered uranium from bismuth phosphate metal waste and produced waste consisting of fission products and residual plutonium. The PUREX process recovered uranium, plutonium, and neptunium in addition to separating the fission products. The waste was all neutral or alkaline before being stored in the SST system.

A significant increase in the volume of waste resulted from the uranium recovery process in U Plant. The process efficiently recovered uranium from the bismuth phosphate metal waste; however, it generated about 2 liters of waste for every liter of bismuth phosphate metal waste processed. This increase in waste volume was the rationale for the ferrocyanide scavenging campaign. The volume of waste in the tanks had to be reduced, and the ferrocyanide scavenging decontaminated the waste sufficiently to enable disposal to the cribs.

The reduction-oxidation process conducted from 1951 to 1967 in the 202-S Plant used a continuous solvent extraction process to remove plutonium and uranium from dissolved fuel in a hexone solvent. The slightly acidic waste stream contained the fission products and large quantities of aluminum nitrate. This waste was neutralized and stored in the SST system.

4.4.2 SST System Storage

The 200 Areas contain 12 single-shell tank farms. Each tank farm consists of 4 to 18 underground, reinforced concrete steel-lined tanks. Table 4-7 lists the location of each farm and the number of tanks in that farm.

The Hanford Facility contains 149 SSTs. Of these, 133 are 22.9 meters in diameter with nominal capacities between 2,000 and 3,800 cubic meters. Sixteen are 6.1 meters in diameter with capacities of 210 cubic meters. Currently, the system contains 133,800 cubic meters of waste. The SST system has not accepted waste since 1980. The only material added to the SST system has been water to tank 241 C-106 to control evaporative cooling.

Table 4-7. SST System Summary.

Tank farm	Location	Number of tanks
A	200 East Area	6
AX	200 East Area	4
B	200 East Area	16
BX	200 East Area	12
BY	200 East Area	12
C	200 East Area	16
S	200 West Area	12
SX	200 West Area	15
T	200 West Area	16
TX	200 West Area	18
TY	200 West Area	6
U	200 West Area	16

4.4.3 SST System Characterization

The SST system received waste from five chemical processes: bismuth phosphate, reduction-oxidation, PUREX, and tributyl phosphate, and B Plant waste fractionation. This waste is found in three forms in the SST system: sludge, salt cake, and supernatant. Both the salt cake and the sludge contain interstitial liquids.

The sludge consists of the solids (hydrous metal oxides, iron, and aluminum) precipitated during the neutralization of acid waste before transfer to the SST system. Sludge types vary greatly in their physical properties. Salt cake contains salts, primarily sodium nitrate, formed by the water evaporating from the waste. Damp salt cake is a jelly-like material; dried salt cake is a hard, abrasive, brittle material that may have formed as large single crystals. The salt cake porosity ranges from 10 to 50 percent. Liquid exists as supernatant and interstitial fluid (WHC 1990c).

The SST system waste is made up of primarily sodium hydroxide; sodium salts of nitrate, nitrite, carbonate, aluminate, and phosphate; and hydrous oxides of iron and aluminum. A relatively small amount of solvents such a tributyl phosphate and normal paraffin hydrocarbon was added to the SST system waste during fuel reprocessing. Water -soluble compelling agents and carboxylic acids from the B Plant waste fractionation process also were added.

Land disposal restriction requirements for the waste placed in the SST system were not documented and most of the waste currently in the system was placed in the tanks before any LDR requirements were enacted. When waste is transferred to the DST system, known LDR requirements are documented in a profile sheet. Because limited analytical information is available, underlying hazardous constituents typically are not identified.

4.4.4 SST System Treatment

The waste in the SST system will undergo retrieval and disposal in accordance with the DST system treatment plan. The Tri-Party Agreement specifies that SST system waste will be treated and disposed of using the DST system pretreatment and disposal facilities and that tank 241-C-106 will be the first to have its contents retrieved from storage. Closure options, which will identify the level of retrieval necessary, will be documented in a comprehensive tank waste remediation system supplemental environmental impact statement.

See the DST system treatment summary (Section 3.4.3) for details of the treatment methods for this waste stream.

The schedule for treating SST system waste is based primarily on Tri-Party Agreement Milestones M-50-00 (pretreatment), M-60-00 (LLW vitrification), and M-51-00 (HLW vitrification). Because of budget limitations, accelerating treatment beyond these milestone dates is not realistic.

Further work is expected to determine what fraction of SST system waste is subject to the specified technology, high-level vitrification, after pretreatment. Regardless of what fraction of the SST system waste is subject to high-level vitrification, current federal LDR requirements impose sampling and analysis requirements on the treated waste before disposal.

4.5 PUREX CONTAINMENT BUILDING

This section covers waste stream PUREX-1. The PUREX containment building is permitted under interim status as a waste management unit within the PUREX Plant TSD unit. It is permitted for the storage of solid mixed waste containing arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Since December 7, 1987, radioactively contaminated process equipment that contained lead and cadmium and that was removed from the canyon area has been stored on the hot pipe trench cover blocks adjacent to D-Cell and inside F-Cell (F17 position). As part of deactivation activities, the solid mixed waste stored on the canyon deck was moved to PUREX Storage Tunnel 2. The mixed waste remaining in F-Cell consists mainly of concrete and tank dunnage corrosion products.

4.5.1 PUREX Containment Building Generation

The waste stored in Position F17 in F-Cell consists of concrete debris collected from the floor of E-Cell. The concrete material was collected during the replacement of Tank E3. Approximately 1.0 cubic meter of debris, weighing approximately 4100 kilograms, is contained in a 1.2 meter x 1.8 meter x 0.6 meter carbon steel scrap hopper. The debris contains regulated quantities of chromium.

4.5.2 PUREX Containment Building Storage

The PUREX containment building (202A building) is a portion of the plant with concrete floor, walls, and ceiling up to 1.8 meters thick. Work in the canyon generally is performed remotely because of high radiation levels. Because any waste in the containment building is located inside the 202-A Building, the waste is protected from external environmental forces such as wind, rain, and flooding.

The entire shielded area of the PUREX 202A building (thousands of cubic meters) is permitted for storage of dangerous waste. However, currently only 1.4×10^{-4} cubic meter (1 kilogram) of chromium waste is stored there. With no plans to store more waste, there is no need to estimate the maximum storage capacity.

4.5.3 PUREX Containment Building Characterization

This section discusses the available waste characterization information. Information based on process knowledge and sample analyses is provided along with the waste designations and their bases, the uncertainly of the designations, and the schedule for further analysis. Not all waste in storage has been evaluated for UHCs. A UHC evaluation may be required for this waste in the future.

The waste stored in Position F17 in F-Cell consists of concrete debris collected from the floor of E-Cell. The concrete material was retrieved from the floor when Tank E3 was replaced.

Sample analyses were conducted to characterize the E-Cell floor solids in which the regulated quantities of chromium were detected.

4.5.4 PUREX Containment Building Treatment

Currently, no plans exist to treat the chromium-contaminated concrete solids from the E-Cell floor. Interim storage in F-Cell was chosen as the best stabilization method for this material. The waste in F-Cell will remain in place through the surveillance and maintenance phase and will be disposed of during closure. A treatment schedule for this waste has not been established. The material stored in the containment building will be addressed as part of PUREX Plant closure.

4.6 PUREX STORAGE TUNNELS WASTE

This section covers waste stream PUREX-2. The PUREX Storage Tunnels 1 and 2 both contain elemental lead. The PUREX Storage Tunnel 2 contains silver (mostly as silver nitrate), elemental mercury, cadmium, and chromium. The lead is in jumper counterweights and equipment weights and shielding. The silver is in discarded silver reactors. The mercury is sealed inside thermowells that are an integral part of the irradiated fuel dissolvers. The cadmium is present as elemental cadmium attached to equipment for neutron shielding. The chromium is a corrosion byproduct from a failed stainless steel process concentrator. (See Table 4-8.)

4.6.1 PUREX Storage Tunnels Generation

In June 1996, barium, absorbed mineral oil, and more cadmium, chromium, and lead were added to the PUREX Storage Tunnel 2 from the 324 and 325 Buildings. Barium is present as dispersible particulate contaminated with process materials from the 324 Building process. Cadmium is present as dispersible particulate and dried melter feed residue removed from process equipment. Chromium is present as dispersible particulate and dried melter feed residue. Lead is present as dispersible particulate, dried melter feed residue, and liquid metal seal material. The mineral oil is contained within an absorbent material.

As Hanford Facility cleanup continues, other equipment and materials containing these and other waste types may be added to the tunnels. If additional waste is placed in the tunnels, the need for waste acceptance criteria will be evaluated.

Silver in the form of silver salts deposited on unglazed ceramic packing was contained within the discarded silver reactors stored in Tunnel 2. Three silver reactors were used to remove radioactive iodine from the offgas streams of the irradiated reactor fuel dissolvers in the PUREX process. The silver reactor vessel contained two beds of packing. The packing was coated initially with 114 kilograms of silver nitrate used for iodine retention. Nozzles on the top of the reactor were provided to allow flushing and/or regeneration of the packing with silver nitrate solution as the need arose.

Table 4-8. Plutonium Uranium Extraction Plant Storage Tunnels Inventories.

Date transferred to tunnels	Tunnel number	Mass (kg) of lead transferred	Mass (kg) of mercury transferred	Mass (kg) of silver nitrate transferred	Mass (kg) of cadmium transferred	Mass (kg) of chromium transferred	Mass (kg) of mineral oil transferred	Mass (kg) of barium transferred
06-60	1	115	—	—	—	—	—	—
12-24-60	1	115	—	—	—	—	—	—
02-26-71	2	—	—	625	—	—	—	—
12-22-71	2	—	45	—	—	—	—	—
09-30-72	2	—	45	—	—	—	—	—
01-18-86	2	—	40	—	43	—	—	—
11-18-87	2	2540	—	—	—	—	—	—
05-13-88	2	230	—	115	13	—	—	—
01-27-95	2	—	—	—	—	8	—	—
02-08-95	2	1930	—	—	—	—	—	—
03-11-96	2	3232	—	—	2	—	—	—
04-26-96	2	1802	—	—	10.5	1.0	8.5	3
06-12-96	2	0.001	—	—	0.001	0.002	—	0.004
	Total	9964	130	740	68.5	9	8.5	3

Note: 9964 kg of lead have a volume of 0.89 m^3.
130 kg of mercury have a volume of about 0.01 m^3 at 23 °C.
740 kg of silver nitrate have a volume of 0.07 m^3.
68.5 kg of cadmium have a volume of 7.88×10^{-3} m^3.
9 kg of chromium have a volume of 1.26×10^{-3} m^3.
8.5 kg of mineral oil have a volume of 7.4×10^{-3} m^3.
3 kg of barium have a volume of 8.29×10^{-4} m^3.

Experience showed that after extended use, the silver reactors lost efficiency. This loss in efficiency normally occurred when about one-half of the silver nitrate on the packing had been converted to silver iodide. Other competing reactions such as reduction of silver nitrate to metallic silver and formation of silver chloride also occurred and affected silver reactor efficiency. To counteract this, the silver reactor was regenerated with fresh silver nitrate periodically. Therefore, the packing of the discarded silver reactor contained a mixture of silver nitrate, silver halides, and silver fines.

Elemental mercury waste was generated when dissolvers in the PUREX process failed or became obsolete and were discarded. The mercury was sealed inside thermowells, which were an integral part of reactor fuel dissolvers used at the PUREX Plant. Each dissolver had two thermowells. Each thermowell consisted of a 2.9 meter length of stainless steel pipe with an extension welded to the downside end. The lower end butted against the outer surface of the internal slotted bar screen that separates the undissolved fuel elements from the outer solution chamber of the annular dissolver. The mercury transferred heat from the dissolver interior to the temperature sensor mounted within the thermowell. This mercury remains in the thermowells of discarded dissolvers. In preparation for storage, the thermowells were sealed with a stainless steel nozzle plug. In storage, the discarded dissolvers rest in an inclined position in a cradle on a rail car. Secondary containment is provided by the dissolver vessel itself.

As of December 1997, three dissolvers have been discarded, one each in 1971, 1972, and 1986. The first two dissolvers contain 45 kilograms of elemental mercury each; the third contains 38 kilograms. All three dissolvers are stored on rail cars in PUREX Storage Tunnel 2 (RL 1990).

As of December 1997, three dissolvers have been discarded, one each in 1971, 1972, and 1986. The first two dissolvers contain 45 kilograms of elemental mercury each; the third contains 38 kilograms. All three dissolvers are stored on rail cars in PUREX Storage Tunnel 2 (RL 1990).

Cadmium may be present in the PUREX Storage Tunnel 2 as elemental cadmium attached to equipment for neutron shielding. The presence of cadmium is determined by process knowledge and the design of equipment that was used during PUREX operation and is known to possibly contain cadmium metal.

Chromium is present in the PUREX Storage Tunnel 2 as a corrosion byproduct of the stainless steel from a failed process concentrator. This concentrator was evaluated for reuse in 1986 and was determined to be unacceptable because of incompatibilities and a potential short service life. The concentrator was inspected and found to contain silicate solids with high levels of chromium.

In the 324 Building waste, lead is present in dispersible debris, dried melter feed residue, and liquid metal seal material from the 324 Building process. The dispersible debris waste consists of dirt, dust, process residue, equipment, and tools collected from the 324 Building B-Cell floor. This debris has been contaminated with process feed solutions that contained heavy metals. The residual dried melter feed was removed from process equipment after water evaporation from the melter feed slurry used in the repository program for the Federal Republic of Germany. The liquid metal seal, used as a seal material in a glass melter, is inherently hazardous. Barium also is present in the dispersible debris. Cadmium is present in the dispersible debris and liquid metal seal; chromium is present in the dispersible debris and residual dried melter feed. Mineral oil also is present in an absorbent material.

4.6.2 PUREX Storage Tunnels Storage

The PUREX Storage Tunnels are the only storage unit permitted for this waste, primarily because the waste is highly radioactive.

The PUREX Storage Tunnels are a mixed-waste storage unit. The two tunnels are connected to the PUREX Plant and, combined, provide storage space for 48 rail cars. The PUREX Storage Tunnels provide long-term storage for process equipment removed from the PUREX Plant and other onsite sources. Equipment transfers into the PUREX Storage Tunnels are made as needed. Radioactively contaminated equipment is loaded on rail cars and remotely transferred into the PUREX Storage Tunnels. Rail cars act as both transport and storage platforms for equipment placed in the tunnels.

The tunnels are weather-tight structures covered by 2.4 meters of earth. This design protects the stored equipment from exposure to natural elements, provides external radiation shielding from the radioactive equipment stored in the tunnels, and protects the environment.

Tunnel 1 (218-E-14) was completed in 1956 as part of the PUREX Plant construction project and holds eight rail cars. Tunnel 1 was filled to capacity (approximately 600 cubic meters of waste) in 1965 and then secured. No elemental mercury waste is stored in Tunnel 1.

Tunnel 2 (218-E-15) was an expansion project constructed in 1964. This tunnel is considerably longer than Tunnel 1, providing storage space for 40 rail cars. Each rail car can hold 497 cubic meters of waste. To date, 28 rail cars containing 2204 cubic meters of discarded equipment and associated waste have been placed in the tunnel, filling 70 percent of the storage area. Sufficient storage capacity remains for all waste projected to be generated. A more complete description of the PUREX Storage Tunnels is available in *PUREX Storage Tunnels Dangerous Waste Permit Application*, Rev. 2 (RL 1990). The PUREX Storage Tunnels are a final-status TSD unit included in the Hanford Facility RCRA Permit.

The capacity of the storage tunnels is not expected to be reached.

4.6.3 PUREX Storage Tunnels Characterization

This section covers the available waste characterization information. Information based on process knowledge and sample analyses is provided along with the waste designations and their bases, the uncertainty of the designations, and the schedule for further analysis. Not all waste in storage has been evaluated for UHCs. A UHC evaluation may be required for this waste in the future.

4.6.3.1 Process Knowledge. The amount of lead generated was identified by reviewing fabrication and design drawings for each piece of equipment placed in storage to determine if the lead weight, counterweight, or shielding was specifically detailed. The silver salts quantity was estimated by knowing the amount of silver nitrate placed on the bedding and the regeneration history of the silver reactors. For accountability, the total silver content was considered as silver nitrate, the salt that exhibits both ignitability and toxicity characteristic leaching procedure (TCLP) toxicity.

The mercury waste was characterized based on fabrication and installation specifications. The quantity of mercury present in each dissolver was documented on the fabrication drawings. None of the mercury will evaporate because the thermowells are sealed.

The quantity of cadmium was estimated from the dimensions of the cadmium metal sheets attached to the equipment. The quantity of chromium was estimated from knowledge of silicate solids that have high levels of chromium and are contained within the failed concentrator sampled during PUREX operation. The quantities of barium, lead, cadmium, mineral oil, and chromium from the 324 Building waste were estimated from process knowledge.

4.6.3.2 Sample Analyses. Sampling and chemical analysis were not performed on waste associated with the radioactive discarded equipment placed in the PUREX Storage Tunnels. The quantity of waste in storage was determined from process knowledge and equipment design. Provisions for sampling the bedding were not provided in the design of the silver reactor vessels. Therefore, the reactors were not sampled and analyzed for silver salts before being placed in storage.

Sampling and chemical analysis were not performed on mercury associated with the dissolvers. The need for sample analyses will be evaluated during planning for closure of the PUREX Plant, including the storage tunnels. A PUREX preclosure work plan was submitted to Ecology and the EPA in July 1996.

4.6.4 PUREX Storage Tunnels Treatment

No definite agreed-on plans have been made for treating the tunnel waste. However, conceptually, the elemental lead would be removed, from the process equipment to reduce the volume to be treated where feasible. The elemental lead and the silver salts located in the silver reactors could be treated by encapsulating the material in a cementitious grout that immobilizes the lead and silver. No planned treatment concept has been developed for the cadmium, chromium, barium, and selenium associated with the process equipment stored in the tunnels. The EPA-required treatment for elemental mercury is amalgamation. Therefore, the treatment of choice would be the current approach of adding zinc powder to create an amalgam. An alternative treatment would be to mineralize the elemental mercury (creating mercury sulfide). Alternative technologies to this process have not been studied. This will be done as part of closure activities for the PUREX Storage Tunnels, as necessary.

A schedule for treating this waste has not been established. Waste from the tunnels will be handled along with the similar materials currently in the PUREX canyon when the PUREX facility is decontaminated and decommissioned. PUREX decontamination and decommissioning, along with treatment of the PUREX Storage Tunnel waste, is contingent on completing the Facility-wide land-use plan, the Facility-wide decontamination and decommissioning priority schedule, and the environmental impact statement, and resolving public comments on those documents. A basis for the treatment plan for the waste associated with the PUREX Storage Tunnels will be developed after these items are complete.

Currently no capacity exists to treat the waste in the PUREX Storage Tunnels. To treat this waste, capability to handle and ship large containers will have to be developed or a treatment unit will have to be located near the tunnels. The treatment unit will have to be capable of remotely handling and reducing the size of highly contaminated large and small pieces of equipment and segregating the dangerous waste portions.

4.7 324 RADIOCHEMICAL ENGINEERING CELLS WASTE

This section covers the 324 REC waste stream. The 324 REC is located in the 324 Building in the 300 Area. It consists of four hot cells (A, B, C, and D) located around a central airlock. It has been used in numerous DOE-sponsored research and development programs since the mid-1960s. The major activities that have influenced the generation of mixed waste include the following:

- The Waste Solidification Engineering Prototypes Program (completed in 1972)

- The development of treatment technologies via the Nuclear Waste Vitrification Project for waste from reprocessing spent nuclear fuel (1979)
- A pilot-scale radioactive liquid-fed ceramic melter testing program in conjunction with the Federal Republic of Germany (1984 through 1987).

A closure plan for this location has been prepared. Currently it is being updated to incorporate comments provided by Ecology.

4.7.1 324 REC Generation

Most of the materials now in the REC accumulated during research activities from 1965 to 1987. The exception is solid residue from the treatment of high-level vault (HLV) tank waste. Over the 20+ years these engineering demonstrations were conducted, equipment (tools, manipulator boots, and construction materials) was dropped and liquids (feed materials and samples) leaked onto the floor. In addition, dust introduced with normal air flow into the cell became contaminated.

Operational protocols in the REC were based on the radioactive properties of these materials. The materials were secured within the cell where they did not interfere with engineering operations. Because of funding constraints and technical difficulties and safety issues associated with consolidating and/or retrieving, packaging, and/or transporting the waste materials, they were left in place. Cleanout of the hot cells to eliminate the unacceptable radiological hazards associated with the dispersible material in the B-Cell began in 1988 with completion estimated by 2000.

No generation of additional waste, other than used HEPA filters, is anticipated. Current waste types contained in the REC and their estimated volumes are as follow.

- Approximately 2.5 cubic meters of tools, equipment, and pieces of metal dropped on the floor during operations; dust and particulates contaminated with sporadically released material (feed solution that contained heavy metals) from process equipment.
- Approximately 1.0 cubic meter of waste elemental lead, used as shielding and counterbalances. Some of this may eventually be cleaned and reused or recycled during the cleanout of the hot cells.
- Approximately 0.6 cubic meter of filters loaded with solid residues resulting from treatment of the HLV tank waste.

4.7.2 324 REC Storage

The 324 REC does not receive waste from other sources. It stores only waste that was generated from REC operations.

The 324 REC is not a RCRA-permitted TSD unit. The 324 Building was constructed to strict nuclear standards to ensure that it would safely house operations involving highly radioactive materials and prevent releases to the environment. The storage capacity for mixed waste in the available hot cell section is estimated to be 15 cubic meters. This estimate is based on the inventory in storage (9.17 cubic meters) and the consideration that no future significant generation of waste at this facility is anticipated. No issues of waste storage capacity are associated with this facility.

4.7.3 324 REC Characterization

Based on process knowledge, none of the designated mixed waste in the REC is currently designated as "listed" hazardous waste. The waste types, characterized based solely on process knowledge, are as follows.

- Waste elemental lead (0.8 cubic meter)—D008
- HLV tank waste treatment residue (0.6 cubic meter)—D005.

In 1995, results of laboratory analyses became available for some waste. Dispersible debris (2.5 cubic meter of tools, equipment, metal pieces, dust, and particulates) was assigned waste codes of D006, D007, D008 based on these analyses. The basis for the designation of the 324 REC waste is process knowledge, supported by analytical data when available.

4.7.4 324 REC Treatment

Waste currently stored in the 324 REC unit is not being treated and is not expected to be treated. Milestone M-89-02 provides for removal of all REC B-Cell mixed waste and equipment by May 31, 1999. Some REC mixed waste will be shipped to the PUREX Storage Tunnels and the CWC for storage. Waste will be treated in accordance with the proposed treatment scenarios for the waste managed in these TSD units.

4.8 B PLANT CELL 4 WASTE

This section covers waste stream B Plant-1. Mixed waste and low-level waste generated in the WESF hot cells are stored in 208 liter drums in the B Plant Cell 4 container storage area, as allowed in the B Plant Part A Form 3 Permit Application. Currently the area holds 7 drums of mixed waste and 36 drums of highly radioactive low-level waste. The sole hazardous constituent in the mixed waste drums is lead solder on incandescent lamps from the hot cells. Because of space constraints in the hot cell, the lamps were packed in drums with other low-level waste, so the entire drum is managed as mixed waste.

4.8.1 B Plant Cell 4 Generation

Since 1988, waste generated in the WESF hot cells has been packaged into 208 liter drums and transferred to B Plant for storage in Cell 4. When lights in the hot cells were replaced, the old ones were packaged into the drums along with the other waste. These transfers were performed frequently until 1991. Cleanout activities in the WESF hot cells generated eight additional waste drums that were transferred to Cell 4 in 1997. Agreements with Ecology reached during transition negotiations under the Tri-Party Agreement allow this process to continue through facility deactivation. However, no additional transfers to Cell 4 from WESF are currently anticipated.

4.8.2 B Plant Cell 4 Storage

Cell 4 is located in the 221B B Plant canyon building. Its physical dimensions are approximately 8 meters by 4 meters by 6 meters deep. It stores the waste drums on a wooden platform that can hold 59 drums. Additional platforms can be constructed and mounted on top of the existing platform to create additional storage capacity. A maximum of 245 drums or 51 cubic meters can be stored in Cell 4 in this configuration. Cell 4 is isolated from the canyon deck by concrete cover blocks.

Seven drums (1.4 cubic meters) of mixed waste are currently stored in Cell 4; 36 drums of low-level waste also are stored in the area. This leaves about 16 empty spaces on the existing platform. Although the agreement reached with Ecology during Tri-Party Agreement transition negotiations allow further additions to Cell 4 from WESF, no additions are planned.

4.8.3 B Plant Cell 4 Characterization

No sampling and analysis of the waste in Cell 4 has been performed. Because of the high radiation levels of this waste and the high degree of process knowledge about it, sample analysis is not considered necessary to obtain an accurate characterization and waste designation.

Based on multiple sample results for waste matrices with lead solder, including similar incandescent bulbs, these bulbs would likely yield an extract containing greater than 5.0 milligrams/liter of lead when exposed to a leachate. The amount of lead solder on the incandescent lamps from the WESF hot cell was provided by the vendor who supplies the light bulbs. An inventory of the waste is prepared as the drum is packaged in the hot cell.

4.8.4 B Plant Cell 4 Treatment

Treatment has not been planned or scheduled for this waste. Current plans call for the waste disposition to be addressed during closure of the B Plant complex. According to 40 CFR 268, the required treatment for radioactive lead solids is macroencapsulation.

4.9 B PLANT CONTAINMENT BUILDING WASTE

This section covers waste stream B Plant-2. The B Plant containment building consists of the 221B canyon area and the process cells in the canyon. The waste stored on the canyon deck and in the process cells, primarily discarded process equipment and jumpers, is considered to be stored in a containment building.

4.9.1 B Plant Containment Building Generation

The lead in the B Plant containment building consists of material used as shielding or counterweights for process equipment or jumpers in the 221B canyon. Approximately 293,447 kilograms of contaminated debris, equipment, and lead counterweights are stored in the containment building as waste. The contaminated debris and equipment remain from processing listed waste and are designated with waste codes F001 through F005.

Additional waste is expected to be generated during deactivation of B Plant. It will be stored in the containment building. However, the waste will result from equipment already in the canyon being declared unusable because it either has failed or has no further use.

4.9.2 B Plant Containment Building Storage

The B Plant canyon is approximately 260 meters long by 21 meters wide by 22 meters high. It is a concrete structure with walls several feet thick. Waste stored in the B Plant containment building is protected from the elements. Waste stored in the process cells is further protected by large concrete cover blocks that enclose the cells and form the canyon deck. The full capacity of the containment building is 35,000 cubic meters.

Accurate estimates of the waste volume currently stored in the containment building are not available. However, an inventory is maintained of the waste in the process cells and on the canyon deck and has been estimated at 293,447 kilograms. This waste is made up of 99 percent contaminated debris and equipment and 1 percent lead. No free liquids are stored in the containment building. Efforts to find additional information about this waste continue.

The B Plant Containment Building is a waste management unit permitted for storage as part of the B Plant complex TSD unit. In accordance with agreements reached during Tri-Party Agreement negotiations for transition, additional waste may be generated and stored through B Plant complex transition. A preclosure work plan with complete waste inventories and descriptions will be submitted to Ecology in accordance with Tri-Party Agreement milestone M20-21A.

4.9.3 B Plant Containment Building Characterization

The amount of lead in each process jumper and the amount of shielding for each piece of process equipment are known from design drawings. Historical process flow diagrams and operating knowledge provide a basis for determining what types of waste were processed using this equipment. No sampling and analysis of the waste has been performed and none will be performed during facility deactivation. Process knowledge will be used to adequately characterize the waste that will remain in the containment building during deactivation.

Some of the waste has been designated as TCLP toxic for lead (D008) because of the lead used as a component of the equipment. In addition, waste codes F001 through F005 have been applied to equipment that was used to manage or process listed SST and DST system waste. Heavy metals waste codes (D004 through D011) also may apply in some instances because of potential waste residue on process equipment. However, applicability of these characteristic codes has not been determined.

4.9.4 B Plant Containment Building Treatment

Treatment has not been planned or scheduled for this waste. Current plans call for its disposition to be addressed during closure of the B Plant complex. The specified LDR treatment for radioactive elemental lead solids is macroencapsulation. Elemental lead waste may be treated using alternative treatment standards for hazardous debris.

4.10 T PLANT COMPLEX DRAG-OFF BOX

4.10.1 Drag-Off Box Generation

No detailed information is available on the generation of waste contained in the drag-off box. Much of the waste in the box appears to be equipment from the T Plant complex. However, some of the items were generated at other onsite locations, such as the PUREX complex, and sent to the T Plant complex for repair or decontamination. Few historical records are known to exist for the materials in the box.

4.10.2 Drag-Off Box Storage

The drag-off box is located in the 221-T Building at the T Plant complex. No plans have been made to move the materials in the box or the box itself. However, if the box or materials must be moved, they can be stored at various locations at the T Plant complex as long as the storage areas are posted and controlled appropriately and the materials are packaged adequately. Permitting does not limit the storage of the materials to a single location.

No significant increases to the waste quantity stored in the 221-T Building or the T Plant complex are planned. The quantity of waste material stored at the T Plant complex varies from day to day, but does not increase significantly over time. Therefore, it is not expected that the T Plant complex storage capacity will be reached.

4.10.3 Drag-Off Box Characterization

The waste items in the drag-off box were being sorted based on limited process knowledge. Items determined to be mixed low-level waste were segregated from items determined to be low-level waste. Sorting was discontinued because of funding cuts. Funding to complete this process is being requested for FY 1999.

4.10.4 Drag-Off Box Treatment

The mixed waste items from the box are expected to require treatment before disposal. However, treatment has not been funded, therefore no plans have been made to treat the items. Treatment methods, capacity, and alternative technologies have not been investigated. Treatment capacity is unknown because a treatment method has not been identified. The items may be treated at the T Plant complex depending on the specified treatment method and funding.

4.11 T PLANT COMPLEX TANK TRAILER WASTE

4.11.1 Tank Trailer Waste Generation

The waste in the tank trailer came from the 219S tank at the 222-S Laboratory complex in the 200 West Area. The waste was derived from analytical laboratory operations. The tank trailer was removed from service because the possible presence of PCBs was a concern. Most of the waste in the tank trailer was transferred to the DST system. What remains is a heel of about 757 kilograms that could not be removed. The trailer was sent to the T Plant complex because the 222-S Laboratory complex was not permitted for storing this type of container. The T Plant complex received the trailer on March 6, 1997.

4.11.2 Tank Trailer Waste Storage

The tank trailer is located in an outside area at the T Plant complex. The trailer may be stored at various locations at the T Plant complex as long as the storage area is posted and controlled appropriately. Permits do not limit the storage of the trailer to a single location.

Significant increases in the quantity of waste stored at the T Plant complex are not planned. The quantity of waste stored at the T Plant complex does not increase significantly over time. Therefore, it is not expected that the storage capacity of the T Plant complex will be reached.

4.11.3 Tank Trailer Waste Characterization

The 5,000-gallon tank trailer contains 757 kilograms (about 0.75 cubic meter) of waste liquid and sludge. Characterization of the waste was based on process knowledge. Therefore, the quantities of listed waste under codes F001 through F005 may be smaller than those reported. Use of the tank trailer was put on hold because of a concern that the waste may contain PCBs. Analysis has shown that PCBs are not present or are present in a quantity below the levels of regulatory concern. The waste contains chromium at a concentration of 39.6 milligrams per liter and has a pH of 13.6.

4.11.4 Tank Trailer Waste Treatment

No plans have been made to treat the waste in the tank trailer. Treatment methods, capacity, and alternative technologies have not been investigated. The feasibility of removing the waste heel at the T Plant complex is being investigated. The waste would then be transferred to the DST system. This would allow the trailer to be returned to use.

4.12 T PLANT COMPLEX EC-1 CONDENSER

4.12.1 EC-1 Condenser Generation

The EC-1 condenser was used at the 242-A Evaporator as part of the process to reduce the quantity of underground liquid waste at the Hanford Facility. The condenser was removed from service and received at the T Plant complex on July 6, 1995.

4.12.2 EC-1 Condenser Storage

The EC-1 condenser is stored on a railroad flatcar on a track in the 2706-T Building yard. The EC-1 condenser may be stored at various locations at T Plant complex as long as the storage area is posted and controlled appropriately. Permits do not limit the storage of the condenser to a single location.

Significant increases to the amount of waste stored at the T Plant complex are not planned. The quantity of waste stored at the T Plant complex varies from day to day, but does not increase significantly over time. Therefore, it is not expected that the storage capacity of the T Plant complex will be reached.

4.12.3 EC-1 Condenser Characterization

The EC-1 condenser is designated as mixed waste because of contact with the DST and SST system waste, which carries waste codes F001 through F005. The designation is based on process knowledge.

4.12.4 EC-1 Condenser Treatment

Treatment of the EC-1 Condenser is a low priority compared to other treatment projects. No plans have been made to treat the condenser. Currently, treatment capacity is not a concern and no alternative technologies are being developed to treat the condenser.

5.0 REFERENCES

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