THE U.S. DEPARTMENT OF ENERGY

Transuranic Waste Performance Management Plan

Carlsbad Field Office
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Table of Contents

Table of Contents

Acronyms and Abbreviations

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AEC	Atomic Energy Commission
ACL	Analytical Chemistry Laboratory (INEEL)
Am	Americium
Am-241	Americium-241
AMWTP	Advanced Mixed Waste Treatment Project
ANL-E	Argonne National Laboratory-East, Argonne, IL
ANL-W	Argonne National Laboratory-West, Idaho Falls, ID
ARCO	ARCO Medical Products Company, West Chester, PA
B&W-NES	Babcock & Wilcox – Nuclear Engineering Services, Lynchburg, VA
BAPL	Bettis Atomic Power Laboratory, West Mifflin, PA
BCL	Battelle Columbus Laboratories, Columbus, OH
CAO	U.S. Department of Energy Carlsbad Area Office (now the Carlsbad Field Office)
CABE	Center for Acquisition and Business Excellence
CBFO	U.S. Department of Energy Carlsbad Field Office
CCA	WIPP Compliance Certification Application
CCF	Central Confirmation Facility
CCP	Centralized Characterization Project
CEMRC	Carlsbad Environmental Monitoring & Research Center (New Mexico State University)
CFR	*Code of Federal Regulations*
CH	Contact-Handled
CH-TRU	Contact-Handled Transuranic waste
CID	Central Internet Database
CNS	Chem-Nuclear Systems (now Duratek, Inc.)
CRA	Compliance Recertification Application
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DOE/EM	U.S. Department of Energy/Environmental Management
DOE-HQ	U.S. Department of Energy – Headquarters
DOT	U.S. Department of Transportation
DR/CT	Digital Radiography/Computed Tomography
ECL	Environmental Chemistry Laboratory (INEEL)
EEG	Environmental Evaluation Group
EPA	U.S. Environmental Protection Agency
ETEC	Energy Technology Engineering Center, Santa Susana, CA

FR	*Federal Register*
FY	Fiscal Year
GE-VNC	General Electric – Vallecitos Nuclear Center, Pleasanton, CA
GFS/I	Government Furnished Services/Item
Hanford	Hanford Reservation, Richland, WA
HLW	High-level Waste
HWFP	WIPP Hazardous Waste Facility Permit
ICV	Inner Containment Vessel
INEEL	Idaho National Engineering and Environmental Laboratory, Idaho Falls, ID
IPABS	Integrated Planning, Accountability, and Budgeting System
KAPL	Knolls Atomic Power Laboratory, Niskayuna, NY
KAPL-NFS	Knolls Atomic Power Laboratory-Nuclear Fuel Services, Inc., Erwin, TN
LANL	Los Alamos National Laboratory, Los Alamos, NM
LBNL	Lawrence Berkeley National Laboratory, Berkeley, CA
LLNL	Lawrence Livermore National Laboratory, Livermore, CA
LLW	Low-level Waste
LQS	Large Quantity Site
LRRI	Lovelace Respiratory Research Institute, Albuquerque, NM
LWA	WIPP Land Withdrawal Act
m^3	Cubic Meters
MEMP	Miamisburg Environmental Management Project (Mound), Miamisburg, OH
MOC	Management and Operating Contractor
MURR	Missouri (University of) Research Reactor, Columbia, MO
NCT	National Certification Team
NMED	New Mexico Environment Department
NRC	Nuclear Regulatory Commission
NTP	National TRU Program
NTS	Nevada Test Site, Mercury, NV
ORNL	Oak Ridge National Laboratory, Oak Ridge, TN
PGDP	Paducah Gaseous Diffusion Plant, Paducah, KY
ppm	parts per million
Pu-238	plutonium-238
Pu-239	plutonium-239
QA	Quality Assurance

RCRA	Resource Conservation and Recovery Act
RFETS	Rocky Flats Environmental Technology Site, Golden, CO
RH	Remote-handled Waste
RTF	Remote Treatment Facility
SARP	Safety Analysis Report for Packaging
SCDHEC	South Carolina Department of Health and Environmental Control
SEIS	Supplemental Environmental Impact Statement
SNL-NM	Sandia National Laboratories, Albuquerque, NM
SPRU	Separations Process Research Unit, Schenectady, NY
SQS	Small Quantity Site
SRS	Savannah River Site, Aiken, SC
SWB	Standard Waste Box
TDOP	Ten-Drum Overpack
TRAMPAC	TRUPACT-II authorized methods for payload control
TRU	Transuranic
TRUPACT-II	Transuranic Package Transporter, Model II
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal (facility)
TWBIR	TRU Waste Baseline Inventory Report
TWRF	TRU Waste Remediation Facility
USAMC	U.S. Army Material Command, Rock Island, IL
WAC	Waste Acceptance Criteria
WAP	Waste Analysis Plan
WIPP	Waste Isolation Pilot Plant, Carlsbad, NM
WIR	Wastes Incidental to Processing
WRAP	Waste Receiving and Processing (Facility)
WVDP	West Valley Demonstration Project, West Valley, NY

Executive Summary

Executive Summary

The Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) opened on March 26, 1999, becoming the nation's first deep geologic repository for the permanent disposal of defense-generated transuranic (TRU) waste. This waste is currently retrievably stored at 27 sites across the country. Since its opening, more than 1,000 shipments of TRU waste have been safely characterized, transported, and disposed in the WIPP. The DOE has achieved and surpassed the original goal of sending 17 waste shipments per week to WIPP. The National TRU Program (NTP) has implemented significant operational efficiencies, regulatory changes, and administrative initiatives, but the program cannot rest on its past achievements. The existing program schedule shows completion of legacy TRU waste disposal in 2034 at an estimated life-cycle cost of $16 billion.

In February 2002, the DOE completed a review of ongoing activities and practices at DOE environmental management sites and reported its findings in *The Environmental Management Top-to-Bottom Review Report.* This report outlined an aggressive strategy designed to reduce risk and challenged sites to develop innovative strategies resulting in a technically supported risk-based plan to enable cleanup and closure.

This document, *The TRU Waste Performance Management Plan*, describes a comprehensive approach to:

- Implement activities that quickly reduce overall risk by removing the TRU waste from small quantity sites (SQSs) by consolidation and characterization of SQS waste at large quantity sites (LQSs) before disposal at WIPP.
- Reduce risk by completing the legacy contact handled (CH)-TRU waste disposal by 2013 (about 20 years early with a continuing mission of disposing of newly generated waste until 2035).
- Remove barriers that impede waste disposal in order to increase the rate and reduce the cost of waste disposal at WIPP.

The ultimate objective of this plan is to accelerate the disposal of legacy TRU waste and reduce the risk to the public and the environment.

The absence of a centralized DOE national management approach to TRU waste characterization, transportation, and disposal has created many barriers to disposal of TRU waste. Complex administrative and regulatory requirements for characterization, transportation, and disposal of TRU waste at WIPP are costly and difficult to implement. Each generator/storage site implements them in a different way. To achieve the vision described in this plan, the management of the DOE TRU waste generator/storage sites and WIPP operations must be integrated within the national TRU waste system.

Recognizing the inter-dependency among the various sites, the DOE Carlsbad Field Office (CBFO) implemented a holistic, comprehensive approach to planning for acceleration. The CBFO initiated a series of interactive videoconferences with each DOE TRU waste site to ensure that this plan reflects an integrated approach to legacy TRU waste disposal.

Key components for acceleration of the disposal of all DOE TRU waste are described in a series of strategic initiatives discussed in Chapter 2 of this plan. These initiatives are listed in priority order and focus on meeting compliance orders and closure agreements as well as accelerated risk reduction, and streamlined operations. In addition, these initiatives will implement regulatory and technology solutions for characterization, transportation and disposal activities.

- Strategic Initiative 1
  Continued emphasis on the shipment of TRU waste from Rocky Flats Environmental Technology Site (RFETS); completion of the 3,100 cubic meter (m^3) project at Idaho National Environmental and Engineering Laboratory (INEEL); and acceleration of TRU waste characterization at the Advanced Mixed Waste Treatment Project (AMWTP) and a commensurate increase in disposal handling capacity at WIPP.

- Strategic Initiative 2
  Continued emphasis on the Central Characterization Project (CCP) deployment of mobile systems at Argonne National Laboratory-East (ANL-E), the Savannah River Site (SRS), and Nevada Test Site (NTS).

- Strategic Initiative 3
  Implementation of a series of projects to accelerate shipments from all sites:

  - *New Mexico Acceleration Project*--deployment of acceleration process lines at Los Alamos National Laboratory (LANL) to augment existing capabilities in order to accelerate LANL and the other two New Mexico TRU waste sites. This plan is consistent with the New Mexico letter of intent (included as Appendix A)

  - *The SRS and Eastern SQS Acceleration Project, and the Hanford and Western SQS Acceleration Project*--deployment of mobile systems to SQSs to characterize waste for transportation to hubs that will be established in the West and East. This accelerated removal of TRU waste from the SQSs will effectively lower the overall risk to a large population located in the communities that surround these sites. The waste will then be characterized at the hub for disposal and transported to WIPP. (See Appendix B)

- Strategic Initiative 4
  Implementation, upon regulatory approval, of a Central Confirmation Facility (CCF) at the WIPP site.

- Strategic Initiative 5
  Implementation, upon regulatory approval, of activities to dispose of remote-handled (RH) TRU waste.

- Strategic Initiative 6
  These are a series of initiatives that are applicable across the DOE complex. These include regulatory changes and technology development initiatives that will provide new or improved paths for disposal of waste from all TRU waste sites. A National Academy of Science committee is looking at technology needs for TRU and low-level waste. The

CBFO has outlined a technology development approach that will support acceleration planning and form the technical basis for regulatory changes. To achieve the goals of accelerated cleanup, there are several key technologies that need to be developed. These technologies will enhance characterization, transportation and disposal activities. It's critical that technologies are developed for mitigating the transportation impacts of gas generation, radioassay of large containers, and a strong, tight payload container.

Accelerating the cleanup of legacy CH-TRU waste by 20 years will significantly reduce the risk associated with temporarily storing TRU waste above ground at 27 DOE sites around the nation. The recent wildfires at Hanford, INEEL, and LANL clearly illustrate this risk. Approximately 53 million people now live within a 50-mile radius of a DOE site with TRU waste. Disposal of TRU waste 2150 feet below ground at WIPP is clearly a better solution than the current approach to managing this risk.

By achieving this kind of significant risk reduction, the attendant cost and schedule savings will be accomplished only through fundamental changes in the way the NTP does business. We are implementing a corporate business structure that uses commercial business practices of standardization and economies of scale while at the same time implementing technology improvements and changes to the regulatory framework. This innovative management structure is described in greater detail in Chapter 3 of this plan. Roles and responsibilities are defined and new strategies are explored. The National TRU Waste Complex Corporate Board, consisting of representatives from across the complex, will ensure that all efforts are coordinated and integrated.

The WIPP mission can be viewed as two parts: disposal of legacy TRU waste (primarily weapons production) and disposal of newly generated TRU waste (primarily facility decommissioning). Of the two, the larger portion is the legacy waste. By completing disposal of the legacy waste about 20 years ahead of the baseline, the operating costs associated with WIPP are reduced. Shipments of newly generated waste can be optimized, thus greatly reducing the infrastructure required. The cost savings associated with acceleration are discussed in Chapter 4 of this plan.

Chapter 5 of this plan presents an integrated schedule for the disposition of TRU waste. The schedules found in Chapter 5 and the concepts and strategies found throughout this document are predicated on a series of assumptions. These assumptions form the basis for the acceleration planning, not only by the CBFO, but also by each of the DOE TRU waste sites. The assumptions are:

- Appropriate levels of funding will be available to support acceleration at CBFO and at the DOE TRU waste sites
- RFETS and INEEL will continue to characterize, load, and ship at their proposed accelerated rates
- Acceleration Process Lines (APLs) will have a capacity for 2,000 drums per year per line for debris waste and 3,000 drums per year per line for homogeneous waste.
- SQS waste, except NTS and ANL-E, will be sent to regional hubs (one in the West, one in the East and one at Los Alamos National Laboratory)

- Shipments will be made in TRUPACT-IIs by truck and TRUPACT-IIIs by rail
- For the sites that do not have rail access, TRUPACT-III shipments will be by truck
- Generally shipments will consist of:
    - 35 drums per shipment in TRUPACT-IIs by truck or 7.4 cubic meters per shipment;
    - 1 TRUPACT-III per shipment by truck or 11.4 cubic meters per shipment
    - 3 TRUPACT-IIIs per railcar and 3 railcars per shipment or 102.6 cubic meters
- TRUPACT-III shipments will begin in FY07
- The WIPP will be capable of handling 100 TRUPACT-IIs and/or HalfPACTs per week for disposal starting in April 2003.

In consultation with our stakeholders and working with our regulators, we can achieve the vision of accelerated cleanup, reduced risk to the nation, and significant cost savings without compromising safety. The bottom line is safely completing the mission of disposal of all TRU legacy waste about 20 years early while continuing the newly generated transuranic waste disposal mission through 2035.

1.0 Purpose and Overview

1.0 Purpose

The purpose of this document, the *TRU Waste Performance Management Plan* (the "Plan"), is to describe the DOE CBFO plan to accelerate the shipments of TRU waste by shipping all of the legacy TRU waste to the WIPP about 20 years earlier than originally planned while continuing the newly generated TRU waste disposal until 2035. The National TRU Waste System must be managed as an integrated system (run like a business) among the various DOE TRU waste sites and the WIPP operations if it is to achieve the highest level of success. This plan provides the programmatic strategy for the TRU waste complex as recommended by the *EM Top to Bottom Review*. This strategy will:

- Reduce costly duplication of effort,
- Provide a national, rather than site specific, prioritization of cleanup efforts, and
- Reduce, rather than manage, the risk associated with the TRU waste sites.

1.1 Background

In August 2001, the Secretary of Energy directed that a review of the Environmental Management (EM) program be undertaken. In response, the Assistant Secretary for Environmental Management created the Top-to-Bottom Review Team. This Team conducted a review of the EM program and its management systems, with the goal of improving program performance. The Team's focus was on following three core principles:

- The business of EM is safe cleanup and closure of sites
- EM needs to complete its work quickly.
- The EM cleanup and closure program will be run like a business.

A key finding of the Top-to-Bottom Review is that the DOE EM site cleanup strategy is not based on technically supported risk prioritization. For TRU waste, this means that the disposal rate of all TRU waste is not sufficient to substantially reduce the risk associated with managing these materials at the numerous DOE sites across the nation. The review also observed that all TRU waste is currently being managed in a costly manner. The team concluded that the process must be improved through the use of more efficient business operations.

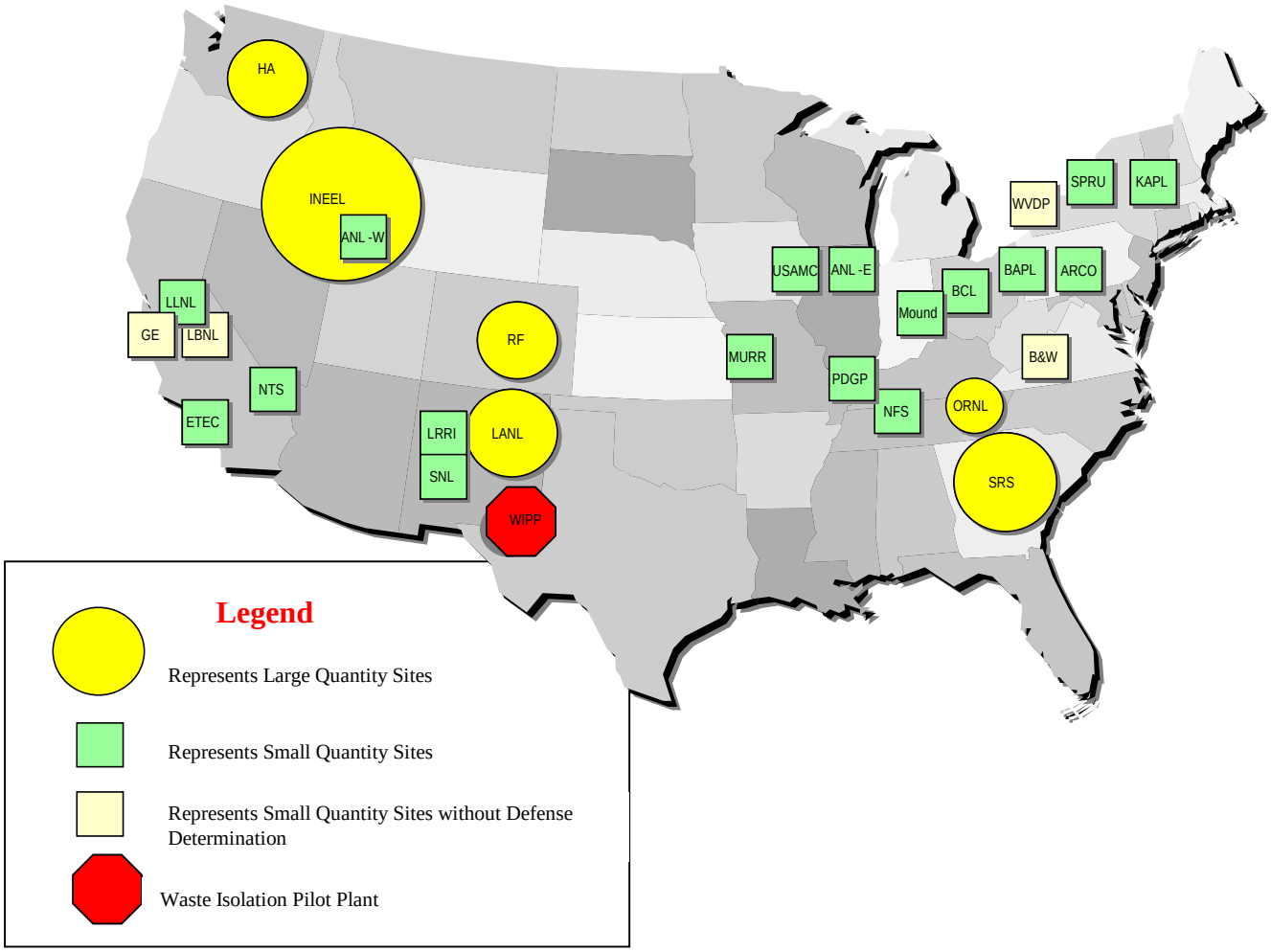
Consistent with the Top-to-Bottom Review, the NTP is devising an acceleration/risk reduction strategy. The strategy proposes to use the best business practices, timely regulatory changes, and innovative technology development and deployment to decrease the current risk associated with managing and disposal of TRU waste. The strategy focuses on innovative ways to characterize, transport, and dispose of TRU waste.

The DOE is committed to honoring the federal government's obligation to clean up legacy waste at sites across the nation that supported the production and testing of nuclear weapons and other defense activities. The CBFO has the responsibility for management

of the NTP, whose mission is implementation and management of a national system that safely and cost-effectively provides for the disposal of defense generated TRU waste at the WIPP.

Figure 1.0-1 TRU Waste Sites depict relative volume of TRU waste at the 6 large quantity sites and the 21 small quantity sites

Figure 1.0-1 TRU Waste Sites



1.2 Completion of Legacy CH-TRU Waste Disposition About 20 Years Earlier

The National TRU Waste System is extensive and complex and needs to be managed as an integrated system. The CBFO is taking a holistic, comprehensive approach to accelerate the shipments of TRU waste for disposal at the WIPP.

The NTP acceleration goals are the following:

- Complete disposal of legacy TRU waste about 20 years ahead of schedule, without compromising safety, and saving the taxpayers approximately $8 billion. The disposal of newly generated waste will continue through 2035.
- Reduce risk to the nation by accelerating cleanup and disposal of TRU waste.

The National TRU Waste Complex is made up of six LQSs and 21 SQSs (the TRU waste inventories and baseline plans of these sites are described in detail in *The National TRU Waste Management Plan, Rev. 3*. Two sites currently have priority for shipping TRU waste for disposal at the WIPP, RFETS and INEEL. The reason for this prioritization is as follows:

- The DOE has made a commitment for closure of the RFETS by December 15, 2006. RFETS has accelerated their shipments to 10-15 TRUPACT-II shipments per week.
- The INEEL must ship at least 3,100 m^3 of TRU waste out of the State of Idaho by December 31, 2002, per the Idaho Settlement Agreement. After meeting this milestone, CH-TRU waste currently stored in the Transuranic Waste Storage Area will be treated in the AMWTP. The AMWTP is nearing completion and is expected to begin operations in March 2003.

A third site, Oak Ridge National Laboratory (ORNL), is constructing a privatized RH/CH-TRU waste treatment facility for characterization and repackaging. The DOE has awarded a contract to Foster Wheeler Environmental Corporation to construct and operate the TRU Waste Remediation Facility (TWRF) in the Melton Valley area of ORNL. All currently stored and newly generated waste from the ORNL will be transferred to the TWRF. Volumes shipped from the TWRF will be post-treated volumes.

The CCP is tasked with providing a standardized characterization and certification capability to certify TRU waste for disposal at WIPP. It was established to provide cost-effective TRU waste characterization, confirmation, and certification, including generation-level and project-level data validation and verification in accordance with programmatic compliance documents. The CCP is structured to use mobile/modular units deployed to generator waste sites. The NTP will use CCP to assist SQSs that have either limited or no TRU waste characterization and certification capability, and to supplement the capability of the LQSs.

The CCP is currently deployed at SRS, ANL-E, and NTS. In addition to the currently deployed mobile units, the CCP will deploy mobile/modular process lines (called acceleration process lines [APLs]) at the hub sites.

For the remaining sites, the approach being taken is consolidation of TRU waste shipped to a hub site. This approach will address the TRU waste at all the sites within the National TRU Waste Complex. Using this concept, the following regional hubs are proposed to be established:

- *The New Mexico Acceleration Project*
  This project includes shipping TRU waste from the Lovelace Respiratory Research Institute (LRRI) to LANL for disposal characterization and shipment to WIPP. The TRU waste from the Sandia National Laboratories (SNL) in New Mexico will also be shipped to LANL.

- *SRS and Eastern SQS Acceleration Project*
  This project includes shipping TRU waste from Mound, Knolls Atomic Power Laboratory-New York (KAPL), Bettis Atomic Power Laboratory (BAPL), Separations Process Research Unit (SPRU), KAPL-Nuclear Fuel Services (KAPL-NFS), Babcock & Wilcox Nuclear Engineering Services (B&W-NES), Argonne National Laboratory-East, and West Valley Demonstration Project to an Eastern Hub for characterization and shipment to WIPP for disposal. For planning purposes, SRS is the large site being considered as this hub. There is already an agreement in place to ship the Mound TRU waste to SRS and one shipment has been made. For expansion of these additional sites, agreement will be required from the state and stakeholders. For some of these SQSs, the TRU waste either has not been generated or a defense determination has not been made.

- *Hanford and Western SQS Acceleration Project*
  This project includes shipping TRU waste from Battelle Columbus Laboratories (BCL), Energy Technology and Engineering Center (ETEC), Lawrence Livermore National Laboratory (LLNL), General Electric-Vallecitos Nuclear Center (GE-VNC), Nevada Test Site (NTS) oversize waste, and Lawrence Berkeley National Laboratory (LBNL) to a Western Hub for characterization and shipment to WIPP for disposal. For planning purposes, Hanford is the large site being considered as this hub. This hub may also receive the 58 oversize boxes currently stored at the NTS, and 31 at Lawrence Livermore National Laboratory (LLNL).

1.3 Risk Reduction

Accelerating cleanup of legacy CH-TRU waste by 20 years will significantly reduce the risk associated with temporarily storing TRU waste above ground at 27 DOE sites around to the nation. The Department has analyzed the risk of various WIPP waste disposal options in the context of the *Waste Isolation Pilot Plant Disposal Phase Final*

Supplemental Environmental Impact Statement DOE/EIS-0026-S-2 (SEIS-II). The various alternatives examined in the SEIS-II encompass the strategic initiatives discussed in the *Transuranic Waste Performance Management Plan* and clearly demonstrate that accelerating cleanup activities will lead to risk reduction across the DOE complex.

Implementation of the planned acceleration activities would reduce overall risks below the levels calculated in the SEIS-II analysis in three ways: operational, transportation, and environmental risks.

Operational Risks

The initiatives to develop characterization methodologies and transportation packaging for large containers would reduce worker risk by reducing radiation exposure to workers resulting from repackaging the waste. Also, the reduction in the number of containers that would need to be handled should reduce the likelihood of waste handling accidents at the generator sites and at WIPP.

Transportation Risks

The highway transportation risks would be reduced by the development of waste transportation packaging capable of handling large containers and high wattage waste loads, which would, in turn reduce the number of shipments needed to transport waste to WIPP. Use of rail reduces this risk even further, as discussed in the SEIS-II.

Environmental Risks

Perhaps the most significant reduction in risk would be reduction of the offsite risks due to potential catastrophic accidents that could release waste from facilities where it is currently stored. Catastrophic events like the recent wildfires near Hanford, INEEL, and the recent Cerro Grande fire near LANL have the potential to affect the estimated 53 million people that now live within a 50-mile radius of DOE sites with TRU waste. The SEIS-II analysis shows that such accidents, if they were to occur, could result in radiation exposure to the public.

The accelerated movement of stored waste to WIPP would reduce the risk of these potential catastrophic events in two ways. First, by reducing the inventory of stored waste the potential consequences of a release are reduced. Second, by reducing the amount of time the waste is in storage, the probability that a catastrophic event will happen during the storage period is reduced.

1.4 The WIPP Site

The TRU waste from all of the generator sites must ultimately come to the WIPP Site for receipt, handling and disposal. To properly meet these requirements, great effort must be placed on timely performance, well-trained personnel, and properly operating equipment.

Personnel

Current WIPP staffing supports day shift waste handling operations at three of four unloading dock positions simultaneously, use of one of two underground transporters for emplacement, and one mining crew. Currently the existing two cranes support four dock positions. To process 100 TRUPACT-IIs per week through the facility, several changes are required at the WIPP. Surface waste handling staff will be increased to support all four dock positions simultaneously. Additionally, two new cranes will be added to provide a dedicated crane to each dock position. Underground waste handling staff will be increased to support two underground transporters and two mining crews.

Current waste receipt is limited by a permitted outside surface storage limit of 12 TRUPACT-IIs. Four additional TRUPACT-IIs may be stored inside, one at each dock position. To process 100 TRUPACT-IIs per week, an additional shift of waste handling will be added to process TRUPACT-IIs.

Equipment needed to support higher throughput rates

As discussed above, an additional crane is needed at each dock. Each dock has two TRUPACT-II positions but only has one crane. There are inefficiencies in this arrangement, because the crane can only support one TRUPACT-II at a time, therefore additional cranes will improve surface waste handling to 100 TRUPACT-IIs per week.

A new dock will be designed and constructed to handle the new TRUPACT-III. Adequate space exists in the Waste Handling Building to install this new dock without affecting the current docks. Modifications to the ventilation system are not expected but may be required if the current height restrictions in the facility prevent handling the new containers. Funding is required two years prior to receipt of waste using the new package. Funding would be required in fiscal year 2004 (FY04) to accommodate FY07 receipt of waste in TRUPACT-III containers.

Rail receipt capability exists at the WIPP site with minor modifications. Specifically, a rail spur is currently installed which allows rail access to the site. No maintenance has been performed on this spur since installation. The rail crossing at the WIPP access road is currently covered with asphalt. Removal of the asphalt and completion of the site rail maintenance is required. Upgrades to the site receipt process are necessary for receipt by rail. The area for waste handling access to the rail is asphalt and will not support heavy load handling. Replacement by concrete is required. Additionally a modified forklift will be needed for handling the TRUPACT-III. Other external access items consist of an elevated handling area near the rail and access to both sides of the rail (current access is only available on one side).

Ten additional facility pallets will be required. Current downloading and emplacement of waste requires that each facility pallet be downloaded, unloaded and returned to the

surface prior to the next facility pallet being downloaded. Additional facility pallets will reduce the wait time for each pallet to return to the surface prior to the next download and supports increased underground waste handling to 100 TRUPACT-IIs per week.

An additional access gate will also be required. The current access gate to the site is used for all traffic including the TRUPACT-II trucks. Congestion using a single gate at the higher throughput rates can delay empty TRUPACT-IIs from leaving the site, which can delay shipments. A dedicated access gate for TRUPACT-IIs will prevent congestion delays and provides for wider radius turn, thus reducing wear and tear on the trailers.

Equipment needed for reliability and redundancy

Facility Loading Car: This is an electric/hydraulic rail car, which loads the waste onto the waste hoist. WIPP has only one such car and it represents a single point failure. Should this car fail for more than one day, waste shipments to WIPP at the rate of 100 TRUPACT-IIs per week would have to be suspended until repairs could be made.

Underground Transporter: This transporter takes the waste off the waste hoist and transports the waste to the disposal panel. At 100 TRUPACT-IIs per week, two more transporters are required. WIPP only has two such transporters today.

Mining equipment: The higher mining rates needed to support 100 TRUPACT-IIs per week require reliable and redundant equipment. The majority of current equipment was used for original WIPP excavations and is now more than 15 years old. To ensure reliable mining rates can be met, WIPP needs one continuous miner, two underground haul trucks and one load, haul, dump truck in addition to existing equipment to reduce reliance on aging equipment with increasing failure rates.

Waste Storage: As discussed above, WIPP is significantly limited in surface storage capacity. The truck parking area storage capacity of 12 TRUPACTs provides inadequate surge capacity at 100 TRUPACT-IIs per week. Additional permitted storage is needed to ensure shipments are not suspended for equipment failures and to improve shipment flexibility and efficiency.

2.0 National TRU Waste Disposition Strategic Initiatives

2.0 The National TRU Waste Disposition Strategic Initiatives

To accelerate the shipment of TRU waste, the NTP has developed a series of strategic initiatives. These initiatives are listed in priority order and represent strategies that reduce risk at individual sites by accelerating completion of the legacy TRU waste mission. Each initiative focuses on an approach that maximizes lessons learned, and includes innovative approaches to waste minimization, repackaging, characterization, transportation, and disposal. These initiatives include:

- Strategic Initiative 1: Continued emphasis on shipping from Rocky Flats and INEEL
- Strategic Initiative 2: Accelerated implementation of shipments from CCP process lines at ANL-E, SRS, and NTS
- Strategic Initiative 3: Deployment of acceleration process lines at Hanford, LANL, and SRS to augment and accelerate legacy CH-TRU waste disposal
- Strategic Initiative 4: Implementation of three regional hubs (one in the West, one in the East, and one in New Mexico) to accelerate disposal of legacy CH waste from the SQSs
- Strategic Initiative 5: Development of a Central Confirmation Facility (upon regulatory approval) Implementation of RH waste disposal
- Strategic Initiative 6: Crosscutting initiatives dealing with characterization, transportation, and disposal of TRU waste

The initiatives, described in this chapter, form the foundation to meet the goals and objectives of accelerated cleanup.

2.1 Strategic Initiative 1: Rocky Flats Environmental Technology Site and the Idaho National Environmental and Engineering Laboratory

2.1.1 Current Acceleration Activities

WIPP

A key element of acceleration is increasing the throughput of the WIPP to 100 TRUPACT-IIs and/or HalfPACTs per week. This handling capability target is essential to all acceleration initiatives. Section 1.4 discusses the actions necessary to meet this throughput goal.

RFETS

The first TRU waste shipment from the RFETS was made on June 15, 1999. RFETS has accelerated its shipment rate to 10-15 TRUPACT-II shipments per week. To date, more than 1,000 shipments of TRU waste has been received at WIPP. Of those, over 600 have been shipped from RFETS. The DOE has made a commitment for closure of the RFETS by December 15, 2006. Therefore, TRUPACT shipments from RFETS will be afforded priority to meet this goal.

INEEL

The first TRU waste shipment from the INEEL was made on April 27, 1999. Of the 1,000 shipments of TRU waste received at WIPP, over 350 have been shipped from the INEEL. The INEEL must ship at least 3,100 m^3 of TRU waste out of the State of Idaho by December 31, 2002 (per the Idaho Settlement Agreement). Plans are to complete the shipment of the 3,100 m^3 of TRU waste out of the State of Idaho in November 2002. Currently, INEEL is making 15 shipments per week. Therefore, TRUPACT shipments from INEEL will be afforded priority to meet this goal.

Sodium-Bearing Waste at INEEL

The sodium-bearing wastes at INEEL are liquids and solids generated as decontamination solution from past spent fuel reprocessing maintenance activities, tank heel solids, spent fuel reprocessing extraction wastes, and wastes generated by ongoing maintenance and closure activities. The wastes are stored in the Idaho Nuclear Technology and Engineering Center (INTEC – formerly the Idaho Chemical Processing Plant). Depending on the final treatment option chosen, these wastes may generate up to 1,200 m^3 of RH-TRU wastes or 4,600 m^3 of CH-TRU wastes.

The sodium-bearing wastes may meet the definition of wastes incidental to reprocessing and a request for determination has been made to the NRC.

2.1.2 Advanced Mixed Waste Treatment Project

Project Description

The AMWTP is a privatized approach for the disposition of over 70,000 m^3 of legacy TRU waste at INEEL, with a projected start date of March 2003. The target date for the disposition of these legacy wastes is 2015. However, in coordination with the national program, the AMWTP has developed a plan to accelerate shipment of its legacy CH-TRU wastes to 2013. Planning is based on the use of truck transport of TRUPACT-IIs and sustains a shipping level of approximately 17 shipments per week. The AMWTP also has the capability to size reduce and repackage oversized waste boxes.

Assumptions

Waste will be packaged and transported in TRUPACT-II containers, optimizing transportation resources, in order to sustain year-round shipping.

Regulatory Change

The AMWTP supercompacts waste for efficient operations and therefore real-time radiography (RTR) and/or visual examination (VE) are most effectively performed prior to compaction and/or final waste packaging. This may require a permit modification/change notice.

Milestones

- Start operations by March 2003
- Complete legacy CH-TRU waste disposition by 2013

2.2 Strategic Initiative 2: On-going CCP activities

2.2.1 Savannah River Site/Mound

Project Description

The method for removal of TRU waste from the Mound site in Ohio has been settled by an agreement among the states of Ohio and South Carolina and the DOE. This agreement stipulates that DOE will ship TRU waste from Mound to SRS for future disposal. In return, SRS will ship to WIPP a volume of SRS TRU waste that is equal to twice the volume of the incoming Mound TRU waste. SRS TRU waste must be shipped to the WIPP before the corresponding Mound TRU waste can be shipped to SRS. Waste from Mound will be shipped using ATMX railcars. Waste from SRS will be shipped using the TRUPACT-II containers. Characterization and certification of SRS TRU waste is currently ongoing using a CCP process line. In addition, prior agreements with the State of South Carolina stipulate an additional 500 drums are to be shipped to WIPP each year.

Assumptions

- The total Mound TRU waste inventory is estimated at 1,500 drum equivalents. Accordingly, characterization activities at the SRS are underway to process 3,500 drum equivalents.
- No repackaging, authorization basis revisions, or new equipment will be required to complete 3,500 drum equivalents.

Milestones

- Complete characterization and certification activities on 3,500 drums to complete of the Mound shipments to SRS by June 2003

2.2.2 Argonne National Laboratory–East/University of Missouri Research Reactor (MURR)

Project Description

Characterization using a CCP line is currently underway at the ANL-E site to remove the legacy TRU debris waste from both the ANL-E and MURR sites. ANL-E does have some inventory (approximately 87 drums) of solidified waste. Currently, ANL-E and the CCP do not have the capability to core and analyze the solidified waste. Therefore, these drums will either be added to the existing effort, with coring and analysis being done at a contract laboratory, or shipped to a larger site for consolidation and future characterization.

Assumptions

- The total MURR inventory consists of seven drums of debris waste.
- Concurrence is obtained from the State of Illinois concerning acceptance of the MURR waste.
- The total ANL-E inventory is 350 drums of debris waste and 87 drums of solidified waste.
- For the solidified waste, non-destructive examination (NDE), non-destructive assay (NDA), and headspace gas sampling (HSG) and analysis will be performed at ANL-E during the existing campaign. An appropriate subset of solidified waste drums will then be shipped to a contract laboratory where coring and chemical analysis will be completed. Following characterization, the waste will be certified and shipped to the WIPP.

Milestones

- Complete the certification audit of the CCP line by September 2002
- Ship MURR debris waste to ANL-E by October 2002
- Complete characterization activities on ANL-E debris drums by December 2002
- Complete shipment of debris waste to WIPP by January 2003
- Complete shipment of solidified waste by September 2003

2.2.3 Nevada Test Site

Project Description

Characterization efforts using a CCP line are currently underway at the NTS to remove the legacy TRU debris drum inventory. NTS also has an inventory of waste in large boxes, which will be shipped to the Western Hub for consolidation, characterization, and future disposal.

Assumptions

- The inventory of debris waste drums totals 1,685.
- The remaining inventory is contained in 58 large size boxes.
- Authorization basis issues will be resolved to allow uninterrupted processing of drums.

Milestones

- Complete the certification audit of the CCP line by September 2002
- Complete characterization activities on all 1,685 drums by April 2003
- Complete shipment of drums to WIPP by June 2003

2.2.4 Lawrence Livermore National Laboratory

Project Description

CCP has initiated planning activities at the LLNL in order to provide relief for the accumulation of TRU waste at the site. Waste from LLNL will either be characterized and certified for shipment directly to the WIPP or transported to the proposed Western hub for full disposal characterization and certification.

Assumptions

- The projected inventory at the end of FY02 is approximately 1,000 drums of debris waste.
- At least 350 of these drums meet all requirements for transportation without further characterization work.

Milestones

- Ship the first 350 drums to the Western hub by March 2003
- Ship 420 drums to the Western hub or directly to WIPP by December 2003
- Ship the remaining drums to the Western hub or directly to WIPP by June 2010

2.3 Strategic Initiative 3: Acceleration Project

The Acceleration Project is intended to significantly reduce the time to clean up the legacy waste inventory throughout the DOE complex. The goal is to complete this task about 20 years earlier than originally planned, however, the newly generated waste disposal mission will continue until 2035. It is based on the concepts listed below.

Waste Partitioning

The entire DOE TRU waste inventory is being evaluated on a site basis and is divided into the following partitions:

- Partition 1: Waste that can be characterized, certified and shipped in the near term without any regulatory changes or repackaging efforts.
- Partition 2: Waste that can be characterized, certified and shipped with minor regulatory changes or repackaging efforts.
- Partition 3: Waste that can only be characterized, certified, and shipped with significant repackaging efforts or major regulatory changes.

Consolidation (Regional Hubs)

Characterizing TRU waste for disposal at WIPP requires a significant investment of time, manpower, and equipment. As such, efficiencies can be gained by consolidating the waste from the SQSs into the inventory of the larger sites designated as hubs where characterization programs already exist.

Standardization

At each of the three hub sites, equipment and processes will be standardized to the extent practicable to gain economies of scale. Standardization provides the following benefits:

- Consistent operating procedures, authorization basis documentation, and maintenance procedures
- The ability to transfer operators between sites with minimal impact
- Simplify procurement of consumables and spare parts
- Simplified auditing and surveillance programs and regulatory oversight
- Simplified data reporting and evaluation
- Simplified data entry and approval in the WIPP Waste Information System (WWIS) database
- Standardized complex-wide training

Acceleration Process Lines (APLs)

At each of the three hub sites, existing characterization capability will be supplemented as needed to ensure that adequate throughput of waste is available for shipment to the WIPP. This supplemental capability will be provided by the addition of standardized equipment and processes procured and operated by the CCP.

The initial APLs will be designed to process drums. The second APL at each site will initially process drums, and then later be modified to handle the larger containers, such as Standard Waste Boxes (SWBs) or containers that fit inside TRUPACT-III (e.g. 5 feet x 5 feet x 8 feet boxes).

Appendix C provides a summary of the expected implementation dates and equipment for APLs at each site.

Accelerated Retrieval

All of the sites will realign resources to ensure an adequate feed of waste containers to the characterization process lines from their inventory of retrievable stored TRU waste.

Regulatory Changes

CBFO will pursue permit modifications necessary to implement this program.

2.3.1 New Mexico Acceleration Project

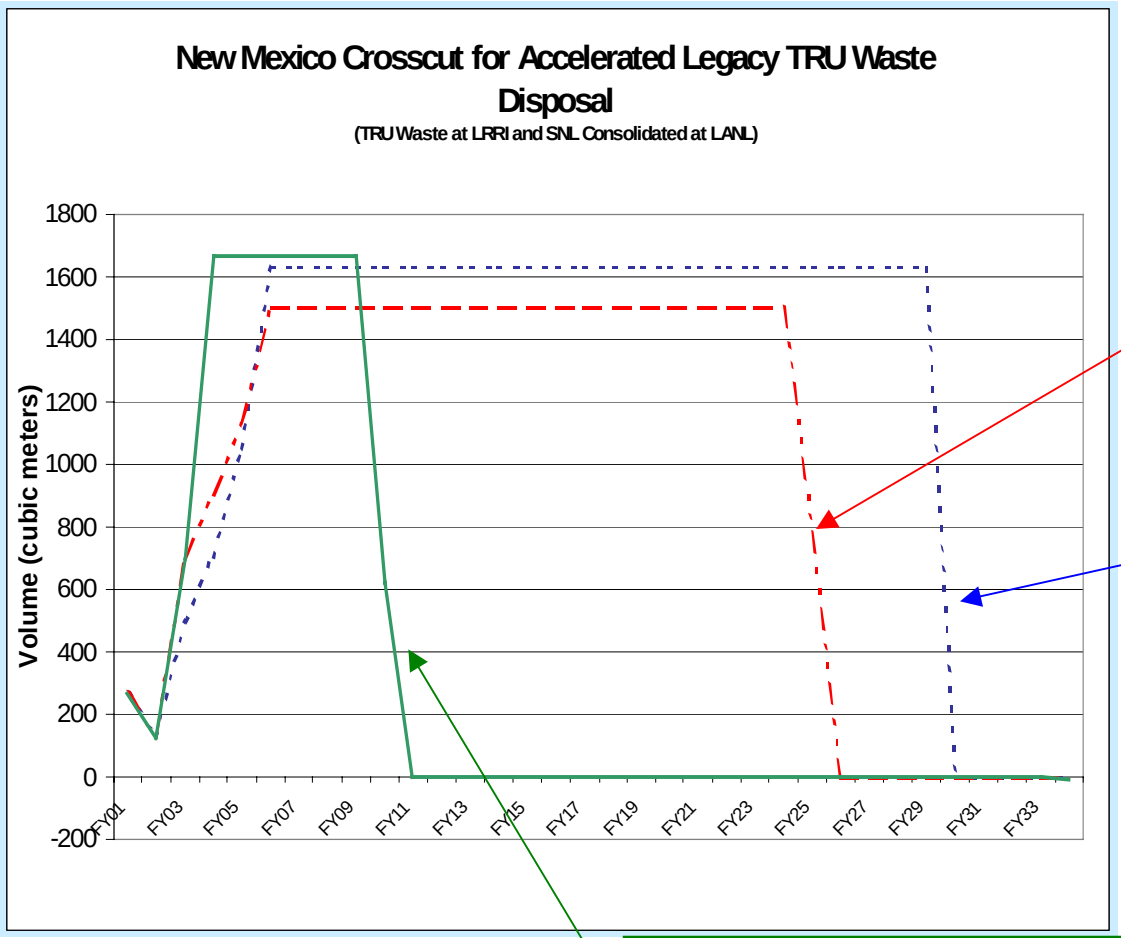
Project Description

The strategic initiative to accelerate the disposition of legacy TRU waste from LANL, SNL, and LRRI has been initiated under the New Mexico Crosscut, an agreement among these sites, the DOE, and the New Mexico Environment Department (NMED). Under this initiative, the CBFO will deploy two APLs to LANL, starting in FY03 and attaining full capacity (4,000 drums per year) in FY04. These APLs will augment the LANL characterization/certification capacity of 2,000–3,000 drums per year and will complete disposition of legacy TRU waste from LANL, SNL, and LRRI by 2011. The APLs will process the LANL homogeneous wastes as well as debris wastes.

To aid in this analysis, ANL-W (coring) and INEEL (analysis) are engaged respectively to core and analyze homogeneous wastes for this acceleration project, while an alternative national capability is being pursued. LANL is augmenting their program with a new repackaging system to handle high wattage and non-compliant packaging. The LANL decontamination and volume reduction system (DVRS) will size reduce the oversized wastes.

Additional acceleration and/or cost reduction is likely as the NTP develops and deploys large container characterization and transportation in 2005, thereby limiting the waste feed to DVRS to those items greater than 5 feet x 5 feet x 8 feet. This overall proposed acceleration is graphically represented in Figure 2.3-1, along with the extended schedule without acceleration (completion in 2030) and the intermediate case where only the 2,000 high-wattage drums at LANL are accelerated (completion in 2025). LANL will continue to coordinate the disposition of defense sealed sources for the nation. Potential disposition of sealed sources currently designated as non-defense is discussed in Section 2.6.3.

Figure 2.3-1 New Mexico Crosscut for Accelerated Legacy Waste Disposal



Accelerate the 2,000 drums of high activity waste

- NRC approved Rev. 19a
- Represents 60% of the activity at risk in LANL waste
- Remaining waste repackaged with associated volume increase to 32,400 m^3
- 3,000 total shipments
- Completion in 2025

Repackage all high-activity waste

- Current transportation restrictions
- Significant repackaging
- Significant volume expansion to 46,000 m^3
- 4,300 total shipments
- Completion in 2030

Accelerate TRU waste shipments in New Mexico

- Small expansion from 9,100 to approx.11,700 m^3 to accommodate extremely high-wattage waste
- Mobile/modular systems support (CBFO proposal)
- 1,300 total shipments
- Completion in 2011

The Expedited Shipment of LANL Technical Area-54 (TA-54) High-Wattage, CH-TRU Waste Project (known as "Quick to WIPP") is also integrated into this acceleration project. The Quick to WIPP project objectives include the characterization, certification, shipment, and disposal of 2,000 drums of high-wattage waste that are stored above ground at TA-54 within 18-24 months. A cornerstone of this project is the ability to safely ship the majority of these 2,000 drums without repackaging. Toward this goal, the NRC approved Revision 19a to the TRUPACT-II Safety Analysis Report for Packaging (SARP) in July 2002. The LANL characterization process line has also been augmented by the advance deployment of a HSG analysis system in July 2002. This system will fill a critical need in the Quick to WIPP project until LANL can either purchase a replacement or the APLs begin operation at LANL in FY03.

LANL and the CBFO will jointly develop and demonstrate a program for newly generated waste that streamlines characterization/certification (see Section 2.6).

Assumptions

The New Mexico Acceleration Project, as a strategic initiative under this Plan, is coordinated with the LANL 2010 initiative (LANL Performance Management Plan) and has the following shared assumptions:

- Revision 19a of the TRAMPAC applies to all waste in the LANL legacy TRU waste inventory.
- The legacy inventory yields approximately 46,000 drum equivalents (excluding newly generated).
- 50% of inventory requires repackaging because of prohibited items, Acceptable Knowledge (AK) problems, wattage, etc.
- LANL addresses more difficult drums, specifically the high wattage drums requiring repackaging and the oversized containers requiring size reduction.
- LANL continues to coordinate the disposition of TRU defense sealed sources.
- APL operations begin at LANL in April 2003
- LANL can receive SNL and LRRI waste.
- SNL facilities are available to repackage waste for transport to LANL under the auspices of this acceleration initiative.

Regulatory Changes

- Apply Rev. 19a regulatory change to all of LANL's waste to minimize repackaging
- Currently the LANL RCRA Part B Permit does not allow receipt and storage of off-site hazardous waste. LANL is pursuing a permit modification with NMED to allow TRU mixed waste to be received from SNL and LRRI.
- Current planning between LANL and the NTP has identified homogeneous solids as an initial category of waste most beneficial for the two APLs to engage. These discussions have also suggested that a procedure change in the Waste Analysis

Plan (WAP) method for formaldehyde sampling and analysis may be required, using a preferred SW 846 procedure.

Milestones

- Rev. 19a of the TRUPACT-II Safety Analysis Report (SARP) approved to allow acceleration of 2000 drums of LANL high wattage wastes by July 2002 (completed)
- APLs deployed at LANL by February 2003
- Legacy waste from LANL, LRRI, and SNL disposed by 2011

2.3.2 SRS and Eastern SQS Acceleration Project

Project Description

The strategic initiative to accelerate the disposition of legacy TRU waste from SRS was initiated through the continuation of the Mound clean-up effort that started in FY01. In support of the Mound clean up initiative, two WIPP certification programs were established at SRS to certify and ship 3,500 drums from SRS to the WIPP, the CBFO-sponsored CCP and the SRS Program. The characterization activities for Mound clean up will be completed by the end of FY02, and the shipping campaign to the WIPP for this waste will continue through March 2003. These two programs will be consolidated into a single program, the CCP, in October 2002. The mobile/modular equipment used by the CCP will continue to conduct the characterization activities at SRS. The SRS will continue to provide infrastructure support to the CCP operations and ensure sufficient feedstock of certifiable drums is provided for WIPP certification.

The estimated drum inventory at SRS is 30,000 drums; 27,000 currently in existence and about 3,000 drums resulting from volume expansion as the result of repackaging high activity containers. An additional process line will be completed in FY03 and at full operation in FY04 to increase throughput. The process throughput for characterization will increase to 4,000 drums per year. Characterization and certification of all 30,000 drums will be completed by FY11.

The total box TRU Waste inventory is 5,000 m^3 or about 25,000 drum equivalents. Of this, 4,600 m^3 are in very large boxes that will require significant size reduction and repackaging. The remaining 400 m^3 will either be repackaged into drums or processed with the very large boxes. Equipment required for the very large box size reduction will be online by FY08. This equipment will include a large box assay system capable handling boxes of up to 5 feet x 5 feet x 8 feet. These activities will conclude by FY13.

Eastern SQSs

For planning purposes, SRS is one of the large sites being considered as the CH-TRU hub for SQSs located in the eastern United States. The eastern SQSs include Mound, Knolls Atomic Power Laboratory-New York (KAPL), Bettis Atomic Power Laboratory (BAPL),

Separations Process Research Unit (SPRU), KAPL-Nuclear Fuel Services (KAPL-NFS), Babcock & Wilcox Nuclear Engineering Services (B&W-NES), Argonne National Laboratory-East, and West Valley Demonstration Project. Most of the CH-TRU wastes at the eastern SQSs are not generated, packaged or ready for characterization for shipment to the eastern hub.

The CCP currently at ANL-E will complete the characterization and certification of legacy CH-TRU at ANL-E (Section 2.2). Newly generated waste created after the demobilization of CCP will be shipped to the SRS hub. Newly generated waste will be packaged in accordance to the WIPP Waste Acceptance Criteria to ensure shipping requirements are met and prohibited items are not introduced in the waste. Mobile systems will be used to characterize waste for transportation requirements at the SQSs.

Assumptions

- The *Programmatic Environmental Impact Statement--Record of Decision* (PEIS ROD) will be amended to accommodate shipments of waste from the SQSs to the eastern hub
- Characterization capabilities for boxes up to 5 feet x 5 feet x 8 feet will be available in FY07

Regulatory Changes

- The current transportation requirements would require waste to be repackaged into multiple drums. An amendment similar to Rev. 19a is necessary to increase gram and wattage limits.
- TP-III will be approved by appropriate regulatory agencies.

Milestones

- Establish a single WIPP certification program at SRS with one process line by October 2002
- Establish a second process line by October 2003
- Mobilize large container characterization equipment by FY07
- Completion of drum characterization and certification by October 2011
- Completion of box characterization and certification by September 2013

2.3.3 Hanford and Western SQS Acceleration Project

Project Description

The Hanford Reservation has approximately 80,000 drum equivalents of legacy CH-TRU waste (post 1970) stored mostly in burial grounds and trenches, with approximately 4,000 drums and boxes stored above ground. Approximately 37,000 drums of suspect TRU waste and 7,000 m^3 of oversized boxes are targeted for initial retrieval. The latter requires a CH/RH Large Box Facility for repackaging, in addition to the Waste Receiving and Processing (WRAP) Facility. The WRAP Facility is currently being used to characterize and process TRU waste for disposal at WIPP and has limited size reduction capability. This new Large Box Facility is not scheduled to begin operations until 2013 in the current site baseline. The baseline for disposal of legacy TRU waste from Hanford, thus, extends to 2035, with the majority of the waste to be shipped after 2010. In addition, BCL and the ETEC have been identified as shipping TRU waste to Hanford.

As has been proposed, Hanford is one of the large sites being considered as the potential Western hub. The Hanford and Western Acceleration Project may use the Hanford capabilities in partnership with the NTP to accelerate the disposition of Hanford's TRU waste as well as that of the western SQSs—BCL, ETEC, LLNL, LBNL, General Electric-Vallecitos Nuclear Center (GE-VNC) (future generation), and NTS (oversized waste) by 2015.

Two APLs configured for characterization of drums (4,000 drums per year total throughput) would be established at the Western hub by this initiative. Both would be installed during the summer of FY03 and begin operations in FY04. Large size container characterization equipment will be installed in FY07 and be fully operating in FY08. If Hanford is selected as the western hub, the large size container characterization equipment would initially concentrate on the 600 boxes at Hanford that are less than 5 feet x 5 feet x 8 feet and thus will not require repackaging to fit into the TRUPACT-III. As hub site facilities repackage the waste in larger boxes into 5 feet x 5 feet x 8 feet containers, the waste will be characterized.

These combined resources will enable the legacy inventory to be disposed by 2015. Both truck and rail will be utilized for transporting the TRU waste to WIPP, with TRUPACT-III and rail dominating in the out years.

Assumptions

- Hanford would accelerate retrieval to match the APL throughputs and initiates repackaging of oversized boxes by 2009.
- Modify PEIS RODs to support the shipments from the designated SQSs to the Western hub.
- The CCP line at NTS will characterize the legacy TRU waste other than the 58 boxes that will be shipped to the Western Hub when TRUPACT-III becomes

available. The Western Hub will have the capacity to process all of the NTS waste, if necessary.
- WRAP would continue in operation serving both TRU waste and MLLW.
- A central coring and analysis capability will be available mid-FY03.
- Regulatory change will allow optimal shipping rates in FY03 and FY04

Regulatory Changes

- TRUPACT-III will be approved by appropriate regulatory agencies.

Milestones

- Drum APLs deployed July 2003
- Large container assay equipment deployed for screening by 2005
- Large container characterization equipment deployed by 2007
- Hanford handling facility for oversized boxes could start operation by the end of 2009
- TRUPACT-III shipments start in 2007
- All CH-TRU drums and small boxes disposed by the end of 2013
- All large, oversized CH-TRU boxes disposed by the end of 2015

2.4 Strategic Initiative 4: WIPP Central Confirmation Facility (CCF)

Project Description

CCF is the final complement to Strategic Initiatives 2 and 3, in that additional resources, under the established CCP management, will be brought online to maximize acceleration of TRU waste disposal and further reduce costs.

The Central Confirmation Facility (CCF), as proposed will be located at the WIPP site and is designed to perform full disposal characterization and certification for CH-TRU waste. TRU waste, currently generated/stored at DOE sites will be certified to meet all transportation requirements and shipped to WIPP for confirmation and disposal. A major goal is to eventually replace the generator site, audit-intensive, 100% confirmation process currently used, with statistical verification of the waste to be performed at the WIPP site. The current approach uses annual audits at each site, necessitating extensive resources and personnel for both the DOE and regulators and requires an extended schedule to implement at more than twenty sites.

The CCF will use standardized characterization equipment, standardized procedures and a centralized project-level verification and validation process. This standardized approach will reduce implementation costs, streamline the certification audit process, and is less burdensome on regulatory personnel, ultimately resulting in a single annual audit of the CCF, and minimizes transportation because waste is shipped only once, directly to WIPP.

CBFO remains committed to implement the CCF in a phased approach, starting with 100% confirmation and migrating to statistical confirmation. As the DOE complex dispositions its legacy waste and moves to newly generated waste, the uncertainties regarding waste composition and properties will diminish and so will the need for 100% confirmation.

The use of hubs allows the legacy waste from the small quantity sites to be consolidated at the hubs. The use of three hub sites and the CCF still achieves acceleration of disposal at WIPP while reducing the implementation time by limiting the annual certification audits to the 4 locations, including the CCF. Additionally, by using the CCP, the certification capacity of the hubs is augmented. When the CCF is permitted and operating, this extra shipping can be minimized. The CCF is envisioned to become operational while the hubs are still fully functional and allow the transition from 100% confirmation at the CCF, to conduct confirmation of waste that has already been certified by a hub site, to statistical verification alone at the CCF.

Assumptions

A permit modification allowing CCF to proceed at the WIPP site is approved.

Regulatory Change

The CBFO has submitted a Class 3 modification for the CCF. A notice of deficiency was issued by the New Mexico Environment Department providing technical and administrative comments. CBFO is currently addressing issues brought up in the notice of deficiency.

Milestones

- A Class 3 permit modification for the CCF submitted June 2001 (completed).
- Response to Notice of Deficiency (requested 12/02)

2.5 Strategic Initiative 5: RH-TRU Waste Disposal

Project Description

At the time Congress enacted the WIPP Authorization Act in 1979 as Public Law 96-164, the DOE envisioned a TRU waste repository that had a capacity for a total of 6.2 million cubic feet of CH-TRU waste including up to 250,000 cubic feet of RH-TRU waste. However, the initial regulatory authorization only allows CH-TRU waste disposal.

Assumptions

- RH-TRU waste permit modification will be approved.
- WIPP facility modifications allow for receipt of RH-TRU waste.
- NTP RH transportation system is in place and operating.
- Characterization and certification for RH-TRU waste will be performed by RH APLs at a hub site or using existing facilities at RH-TRU waste sites.

Regulatory Change

A permit modification was submitted in June 2002 to the NMED and a preliminary submittal of a Notification of Planned Changes given to the EPA. These submittal documents requested that the nation's inventory of RH-TRU waste be accepted and disposed of at WIPP. To expedite the characterization and shipment of the RH-TRU, several changes have been proposed in these documents. The changes emphasize characterization parameters that are required by regulation, health and safety of the public and environment, or the long-term performance of the facility

Milestones

It should be noted that these milestone dates are for planning purposes only.

- Permit modification submitted in June 2002
- Permit modification approval expected fourth quarter FY04
- RH-TRU waste certified expected second quarter FY05
- First receipt of RH-TRU waste expected second quarter FY05

2.6 Strategic Initiatives 6: Crosscut Initiatives

These initiatives include operational efficiencies, regulatory changes, and technology development/deployment activities that will remove barriers to characterization, transportation and disposal of TRU waste. All the DOE TRU waste sites will benefit from the removal of these barriers and associated risk reduction. These crosscutting initiatives address areas identified in the *Environmental Management Top to Bottom Review* as priority issues, such as improving packaging and transportation, focusing on technology and using an integrated program for accelerated clean up.

2.6.1 Characterization Improvements

Project Description

The longer-term strategy of the DOE is to accelerate disposal of legacy TRU waste by achieving a sustained WIPP throughput of 34 or more shipments per week and to dispose of RH-TRU waste. To do so, several important changes are needed. Some of these changes are focused on increasing the operational capacity of the WIPP facility in areas such as the waste handling building storage capacity. Other changes are focused on streamlining the entire TRU waste management system by eliminating "self-imposed waste characterization requirements that lack a legal or safety basis," as recommended by the National Academy of Sciences[1]. These changes include the use of mobile characterization services, centralized waste analysis activities, and the elimination of the audit program replaced by a waste fingerprinting approach.

In addition, there are improvements to the characterization technologies that will significantly reduce the amount of handling and repackaging required prior to shipping. A portion of the current inventory of legacy TRU waste was packaged for storage and disposal in large sized containers. Current characterization capabilities cannot handle these oversize containers.

Regulatory Changes

The CBFO is pursuing regulatory changes to address additional types of TRU waste to be received at WIPP. This expanded envelope includes waste that currently has no clear path forward (waste partition 3), like poly-chlorinated biphenyl (PCB)-contaminated waste. In addition to defining new waste forms, permit modifications that reduce redundant or unnecessary characterization requirements have been submitted. These regulatory changes will increase the volume of waste available at the sites for disposal at WIPP, streamline the characterization system, and make it possible for the sites to increase the number of shipments to 34 or more per week.

[1] Improving Operations and Long-term Safety of the Waste Isolation Pilot Plant/Interim Report (National Academy Press)

The following list of permit modifications was submitted to the NMED in June 2002.

- *RH-TRU Waste Operations*
  The proposed modification request would allow WIPP to receive, store, and dispose of RH-TRU waste at the WIPP. The modification request includes a waste analysis plan that describes the methods DOE will use to ensure that only wastes permitted for disposal will be shipped to WIPP. Descriptions of changes made to the facility and to processes and procedures to safely accommodate RH waste operations are part of the Class 3 request.

- *Addition of New Hazardous Waste Code*
  Proposes adding the waste code U134, hydrofluoric acid to the list of acceptable hazardous waste codes for WIPP. This addition is necessary to accommodate approximately 100 cubic meters (500 drums) of CH-TRU debris waste located at the INEEL.

- *Improving Data Management*
  Proposes to allow generator/storage sites the option to use electronic review, validation, and verification as a means to manage and release waste characterization information.

- *Addition of HalfPACT Shipping Container*
  Proposes to include the HalfPACT shipping container among those that can be accepted at WIPP.

- *Record Keeping and Auditing Classified Information*
  Proposes that records containing classified information be held at a location designed to protect classified material, rather than at the WIPP site. Radiography tapes of waste containers may reveal classified information and must be stored at a facility approved for the storage of classified information.

- *Characterizing Repackaged Homogenous Solids as Retrievably Stored Waste*
  This modification request will clarify the existing permit and allow sites added flexibility in managing their characterization and confirmation programs.

- *Use of Radiography for Newly Generated Waste*
  When generator/storage sites initially package waste or when retrievably stored waste must be repackaged, the permit requires that sites use VE to confirm AK. This modification request would allow sites the option of using radiography to confirm the AK.

- *Addition of Containers*
  The proposed modification request would allow WIPP to receive waste in direct-loaded ten drum overpacks, direct-loaded 85-gallon drums, and 100-gallon drums.

Technology Development: NDA and NDE of Large Containers of TRU Waste

It is estimated that approximately 24% (by volume) (40,000 m^3) of the CH-TRU waste inventory bound for disposal at the WIPP is stored in oversized containers that are not transportable in the TRUPACT-II or the HalfPACT. The CBFO is in the process of developing a shipping container for these large boxes (TRUPACT-III) and will seek certification by the NRC as a Type B container.

The oversized container inventory at the DOE TRU wastes sites is primarily in boxes that are 5 feet x 5 feet x 8 feet or smaller. These sites cannot be closed or de-inventoried without disposition of these boxes.

Deployment of NDA and NDE technologies for large containers will allow sites to be closed or de-inventoried of their TRU waste. NDA and NDE capability for large containers will enable sites to assay or examine the large containers or to load TRU waste directly into large containers without having to size reduce. Worker exposure will be greatly reduced by not having to size reduce and repackage these containers. A large container system would allow TRU waste sites to nondestructively assay/examine large containers (maximum size, 5 feet x 5 feet x 8 feet) rather than having to repackage and assay/examine individual drums or standard waste boxes, thus reducing cost.

2.6.2 Transportation Improvements

The Land Withdrawal Act requires that all waste to be disposed of at the WIPP be transported in NRC-certified shipping containers (packages). The WIPP inventory of NRC-certified packages currently includes the TRUPACT-II and HalfPACT for transporting CH-TRU waste, and the 72-B Cask and 10-160B Cask for transporting RH-TRU waste.

The baseline mode of transportation for the TRU waste inventory is currently by truck. The addition of rail transport is planned to increase efficiency for heavy and large-sized waste containers, to reduce the number of shipments, and to provide capability to ship during winter months when truck travel is hindered by weather delays.

As discussed in Section 2.0, the Acceleration Project will involve transporting waste to WIPP for disposal or to a hub site for disposal characterization, with subsequent transportation from the hub site to WIPP for disposal. The hub concept is particularly viable because only the characterization requirements for transportation need to be met. In many cases, the current DOE process knowledge information may be sufficient to certify a payload for TRUPACT-II transport, but not necessarily for WIPP disposal.

Under the Acceleration Program, in order to ensure that the entire projected TRU waste inventory will be shippable via certified packages and with the most efficient means possible, specific projects relating to the waste inventory must be addressed.

Transportation Projects

TRUPACT-III

Project Description

Approximately 24% (by volume) of the CH-TRU inventory at the DOE sites is estimated to exist in oversized containers that are not transportable in the TRUPACT-II or the HalfPACT. This oversized container inventory is located at several of the DOE sites. The options available for transporting this waste include size reduction of the waste for transport in the TRUPACT-II and the HalfPACT, design/development of new packaging, modification of an existing packaging, or some combination of these options.

DOE conducted an evaluation of the cost, schedule, and safety considerations associated with building new facilities and repackaging all of the waste currently in oversized containers. Based on that effort, the DOE-CBFO initiated an effort to investigate the feasibility and effectiveness of designing a new packaging, the TRUPACT-III, for the shipment of the oversized/overweight CH-TRU waste inventory by both rail and over the road.

Assumptions

- Bimodal (truck and rail) transportation system will become viable
- NDA/NDE system for large containers can be developed
- Fleet size considers inventory and schedule for legacy boxes only
- Single containment with option for double, if needed
- Risks for regulatory approval are no greater than TRUPACT II
- NRC certifies the TRUPACT III

Regulatory Change

- Single containment preferred but not essential
- Application must be made to the NRC for the Certificate of Compliance
- Modify the HWFP to include TRUPACT-III handling

Milestones

- Award Contract in FY03
- Submit TRUPACT-III SAR to NRC in FY04
- Receive Certificate of Compliance in FY05
- HWFP modification for TRUPACT-III in FY05
- Fabricate 20-30 units FY05-FY08

Rail Transport of TRU Waste

Project Description

In addition to the studies to determine the feasibility of developing the TRUPACT-III for the transport of oversized boxes, studies have been performed to determine the viability of transporting waste to WIPP by rail (in addition to by truck). The CH-TRU Waste Transportation System Rail Study performed by CBFO in September 2000 concluded that shipment by rail could be cost effective under certain conditions. CBFO will issue a Request for Proposal to determine if a rail transportation system meets the needs of the DOE waste complex and is cost effective.

Assumptions

- Use of 100 ton, 62-foot railcars, with the capacity to carry up to (7) TRUPACT-IIs or (3) TRUPACT-IIIs
- Rail shipping costs are to be similar to the estimates given in the Burlington Northern Santa Fe response to the WIPP Request for Information
- A fleet of TRUPACT-IIIs and/or a larger fleet of TRUPACT-IIs is available

Regulatory Change

- NEPA coverage already exists for rail shipments of TRUPACT-IIs, but NEPA changes would probably be required for TRUPACT-III. A supplement analysis or an environmental assessment will be necessary to examine the impact of a larger packaging.
- WIPP will need a hazardous waste permit modification to demonstrate that rail traffic can be managed at the WIPP facility and to allow storage of waste on rail cars on the rail spur until the containers can be emptied and the waste disposed of.

Milestones

- Completion of the WIPP Rail Implementation Guide by October 2002
- Test shipment from INEEL to WIPP in FY03
- Negotiate routes with states, tribes, and railroads
- Negotiate contract with railroad company/companies
- Upgrades to rail infrastructure completion—6 to 12 months from start date
- Adapt TRANSCOM to rail—3 to 4 months from start date
- Complete additional emergency response training along routes—1 year from start
- Conduct exercises—1 year from start

Non-Shippable TRU waste

Project Description

Even with the current SAR amendments in place (i.e., Revision 19), approximately 2% of the total CH-TRU waste inventory is restricted from shipment due to gas generation issues. This waste includes Pu-238 waste, solidified organic waste, and other high Pu-239 activity wastes. A two-fold approach is being pursued to develop a shipping path for these wastes, as follows:

Regulatory Changes--A more detailed knowledge of the non-shippable waste (e.g., void volumes, gas generation potential of specific chemical constituents) may allow refinement of the current assumptions in the gas generation model for CH SARPs.

Technology Development--There are payload expansion initiatives currently under development to design a getter material for use in the CH-TRU waste packages and a bag breaching technique that would help resolve some of the hydrogen gas generation issues by increasing analytically-determined decay heat limits. Since the CH SARPs do not currently permit the use of gas getters, the use of a getter system will require NRC approval of a detailed specification for the getter system with experimental evidence of the functioning and deployment of the getter system. The use of a getter system is currently proposed for use in the CH packaging inner containment vessels and will require elimination of multiple bag layers in order to be effective. A bag breaching technology is currently being studied, with preliminary results indicating viability of the concept. It is likely that these two technologies will need one to three years for deployment demonstration and regulatory approvals. As noted earlier, waste-stream specific analysis and amendments may provide an alternative to the shipment of these wastes if barriers exist to the deployment of these technologies.

Assumptions

- Current gas generation model assumptions are overly conservative and refinements will reduce limitations
- Getter and breacher technology, when developed, meet regulatory requirements
- Current technology demonstrations for getters/breachers are successful for a wide range of waste conditions

Regulatory Change

- Getter acceptance as a passive control (with Hypothetical Accident Conditions considered)
- SARP modifications for each packaging

Milestones

- Finalize technology demonstrations and peer review results in FY03

- Design optimal production systems in FY04
- Regulatory approval in FY05

Robust Container

Project Description

Another proposed technology being considered is the use of a robust container such as the ARROW-PAK™ System being designed to withstand any expected hydrogen deflagration (i.e., no consequence) and other benefits such as criticality control. The ARROW-PAK™ System is planned to undergo testing to determine its effectiveness, optimal configuration, and potential for certification. The testing includes pressure, vacuum, puncture, deflagration, and many other performance and environmental tests to meet a variety of standards under several different regulatory areas. Ideally, approval of the robust container could assist with high hydrogen generation waste forms to achieve safe handling at DOE facilities, in transit, and efficient disposal at WIPP.

Assumptions

- Recent advances in material technology are applicable to packaging
- Use of sealed payload containers is acceptable at DOE TRU waste sites
- Use of sealed payload containers meets applicable regulatory requirements
- Satisfactory testing can be achieved

Regulatory Change

- Modification to the WIPP HWFP for new disposal containers
- Application for an amendment to the TRUPACT-II C of C will be required

Milestones

- Complete proof of concept testing in FY02
- Testing for optimal design and applications in FY03

2.6.3 Orphan Wastes

Several categories of TRU waste have been identified for which disposition paths are undefined.

Non-Defense TRU Wastes
As set forth in the WIPP Land Withdrawal Act (LWA), only TRU waste generated by atomic energy defense activities may be disposed of at WIPP. Accordingly, TRU wastes generated by commercial activities cannot be disposed of at WIPP even though they may be identical to wastes generated by defense activities that are being placed in the repository. This restriction applies to up to 1,000 m^3 of TRU waste.

Classified Material Wastes
There are classified materials in the DOE complex that are contaminated with significant amounts of TRU isotopes. These materials include graphite molds, non-nuclear components removed from disassembled pits, fixtures, and tools. Most are classified because of their geometry and are similar to TRU debris waste already being disposed of at WIPP. The Working Group on Classified, non-Special Nuclear Materials, Contaminated Weapons Parts and Process Equipment has identified the following volumes of classified materials contaminated with TRU isotopes (numbers are approximate):

- Hanford 900 drums (from RFETS)
- NTS 350 drums (from RFETS)
- RFETS 400 drums (legacy) and 100 drums from future decontamination and decommissioning (D&D)
- LANL 400-500 drums (legacy) and 2 drums per year future Generation
- LLNL 8 drums
- SRS 24 drums and 3 boxes

The difficulty presented by these materials is that WIPP is not authorized to manage classified materials at this time. There are two options:

- Sanitization (removing the classified information contained within these materials by grinding or melting) followed by disposal at WIPP; or

- Authorization of WIPP to manage classified materials. WIPP has developed a security plan for option and has recently submitted a permit modification to allow for it to manage some of the characterization information as classified records

RH-TRU Waste > 1,000 rem/hour
The WIPP Land Withdrawal Act established an upper limit for the surface dose rate for RH waste at 1,000 rem/hour; therefore, any TRU waste that emits greater than 1,000 rem/hour cannot be sent to WIPP. The inventory of these materials is not yet established and will be developed as the RH program at WIPP is implemented. However, the quantity of RH-TRU waste falling into this category is expected to be extremely small.

Other Material
Other defense generated TRU waste must be addressed. These materials include the beryllium blocks and shim control cylinders from the Advanced Test Reactor at INEEL. Some of these materials may be subject to the restrictions discussed above.

Approximately 52 m^3, or about 250 55-gallon drums, of U-233 waste stored at the INEEL, is expected to exceed 200mR/hour radiation dose. The primary source of radiation dose is Tl-208 (a daughter product of U-232), where U-232 is present in U-233 waste as an impurity. The U-233 waste has historically been managed as TRU waste at

INEEL. The U-233 waste does not currently meet the strict definition of TRU waste for disposition at WIPP. This waste stream was produced during the fabrication of U-233 based fuel and consists of fabrication scraps, rags, gloves, solidified grinding sludge, and metal. The generator reported no hazardous waste constituents for this waste stream at the time of shipping.

Milestones

- Submit WIPP HWFP modification for classified material waste by June 2002. (completed)
- General Counsel to continue its analysis of the scope of the restriction concerning defense waste.

2.6.4 Newly Generated Waste

Through the New Mexico Acceleration Project, LANL and the CBFO will jointly develop and demonstrate a program for newly generated waste that significantly streamlines characterization and certification, while maintaining safeguards and accountability. In an operating nuclear facility, safeguards and accountability procedures for material handling are often equally or more stringent than those required by the WIPP HWFP. Procedure modifications and controls will be implemented at LANL such that safeguards/material accountability requirements and WIPP HWFP requirements are both met without duplicative handling/packaging operations. To the extent practical, safeguards/accountability assay and WIPP NDA requirements will also be accomplished through one set of measurements. For homogeneous solids, procedures will be developed for sampling feed streams instead of coring and analysis of monolithic product matrices. The successful program for newly generated waste demonstrated at LANL will then become a template for standardization across the complex.

3.0 Managing the TRU Waste Disposal Program as a Business

3.0 Managing the TRU Waste Disposal Program as a Business

The accelerated closure of DOE's Environmental Management responsibilities across the complex will require an integrated effort. No area is more important to this success than the management of the TRU Waste Acceleration Project. While the WIPP facility itself must be able to accommodate an accelerated disposal rate, the NTP must also be able to coordinate the complex activities waste characterization, certification, and transportation to WIPP. With every DOE TRU waste site storing TRU waste until it can be shipped to WIPP, our ability to coordinate the characterization and transportation for disposal at WIPP will spell success or failure. This ability must be based on sound and proven business concepts.

The CBFO is responsible for development and management of a comprehensive TRU waste management strategy. The CBFO coordinates DOE operations offices to integrate the various program elements (TRU waste inventory, characterization, certification, transportation, disposal, and system integration) carried out across the DOE TRU waste system. This complex process requires significant investment at each facility that stores or generates TRU waste. With no relief from the current regulatory structure, DOE would be faced with investing substantial resources at each site to build and maintain special nuclear capability for TRU waste characterization. For those sites with only a small quantity of TRU waste, this would clearly not be cost effective. Therefore, one of the overarching themes in CBFO's business strategy is the avoidance of the high cost of developing this characterization capability through the use of mobile and modular systems.

3.1 TRU Waste Disposal Business Philosophy

The following are the four primary elements of the national TRU waste disposal business philosophy:

- An emphasis on the findings of the *Top-To-Bottom Review of the EM Program* conducted by DOE Headquarters in 2002.
- Modern business practices, such as standardization and economies of scale driven from the top, down; and performance-based new technology development driven from the bottom, up.
- A complex-wide corporate strategy, with DOE and its contractors both participating on a Corporate Board making strategic decisions and assigning priorities in a transparent fashion.
- Optimization using validated models and continuous review and improvement.

3.1.1 EM Top-to-Bottom Review Findings for TRU Waste

In February 2002, the DOE issued a review of ongoing activities and practices at the DOE sites for which they were responsible for cleanup. This document, the *Top-to-*

Bottom Review of the EM Program, identified the following four primary findings to better address cleanup activities and recommended improvements to the process:

- The manner in which EM develops, solicits, selects, and manages many contracts is not focused on accelerating risk reduction and applying innovative approaches to doing the work.
- EM's cleanup strategy is not based on comprehensive, coherent, technically supported risk prioritization.
- EM's internal business processes are not structured to support accelerated risk reduction or to address its current challenge of uncontrolled cost and schedule growth.
- The current scope of the EM program includes activities that are not focused on or supportive of an accelerated, risk-based cleanup and closure mission.

These findings have driven the development of this Plan, and are reflected in the schedules and planned initiatives described throughout for accelerating the cleanup and closure of DOE facilities.

3.1.2 Modern Business Practices

Modern business success is generally based on two primary principles: 1) use of standardization and economies of scale driven from the top down, and 2) performance-based technology development driven from the bottom up. To apply only these principles to the management of the NTP is not enough. Because of its controversial nature, radioactive waste disposal must meet strict regulatory requirements. With WIPP's unique regulatory framework, this is even more important. Therefore, the modern business practice model used by WIPP is shown in Figure 3.1-1.

Technology Driven:

- Performance Based
- Continuous Improvement

Best Business Practices:

- Standardization
- Economies of Scale
- Mobile/Modular
- Standardized Authorization Basis

Regulatory Framework:

NMED Hazardous Waste Facility Permit
EPA Compliance Certification and Land Withdrawal Act
NRC Certificate of Compliance

3.1.3 Establishing a "Corporate" Strategy

To coordinate the many activities necessary to dispose of waste at WIPP, CBFO organized a National TRU Waste Complex Corporate Board. This Board is organized to coordinate the TRU waste system as a single corporate business entity rather than as a number of independently managed operations. The Board is the principal means to integrate the independently managed DOE sites within the national TRU waste system into a single, unified entity. The purpose of the Board is to institute, through consensus, best business practices for economy of scale, standardization, and the appropriate use of mobile/modular systems to minimize costs, optimize transportation logistics, and implement new policies or requirements.

Membership consists of both senior DOE and contractor representatives from those sites that are actively shipping waste to the WIPP. In addition to Board members, advisors are also added to the Board as needed. These advisors are either Technical Advisors or other Site TRU Waste Project Managers. They provide both technical and logistical support to the Board and the National TRU Waste Program.

The board meets (video-conference) once per month and all TRU waste sites participate in a centralized meeting at least once per year. At each meeting, the board considers many issues including: site shipping schedules; efforts to optimize characterization, transportation, and disposal activities; strategies to implement standard procedures and equipment; external oversight and review events such as the National Academy of Sciences reports; and strategies to assist facilities across the country that only have small quantities of waste that will come to WIPP.

The Board members:

- Provide solutions, ideas, and suggestions to issues that affect the vision, mission and goals of the NTP.
- Establish the priority for the limited NTP resources (e.g. shipping packages, Mobile/Modular Systems, etc.).
- Seek specific generator/storage site and overall TRU system operating efficiencies, in order to develop recommendations for standardization, modular/mobile initiatives, and economies of scale.
- Monitor, review, and recommend appropriate performance metrics that arise from changes to the integrated schedule.
- Champion and communicate the Board recommendations at their individual sites.

3.1.4 Optimization

The optimization of resources using validated models and continuous review and improvement is the final element of the strategy to run the disposal of TRU waste like a business. Optimization requires that DOE understand the interrelationship of each of the processes of TRU waste inventory, characterization, certification, transportation, disposal, and system integration. While individual processes have been successfully

modeled and optimized in the past years of WIPP operations, a complete integrated system model is under development. A simple example of an individual process model is that for waste handling optimization at WIPP. That model showed that the limitation imposed by the WIPP hazardous waste facility permit (HWFP) on surface storage drives the limiting disposal rate for the facility. To minimize, and especially avoid risk under the accelerated cleanup plan, an integrated systems model (currently under development) is a tool that must be further refined and expanded.

CBFO will employ a continuous optimization review and improvement effort for the life of the accelerated cleanup plan with the following major objectives.

- Replace the current certification-documentation system with a performance-driven system.
- Ensure all administrative and operational changes being considered are technically defensible and based on safety or legal considerations.
- Obtain modifications to permit conditions to allow more efficient operations in compliance with regulatory requirements.
- Use cost-effective technology to improve current treatment, characterization, transportation, and disposal methods to the maximum extent possible.
- Improve TRU waste system performance metrics by developing improved waste inventory data;
- Improve understanding of real-time waste inventory characterization/certification status; and improve cost metrics.

The optimization strategy involves identifying and removing potential barriers and seeking process improvement in four functional areas: (1) administrative/operational efficiencies; (2) regulatory changes; (3) technology deployment; and (4) research, development, and demonstration (RD&D). The strategy provides continual improvement to the National TRU Program using an iterative process involving the following steps:

- Identify issues and barriers impeding the flow of TRU waste to WIPP.
- Identify and evaluate options for overcoming impediments to the flow of TRU waste from generator/storage sites to WIPP using a set of selection criteria and expert opinion.
- Implement those options that will achieve operational economies and efficiencies for treatment, characterization, transportation, and disposal of TRU waste at WIPP.
- Develop and deploy technologies that will have significant, positive impact on the ability of the DOE Complex to characterize, ship, and dispose of TRU waste.
- Monitor performance of optimization projects through project-control methodologies.
- Continually review and prioritize the needs of the national TRU waste system to ensure that all goals of system optimization are being met.
- Regularly input the integrated systems model (above) for optimizing resources.

3.2 TRU Waste Disposal Program Business Tools and Approach

In the first three years of WIPP operations, CBFO successfully increased the TRU waste disposal rate to its design level. It achieved this start-up milestone safely and within budget. To achieve a similar ramp up to the level called for in the acceleration project, many of the same proven business tools and approaches will be used. In addition, some new tools will be required.

CBFO will use the following primary tools (each is more fully described in its own section, which follows):

- Work Breakdown Structure that Facilitates Accelerating TRU Waste Disposal
- Integrated Master Schedule that Incorporates TRU Waste Disposal Acceleration
- Updated Project Baseline that Focuses on Accelerating TRU Waste Disposal
- Performance Measures that Include TRU Waste Disposal Acceleration
- Performance Based Incentive Contracting Strategy to Emphasize TRU Waste Disposal Acceleration

3.2.1 Work Breakdown Schedule

With the enhanced emphasis of mobile/modular systems at SQS and for their use at sites as enhanced processes (funded, operated, and directed by CBFO), the CBFO Work Breakdown Structure (WBS) must be revised to accommodate these many new activities. New WBS elements associated with the mobile/modular systems will be introduced, with costs collected at WBS level 4.

3.2.2 Integrated Master Schedule

The National TRU Program recently introduced a new tool developed under the current baseline to track all activities across the complex (including those at the WIPP facility). The integrated master schedule will be updated to account for all of the generator sites' acceleration plans (TRU waste disposition only), as they are finalized between the DOE and the respective state/site regulatory oversight organizations. The integrated master schedule will continue to be used by the Corporate Board during their monthly meetings (updated monthly) as the tool for tracking progress and identifying problems across the complex.

3.2.3 Updated Project Baseline

With all TRU sites in the DOE complex accelerating their waste disposition baselines, CBFO and the National TRU Program must incorporate these new baselines (both characterization and shipping schedules) across all TRU waste streams into its project baseline for disposal. While CBFO cannot complete this update until the various generator sites complete their accelerated baseline development (requires negotiation

with their own regulatory oversight organizations), the process will begin as soon as each generator site finalizes its own acceleration plan.

3.2.4 Performance Measures

The CBFO uses and will continue to use performance indicators to measure the progress and success of the many activities within the national TRU system that contribute toward the ultimate goal of TRU waste disposal. Performance indicators are sets of tailored metrics that are used to report current status, monitor the effects of changes, determine progress, and provide feedback for continuous system improvement. These performance indicators will be continued and new ones created as additional processes come on-line.

Performance measurement is mandated by the Government Performance and Results Act of 1993. In addition, DOE Order 435.1, "Radioactive Waste Management," requires that the goals of all DOE waste management programs be measurable to support periodic assessment of the program's progress.

Some of the primary measures for TRU waste disposal are the individual sites' shipping schedules. The schedules, once published, will be placed under change control until the next update, though sites will be able to adjust forecasts on a quarterly basis to account for unforeseen circumstances. Supplements to the Plan will be prepared periodically and published to show actual performance against the planned schedule.

3.2.5 Performance Based Incentive Contracting Strategy

DOE's management and business practices must be consistent with and supportive of implementing the accelerated cleanup strategy. The time span encompassed within the accelerated cleanup plan exceeds the duration of all of the current contracts within which CBFO manages and operates the National TRU Waste Disposal Program (including the WIPP management and operations contract). As different contracting opportunities arise, CBFO will consider a variety of contracting strategies and alternatives.

As CBFO considers options for future contract awards, the possibilities of shifting from the traditional management and operations, at least in part, to a variety of other alternatives will be evaluated. Options include the possibility of allowing separate bid and award for site services, mining operations, environmental monitoring, and laboratory activities, or some combination of those aspects of site work. Work could be subject to varied pricing and contract mechanisms. Fixed-price portions of work scope may be feasible as further discrete activities to be accomplished under this accelerated plan are refined. Contract changes must enhance efforts to accelerate waste disposal and not jeopardize them.

Incentives will be performance-based, with an emphasis on building structured incentives into the contract at formation, rather than throughout performance. Cost, schedule, and desired results will drive incentive provisions. Fee amounts can be set for achieving the end result, with payments tied to critical path milestones as well as difficulty of the task

and consequences of failure. Additional fee incentives could be based on a sliding share ratio for cost efficiencies and savings, important schedule accelerations, or work scope breakthroughs. Conversely, fee penalties could be identified and imposed for failure to achieve the desired results, failure to perform to contractual requirements, failure to perform to acceptable safety standards, or cost or schedule overruns.

3.2.6 Configuration and Change Control

CBFO will continue to use its proven change control processes as TRU waste disposal accelerates. However, there are two additional configuration control processes that CBFO will develop to enhance our ability to manage the acceleration. These will involve placing both the TRU waste inventory (across the TRU waste complex) and the WIPP regulatory envelope under configuration control.

Waste Inventory Configuration Control

A precise and accurate knowledge of the TRU waste inventory is imperative to ensure that accelerated disposal can succeed. An accurate inventory is fundamental to packaging, transportation, disposal strategies, and resource allocation. A formal change control process will ensure that the inventory is a solid and reliable database. This is extremely important in order to achieve the goals of the acceleration project. In addition, it is imperative that those wastes with no known path forward be identified and tracked as soon as possible. This will allow time to either make changes in the WIPP Waste Acceptance Criteria or regulatory framework such that the cost of repackaging or treating them can be avoided.

Regulatory Envelope Configuration Control

CBFO manages its regulatory framework through a series of configuration controlled "road-lines" for the three primary agencies that represent the regulatory envelope for TRU waste characterization, transportation and disposal.

In addition, DOE uses a number of self-imposed requirements to ensure safe and environmentally protective operations. Because many of the compliance areas have significant overlap across these three regulatory agencies and WIPP's authorization basis, it is important to track the elements of the regulatory envelope and to share them with all stakeholder groups.

4.0 Cost

4.0 Cost

The life-cycle costs for the disposal of TRU waste is presented in Revision 2 of the *National TRU Waste Management Plan* (DOE/NTP-96-1204) and is used as the baseline for this *TRU Waste Performance Management Plan.* This information is summarized in Table 4.0-1 Current Baseline Costs.

Table 4.0-1 Current Baseline Costs

Baseline	NTP Revision 2
Generator Sites Sub-Total	$ 6.18 billion
Carlsbad Operations	
Transportation	$ 2.64 billion
Disposal	$ 2.73 billion
Remaining Mission-Critical Activities	$ 4.42 billion
Total	**$ 15.97 billion**

Implementation of the comprehensive plan for acceleration can reduce this baseline cost by half. A summary of these savings follows:

$3.6 billion – Completion of CH legacy cleanup about 20 years early

- By completing disposal of the legacy waste about 20 years ahead of the baseline, the operating costs associated with WIPP are reduced. This equates to a reduction of approximately $180 million per year for 20 years.

$0.6 billion – Implementation of the mobile/ modular approach (CCP)

- The savings associated with the use of the mobile/modular approach are primarily a result of standardization. The CCP can characterize and certify at a lower cost than individual sites because of standardization in equipment, operating procedures, authorization basis, and data validation and verification; mobilization and modularization of equipment; and regulatory oversight.

$1.2 billion – TRUPACT-III and Rail transportation

- The savings associated with TRUPACT-III are derived from not having to repackage boxes larger than SWBs but smaller than the capacity of the TRUPACT-III (5 feet x 5 feet x 8 feet). There are approximately 12,500 of these boxes within the TRU waste inventory. Elimination of repackaging eliminates the capital expense, operational costs, and decommissioning expense for dedicated facilities at several sites. The savings associated with rail are due to the elimination of weight restrictions and a reduction in shipment delays caused by seasonal conditions.

$0.5 billion – Central Confirmation Facility (CCF)

- Cost savings realized from the establishment of the CCF as a fingerprinting facility results from the elimination of the separate characterization programs at each of the generator sites.

$2.1 billion – Regulatory Improvements

- Cost savings from regulatory improvements are associated with the elimination regulatory requirements that have marginal technical or safety bases. Two primary examples are the elimination of headspace gas sampling and analysis on every waste container, and allowance of mechanisms to reduce gas generation during shipment (inserting an inert atmosphere or shortening transportation times). Other regulatory changes include the elimination of solids sampling and analysis, elimination of material parameter weight estimation during NDE, and replacing VE with digital radiography/computed tomography (DR/CT) as the confirmation of RTR.

Total estimated complex-wide savings equal approximately *$8 Billion*.

In order to realize these savings, implementation of the acceleration program will require commensurate funding.

Increasing the CBFO base line budget through 2015 will support the following activities:

- Increased operations at the WIPP to handle the accelerated shipment schedules
- Technology development to obtain large box NDE and NDA capability
- Establishment of mobile/modular acceleration process lines at the 3 large hub sites.
- Regulatory change proposal efforts
- Increased number of TRUPACT-II shipping containers
- Implementation of the TRUPACT-III shipping containers

Additional site funding for the 3 hub sites will be required to support two primary site activities:

- Accelerated retrieval and drum handling efforts
- Repackaging facilities and staff for the largest waste containers (those exceeding 5 feet x 5 feet x 8 feet)

Costs estimates for these activities are contained in the individual site acceleration submittals.

The above information from *The National TRU Waste Management Plan, Rev 2* is summarized in Table 4.0 - Accelerated Funding Profile.

A cost profile to accelerate cleanup and subsequent disposal of TRU Waste as described in this Performance Management Plan is currently under development and will be included in the final version of the PMP.

Table 4.0 CBFO Accelerated Funding Plan

5.0 Schedule

5.0 Schedules

The shipping schedules contained in this document were prepared after discussions with each TRU waste site. These schedules are based on the sites' expectations as to their current and future characterization and certification capabilities, and any supplemental capabilities provided by the Central Characterization Project. Also included are the intersite shipments to the respective regional hub. Schedules are focused on completing the removal of legacy CH-TRU waste by FY13.

The schedules for both CH and RH are compiled below. Monthly schedules for near-term shipments are provided for FY03 and FY04. Estimates of annual shipments are provided for the remaining years from FY05 to FY35. The relative mix of TRUPACT-IIs and TRUPACT-IIIs shipped by either rail or truck is based on the assumptions described below.

The tables were generated based on the following general assumptions.

1. A general truck shipment consists of 3 TRUPACT-IIs containing 35 55-gallon drums or 7.4 m^3 of waste. (Unless the specific configuration for a particular site is known.)
2. A general truck shipment consists of 1 TRUPACT-III containing the equivalent of two 5 feet x 5 feet x 8 feet boxes or about 11.4 m^3.
3. A general rail shipment consists of 9 TRUPACT-IIIs with a volume of 102.6 m^3.
4. The TRUPACT-III will be available for use in FY07 and the date of individual site usage of TRUPACT-IIIs is dependent on the capability of each site, such as the availability of facilities for characterizing or handling of oversized containers.
5. The breakout between truck and rail, and TRUPACT-II or TRUPACT-III is site-specific. Sites are assumed to use the most efficient package or transportation mode as it becomes available.
6. Characterization methods for oversized containers and/or large boxes is approved prior to FY07.
7. For RH-TRU shipments, waste will be shipped in the RH-72B Casks or 10-160B Casks depending on site infrastructure.
8. The time required to handle a TRUPACT-III through the WIPP Facility is assumed to be no greater than the time required for a TRUPACT-II.

Each of the large sites are discussed in the following sections. Site specific data used in lieu of the general assumptions is identified. Charts illustrating the impact of the accelerated disposal schedules for CH-TRU at the sites being considered for hubs (for planning purposes LANL, SRS, and Hanford,) are provided. A cumulative chart depicting the Total TRU System is also shown.

Each chart shows the comparison between the current legacy baseline as obtained from *The National TRU Waste Management Plan Rev. 3* and the accelerated disposal plan. The final chart shows the estimated acceleration of RH-TRU from the various sites with RH-TRU.

RFETS

The first TRU shipment from the RFETS was made on June 15, 1999. Through a coordinated effort with the CBFO, RFETS has already accelerated its shipment rate to 10-15 TRUPACT-II shipments per week. To date, over 1000 shipments have been received at WIPP of which over 600 were shipped from RFETS. The DOE has made a commitment for closure of the RFETS by December 15, 2006. No additional acceleration is planned for RFETS.

INEEL

3,100 m^3 Project

The first TRU waste shipment from the INEEL was made on April 27, 1999. To date, over 350 shipments have been shipped from INEEL. The INEEL must ship at least 3,100 m^3 of TRU waste out of the State of Idaho by December 31, 2002 (per the Idaho Settlement Agreement). Plans are to complete the shipment of the 3,100 m^3 of TRU waste out of the State of Idaho in November 2002. Currently, INEEL is scheduled to make 15 shipments per week.

AMWTP

The AMWTP is a privatized approach for the disposition of over 70,000 m^3 of legacy TRU waste at INEEL, with a projected start date of March 2003. The target date for the disposition of these legacy wastes is 2015. The AMWTP has already developed a plan to accelerate disposition of its legacy wastes to 2012 and is pursuing this acceleration effort. Current planning is based on the use of truck transport of TRUPACT-IIs to reach and sustain a shipping level of approximately 17 shipments per week. The AMWTP will have the capability to size reduce and repackage oversized waste boxes. Additional information on the shipping schedule can be found in Table 5.0-1 (CH-TRU waste) and Table 5.0-2 (RH-TRU waste).

ORNL

The current ORNL efforts have been developed to accelerate the disposal of TRU waste. Therefore, this acceleration plan does not reflect any additional acceleration beyond currently planned activities.

LANL

The pre-acceleration baseline shipping schedule indicates that LANL will continue to ship its legacy waste into 2035. The acceleration plans discussed in Chapter 2.3.1 result in completion of legacy waste shipments in FY10. This schedule includes the shipments of waste from SNL and LRRI that will be consolidated and shipped to LANL for characterization and certification. LANL will begin ramping up their shipping schedule in the first quarter of FY03, reach a level rate in FY04 and maintain that rate until their CH-TRU legacy waste has been removed. All the CH-TRU waste shipments will be made in TRUPACT-IIs, using trucks. The RH-TRU shipments will be made using the RH-72B Cask and trucks. Figure 5.0-2 illustrates LANL's planned shipping schedule for CH-TRU waste. More detailed information about the shipping schedules can be found in Table 5.0-1 (CH-TRU waste) and Table 5.0-2 (RH-TRU waste).

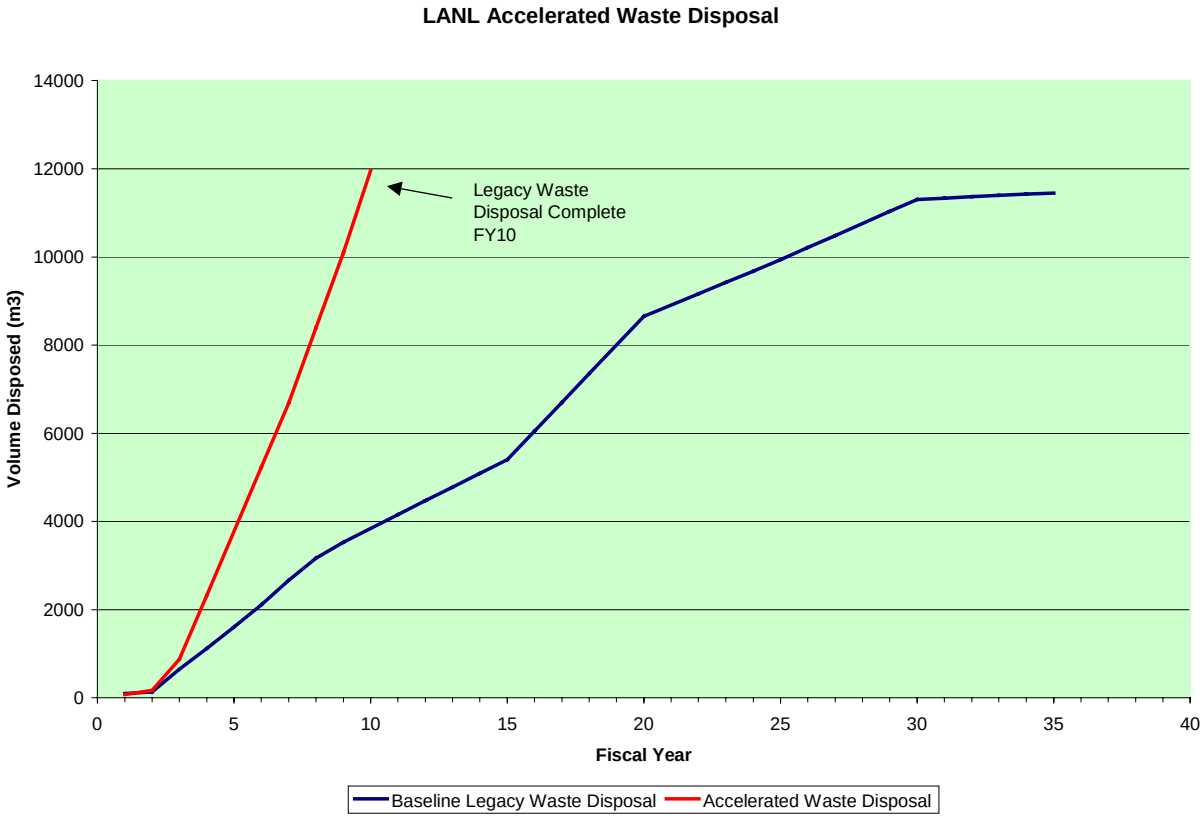


Figure 5.0-1: LANL's cumulative baseline legacy waste disposal schedule and the proposed accelerated disposal schedule.

SRS

The baseline shipping schedule indicates that the SRS will continue to ship its legacy waste into 2035. The acceleration plans discussed in Chapter 2.3.2 result in completion of shipments in FY13. SRS is currently making shipments to meet it commitments with the state of South Carolina so that Mound Laboratory waste can be brought into SRS. Its shipping schedule is based on using TRUPACT-IIs on trucks until FY07, when shipments using TRUPACT-IIIs on rail will begin. Shipments using both TRUPACT-IIs and TRUPACT-IIIs will continue until their inventory of CH-TRU legacy waste is depleted in FY13. No RH-TRU shipments are currently planned. Figure 5.0-3 shows the effects of acceleration on the SRS shipment schedule. More detailed information about the shipping schedules can be found in Table 5.0-1 (CH-TRU waste) and Table 5.0-2 (RH-TRU waste).

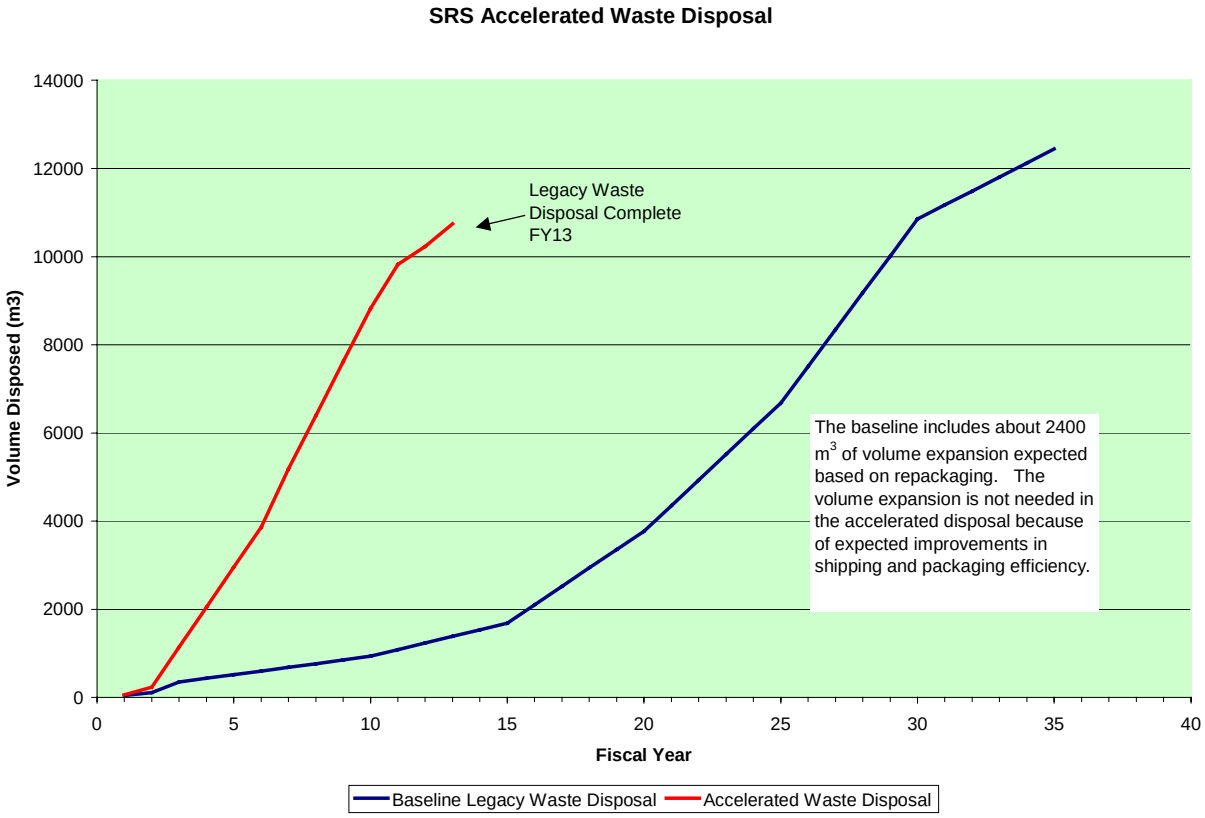


Figure 5.0-2: SRS's cumulative baseline legacy waste disposal schedule and the proposed accelerated disposal schedule

Hanford

The baseline shipping schedule indicates that the Hanford will continue to ship its legacy waste into 2035. The acceleration plans discussed in Chapter 2.3.3 would result in completion of shipments in FY13. FY05 could be the beginning of a ramp-up in shipping rate that will level off in FY08 and continue until removal of the CH-TRU legacy waste is completed in FY13. Beginning in FY05 RH-TRU waste shipments using RH-72B Casks may start. Completion of the RH-TRU waste shipments is not expected until FY28. Figure 5.0-4 shows the potential effects of acceleration on the Hanford shipping schedule. More detailed information about the shipping schedules can be found in Table 5.0-1 (CH-TRU waste) and Table 5.0-2 (RH-TRU waste).

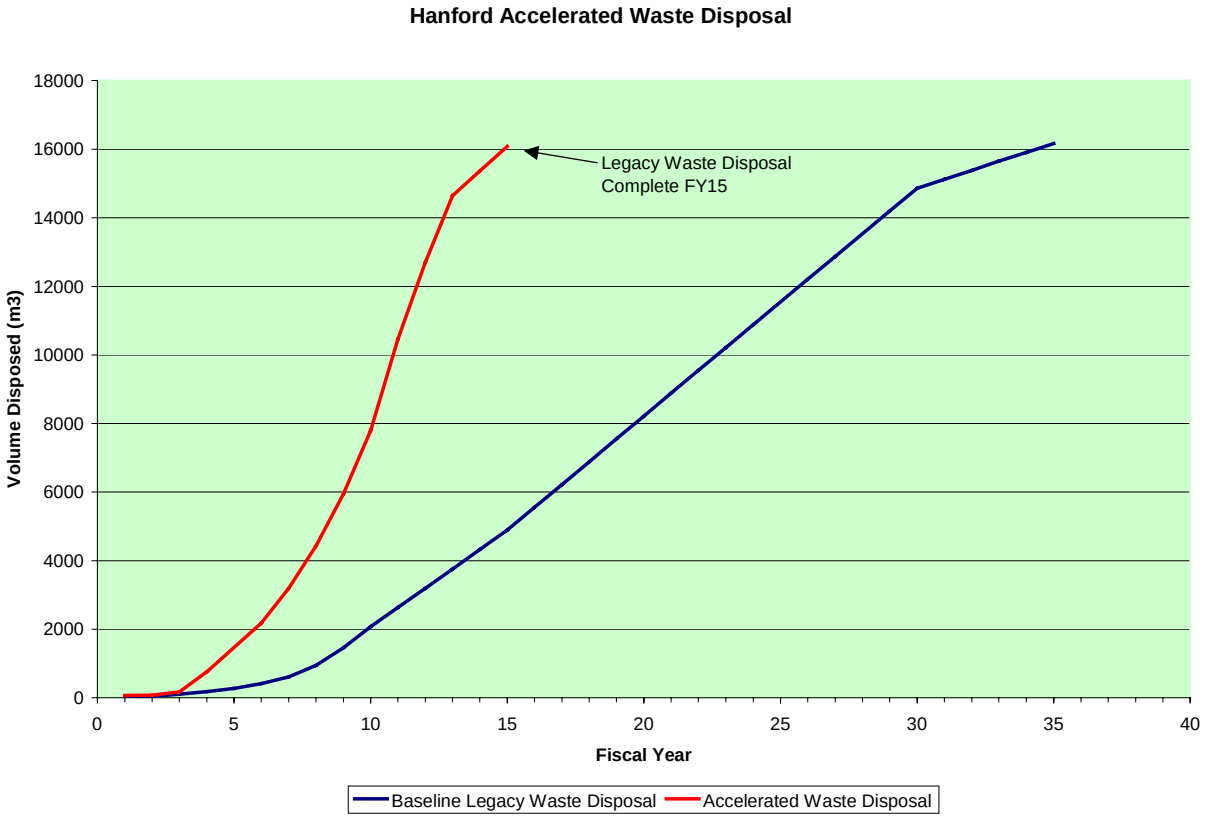


Figure 5.0-3: Hanford's cumulative baseline legacy waste disposal schedule and the proposed accelerated disposal schedule.

Summary Information

Figure 5.0-4 shows the impact of acceleration on the total CH-TRU legacy waste disposal effort. Figure 5.0-5 shows the impact of acceleration on RH-TRU waste shipments. Tables 5.0-1 and 5.0-2 show the accelerated shipment schedules for CH-TRU and RH-TRU, respectively and Table 5.0-2 shows the integrated RH-TRU shipping schedule baseline and potential impact of acceleration. These tables use the assumptions discussed in the sections above.

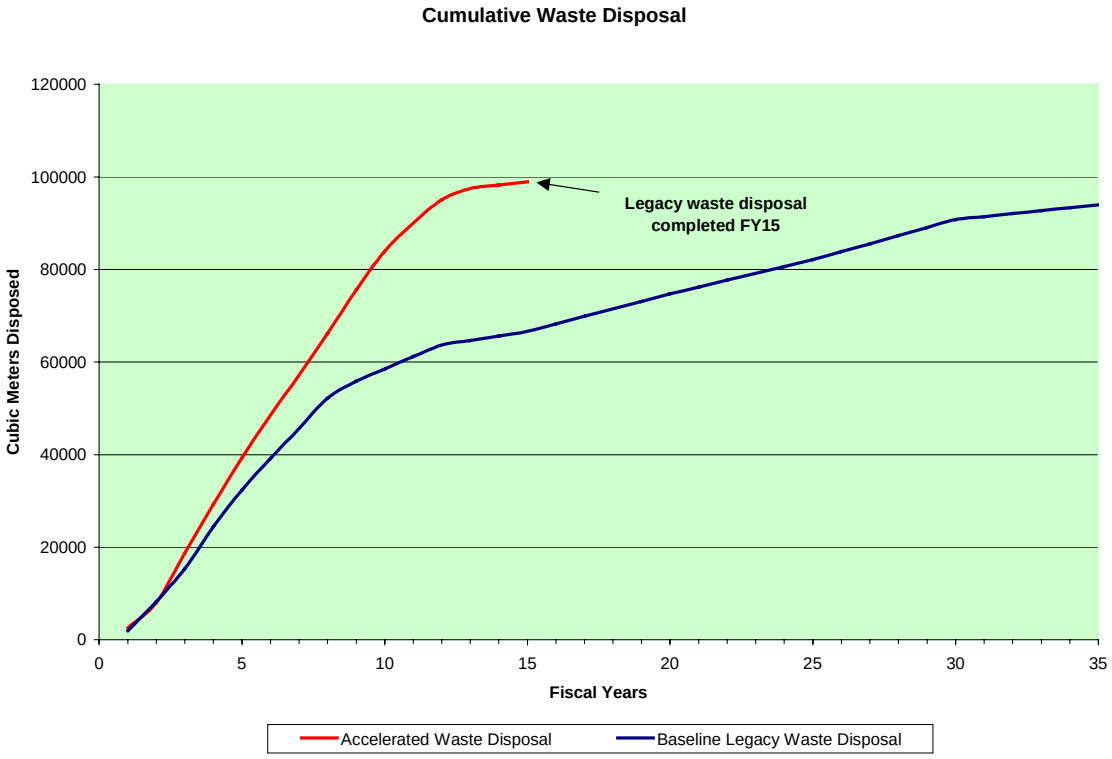


Figure 5.0-4: Summary legacy CH-TRU waste baseline and accelerated disposal.

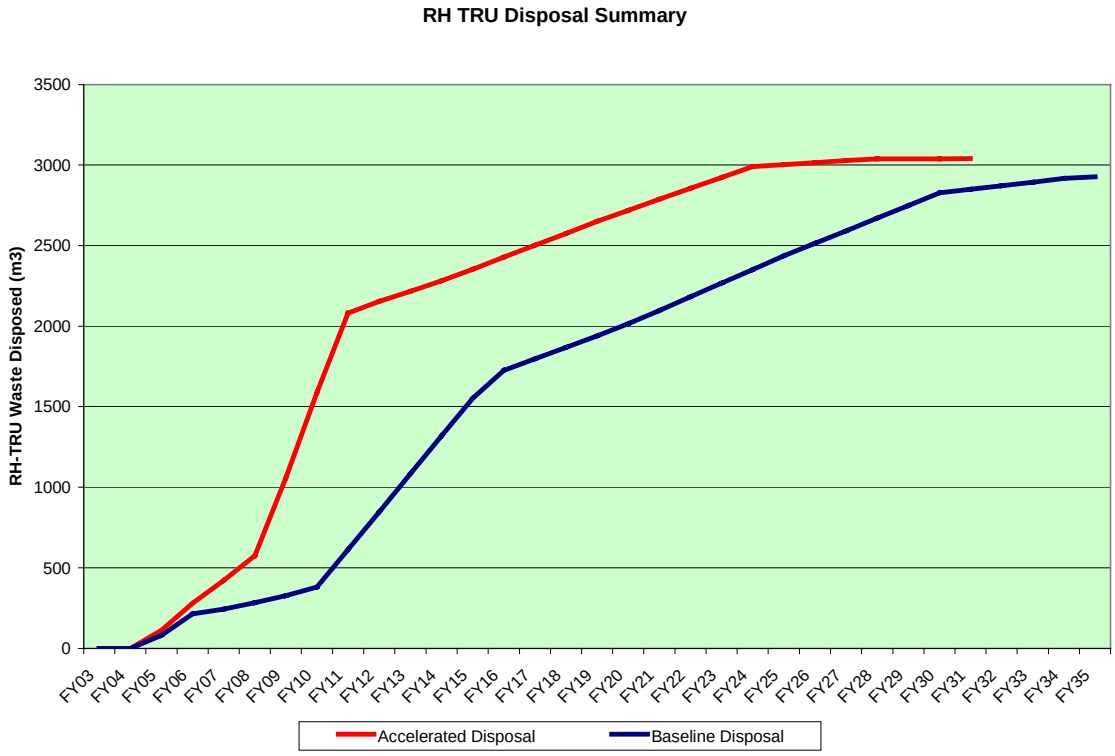


Figure 5.0-5: Legacy RH-TRU waste shipment summary

Table 5.0-1: CH TRU Shipment Schedule for FY03 and FY04

Site	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03
ARCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	0	0	0	0	3	4	2	0	0	0	0	0	0	0	3
ANL-W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BAPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	0	1	1	0	0	0	0	0	1	1	1	2	2	2	1
INEEL Requested	70	72	72	42	20	0	0	0	3	55	55	55	55	55	55
INEEL	57	61	60	67	39	0	0	0	3	55	55	55	55	55	55
KAPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LANL	0	0	0	0	2	2	4	5	5	5	10	12	12	12	12
LBNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LLNL	0	0	0	0	0	0	4	4	2	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
MURR	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	0	0	0	0	0	8	8	8	12	8	0	0	0
ORNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PGDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	39	39	36	38	40	40	40	40	40	40	40	40	40	40	40
SNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SRS	1	8	8	12	12	12	12	12	12	12	12	12	12	12	12
SPRU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	97	109	105	117	96	58	58	65	69	121	130	129	121	121	123
Intersite	0	0	0	1	0	0	4	5	2	0	0	0	0	0	0
Totals	97	109	105	118	96	58	62	70	71	121	130	129	121	121	123

WIPP Shipments

Intermediate Site Shipments

Table 5.0-1 (continued): CH TRU Shipment Schedule for FY03 and FY04

Site	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04
ARCO	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	0	0	0	0	0	0	0	0	0	0	0	0
ANL-W	0	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0
BCL	0	0	0	0	0	0	0	0	0	0	0	0
BAPL	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	4	4	4	4	8	8	8	8	8	8	8	8
INEEL Requested	75	75	75	75	75	75	75	75	75	75	75	75
INEEL	65	65	60	60	60	60	60	60	60	60	60	60
KAPL	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	0	0	0	0	0	0	0	0	0	0	0	0
LANL	13	14	14	14	14	14	14	14	14	14	14	14
LBNL	0	0	0	0	0	0	0	0	1	0	0	0
LLNL	4	4	4	0	0	0	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	0	0	0	0	0
MURR	0	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	0	0	0	0	0	0	0	0	0	0
ORNL	6	6	6	6	6	6	6	6	6	6	7	7
PGDP	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	40	40	40	40	40	40	40	40	40	40	40	36
SNL	0	0	0	0	0	0	0	2	2	5	4	1
SRS	12	12	12	12	12	12	12	12	12	12	12	12
SPRU	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	140	141	136	136	140	140	140	140	140	140	141	137
Intersite	4	4	4	0	0	0	0	2	3	5	4	1
Totals	144	145	140	136	140	140	140	142	143	145	145	138

WIPP Shipments

Intermediate Site Shipments

Table 5.0-1 (continued) CH TRU Shipment Schedule for FY05 through FY35

Site																
	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
ARCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BAPL	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	96	96	99	101	104	107	115	111	57	7	7	0	0	0	0	0
INEEL Requested	1140	1140	1140	1140	558	336	336	306	0	0	0	0	0	0	0	0
INEEL	768	852	1120	1120	1140	619	336	306	0	0	0	0	0	0	0	0
KAPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LANL	167	167	167	196	196	215	0	0	0	0	0	0	0	0	0	0
LBNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LLNL	0	0	2	3	3	4	0	0	0	0	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MURR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	4	8	15	0	0	0	0	0	0	0	0	0	0	0
ORNL	40	8	8	2	0	0	0	0	0	0	0	0	0	0	0	0
PGDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	440	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SRS	144	144	148	147	147	147	66	4	5	0	0	0	0	0	0	0
SPRU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	1655	1607	1546	1574	1602	1088	517	421	62	7	7	0	0	0	0	0
Intersite	32	0	2	3	3	4	0	0	0	0	0	0	0	0	0	0
Totals	1687	1607	1548	1577	1605	1092	517	421	62	7	7	0	0	0	0	0

WIPP Shipments

Intermediate Site Shipments

Table 5.0-1 (continued) CH TRU Shipment Schedule for FY05 through FY35

Site															
	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
ARCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BAPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INEEL Requested	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INEEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LANL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LBNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LLNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MURR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ORNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PGDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SRS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPRU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

WIPP Shipments

Intermediate Site Shipments

Table 5.0-2: RH TRU Shipment Schedule for FY03 and FY04

Site												
	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03
ARCO	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	0	0	0	0	0	0	0	0	0	0	0	0
ANL-W	0	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0
BCL	6	6	0	0	0	2	2	2	1	0	0	0
BAPL	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	3	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	0	0	0	0	0	0	0	0	0	0	0	0
INEEL	0	0	0	0	0	0	0	0	0	0	0	0
KAPL	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	0	0	0	0	0	0	0	0	0	0	0	0
LANL	0	0	0	0	0	0	0	0	0	0	0	0
LBNL	0	0	0	0	0	0	0	0	0	0	0	0
LLNL	0	0	0	0	0	0	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	0	0	0	0	0
MURR	0	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	0	0	0	0	0	0	0	0	0	0
ORNL	0	0	0	0	0	0	0	0	0	0	0	0
PGDP	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	0	0	0	0	0	0	0	0	0	0	0	0
SNL	0	0	0	0	0	0	0	0	0	0	0	0
SRS	0	0	0	0	0	0	0	0	0	0	0	0
SPRU	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	0	0	0	0	0	0	0	0	0	0	0	0
Intersite	6	6	3	0	0	2	2	2	1	0	0	0
Totals	6	6	3	0	0	2	2	2	1	0	0	0

WIPP Shipments

Intermediate Site Shipments

Table 5.0-2 (continued): RH TRU Shipment Schedule for FY03 and FY04

Site												
	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04
ARCO	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	0	0	0	0	0	0	0	0	0	0	0	0
ANL-W	0	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0
BCL	0	0	0	0	0	0	0	0	0	0	0	0
BAPL	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	0	0	0	0	0	0	0	0	0	0	0	0
INEEL	0	0	0	0	0	0	0	0	0	0	0	0
KAPL	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	0	0	0	0	0	0	0	0	0	0	0	0
LANL	0	0	0	0	0	0	0	0	0	0	0	0
LBNL	0	0	0	0	0	0	0	0	0	0	0	0
LLNL	0	0	0	0	0	0	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	0	0	0	0	0
MURR	0	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	0	0	0	0	0	0	0	0	0	0
ORNL	0	0	0	0	0	0	0	0	0	0	0	0
PGDP	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	0	0	0	0	0	0	0	0	0	0	0	0
SNL	0	0	0	0	0	0	0	0	0	0	0	0
SRS	0	0	0	0	0	0	0	0	0	0	0	0
SPRU	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	0	0	0	0	0	0	0	0	0	0	0	0
Intersite	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	0	0	0	0	0	0	0	0	0

WIPP Shipments

Intermediate Site Shipments

Table 5.0-2 (continued): RH TRU Shipment Schedule for FY05 through FY35

Site	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
ARCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-W	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BAPL	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	8	10	10	10	10	65	65	65	67	67	78	79	79	79	79	72
INEEL	7	6	71	71	442	442	441	0	0	0	0	0	0	0	0	0
KAPL	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LANL	17	19	40	40	40	40	0	0	0	0	0	0	0	0	0	0
LBNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LLNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MURR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ORNL	83	142	31	41	25	16	16	14	0	0	0	0	0	0	0	0
PGDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNL	5	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0
SRS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPRU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	119	177	153	162	517	563	522	79	67	67	78	79	79	79	79	72
Intersite	12	5	2	0	7	0	0	0	0	0	0	0	0	0	0	0
Totals	131	182	155	162	524	563	522	79	67	67	78	79	79	79	79	72

WIPP Shipments

Intermediate Site Shipments

Table 5.0-2 (continued): RH TRU Shipment Schedule for FY05 through FY35

Site	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
ARCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANL-W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B&W-NES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BAPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETEC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GE-VNC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hanford	72	72	72	72	13	13	13	12	0	0	0	0	0	0	0
INEEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAPL-NFS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LANL	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0
LBNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LLNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LRRI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MURR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mound	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ORNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PGDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RFETS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SRS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPRU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USAMC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WVDP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIPP Shipments	74	72	72	72	13	13	13	12	0	0	2	0	0	0	0
Intersite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	74	72	72	72	13	13	13	12	0	0	2	0	0	0	0

WIPP Shipments

Intermediate Site Shipments

6.0 Summary and Conclusion

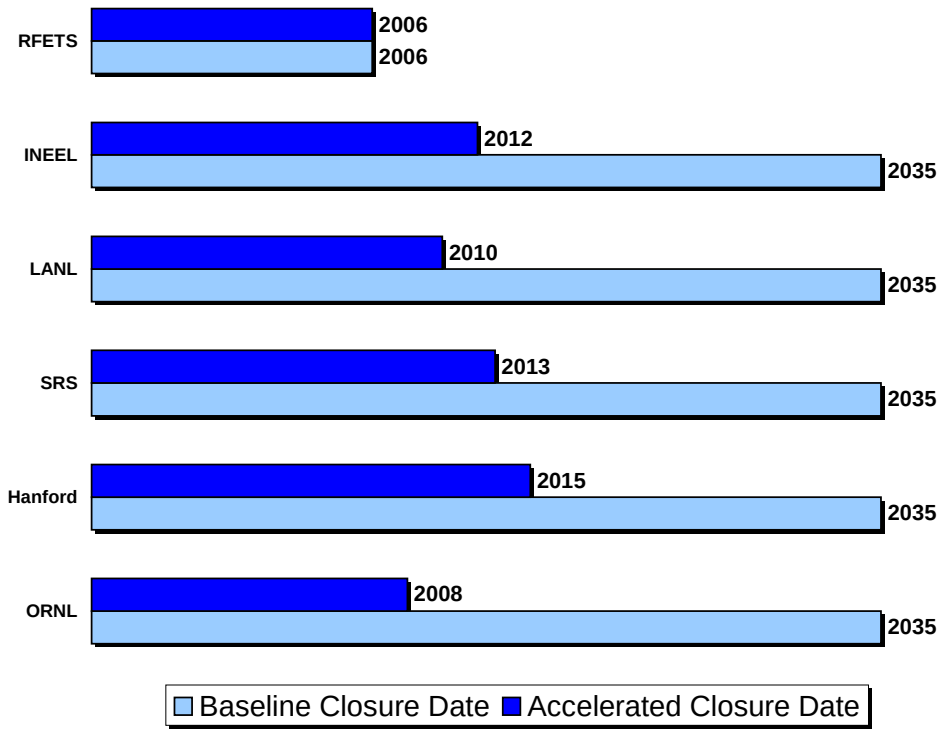
6.0 Summary and Conclusion

The accelerated closure of DOE's Environmental Management responsibilities across the complex will require an integrated effort. No area more important to this success is the management of the National TRU waste disposal program. While the WIPP facility itself must be able to accommodate an accelerated disposal rate, the NTP must also be able to coordinate the very complex process of waste characterization, transportation and disposal at WIPP. With many DOE TRU waste sites across the nation storing TRU waste until it can be shipped to WIPP, our ability to coordinate efforts for TRU waste will spell success or failure.

The concepts, schedules, and initiatives described in this plan will enable DOE to meet the goal of accelerated cleanup and closure of TRU waste sites across the country. Figure 6.0-1 graphically depicts what can be accomplished by accelerating the cleanup.

CBFO has embraced and begun to implement the concepts described in EM's Top-To-Bottom Review. A concentrated effort, as described in this plan, to accelerate cleanup, and implement best business practices allows the DOE to make significant progress toward reducing risk not just managing it. The results of this national effort to accelerate cleanup will be a significant reduction in risk, completion of the legacy CH-TRU mission about 20 years early result in an estimated complex-wide cost savings of $8 billion.

Figure 6.0-1 Impacts of CH Acceleration



Appendix A: Letter of Intent

Letter of Intent
Meeting Environmental Responsibilities
At New Mexico DOE Facilities

The U.S. Department of Energy (DOE), New Mexico Environment Department (NMED), and U.S. Environmental Protection Agency (EPA), Region 6, are collectively committed to accelerating risk reduction and cleanup of environmental contamination at DOE facilities in New Mexico. When completed, the cleanup will: 1) result in reduced risk from New Mexico's legacy waste sites sooner; 2) allow the National Nuclear Security Administration's (NNSA) focus to remain on its core national security mission; 3) support Environmental Management's (DOE-EM) mission of expedited transuranic (TRU) waste cleanup at numerous sites by disposal of this waste in the Waste Isolation Pilot Project (WIPP) repository; and 4) provide a significant benefit to New Mexico and the nation by reducing the potential environmental, public and worker health, and security risks posed by TRU waste.

In light of the benefits to be obtained from the accelerated cleanup, the undersigned are committed to accelerating all environmental restoration, legacy waste disposal, and implementation of long-term environmental stewardship from 2009 to 2006 at Sandia National Laboratories (SNL), and from 2030 to 2015 at Los Alamos National Laboratory (LANL), and acceleration of TRU waste disposal from New Mexico facilities at WIPP.

Key Commitments to Ensure Success

All of the parties to this agreement commit to the following in order to achieve accelerated risk reduction and completion of cleanup:

1. Accelerate risk reduction of groundwater and soil contamination, as well as legacy waste at both LANL and SNL, giving priority to the highest risk activities, by:

    a. Implementing the "Quick to WIPP" strategy which would accelerate the removal and disposal of legacy TRU waste at LANL from 2030 to 2010 (addressing 61% of the radioactivity by 2004);

    b. Implementing the watershed aggregate approach for environmental restoration at LANL, and accelerating completion of activities of the highest risk watershed and high priority Material Disposal Areas from 2022 to 2008 specifically, and total project from 2030 to 2015; and,

    c. Completing the remaining risk reduction and resolving uncertainties, resulting in site acceleration of cleanup at SNL from 2009 to 2006.

2. Define regulatory endpoints for LANL and SNL:

    a. Determine likely future use scenarios and associated cleanup standards;

b. Pursue necessary actions to ensure long-term effectiveness of institutional controls;

c. Continue to improve the definition of data quality objectives and what constitutes sufficient and acceptable data for predictive modeling; and,

d. Plan and implement a Long-Term Environmental Stewardship program, working with our regulators and surrounding communities.

3. Continue the established partnership between DOE, its contractors, and regulators for LANL and SNL to:

   a. Ensure senior-level involvement and support to achieve the desired end state; and,

   b. Include expansion of high performance teams to focus on accelerated decision making and to optimize cleanup schedules.

4. Shorten review periods within the regulatory framework and provide timely decisions for project execution.

5. Streamline internal processes such as quality control and verification of data, preparation of regulatory documents, maximization of electronic commerce, consolidation and integration of databases, and elimination of duplicative processes.

6. Address resource issues by seeking additional state funding and pursuing new, more tractable hazardous waste fee regulations that provide sufficient (increased) regulatory resources.

7. Integrate DOE and NMED/EPA public participation for more efficient and effective public involvement.

8. DOE, NMED, and EPA are committed to the acceleration of risk reduction and the completion of the environmental cleanup program while at the same time being protective of site workers and the environment.

9. DOE, NMED and EPA further commit to pursuing and adopting innovative cleanup approaches that are protective of the environment and designed to achieve demonstrable risk reduction at a reasonable cost, therefore serving as an effective investment for the American taxpayers.

DOE and its contractors will develop a performance management plan by August 2002. The plan will include actions, milestones, responsibilities, business processes, and acquisition strategies necessary to achieve the agreements made in this letter. The Department recognizes that funding commensurate with the approved performance plan is necessary to achieve the above stated goals of acceleration and closure.

We the undersigned recognize the significant role New Mexico plays in addressing cleanup issues of national importance. By virtue of WIPP's presence, New Mexico plays a crucial role in reducing the risks posed by TRU waste nationwide.

We the undersigned are committed to an accelerated completion of the SNL and LANL environmental projects and the accelerated TRU waste disposal from New Mexico facilities at WIPP. We agree to the above working commitments to support this very important goal. We will continually seek and adopt additional opportunities that further advance the remediation and legacy waste mission in a safe, protective and cost effective manner.

Peter Maggiore
Peter Maggiore
Cabinet Secretary
New Mexico Environment Department

Gregg A. Cooke
Gregg A. Cooke
Regional Administrator (6RA)
Environmental Protection Agency

W. John Arthur, III
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Carlsbad Field Office
U.S. Department of Energy

Jessie Hill Roberson
See attached EPA Signature.
Jessie Hill Roberson
Assistant Secretary
for Environmental Management
U.S. Department of Energy

Appendix B: Action Plan

Table B-1: Action Plan

Site	Action	CH TRU Hubs			RH TRU Hubs		
		Western	NM	Eastern	Western	NM	Eastern
ARCO	Offsite Source Recovery Program						
ANL-E	Current Centralized Characterization Project						
ANL-W	To INEEL (See Note 1)						
B&W-NES	Requires Defense Determination						
BCL	To Western hub	X			X		
BAPL	To Eastern hub			X			X
ETEC	To Western hub	X			X		
GE-VNC	Requires Defense Determination						
Hanford	Large Quantity Site (See Note 2)						
INEEL	Large Quantity Site						
KAPL	To Eastern hub						X
KAPL-NFS	To Eastern hub			X			
LBNL	To Western hub	X					
LLNL	To Western hub	X					
LANL	Large Quantity Site (See Note 3)						
LRRI	To New Mexico hub		X				
MURR	To be consolidated at ANL-E under current CCP						
Mound	To Western hub	X					
NTS	Current Centralized Characterization Project						
ORNL	Large Quantity Site (See Note 4)						
PGDP	To ORNL						
RFETS	Large Quantity Site						
SNL	To New Mexico hub		X			X	
SRS	Large Quantity Site (See Note 5)						
SPRU	To Eastern hub			X			
USAMC	Offsite Source Recovery Program						
WVDP	Requires Defense Determination						

Notes:

1. Waste to be consolidated at a site outside of the hub consolidation effort
2. Potential Western hub site for planning purposes
3. New Mexico hub site
4. Potential Eastern RH-TRU hub site for planning purposes
5. Potential Eastern CH-TRU hub site for planning purposes

Appendix C: APL Equipment

Appendix C–APL equipment description, estimated cost, and scheduled deployment

The following is a description of each type of characterization equipment and its associated cost, as required to assemble an APL.

- *Non-Destructive Examination (NDE)*
  Two methods for NDE are currently available; RTR and DR/CT. NDE is required for legacy waste unless full VE or repackaging is performed. Approximate cost for these systems capable of processing drums are $1M and $2M, respectively. RTR is the choice for standardizing equipment.

  New equipment is required to NDE larger sized containers (up to 5x5x8), which will fit inside the TRUPACT-III containers. DOE will issue a request for proposal to industry for competitive demonstration of existing equipment. It is assumed the cost will increase by $1M to handle the larger containers (up to 5x5x8), and such equipment will be ready for deployment in FY05.

- *Non-Destructive Assay (NDA)*
  NDA equipment consists of some combination of gamma detection equipment, neutron generation equipment, and neutron detection equipment. One or more of these components will be required, depending upon the waste composition. The selection for standardization has been based on identifying the single piece of equipment capable of handling the largest fraction of the entire waste inventory. The selected equipment is a high efficiency neutron counter (HENC) with gamma detection incorporated into a single instrument. A similar unit, designed to accommodate SWBs is called a Super HENC. The cost of these units is estimated at $2M and $3M, respectively.

  New equipment is required to NDA larger sized containers (up to 5x5x8), which will fit inside the TRUPACT-III containers,. DOE will issue a request for proposal to industry for competitive demonstration of existing equipment. It is assumed the cost will increase by $1M to handle the larger containers (up to 5x5x8), and such equipment will be ready for deployment in FY05. This situation is exactly analogous to NDE.

- *Headspace Gas (HSG) equipment*
  Two basic methods are currently available for HSG S&A: (1) canister collection from the waste container with analysis in a laboratory, and (2) on-line sampling and analysis by a single machine in the field. The method selected for standardization is the on-line method. Two manufacturers are available for this type of machine, with costs estimated at $400K per unit. One of these units will be required for each process line at each of the major sites.

- *Visual Examination (VE) Equipment*
  Some type of containment device is attached to a waste container to perform VE work. Preferably, the containment is a glovebox, which ensures visual clarity and

provides a framework for needed support equipment. These are specialized units, designed around specific types of waste containers. The cost for one of these units capable of processing drums is estimated at $1.5M each. Because VE is not required on all containers, one of these units will suffice for two process lines at a site. However, if a significant percentage of containers are expected to contain prohibited items (e.g., aerosol cans, liquids, sealed containers in excess of 4 liters), additional VE systems will be needed to correct these deficiencies.

VE on larger sized containers does not warrant the expense of dedicated equipment. This is due to the variability in the dimensions of the larger containers, the relatively low number of larger containers at each site, and the fact that VE is only required on a portion of these containers. As such, regulatory relief will be sought to eliminate the need for VE on the larger containers. If this is unsuccessful, this VE will be performed in temporary facilities or existing site facilities (e.g., hot cells).

- *Coring equipment and analysis*
  To process solidified wastes, some type of coring and core analysis capability will be necessary to obtain and analyze a representative sample of the waste. As the current regulations require a representative group of such containers be sampled and not every container, this capability is not warranted at each site. The current plan is to use existing capability within the complex (ANL-W for coring, INEEL for analysis), with a single mobile system to be procured as backup. The estimated costs for using existing capability is approximately $3M per year for coring and $3M per year for analysis (established as a service subcontracts). The estimated cost to design and fabricate the mobile system is $6M.

  The table on the following page defines the scheduled makeup and deployment of the APLs. Full operation of the APLs will lag deployment by 6 months.

Table C-1 Scheduled Makeup and Deployment of the APLs

SITE	FY02	FY03	FY04	FY05	FY06	FY07
SRS	1st APL – drums only NDE: RTR unit NDA: IPAN/GEA HSG: On-line unit VE: use existing SRS facilities	2nd APL – drums only NDE: 2nd RTR unit NDA: IQ-3 HSG: 2nd on-line unit VE: drum repackaging station				Add Large Box Capability NDE: large volume RTR unit NDA: large box assay system
LANL		Both APLs– drums only NDE: 2 RTR units NDA: HENC/TGS HSG: 2 On-line units VE: new modular unit				
Hanford		Both APLs – drums only NDE: 2 RTR units NDA: SGS/HENC HSG: 2 On-line units VE: New modular unit		NDA Large Box Capability for Screening		Add Large Box Capability NDE: large volume RTR unit NDA: large box assay system