PROGRAM PLAN FOR WASTE MANAGEMENT FISCAL YEARS 2003 TO 2013

National Nuclear Security Administration
Los Alamos Site Office
and
Los Alamos National Laboratory

JUNE 2003

REVISION 0

National Nuclear Security Administration

Los Alamos
NATIONAL LABORATORY

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Change Control Log

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Revision 0	Initial document release	

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Acronyms

AB	Authorization Basis
ALARA	as low as reasonably achievable
AM	Assistant Manager
ANL-W	Argonne National Laboratory-West
BIO	Basis for Interim Operations
CA	Composite Analysis
CAO	Corrective Action Order
CBFO	Carlsbard Field Office (DOE)
CC	Chief Counsel (LASO)
CCP	Centralized Characterization Project (CBFO)
CGRP	Cerro Grande Rehabilitation Project
CMR	Chemistry Metallurgy Research (Facility)
COR	Contracting Officer Representative
CSU	Container Storage Unit
CTEN	Combined Thermal/Epithermal Neutron Counter
D&D	Deactivation and Decommissioning
DE	Drum Equivalent
Dep	Deputy
DOE	Department of Energy
DP	Office of Defense Programs (NNSA/HQ)
DSA	Documented Safety Analysis
DVS	Drum Venting System
DVRS	Decontamination and Volume Reduction System (Facility)
EDR	Electro Dialysis Reversal
EM	Office of Environmental Management (DOE/HQ)
EMS	Environmental Management System
EPA	Environmental Protection Agency
ER	Environmental Restoration
FM	Facility Manager
FRAM	Fixed Energy Response Function Analysis with Multiple Efficiencies
FRP	fiberglass reinforced plywood

FSP	Facility Strategic Plan
FWO	Facility Waste Operations Division (LANL)
FWO-SWO	Facility Waste Operations - Solid Waste Operations (LANL)
FY	Fiscal Year
Grp	Group
HAZ/CHEM	hazardous and chemical
HC2	Hazard Category 2
HC3	Hazard Category 3
HENC	High Energy Neutron Counter
HEPA	high efficiency particulate air
HGAS	Headspace Gas Sampling and Analysis
HVAC	heating, ventilation, and air conditioning
IFC	Office of Facilities, Infrastructure, and Construction (LANL)
INEEL	Idaho National Environmental Engineering Laboratory
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office (NNSA)
Ldr	Leader
LDR	Land Disposal Restrictions
LLW	low-level waste
LW	legacy waste
MAR	Material-at-Risk
MDA	Material Disposal Area
Mgr	Manager
MLLW	mixed low level waste
MTRU	transuranic mixed
MU	Modular Units
NDA	Non-Destructive Assay
NDE	Non-Destructive Examination/Evaluation
NGW	newly generated waste
NLT	no later than
NMED	New Mexico Environment Department
NPDES	National Pollution Discharge Elimination System
NNSA	National Nuclear Security Administration
NNSA Svc Ctr	NNSA Service Center
NPF	no path forward
NRC	Nuclear Regulatory Commission
OA	Office of Independent Oversight/Performance Assessment (DOE/HQ)
OPL	Office of Program Liaison (NNSA/LASO)
Ops	Operations
OSRP	Offsite Source Recovery Project
P^2	Pollution Prevention
PA	Performance Assessment
PAN	Passive/Active Neutron System
PCB	Polychlorinated Biphenyls
PM	Performance Measure
PMP	(LANL) Performance Management Plan for Accelerating Cleanup
PPWM	Program Plan for Waste Management
Proj	Project
Prog	Program
Program Plan	Program Plan for Waste
Q	Quarter
QTW	Quick to WIPP
RAMROD	Radioactive Material Research and Demonstration Facility
RANT	Radioassay and Non-Destructive Testing (Facility)
RCRA	Resource Conservation and Recovery Act

RH	Remote-Handled
RLW	radioactive liquid waste
RLWCS	Radioactive Liquid Waste Collection System
RLWTF	Radioactive Liquid Waste Treatment Facility
RO	reverse osmosis
ROD	Record of Decision
RPK	Repackaging
RRES	Risk Reduction and Environmental Stewardship Division (LANL)
RTR	real-time radiography
RTBF	Readiness in Technical Base and Facilities
RVF	Rotary Vacuum Filtration
SARP	Safety Analysis Report for Packaging
STP	Site Treatment Plan
SWB	standard waste box
SWEIS	Site-Wide Environmental Impact Statement
TA	Technical Area
TBD	to be determined
TGS	Segmented/Tomographic Gamma Scanner
TRAMPACT	Transuranic Authorized Methods for Payload Control
TRU	transuranic
TSCA	Toxic Substances Control Act
TUF	Tubular Ultra Filter
TWISP	Transuranic Waste Inspectable Storage Project
TYCSP	Ten-Year Comprehensive Site Plan
UC	University of California
VE	Visual Examination
WAC	Waste Acceptance Criteria
Waste Min	Waste Minimization
WCRR	Waste Characterization, Reduction, and Repackaging (Facility)
WFM	Waste Facilities Management (LANL/FWO)
WIPP	Waste Isolation Pilot Project
WM	Waste Management

EXECUTIVE SUMMARY

This Program Plan for Waste Management (Program Plan or PPWM) is a joint National Nuclear Security Administration (NNSA)/Los Alamos Site Office (LASO) and Los Alamos National Laboratory (LANL) effort to develop a Waste Management (WM) Program planning strategy and tool for Fiscal Years (FY) 2003 to 2013.

The PPWM is intended to articulate a clear strategy for WM activities, operations, and facilities; identify key decisions; and document special considerations related to the WM Program. This PPWM supports the establishment of a planning approach for the LANL WM Program. The Program Plan supports strategic planning efforts, identifies key management issues and decisions, and provides a basis for sound NNSA/LANL decision-making. This Program Plan will be updated on an annual basis.

This PPWM discusses major radioactive and hazardous waste types that have been and will be generated by LANL. LANL Pollution Prevention (P^2) and Waste Minimization (Waste Min) Programs are discussed. However, sanitary waste and high explosives waste streams are not addressed. Both waste streams may be included in future revisions.

The Department of Energy (DOE)/NNSA operates LANL in support of its principal Core Mission Programs in national security, energy resources, and environmental quality and science. The LANL is a multi-program site, conducting programmatic work for a variety of DOE, Department of Defense, and commercial entities.

The DOE carries out its mission responsibilities through Program Offices with differing functional responsibilities. The NNSA is responsible for management of newly generated waste (NGW), waste identified after FY 1998. The DOE/Office of Environmental Management (EM) is charged with managing legacy waste (LW), waste generated from previous LANL operations and identified prior to FY 1998. Given the large inventory of LW currently stored at LANL, EM has a significant part of the responsibility for LANL WM operations.

The current WM facilities footprint includes five nuclear facilities at Technical Area (TA)-50 and TA-54: the Waste Characterization Reduction and Repackaging (WCRR) Facility; the Radioactive Materials, Research Operations and Demonstration Facility; the Radioactive Liquid Waste Treatment Facility (RLWTF); the Radioassay and Non-Destructive Testing (RANT) Facility; and Area G. Also, the Decontamination and Volume Reduction System (DVRS), currently a Radiological Facility (but planned for possible recategorization to nuclear facility status) and Material Disposal Areas H, J, and L are located at TA-54. Finally, additional WM facilities are located at TA-21 and the Los Alamos Neutron Science Center at TA-53.

Numerous plans have been proposed to change the WM facilities footprint, including reduction of the number of WM nuclear facilities; reduction of the WM facilities footprint; co-location of WM transuranic (TRU) waste operations; enhancement of TRU waste characterization capabilities; establishment of a smaller, consolidated WM capability; and the closure of TRU waste storage domes. The Waste Facilities Management Facility Strategic Plan (FSP), developed in September 2002, documented LANL proposals for facilities projects to consolidate WM operations, reduce long-term operating costs, and better position the WM Program to carry

out the WM mission. A key issue for NNSA/LANL is agreement on which projects should progress forward and how to identify capital funding for these projects within an oversubscribed NNSA construction program.

Currently, the EM-funded LW accelerated offsite shipment effort has high priority. The 2010 Plan' if fully implemented, would result in the fulfillment of EM's WM goal of being out of the LANL LW business by no later than FY 2010. As the LW work scope is completed, issues associated with long-term stewardship responsibilities will need development, discussion, and final decisions. Additional dialogue, interaction, and integration are needed.

Issues associated with funding of P^2/Waste Min projects and project implementation have been identified. Key milestones include completion of the LANL P^2 Roadmap, completion of TRU Waste Min projects, improvement of the P^2 Performance Index, and identification of new projects.

Transuranic Waste – Legacy Waste

LANL had developed detailed plans for the disposition of all TRU LW by the year 2032. However, two fairly recent events, the Cerro Grande Fire and the 9/11 Terrorist Attack, have heightened the awareness that the TRU waste stored at TA 54, Area G is vulnerable to such events. Prudence dictates acceleration of TRU LW shipments to the Waste Isolation Pilot Project (WIPP).

Accordingly, EM requested that sites develop plans. LANL submitted the Performance Management Plan for Accelerating Cleanup (PMP), setting forth a schedule for the disposal of TRU LW inventories by 2010. PMP objectives include expediting the shipment of the higher-dispersion risk (high-wattage) TRU waste by WIPP by the end of FY 2004.This effort is known as the "Quick to WIPP" subproject. At the May 14, 2003 LASO/Safety Authorization Basis Team (SABT) and LANL/SBO meeting, the AB Prioritization List was updated. All WM AB needs related to the LANL plan to accelerate shipment of legacy waste off-site by 2010 and shipment of high-wattage waste to WIPP (the "Quick to WIPP" (QTW) subproject) by September 30, 2004, were elevated to "S-1" (Safety Priority 1) to focus and maintain the highest priority on reducing waste. This is consistent with the May 5, 2003 LANL memorandum which stated that LANL is committed to ship the 2,000 QTW drums to the Waste Isolation Pilot Plant by September 30, 2004. A quotation, by James Holt, LANL Associate Director for the Operations Directorate, was made in the same memorandum, stating, "There is no higher nuclear safety goal for the Laboratory."

The TRU waste characterization and shipping programs are challenged to increase their productivity and performance to levels never before achieved. These programs have been impacted by the FY 2003 Continuing Resolution.

In addition, a number and variety of key issues surround the LANL's capabilities to achieve proposed offsite shipment schedules. Current waste characterization capacity has been assessed at ~1,500 drums per year. The LANL PMP requires that this performance be increased to ~6,000 drums per year through FY 2010. Current shipping capacity is about 1,400 drums per year (~one shipment per week and ~40 shipments per year). This capacity can only be achieved, however, if low-wattage drums are shipped. Current LW and NGW planning requires enhanced shipping capability of ~200 shipments per year.

Key TRU LW issues revolve around the need for the

- establishment of a production-oriented culture at LANL;
- completion of detailed, integrated 2010 Plan planning documentation, such as a Life Cycle Baseline and integrated project schedules (including integrated NNSA support requirements);
- rapid and dramatic ramp-up of the TRU waste characterization, certification, and shipping program to support accelerated LW shipments offsite, including coordination and implementation of Cerro Grande Rehabilitation Project and EM/Carlsbad Field Office (CBFO) waste characterization enhancements;
- improvement of logistics by timely transfer of TRU waste characterization and support facilities from TA-50 to TA-54, Area G;
- revision and upgrading of WM Facility Authorization Basis (AB) documentation to support new activities and operations;
- coordination of EM commitments with NNSA and the impact of these commitments on NNSA program, facilities, and operations resources;
- determinations regarding TA-54, Area G TRU waste below-ground retrieval operations;
- planning for packaging and shipping of remote-handled TRU waste to WIPP; and
- tracking of TRU waste storage excess capacity.

Significant TRU LW milestones to be accomplished include

- submittal and update of 2010 Plan integrated Life Cycle Baseline (March 2003);
- submittal, approval, and readiness verification of the 10 Code of Federal Regulations (CFR) 830-required Documented Safety Analyses (DSA);
  - Area G DSA (Submitted in April 2003),
  - WCRR Facility Basis for Interim Operations (BIO) (submitted in April 2003),
  - RANT Facility BIO (to be submitted by May 2003);
- submittal and update of key integrated 2010 Plan program planning documents (LANL PMP (March 2003),
- design, completion of AB documentation, construction, and startup of a Modular Unit for Visual Examination and Repackaging (to be operational by FY 2004, 4Q);
- design, completion of AB documentation, construction, and startup of CBFO TRU waste full characterization production lines (first Centralized Characterization Project [CCP] system to be operable by FY 2003, 4Q), (second CCP system to be operational by FY 2004, 4Q);
- relocation and addition of needed non-destructive examination and assay equipment to TA-54, Area G (FY 2003, 4Q);
- completion of CBFO-negotiated accelerated TRU waste shipping schedules (e.g., 96 TRU shipments) (FY 2003, 4Q); and
- completion of TRU waste out year shipping schedules (per approved PMP).

Transuranic Waste – Newly Generated Waste

The most significant TRU NGW issue surrounds the definition of future TRU NGW facility and operations needs. The LASO and LANL will jointly identify and evaluate alternatives and proposals. As part of this effort, LANL's proposals for establishment of a WM Campus at TA-54,

as articulated in the FSP and the program/mission need related to LANL's out year proposal to construct a permanent facility to manage TRU waste need to be evaluated.

Significant near- and long-term issues related to NGW include

- identification of alternatives to the long-term WM of NGW, including evaluation of LANL proposals to develop a WM Campus at TA-54 West and to construct a permanent TRU waste facility, and
- determination of a preferred alternative(s) for NGW WM facilities and operations.

Milestones to be achieved in the TRU NGW arena, include completion of a

- NGW Waste Volume Study (4Q of FY 2003), and
- formal LANL study to identify and evaluate NGW management approaches in the out years (FY 2004, 1Q).

Transuranic Waste - Offsite Source Recovery Project

Key Offsite Source Recovery Project (OSRP) issues are associated with the need for resolution of significant recovery and disposal concerns, including resolution of legal and regulatory limitations and restrictions. Significant OSRP milestones are identified in the OSRP Program Plan.

Low-Level Waste

Onsite low-level waste (LLW) disposal capacity at Area G will be consumed within the next few years at the current rate of LLW generation. To maintain LLW capacity, several disposal options should be formally evaluated. These include

- maintaining the LLW disposal capacity as is currently authorized at TA-54, Area G;
- enhancing disposal capacity within Area G in defined locations;
- expanding the currently authorized LLW disposal capacity to include the defined Expansion Area, areas contiguous to Area G, including up the mesa toward the RANT Facility;
- expanding to a new location not yet authorized (e.g., Mesita del Buey Norte); and
- adding offsite LLW disposal options.

Defined LLW issues include

- definition of the scope for the planned Area G upgrade and related funding issues;
- evaluation of alternatives for LLW disposal and finalizing a decision(s); and
- long-term site planning to include evaluation of program/mission need for a permanent facility for temporary storage and packaging of LLW at TA-54, prior to disposal.

LLW Program milestones include the

- documentation and validation of LLW FY 2003 and out year waste generation projections, including estimated Deactivation and Decommissioning and Environmental

Restoration Programs and construction project waste generation (as soon as possible, but no later than FY 2003, 2Q);

- determination of current "excess" LLW capacity and projection of when excess capacity will be expended (as soon as possible, but no later than FY 2003, 2Q);
- submittal by LANL to NNSA of near- and long-term "options" or "alternatives" white papers regarding the numerous alternatives to LLW disposal, both onsite and offsite (as soon as possible, near-term analysis by FY 2003, 2Q, and long-term analysis by FY 2004, 2Q);
- joint LASO/LANL evaluation of LLW disposal options, cited above, with a recommendation to senior management on preferred alternative(s) (as soon as possible, near-term analysis by FY 2003, 2Q, and long-term analysis by FY 2004, 2Q);
- development and submittal of the LLW Performance Assessment (PA) Upgrade to the 1997 Area G LLW Disposal PA (~FY 2004);
- receipt of DOE LLW Disposal Authorization, following review and acceptance of the Upgraded Area G PA (~ FY 2005); and
- formal LANL submittal and NNSA review/approval, as appropriate, of the TA-54 Master Plan (FY 2003).

Mixed Low-Level Waste

The Mixed Low-Level Waste (MLLW) Program has been extremely successful in systematically reducing its inventory requiring management. A number of issues still remain, primarily regarding MLLW no path forward waste inventories. Milestones identified for the MLLW Program are identified in the LANL Site Treatment Plan.

Hazardous and Chemical Waste

At this time, no significant issues or milestones have been identified in the area of hazardous and chemical wastes.

Radioactive Liquid Waste

The current RLWTF is a 39-year-old facility and is in need of an upgrade or new construction. Numerous issues have been identified. A determination will be made as to whether the current facility will be maintained as is, renovated and/or upgraded, or whether a new RLWTF will be constructed.

A number of key issues revolve around the definition of the RLWTF Upgrade Project scope:

- Definition of the RLWTF Upgrade Project work scope. Joint LASO/LANL workshops will be held in FY 2003 and FY 2004 to support this process and define needed radioactive liquid waste (RLW) operations and capabilities, consistent with limited funding profiles. Areas of interest include evaluations of current RLWTF Room 60 TRU RLW "Pretreatment" operation and alternatives; "trucking" RLW from generators to the RLWTF versus the use of the RLW containment system; extent and nature of upstream treatment or pretreatment; waste generator P^2/Waste Min initiatives; and minimizing RLW discharge to as low as reasonably achievable.

- Development of improved tritium-removal processes. Additional bench scale studies may be needed to determine the feasibility of this effort.
- Emerging State of New Mexico discharge standards that may drive the need for additional facility modifications or capability enhancements. Contingency planning should be initiated, as such proposals evolve and are defined.

Significant milestones for the RLW Program include

- approval and readiness verification of the 10 CFR 830-required RLWTF DSA (DSA was submitted in April 2003 and is undergoing NNSA review,),
- construction and start-up of the RLWTF Waste Risk Mitigation Project to include submittal, approval of the related Preliminary DSA (PDSA) documentation, and readiness verification (PDSA was submitted in May 2003 and is undergoing NNSA review);
- definition of the RLWTF Upgrade Project work scope by means of joint LASO/LANL workshops (planned for FYs 2003 and 2004);
- completion of a technical study to evaluate RLWTF Room 60 Pretreatment Operations (FY 2003 and 2004);
- completion of all corrective action plans identified in the DOE Headquarters RLWTF review (FY 2004); and
- completion of projects initiated (and funded) under the RLWTF tactical and strategic planning efforts (FYs 2003 and 2004).

Many of the RLWTF activities identified are not funded and cannot be accurately scheduled at this time.

1.0 Introduction

A Program Plan for Waste Management (Program Plan or PPWM) is needed to support the establishment of a 10-year planning horizon for the Los Alamos National Laboratory (LANL) Waste Management (WM) Program, in support of National Nuclear Security Administration (NNSA) strategic planning efforts (such as the Ten-Year Comprehensive Site Plan [TYCSP]), document an integrated WM Program strategy, identify key management issues and decisions, and provide a basis for sound decision-making. The PPWM is intended to articulate a clear strategy for WM activities, operations, and facilities; identify key decisions; and document special considerations related to the WM Program. This Program Plan is intended to integrate the numerous institutional, strategic, and tactical planning efforts that have been initiated by LANL in the area of WM and show the linkages to the other key WM planning documents.

The development of a formal, integrated Program Plan was initiated as a result of a joint effort by the recently-established NNSA/Los Alamos Site Office (LASO) and the LANL organizations that have WM Program and operations responsibilities. A core team of representatives authored the Program Plan, with input from both LASO and LANL organizations. Dorothy Newell, LASO/Office of Program Liaison (OPL), served as the LASO Team Lead. The LANL team members include the LANLTeam Leader, Craig Bachmeier, Infrastructure, Facilities, and Construction (IFC); and Team Members, Christopher Del Signore, Risk Reduction and Environmental Stewardship (RRES); Ray Hahn, Facility Waste Operations - Solid Waste Operations (FWO-SWO); and Jene Vance (Vance and Associates). In addition, LASO has coordinated with the recently established NNSA Service Center (NNSA Svc Ctr) on the development of this document.

This section of the Program Plan provides

- the document's scope and purpose,
- the WM Program 10-year vision and related goals and objectives,
- the linkage between the WM Program and LANL core mission program operations and activities,
- a brief history of the WM Program, with a discussion of funding sources and WM responsibilities,
- a summary of the roles and responsibilities of federal and contractor WM Program organizations,
- a list of facilities that generate and manage waste, and
- separate sections that summarize key milestones and issues by major waste type.

Each waste type section provides a summary of the waste inventory and/or volumes; a newly-generated waste (NGW) projected estimate of generation; relevant planning bases (factors which influence projections and plans); and current projects and planned activities. Finally, each waste section provides a summary of key milestones to be accomplished, based on current plans and expectations, and key issues that may need LASO/LANL discussion and decisions.

2.0 Waste Management Link to Core Missions

2.1 *Los Alamos National Laboratory Core Missions*

The Department of Energy (DOE) operates LANL in support of its principal core mission programs in national security; energy resources; and environmental quality and science. As stated in the LANL 2001-2006 Institutional Plan, DOE and other Federal agencies ask LANL to undertake projects related to the following core missions:

- assurance of the safety and reliability of the US nuclear weapons stockpile;
- development of the technical means for reducing global threat of weapons of mass destruction or terrorism (including biological, chemical, nuclear, and cyber); and
- solution of national problems in energy, environment, infrastructure, and health security, utilizing the investment in people and facilities developed for the first two missions.

LANL is a multi-program site, conducting programmatic work for a variety of DOE, Department of Defense, and commercial entities. The NNSA's Defense Programs (DP) organizations are the major radioactive and hazardous waste generators at LANL, although many smaller programs also generate waste.

Key programs that generate waste at LANL include

- NNSA/DP – Directed Stockpile Work; Campaigns; Readiness in Technical Base and Facilities (RTBF)
- NNSA/Nuclear Nonproliferation – Nuclear Nonproliferation; Material Disposition
- Energy, Science & Environment
- Environmental Management (EM) – Legacy WM and Environmental Restoration (ER)
- Science – Basic Energy Science, High Energy and Nuclear Physics, Biological and Environmental Research
- Nuclear Energy, Science, and Technology – Isotopes for Medicine and Science; Advanced Accelerator Applications
- Department of Defense – Special Programs

2.2 *Waste Management Program Linkage to Core Missions*

The WM Program exists to provide reliable, uninterrupted waste disposition services and related support to all LANL programs and projects, in support of the Lab's core mission programs. This Program Plan is intended as a tool to look ahead at current and anticipated waste generator needs and at the ability of the WM Program to support identified and defined generator needs.

The DOE carries out its core mission responsibilities through Program Offices with differing functional responsibilities. The NNSA is the central programmatic sponsor for LANL and, therefore, NNSA supports "landlord" functions, including the WM Program. The NNSA/DP is responsible for management of NGW (i.e., waste identified after Fiscal Year [FY] 1998). The EM Program is charged with management of legacy waste (LW) from previous LANL

operations (i.e., waste identified prior to FY 1998). Given the large inventory of LW currently stored at LANL, EM has a significant part of the responsibility for LANL WM operations.

2.3 *Core Mission Risks Related to Waste Management Program*

The WM Program exists to provide reliable and uninterrupted WM services and related support to all LANL programs and projects, in support of the Lab's core mission programs. Without such a WM Program, direct impacts to core mission programs, operations, and activities could result.

The WM Program, in conjunction with waste generators, has established internal controls and requirements for generators to minimize the occurrence of impacts to core mission programs. Such controls include the development and implementation of approved Waste Acceptance Criteria (WAC). Also, the requirement that No Path Forward (NPF) waste not be generated without approval by the NNSA minimizes the generation of waste with no disposal path. In addition, waste generators are required to apply Pollution Prevention (P^2) and Waste Minimization (Waste Min) approaches to processes and operations that generate waste.

The most visible and problematic risk to LANL core mission programs and operations would be the inability of the WM Program to accept waste from generators for management, storage, and/or disposal. This could result in an unacceptable buildup of waste inventories at centralized storage locations and/or waste generator sites. Ultimately, the shut down of waste-generating operations and activities could result, thereby negatively impacting program activities. Also, costs associated with long-term storage of waste is a significant concern.

Potential shutdown of program facilities is mitigated by generator compliance with approved WAC and NPF waste requirements. Further, continued and accelerated offsite shipments of waste, particularly transuranic (TRU) waste, could mitigate storage concerns. However, historical offsite TRU waste shipping trends have been low. Unless significant increases in offsite shipments of TRU waste are achieved, NGW inventories will continue to increase, thereby increasing the risk to operating waste generator facilities.

Such programmatic and operations risk must be managed: WM Program planning is essential to minimizing negative impacts to core mission programs. The Program Plan is intended to identify areas of risk early, such that actions can be implemented to minimize and/or eliminate WM impacts to core missions. An integrated waste generator approach to WM; application of P^2 and Waste Min principles; compliance by waste generators with WAC and NPF requirements; and effective WM Program planning are essential to minimizing negative impacts to core mission programs.

3.0 Program Plan Scope and Purpose

3.1 Scope

This Program Plan describes LANL's plans for facility modifications, operations, and activities for the management of the five major waste types listed below. The Program Plan scope is intended to be comprehensive in its discussions of all major radioactive and hazardous waste types that have been generated in the past and those projected to be generated by LANL waste generators.

LANL facilities that support WM operations and activities are discussed in terms of current and anticipated future conditions. Activities and treatment capabilities are summarized per the same framework. Current capabilities are evaluated against anticipated future requirements. In addition, projects that support the construction of new facilities and renovation/refurbishment of existing facilities are presented.

3.2 Waste Types Addressed in Program Plan

The waste types included in the Program Plan are

- TRU and mixed TRU (MTRU),
- low-level waste (LLW),
- mixed LLW (MLLW),
- radioactive liquid waste (RLW); and
- hazardous and chemical (HAZ/CHEM) waste.

The PPWM includes discussions on the management of both LW and NGW. LW streams include waste generated from past LANL operations. NGW streams include waste generated from routine operations, Deactivation and Decommissioning (D&D) and ER operations, legacy special nuclear materials re-categorized as waste, and the sealed sources recovered through the Offsite Source Recovery Project (OSRP). Sanitary waste and high-explosive waste streams are not addressed in this document, although both waste streams may be included in future revisions.

In addition, application of P^2 and Waste Min approaches relevant to the waste types identified in the Program Plan are addressed.

3.3 Purpose of Program Plan

The PPWM is intended to articulate a clear strategy for WM activities, operations, and facilities; identify key decisions; and document special considerations related to the WM Program. A PPWM is needed to support the establishment of a 10-year planning horizon for the LANL WM Program. The Program Plan serves to

- develop a 10-year planning horizon, in support of NNSA strategic planning efforts (such as the TYCSP);

- document a WM strategy that helps ensure clear communications of goals and requirements between NNSA and LANL;
- identify near-term and long-term key management decisions and issues;
- provide a basis for prioritization of issues for sound decision-making;
- provide a tool for documenting key management decisions;
- define DOE (NNSA and EM) and LANL WM Program organizations and their related roles and responsibilities; and
- define WM Program implementation and funding requirements.

3.4 Integration With Other Plans

This Program Plan serves to describe NNSA and EM WM policy and guidance. It is intended to support and document formal strategic planning processes that provide a platform for the identification and development of WM issues for joint NNSA/LANL discussion and resolution. Accordingly, the Program Plan will feed directly into the detailed planning processes at the division and facility level, such as future facility and operations strategic planning efforts.

Also, it is intended that the Program Plan feed into the TYCSP planning process, at the institutional level of planning, and integrates such planning to the project approval and formal budget processes. The Program Plan is consistent with the RTBF Implementation Plan and will be reflected, at the summary level, in the TYCSP. The emphasis in the TYCSP is the link between long-range planning, proposed projects, and the budget. The intent of the joint development process and the final document is to better integrate the planning for waste facilities, operations, and workforce requirements, in conjunction with the NNSA RTBF and EM program planning.

Finally, this Program Plan is intended to incorporate LANL's P^2 and Waste Min efforts into the planning processes for operations and processes that generate waste

It should be noted that this Program Plan is not intended to provide generic or technical direction to the University of California (UC) and/or the LANL. The DOE utilizes formal budget and contracting processes to provide contractual direction to LANL.

4.0 Ten-Year Vision

This Program Plan is intended to support the establishment of a 10-year planning horizon for the WM Program at LANL and to document a NNSA/LANL WM strategy. The following describes the vision that NNSA and LANL hope to achieve through joint development of strategies, policies, goals, and objectives.

The Program Plan is to

- provide efficient and effective WM customer services to LANL core mission programs,
- manage LW and NGW in an efficient and compliant fashion,
- work off LW inventories within the next 10 years,
- dispose of NGW inventories within one year of generation,
- assure RLW discharges (radioactive, metals, etc.) are compliant with standards and requirements and reduce RLW discharges to As Low As Reasonably Achievable (ALARA),
- provide right-sized and right-scoped facilities and capabilities that support WM operations,
- reduce the footprint of WM facilities,
- support and implement joint LASO/LANL WM program planning activities,
- improve the efficiency of WM logistics and operations through the development and implementation of specific continuous improvement efforts, and
- incorporate the principles of P^2 and Waste Min into day-to-day operations through program and project planning.

To work toward accomplishment of the WM Program 10-year vision, specific goals and objectives have been defined for immediate, near-term, and long-term time frames. Section 5.0 describes those goals and objectives that have been defined and agreed upon by LASO and LANL, in support of achievement of the stated WM Program 10-year vision.

5.0 Waste Management Program Goals and Objectives

The vision statement, identified in Section 4.0, serves as the foundation for development of the WM Program goals and objectives summarized below. This section outlines key WM programmatic goals and objectives for radioactive and hazardous WM facilities, operations, and activities at LANL. These goals and objectives define the core WM capabilities, strategic thrust areas, and special WM projects that are required to support the DOE programs at LANL. Collectively, they form the bases for the application of WM resources and utilization of facilities and equipment required to carry out the WM mission at LANL.

The WM Program goals and objectives are intended to be consistent with the FY 2003 Performance Measures (PM), incorporated into the NNSA/UC contract. If any inconsistencies are identified after finalization of the FY 2003 PMs, the goals and objectives will be modified, as necessary.

5.1 Goals and Objectives

To support achievement of the vision statement, the WM Program shall seek to achieve the identified goals and objectives, which, in turn, support key LANL mission activities and operations.

Table 5-1 summarizes the relationship between the WM Program vision statement and related Goals and Objectives.

5.2 Performance Measures

Consistent with the new FY 2003 NNSA/UC PM process, this PPWM documents the FY 2003 PMs relevant to the WM Program. Appendix A provides a copy of the latest FY 2003 PM information incorporated into the NNSA/UC Contract (Tier I and Tier II). The FY 2003 PM Tier III level was provided by LANL in January 2003 and, once submitted and finalized, will be added to Appendix A.

5.3 Performance Indicators

To track and trend success in achieving the jointly developed Program Plan goals and objectives, Performance Indicators (PI) have been developed and are identified in Section 16.0. Appendix B provides a list of the detailed PIs. The PIs are not identified in the strategic-level PPWM (which will be updated annually). Instead, the PIs are included in Appendix B, and can be revised and updated, as needed, throughout the year.

Table 5-1 Waste Management Program Vision Statement and Related Goals and Objectives

Vision Statement	Goals and Objectives
Provide efficient and effective WM customer services to LANL core mission programs	*Support Programmatic Operations and Maintain WM Facilities*: LANL WM shall ensure that no core mission program deliverables are impacted by WM facility closures and maintain the WM facilities, equipment, and technologies in an appropriate condition such that WM Program is not a limiting factor in the accomplishment of NNSA activities. (e.g., inability of WM Program to accept generator waste because of inadequate storage capacity).
Manage LW and NGW in an efficient and compliant fashion	*Protect the Public and Worker Health and Safety*: WM operations will be compliant with all WM and environmental laws and regulations. WM operations shall not affect public safety and/or worker health. WM facilities shall be operated in a manner consistent with proactive implementation of LANL Integrated Safety Management objectives.
	Protect the Environment: WM operations will be compliant with all WM and environmental laws and regulations. WM operations shall not negatively affect the environment.
	Protect the Security of WM Facilities and Operations: WM facilities and operations shall be managed in a manner consistent with proactive implementation of LANL Integrated Safeguards and Security Management objectives. The WM Program shall ensure that security-significant waste materials are managed in accordance with applicable DOE requirements.
	Treat, Store, and Dispose of Waste per Requirements: Radioactive waste shall be treated, stored, and disposed of per all relevant WM treatment, storage, and disposal requirements.
	Manage WM Operations Cost-Effectively and Per Applicable Requirements: Radioactive and hazardous wastes shall be cost-effectively managed in compliance with applicable laws, regulations, DOE Orders, and LANL guidance and policy documents, and consistent with approved baselines.
	Conduct WM Operations per NNSA/UC Contract Requirements: All WM facilities management and WM operations shall be conducted in accordance with the requirements and expectations specified in the NNSA/UC contract and the LANL Work Smart Standards.
	Apply Quality Assurance to WM Facilities and Operations: WM facilities, operations, and projects shall be conducted under appropriate quality assurance program(s) meeting DOE and LANL requirements using a graded approach.
Work off LW inventories within the next 10 years	*Plan and Implement Accelerated Shipment of LW 2010 Plan*: Implement accelerated EM WM characterization, packaging, and shipping program and achieve milestones identified and documented in the 2010 Plan (per the Performance Management Plan for Accelerating Cleanup [PMP]).
	Develop and Implement Accelerated Shipment of LW 2010 Plan Life Cycle Baseline: Develop, document, and implement a detailed FY 2003 through FY 2010 life cycle baseline, within integrated work scope and schedules.
Dispose of NGW inventories within one year of generation	*Plan for Shipment of NGW*: Develop and implement a detailed FY 2003 to FY 2010 NNSA plan to dispose of NGW per NNSA policy expectations.

Vision Statement	Goals and Objectives
	Manage NGW generating processes: Prior to generating wastes with no disposition path, comply with requirements to plan for generation of NPF wastes and receive NNSA approval prior to generation of new wastes.
	Meet Generator Compliance Requirements: Generators shall comply with all appropriate requirements and WAC.
Reduce RLW discharges to ALARA	*Meet all Standards and Requirements for RLW Discharges*: Meet all applicable laws and regulations associated with the management of RLW and RLW discharges. Reduce such discharges to ALARA.
	Provide Right-Sized and -Scoped WM Capabilities: Provide the right WM facilities, infrastructure, operational capabilities, and technologies to support a state of operational readiness.
Provide right-sized and right-scoped facilities and capabilities that support WM operations	*Provide Right-Sized and -Scoped WM Facilities and Capabilities:* WM facilities and capabilities shall be provided for TRU, MTRU, LLW, MLLW, and HAZ/CHEM waste, including required facilities, equipment, infrastructure, and operations support.
	Maintain WM Facilities per RTBF Requirements: LANL WM facility management shall ensure that no WM Program deliverables are impacted by facility closures; maintain warm standby operations in a safe, secure, compliant, and cost-effective manner; and sustain a defined level of WM operational readiness; and Maintain the WM facilities and technologies in an appropriate condition such that WM is not a limiting factor in the accomplishment of NNSA and EM WM activities.
	Manage WM Facilities per Cost-Effective and Applicable Requirements: WM facilities shall be cost effectively managed in compliance with applicable laws, regulations, DOE Orders, and LANL.
Support and implement joint LASO/LANL WM program planning activities	*Develop, Approve, and Implement a Formal Program Plan for WM*: Support the joint development, approval, and implementation of a formal Program Plan.
	Plan for Long-Term WM Mission: WM operations and projects shall be planned and implemented assuming a long-term ongoing NNSA mission to extend beyond the horizon of this Program Plan.
	Meet Joint LASO/LANL WM Expectations and Requirements: Comply with WM expectations, as defined and approved by this Program Plan.
Improve the efficiency of WM logistics and operations through the development and implementation of specific continuous improvement efforts	*Identify/Implement Innovative Business Processes*: To reduce inefficiencies, eliminate non-productive direct and indirect costs and streamline the cost of operating these facilities.

Vision Statement	Goals and Objectives
Incorporate the principles of Waste Min and P^2 into day-to-day operations through program and project planning	*Integrate WM Operations with Program Activities*: WM operations shall be integrated with Division program activities, and the pollution prevention & regulatory compliance expectations of NNSA, EM, and LANL. P^2 and Waste Min will be incorporated into day-to-day operations by designing these work principles into all work activities and developing and implementing specific P^2/Waste Min efforts.
Continue to develop and implement efforts supporting inter-site cooperation and sharing of resources	*Support Inter-Site Cooperation in the WM Arena*: WM operations shall be integrated, to the extent possible, with other sites to develop and implement efficiencies.
Support internal and external WM Program reviews and assessments	*Support Oversight and Expectations*: WM facilities shall provide support to NNSA, Office of Inspector General, and Defense Nuclear Facility Safety Board oversight activities, as needed.

6.0 Pollution Prevention and Waste Minimization

The LANL has mature and well-established P^2/Waste Min Programs. The P^2 Program was established in response to the Secretary of Energy's P^2 and Environmental Efficiency goals issued in November 1999. The P^2 Program also responds to Resource Conservation and Recovery Act (RCRA) regulatory requirements associated with Waste Min. On February 8, 2001, LANL submitted a plan to meet the secretarial leadership goals. The DOE 2005 P^2 goals require that the DOE complex reduce routine TRU/MTRU waste generation by 80% by FY 2005, as compared with the Calendar Year 1993 baseline.

6.1 Introduction

The RRES P^2 Office manages the LANL program. The P^2 Office assists the Laboratory to

- ensure the Laboratory Integrated Safeguards and Security Management incorporates and utilizes an Environmental Management System (EMS);
- reduce waste generation;
- reduce or eliminate the release of pollutants to the environment;
- increase recycling;
- buy items with recycled content;
- improve energy efficiency;
- decrease natural resource use;
- reduce ozone depleting substances and greenhouse gases;
- increase vehicle fleet efficiency and use of alternative fuels; and
- report annual progress.

The P^2 Office's leadership in P^2 and energy efficiency will help the Laboratory meet and go beyond the goals established by DOE Orders and environmental regulatory compliance. The program manages projects to protect the environment as well as to reduce cost and create a safer workplace. By evaluating work tasks to prevent pollution and minimize waste, this office helps to increase the efficiency of mission activities. In effect, they increase productivity, enabling the Laboratory to achieve its mission. The P^2 Program reports to DOE on waste generation, Waste Min reduction, and affirmative procurement on an annual basis. Information for these reports is compiled from information from Business Operations Division, Facility Waste Operations Division (FWO), Los Alamos County, and recycling contractors.

6.2 Planning Bases

The primary P^2 planning document is the Annual Pollution Prevention Roadmap. This document outlines the processes used to implement environmental improvements. It describes current operations, improvements to eliminate sources of environmental incidents, and LANL's end state and goal. The 2002 version is responsive to the P^2 and energy efficiency goals issued by the DOE on November 12, 1999. It also satisfies the Waste Min Program documentation requirements of 40 Code of Federal Regulations (CFR) 264.73 (b)(9).

6.3 Department of Energy 2005 Goals and Drivers

P^2 Program goals and drivers are defined by federal laws, Executive Orders, and DOE Orders. The Pollution Prevention Act of 1990 is the national legislation that establishes P^2 policy. This act establishes source reduction as the preferred option in a hierarchy of P^2 options that include recycling and housekeeping measures. RCRA (Section 6002) directs federal agencies to establish affirmative procurement programs for acquiring recycled content products designated by the Environmental Protection Agency. In addition, numerous Executive Orders provide guidance in the area of P^2 and Waste Min. Finally, DOE Orders also provide guidance.

6.4 Current Pollution Prevention Program Goals

On November 12, 1999, the Secretary of Energy issued a memo outlining P^2 and energy efficiency goals for DOE sites. The goals were established to take the DOE beyond compliance based on continuous cost-effective improvements. The P^2 goals, relevant to scope of this Program Plan (i.e., TRU, LLW, MLLW, HAZ/CHEM waste) are provided below.

Program Goal 1 is to reduce waste from routine operation by FY 2005, using a FY 1993 baseline. On February 8, 2001, the Laboratory submitted a plan to meet these goals and the resources required. The goals for reducing waste from routine operations by 2005, using a 1993 Calendar Year baseline, are presented in Table 6-1.

Table 6-1 Pollution Prevention Goals

Waste Type	P^2 Goal
TRU	50%
LLW	80%
MLLW	80%
Hazardous	90%

The LANL consolidation of TRU waste operations led to an increase in production of TRU waste against the baseline year, a year when the Technical Area (TA)-55 plutonium facility was partially shutdown for safety upgrades. Because the mission-related work has been growing, it is extremely unlikely that the DOE FY 2005 goal can be met. Goals for LANL TRU waste are based on the volume of waste avoided. The Nuclear Material Technology Division negotiated a 50% reduction as LANL's share of the complex-wide 80%. Currently, two sites within the DOE Complex generate new TRU waste: LANL and Savannah River.

The LANL generation of routine LLW and hazardous waste is at or below the DOE FY 2005 goal. The Laboratory has committed to maintaining the current level and reducing it where practical. The routine MLLW generation is very small, totaling ~5 m^3/yr. Since the generation in the baseline year was low, the DOE FY 2005 goal is a very low 2.5 m^3. LANL is committed to achieving this goal, but it may be too low to be attainable on a continuing basis.

The P^2 toxic chemical program goal is to reduce toxic chemicals subject to specific reporting requirements by 90% by 2005, using a 1993 baseline. The only chemical currently procured or released by LANL is nitric acid. One of the most problematic waste streams is plutonium-contaminated nitric acid. The TA-55 Nitric Acid Recovery System is a distillation process that

recycles acid used for plutonium dissolution and recovery. This system virtually eliminates this waste stream.

Another identified P^2 program goal is to reduce waste resulting from cleanup, stabilization, and decommissioning activities by 10% on an annual basis. In the last FY, LANL exceeded the 10% reduction in this waste type. Each year a projection of the expected waste is made and a certain volume of that waste is targeted for recycle. The ER baseline waste projection is an estimate. Depending on the actual degree of contamination at ER sites, waste generation can vary by significant and unpredictable margins. While the reduction goal may be met in some years, it will be impossible to meet it in others. A new program has been proposed which will help increase the recycle rate. This program proposes to recycle some of the dirt generated from remediation activities as caps for closure of material disposal areas (MDA or Area). The volume of soil recycled to MDA caps will vary from year-to-year, depending on both supplies of soil and demand for MDA capping.

6.5 *Waste Reduction Summary*

Table 6-2 provides a summary of the P^2 waste reduction efforts.

Table 6-2 Waste Reduction Summary

Routine Waste Minimization	2005 Goal Reduction	Baseline	FY 2005 Goal	FY 2002 Performance	Predicted Index
Hazardous Waste Reduction	90%	307 mt	31 mt	16 mt	100%
LLW Reduction	80%	1987 m^3	397 m^3	372 m^3	100%
MLLW Reduction	80%	12.3 m^3	2.5 m^3	5.5 m^3	74%
Chemical Use Reduction	90%	88,293 lbs	8,829 lbs	28,872 lbs	75%
TRU Waste Minimization	50%	100 m^3	50 m^3	87 m^3	24%

6.6 *Key Issues*

A number of issues have been identified in the P^2 Program. The P^2 Performance Index (that measures progress toward meeting DOE 2005 P^2 goals) is anticipated to be 84 by the end of FY 2003. A key FY 2003 goal is to meet this expectation. Due to rapid expansion of the LANL mission and staff, a revised goal tied to staffing levels will be proposed. To achieve this measure, projects will need to be implemented to reduce routine MLLW, reduce chemical usage, minimize TRU waste, and reduce other waste streams.

Also, there are also concerns with meeting the TRU waste P^2 measure. Currently at TA-55, PF-4, there is no room for new equipment. It may be possible to eliminate essentially all combustible TRU waste, which is 25% of the total TRU waste stream, with existing technology (granulation and pyrolysis). However, there is no room to install the equipment. Creating options for TRU waste processing outside TA-55 may need to be explored.

Additional issues include funding availability and implementation of programs to reduce and/or minimize MLLW, chemical, and TRU waste. Further, to implement DOE Order 450.1, the P^2 Program will need to conduct a resource assessment for P^2 programs within the context of an EMS. In FY 2003, funding is being sought for the completion of the Mercury Drain Assessment and Cleaning Project.

Table 6-3 provides a list of current P^2 projects.

Table 6-3 Current Pollution Prevention Projects

Title	Waste Type or P^2 Goal
Small-Scale Granulator and Compactor for PF-4 TRU Waste	TRU
Vitrification System	TRU
Pyroclean Oven for C-ACT	Hazardous
TA-53 Lead Waste Minimization and Recycle	MLLW and Hazardous
Cost and Waste Reduction in Ultra-Cleaning Ops	Hazardous
Processing of PETN with Supercritical CO2	Hazardous
TA-48 RC-1 Nitrate Waste Elimination	TRI
ID of Mercury Drains	Hazardous
Verification of Scrap Metal Release Survey	LLW
Solidification of MLLW Oil	MLLW
Job Control Waste Minimization	LLW
Green is Clean	LLW
Compactor Box Deployments to Radiologically Contaminated Areas	LLW
Sorting, Segregation and Reuse of Equipment from Radiologically Contaminated Areas	LLW

Finally, a number of unfunded projects, related to TRU, LLW, MLLW, and HAZ/CHEM wastes, have been identified. If additional funding were made available, numerous additional projects could be considered.

6.7 Key Milestones

The P^2 Performance Index (that measures progress toward meeting DOE 2005 P^2 goals) is anticipated to be 84 by the end of FY 2003. A key FY 2003 goal is to meet this expectation.

Key milestones for the P^2/Waste Min Program include completion of the P^2 Roadmap, key TRU Waste Min projects; improvement of the P^2 Performance Index; and identification of new projects. Table 6-4 provides a summary of key program milestones.

Table 6-4 Key Pollution Prevention Program Milestones

Milestone	Date Due or Needed
Complete LANL annual P^2 Roadmap. Complete the PF-4 Glovebag Enclosure Pilot Project Complete the Mercury Drain Assessment and Cleaning Project.	FY 2003 1Q
Complete Dissolved Tritium Removal pilot study.	FY 2003 2Q
Complete Plutonium Oxide Dissolution Project.	FY 2003 3Q
Complete vitrification cold tests and operating procedures development. Achieve at least 84 on the P^2 Performance Index that measures progress toward meeting DOE 2005 P^2 goals. Identify and authorize new P^2 projects for FY 2003.	FY 2003 4Q

7.0 Program Background

7.1 Waste Management Program History

Prior to FY 1999, EM had primary responsibility and served as the program sponsor and funding source for all LANL WM activities. After 1998, EM was assigned responsibility for the LW inventory and NNSA/DP the responsibility for NGW inventory. "Legacy Waste" is waste generated and identified before October 2, 1998. Both include debris and homogeneous waste streams. "Newly Generated Waste" streams are defined as wastes determined to have been generated after October 2, 1998.

Accordingly, LANL WM facilities and operations are funded and overseen by different NNSA and DOE Program Offices. Currently, NNSA, as the landlord, operates the site through its Management and Operating contractor, the UC. The NNSA and UC must take into account the requirements and policy guidance provided by the specific Program Offices that provide funding for the management of the waste owned by the respective Program Office. WM activities are provided different types and levels of oversight that are dependent upon the Program Office that provides policy guidance and oversees the facilities and operations.

7.2 Funding Sources

Given the division of WM responsibilities, the WM Program receives funding from both EM and DP. EM funds operations that apply to LW (TRU and MLLW) and a portion of the facility and programmatic costs. DP funds the largest portion of nuclear and other facility costs, the base quality program needed to retain TRU waste certification necessary to ship waste to the Waste Isolation Pilot Project (WIPP), a portion of the program management costs, and costs associated with TRU, MLLW, LLW, HAZ/CHEM, and RLW NGW characterization and disposal.

7.3 Environmental Management

Since EM is responsible for an identified LW inventory, WM operations and activities have been defined as "projects" and "subprojects." EM WM projects, therefore, have specific completion goals, requirements, expectations, and cost, scope, and schedule parameters. EM manages LW responsibilities through a traditional project management approach, which includes development and execution of a formal baseline, with established procedures for project controls and change control. Progress is reported regularly through the Integrated Planning and Budget System. A Project Baseline Summary manager is formally designated for oversight and management of this work.

7.4 Defense Programs

The NGW inventory is generated through ongoing operations and is considered part of routine and ongoing work activities. Therefore, when DP took responsibility for NGW management, the organization determined that WM operations should not be defined as a formal "program." Instead, WM operations were defined as a part of "normal operations."

DP program planning, budgeting, and execution guidance is provided in the approved RTBF Program Plan. The RTBF Program has been established to ensure that DP facilities and infrastructure are available to conduct the scientific, computational, engineering, and manufacturing activities of the Stockpile Stewardship Program. The Program mission is to ensure that all DP sites are implementing the technologies and methods necessary to make construction, operation, and maintenance of DP facilities safe, secure, compliant, and cost-effective. The RTBF Program provides support to maintain facilities and technologies in an appropriate condition, such that they are not limiting factors in the accomplishment of the DP mission.

Under the Management and Operating contract, prior to FY 2002, in addition to the RTBF PMs, detailed annual PMs were drafted and incorporated into the contract to incentivize the accomplishment of defined expectations. Per guidance from NNSA/DP, the new FY 2003 approach to PMs is based on the concept of focusing on a "critical few" top-tier PMs, rather than on more detailed PMs incorporated into the contract prior to FY 2003. Additional discussion on the NNSA PM process is included in Section 16.0. Appendix A provides a copy of the FY 2003 Tier I and Tier II PMs.

DP WM Program execution and controls are described in annual RTBF Implementation Plans. The Implementation Plan describes the cost, scope, and schedule commitments for each FY, consistent with the Future-Years Nuclear Security Plan funding. DP monitors WM Program performance through quarterly reports and quarterly and semi-annual reviews. RTBF approved baselines are managed with formal prioritization and change control procedures.

The NNSA/DP has articulated clear policy guidance for the management of WM in a 1998 memorandum to the field. The guidance was promulgated as a result of the FY 1999 Congressional budget request, which assumed the transition of WM responsibilities from EM to DOE/DP, now NNSA/DP. The NNSA direction to the field implies the need for waste generators to understand the full cost for generated waste treatment and disposal. In addition, core mission programs need to evaluate processes and operations to minimize waste generation, especially waste with no defined path forward for disposal.

The 1998 DP policy guidance memorandum provided the following guidance expectations:

- landlord programs for multi-program laboratories implement full cost recovery from waste generators beginning in FY 2001 for all WM charges associated with the transportation, storage, and disposal of wastes;
- NGW activities be funded such that these wastes be disposed of within one year of generation for those wastes that have a disposal path;
- for those NGWs with no disposal outlet, those wastes be identified; and sites develop, fund, and implement corrective actions to allow the earliest possible disposal and, before a site generates such waste, approval be granted;
- Waste Min be considered a part of day-to-day operations and be designed into all work activities; and
- PMs be developed to monitor implementation of the DP guidance.

8.0 Federal Waste Management Program Oversight

This Section is intended to provide an understanding of the federal organizations that provide guidance, direction, and funding for WM Programs at LANL. Additional narrative discussions are included in Appendix C.

Appendix D provides a copy of the LASO WM oversight roles and responsibilities memorandum. Appendix E provides a LASO memorandum defining Contracting Officer Representative (COR) responsibilities in areas including WM. Appendix F provides the DRAFT NNSA Service Center Agreement relevant to the WM Program. That agreement is still under review and consideration. Further, Appendix G provides a similar narrative discussion of LANL WM Program roles and responsibilities and provides LANL organizational charts for reference.

8.1 Contractor Relationship

All discussions included in this Program Plan are intended for strategic planning purposes. Authorization and funding of any WM facilities, operations, and activities are provided through a formal budget formulation, presentation, and approval process.

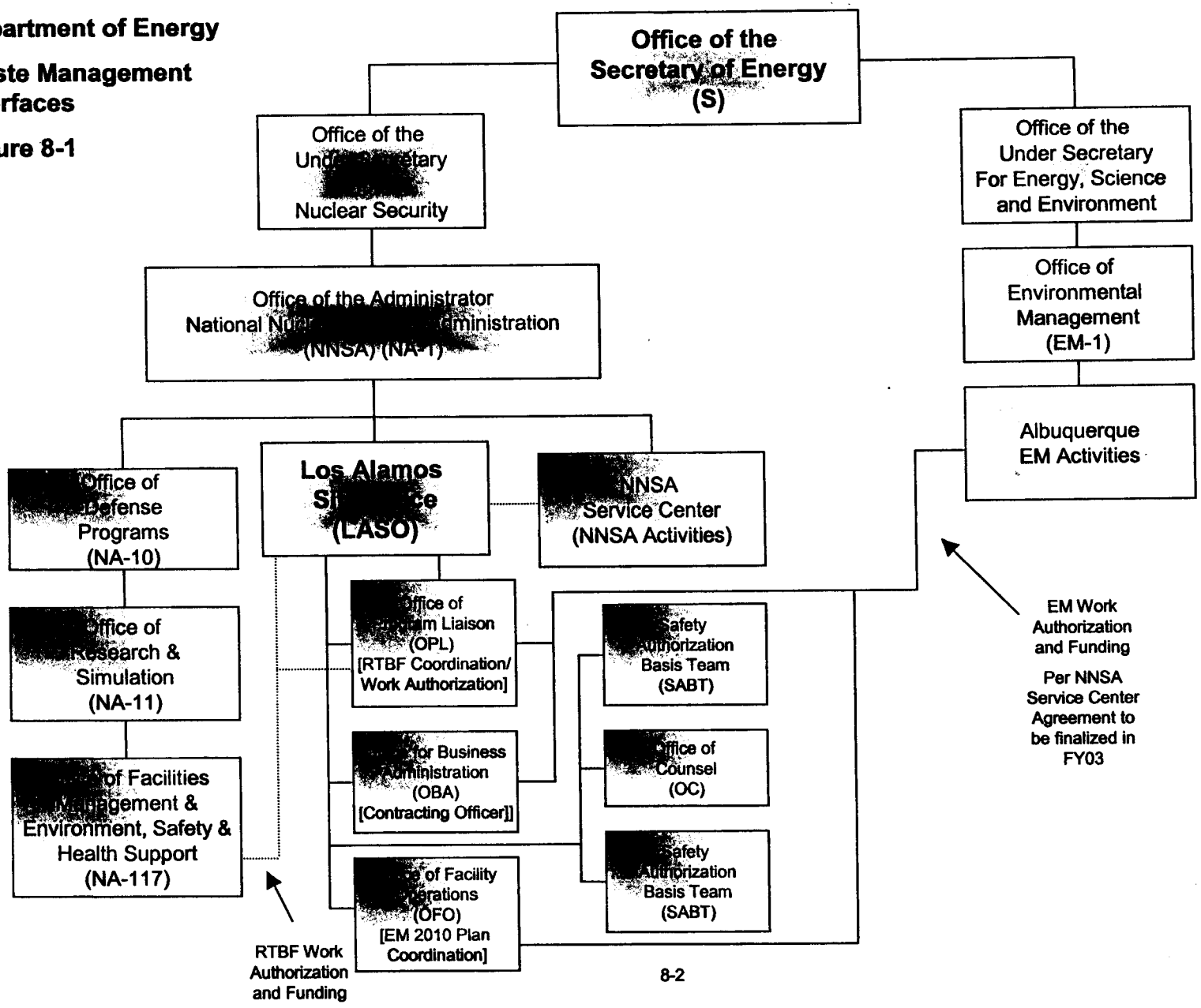
Further, all UC contractual requirements are identified, authorized, and conducted through a formal contract process. This Program Plan is not intended to supercede the formal contract negotiation and approval process. In January 2003, LASO expanded contract management and oversight functions by providing additional Contracting Officer and new COR delegations to LASO. Appendix E provides a copy of the NNSA/LASO COR delegation letter.

The DOE NNSA and EM relationships to LANL and the LANL WM organizations are represented in Figures 8-1 and 8-2, respectively.

Department of Energy

Waste Management Interfaces

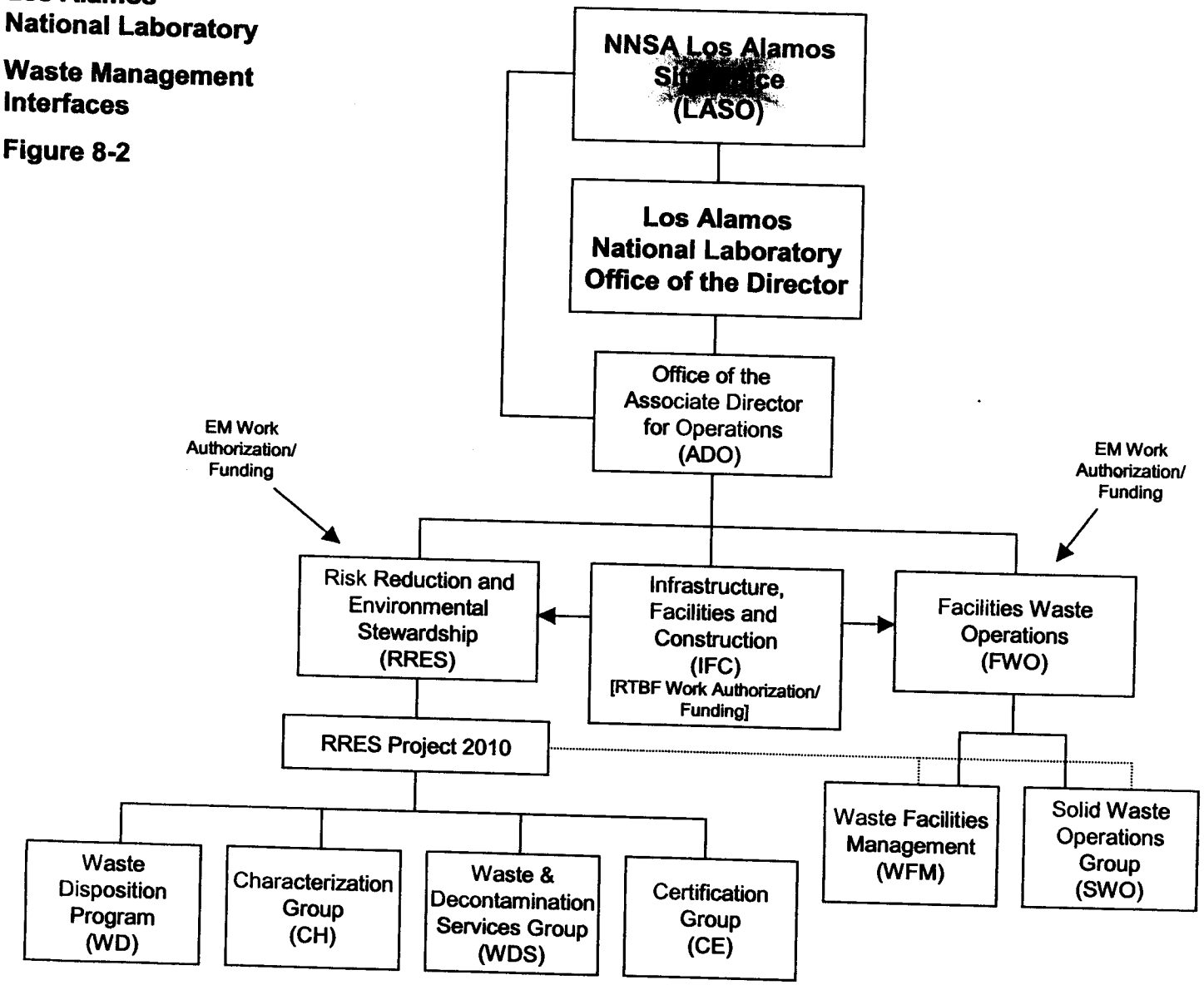
Figure 8-1



Los Alamos National Laboratory

Waste Management Interfaces

Figure 8-2



9.0 Waste Generators

Many LANL facilities generate various types and quantities of radioactive and hazardous waste.

Facilities that generate significant quantities of TRU waste and LLW include TA-03 (Chemistry and Metallurgy Research Facility [CMR]; TA-21 (the former Plutonium Facility currently undergoing D&D); TA-50 and TA-54 (the WM facilities); and TA-55 (the current Plutonium Facility Site). In addition, TRU waste and LLW are generated by the D&D and ER Programs, the OSRP, and the special nuclear materials legacy program.

D&D and ER projects are not expected to generate any significant quantities of TRU waste. However, small amounts of TRU waste may be generated. Further, these projects may generate significant quantities of LLW. Other facilities may generate small amounts of LLW. MLLW, and HAZ/CHEM waste is generated by various LANL facilities, generally in small quantities. Finally, RLW is generated by a number of LANL facilities. Primary generators include TA-55 and CMR, in addition to various facilities that generate small quantities.

Table 9-1 shows the waste types generated by major LANL facilities.

Tools for improved NGW forecasting are in process of development and are planned for completion in FY 2003 (2Q). The NGW volume forecasting approach will evaluate current generators out year waste projections; and other potential generators, including the D&D and ER Programs, OSRP, and the legacy special nuclear materials program.

Table 9-1 Key Waste Generators

Facility	Description	TRU	MTRU	LLW	MLLW	Hazard-ous	Chemical	RLW
TA-02	Omega West Reactor			•	•	•	•	
TA-03	Includes CMR Facility and Sigma Complex	•	•	•	•	•	•	•
TA-18	Pajarito Site			•	•	•	•	•
TA-21	Defense Program Site	•	•	•	•	•	•	•
TA-43	Health Research Laboratory			•	•	•	•	
TA-48	Radio-chemistry Site	•		•	•	•	•	•
TA-50	WM Site: Radioactive Liquid Waste Treatment Facility (RLWTF), Waste Characterization Reduction and Repackaging (WCRR) Facility, and Radioactive Materials, Research, Operations, and Demonstration (RAMROD) Facility	•	•	•	•	•	•	•
TA-53	Los Alamos Neutron Science Center (LANSCE)			•	•	•	•	•
TA-54	Waste Disposal Site, includes MDAs G, H, J, L, Decontamination and Volume Reduction System (DVRS) Facility	•	•	•	•	•	•	
TA-55	Plutonium Facility Site	•	•	•	•	•	•	•
Various TAs	ER Sites	•	•	•	•	•	•	
Various TAs	D&D Sites	•	•	•	•	•	•	•
Various TAs	Other Facilities					•	•	

10.0 Waste Management Facilities Summary

10.1 Current Inventory of Facilities

The current inventory of LANL WM facilities is listed in Table 10-1. The table provides a brief description of the activities conducted in each of the facilities and the current facility Hazard Category (HC) (Radiological Facility, HC3, or HC2). Also, facility RCRA unit permit status is included. Notes on proposed changes to TRU waste characterization facility hazard recategorization are summarized.

The current LANL WM nuclear facilities "footprint" includes five facilities in two TAs, TA-50 and TA-54:

- the WCRR and RAMROD Facilities and the RLWTF, located at TA-50,
- the RANT Facility, at TA-54 West, and
- Area G, at TA-54.

Also, the DVRS, currently categorized as a Radiological Facility, is planned for possible recategorization to nuclear facility status pending completion and implementation of required Authorization Basis (AB) documentation and is located at TA-54, Area G.

Additional non-nuclear facilities are located at TA-21 (the Radioactive Liquid Treatment Facility) and the TA-53 LANSCE Facility (RLW treatment lagoons). Further, Area H (a radioactive waste disposal area), Area J (a former asbestos-contaminated and classified MDA, currently undergoing closure), and Area L (a MLLW, HAZ/CHEM, and polychlorinated biphenyls (PCB) WM area) are included in the inventory of WM facilities.

The LANL has established an institutional goal of reducing its nuclear facility footprint to reduce costs. This approach influences WM facilities planning. The following sections summarize footprint reduction plans and facility changes.

10.2 Plans for Facility Changes and Footprint Reduction

Numerous plans have been proposed to

- reduce the number of nuclear facilities performing WM operations;
- reduce the WM facilities footprint;
- co-locate WM operations in a consolidated location;
- establish a smaller, consolidated WM capability to meet long-term NGW facility and operational requirements; and
- close down the TRU waste storage domes, when no longer needed for storage operations.

Plans have been developed to transfer the RAMROD Facility from the Chemistry Facilities Management organization to the Nuclear Material Technology Division. Plans are still tentative and details are being developed. If implemented, this transfer could reduce the WM facilities footprint and associated costs. This would enable transfer of the facility to another tenant and

would allow the facility to be de-classified as a WM nuclear facility. However, in the short term, LANL would need to relocate the RRES operations currently housed in the RAMROD facility.

LANL has identified a goal, to be implemented in the next few years, to transfer all TRU waste characterization operations from TA-50 (WCRR) Facility to TA-54 (Area G) to facilitate logistics, streamline operations, reduce road closures, and reduce costs. Plans have been developed to transfer the WCRR Facility organizationally to the FWO -Waste Facility Management (FWO-WFM) to consolidate WM functions into one organization. Once sufficient waste characterization capabilities are relocated and/or installed and fully operational at TA-54, Area G, the WCRR Facility could be stood down as a WM facility and transferred to another organization with an appropriate mission need. This proposal is still in the planning stages.

LANL's longer-term strategy, described in the WM Facility Strategic Plan (FSP) and TA-54 Master Plan, proposes a smaller WM facility complex at TA-54 West. Given EM proposals to accelerate TRU waste shipments offsite by FY 2010, this complex would primarily support NGW operations. These conceptual proposals are under review by LASO at this time. Also, as part of the longer-term WM strategy, LANL has proposed a plan, consistent with the plan to accelerate shipment of TRU LW to the WIPP, of closing TRU waste storage domes at TA-54, Area G, when no longer required for TRU storage.

Intimately tied to the above strategies, is the EM-proposed 2010 Plan to accelerate offsite shipment of TRU waste to WIPP. As envisioned today, the 2010 Plan would require an enhancement of TRU waste characterization and shipping infrastructure, primarily at Area G, to support accelerated shipping plans. The success of this effort will have an impact on the development and approval of short- and long-term WM facilities needs and strategies.

10.3 Radioactive Liquid Waste Treatment Facility

As part of the strategic planning processes identified in the NNSA's TYCSP, the RLWTF operations will be evaluated. A determination will be made as to whether the current facility will be maintained as is, renovated, or whether a new RLWTF will be constructed. A line item project has been proposed for a FY 2006 new start. LASO and LANL will engage in a joint partnership on the RLWTF determination. Plans are underway to conduct joint workshops to analyze the current RLWTF, alternatives, and pros and cons of each, with an ultimate goal of developing a recommendation for a preferred alternative. This issue is discussed in greater detail in Section 15.0.

Table 10-1 Current Inventory of Waste Management Facilities

Solid Radioactive and Chemical Waste Facilities				
Facility Group	Facilities/ MDAs	Facility WM Activities/ Processes/Operations	RCRA Units/);	Hazard Category
Area G (TA-54)	TRU waste storage domes and storage containers	TRU waste storage; LLW and MLLW storage and disposal in domes/ shafts; TRU LW storage in pits/shafts; LLW disposal of asbestos in pits/shafts	TA-54-G, Pad 1 Container Storage Unit (CSU) or TA-54-226 - (IS) TA-54-G, Pad 2 CSU - (IS) TA-54-48, Pad 3 CSU - (IS) TA-54-G, Pad 4 CSU - (IS) TA-54-49, Pads 5/7/8 CSU (with Dome 49, TA-54-11, -145, -146, -177, -224, -1027, -1028, -1030, -1041) - (IS) TA-54-G, Pad 6 (over Pit 30) CSU (Domes 153 and 283) - (IS) TA-54-G CSU (TA-54-229, -230, -231, -232) – (IS) TA-54-8 CSU – (IS) TA-54-Area L (Shafts 36/37) – (IS) TA-54-35 Storage/Treatment Tanks (2 of 4) (C? – possible due to lack of programmatic need)	HC2
Included in Area G (TA-54)	Drum Venting System (DVS) (Dome 33)	Venting and filter installation for TRU waste drums	TA-54-33 CSU – (IS)	(included within Area G DSA)
Included in Area G (TA-54)	LLW Waste (Compactor Facility	Compaction of LLW		(included within Area G DSA)
Included in Area G (TA-54)	LLW Waste Disposal Areas	LLW disposal trenches		(included with in Area G DSA)
DVRS	(Bldg 54-412)	Decontamination/Size Reduction of TRU and LLW	TA-54-412 CSU (DVRS) – (IS)	Radiological Facility [NOTE; DVRS is planned for recategorization to HC3 facility]
Area H		Radioactive waste disposal area – inactive		
Area J		Former asbestos-contaminated material and classified MDA – undergoing closure	New Mexico Environmental Depaertment (NMED) Permit Status – "Special Waste"	
Area L		HAZ/CHEM, MLLW, and PCB WM area	TA-54 Area L CSU (Structures 68, 69, 70, 31, 32, 35, 36, 39, 58, Domes 215 and 216 [part of IS units]) – (P)	

Footnote: RCRA Unit Status: Currently Permitted (P); Interim Status (IS); Closure Underway (C); Potential for Closure (C?

Transuranic Waste Characterization Facilities				
Facility Group	Facilities/ MDAs	Facility WM Activities/ Processes/Operations	RCRA Units	Hazard Category
RAMROD (TA-50-37)	TRU waste characterization	Homogeneous drum coring and sampling	TA-50-37-115, -117, -118 (C) Office space, Container Storage (no material)	Radiological Facility Facility in cold standby
WCRR (TA-50-69) (Bldg 50-69 and external area located outside of Bldg 50-69)	TRU waste characterization	Visual Examination (VE)/Repackagin (RPK); Headspace Gas Sampling (HGAS) characterization; Container Storage Area	TA-50-69 Inside CSU - (P) (C?) – Mew Mexico Environment Department (NMED) informed of possible closure in 1.5 years due to change in mission) TA-50-69 Outside CSU – (P) (C?) – NMED informed of possible closure in 1.5 years due to change in mission)	HC3 (inside of Bldg 69) HC2 (outside of Bldg 69 – Non-Destructive Assay (NDA) mobile activities, drum equiplibration activities, and drum staging/storage pad located outside) [NOTE: WCRR DSA was submitted to NNSA in April 2003. DSA requests HC2 categorization for facility (both inside and outside) and is under NNSA review.
RANT (TA-54-38)	TRU waste characterization and TRUPACT II loading	Non-Destructive Examination (NDE)/NDA TRU characterization, certification, and loading of TRUPACTS for shipment to WIPP	TA-54-West Outdoor CSU – (P) TA-54-West High Bay, Low Bay, and Loading Dock CSU (P)	HC2, while operating under the Limited Life BIO [NOTE: RANT is scheduled to submit a full BIO in May 2003)]
Radioactive Liquid Waste Facilities				
RLWTF (TA-50) (Bldgs 50-1, 2, 66, and 90)	RLW Main Treatment and Pretreatment (Bldg 1); LLW influent, treatment effluent, LL sludge tanks (Bldg 2); acid/ caustic waste holding tanks (Bldg 66); holding tank (Bldg 90)	Central RLW treatment	TA-50-1, Rm 59 CSU (C – being closed under IS and permit, will become 90-day Storage Area) TA-50-114 CSU (C – being closed under IS and permit, will become 90-day storage area)	HC3 [NOTE - once approved, new Documented Safety Analysis (DSA) will likely result in re-categorization of RLWTF to HC2]
Radioactive Liquid Treatment Facility (TA-21)	RLW treatment	RLW treatment		Radiological Facility
Lagoons (TA-53)	RLW treatment	RLW treatment		

10.4 Authorization Basis Needs

This section summarizes key program AB needs. The WM Program is heavily impacted by requirements for AB enhancements to support 10 CFR 830 compliance requirements. Three DSAs, for Area G, the RLWTF, and WCRR, were required to be submitted by April 2003 to comply with the new 10 CFR 830 requirements. All three were submitted by the April 2003 deadline and are currently under review by NNSA.

In addition, planned enhancement and relocation of TRU waste processing and/or characterization capabilities to Area G impact AB needs. Essential to success of aggressive WM shipping schedules, LANL must be prepared to submit several AB documents for NNSA review and approval. Further, AB changes and modifications result in LANL and NNSA requirements for readiness review and verification. Determinations regarding appropriate levels of review, scope of reviews, and planned schedules must be coordinated between LANL and NNSA, as needed.

To support WM planning schedules, LANL must identify required WM AB deliverables and determine planned dates for submittal to NNSA for review and approval. A copy of the most current Master Schedule and Priority List are provided in Appendix H. It should be noted that, in the current Priority List, many of the AB requirements belong to the WM facilities.

Additional AB requirements and related information are discussed throughout this document. For example, the TRU Waste Section (Section 11.0) and the RLWTF Section (Section 15.0) include discussions on facility changes that would result in AB impacts.

10.5 Readiness Review Requirements

The WM facility and operations changes may require issuance of revised AB requirements. Changes to facility safety bases might result in requirements for contractor and/or NNSA verification of implementation of these changes. This extensive readiness review process requires close coordination between LANL and NNSA to assure accomplishment of schedules.

10.6 Key Issues

The WM FSP developed last year identified a number of facilities projects that will consolidate WM operations, reduce long-term operating costs, and better position the program to carry out the WM mission. A key issue for NNSA/LANL is agreement on which projects should progress forward and how to identify capital funding for these projects within an oversubscribed NNSA construction program.

WM facilities long-term planning issues revolve around key commitments and decisions made by NNSA and EM. The implementation of the 2010 Plan to accelerate TRU waste shipments offsite to WIPP; planning associated with potential expansion of LLW disposal capability at TA-54; long-term WM facilities planning; and the NMED Corrective Action Order (CAO) are key planning areas with potentially significant impacts at the WM facilities. However, many of these issues and milestones are identified in other sections of this document. For example, TRU, LLW, and RLW discussions are included in Sections 11.0, 12.0, and 15.0, respectively. Table 10-2 provides a matrix of only those WM facilities issues not identified elsewhere in the

Program Plan. Finalization of negotiations associated with the NMED CAO, and the impact of these negotiations on the WM facilities, is identified as a WM facilities issue.

Table 10-2 Waste Management Facilities Issues

Description of Issue	Alternative(s) to be Evaluated	Plan for Resolution	Responsibility (LANL)	Responsibility (NNSA)
NMED Final CAO, issued on 11/26/02	Determination of impacts (scope and cost) to TA-50 and TA-54 of Final CAO	LANL Impact Assessment based on Final CAO to be prepared in FY 2003	Legal Counsel Division Director, RRES	HQ EM-1 HQ Office of Chief Counsel Legal Counsel, LASO/Office of Chief Counsel Assistant Manager (AM),LASO/Office of Facility Operations (OFO) AM, LASO/OPL

10.7 Key Milestones

Table 10-3 provides a list of WM facilities milestones. Completion of the Area G DSA, CAO negotiations, and facility input to the annual NNSA TYCSP planning effort are identified as key milestones.

Also, a project to upgrade the TA-54 intersection has been identified. This operational/safety project will re-configure the existing access point to TA-54. The current Pajarito/Mesita del Buey intersection does not meet highway standards for an intersection with the increasing volumes of traffic and the types of vehicles using the intersection. The intersection is located on both horizontal and vertical curves in Pajarito Road. This creates an elevated risk of accidents with the potential for injury to LANL workers and the public and the potential for waste material releases. This project is not funded at this time.

Table 10-3 Waste Management Facilities Milestones

WM Facilities	Description	Milestone
Area G DSA	DSA to be compliant with new requirements in 10 CFR 830	DSA submitted to NNSA in April 2003 and is under review by NNSA
Area G and other facilities	CAO negotiations completed	Summer 2003
All WM Facilities	LANL input to NNSA TYCSP strategic planning effort	April 2003
TA-54	Intersection upgrade	TBD

There are numerous other milestones that have facility impacts. However, this table does not include milestones identified in other sections of this document.

11.0 Transuranic Waste Operations

11.1 Transuranic Waste Management System

Disposal of TRU wastes at the WIPP in Carlsbad, New Mexico, requires storage, processing, characterization, certification, and shipping. A number of activities are required under each of these five broad headings. Figure 11-1 provides a representation of the LANL TRU Waste Management System.

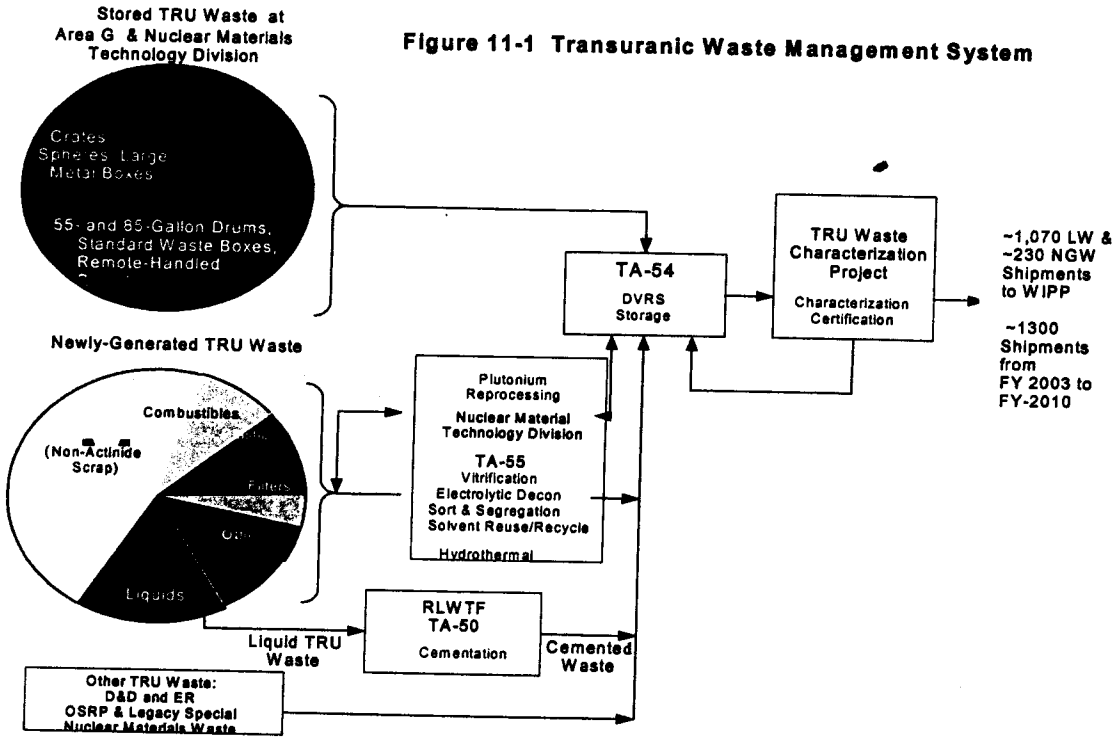


Figure 11-1 Transuranic Waste Management System

Before TRU waste can be shipped to the WIPP for disposal, the waste must meet WIPP WAC. The WAC requires that the waste be compliantly characterized, certified, and packaged in containers approved for disposal at WIPP. LANL TRU wastes include different waste containers, waste forms, and waste matrix characteristics. In addition, most TRU LW was generated and packaged prior to the issuance of the WIPP WAC, and the contents of many of the packages may include prohibited items and radionuclide quantities in excess of the limits allowed for shipment in a TRUPACT II shipping container. As a result of these differences, re-packaging will be required for some of the waste containers. Further, different characterization requirements will apply to different types of waste.

11.2 *Accelerated Transuranic Waste Disposition Initiative*

LANL had developed detailed plans for the disposition of all TRU LW by the year 2032. However, two fairly recent events, the Cerro Grande fire and the 9/11 Terrorist Attack, have heightened the awareness that the TRU waste stored at TA-54, Area G, in above-ground storage facilities, is vulnerable to such events and could result in release and dispersal of radioactive materials. This realization has led to the conclusion that it would be prudent to accelerate the shipment of TRU LW to WIPP to place the waste in a safer condition.

EM requested that sites develop plans for accelerated offsite shipment of TRU waste to WIPP. In July 2002, LANL submitted the PMP, which sets forth a conceptual plan for the accelerated removal and disposal of TRU waste inventories by 2010. PMP objectives include expediting the shipment of the higher-dispersion risk (high-wattage) TRU waste to WIPP by the end of FY 2004 (also known as the Quick to WIPP [QTW] Subproject), and accelerating disposal of all TRU LW from 2032 to 2010. Both of these actions will reduce the risks posed by storage of TRU LW in domes at TA-54.

To meet the 2010 Plan, approximately 7,000 drums per year will need to be characterized and shipped to WIPP. This represents an increase by a factor of more than 100 over disposal rates of the previous four years. Shipments averaged 55 drums per year during FY 1999 through FY 2002, or slightly more than one full shipment of 42 drums per year. To accelerate characterization and shipping activities to the levels needed, LANL plans to separate the required TRU waste characterization activities into two approaches: a LANL effort and a Carlsbad Field Office (CBFO) effort. LANL plans to process approximately 3,000 drums per year (2,000 drums in FY 2003, and 3,000 drums in out years). CBFO, through it's Centralized Characterization Project (CCP), plans to process 4,000 drums per year by deploying two characterization lines to LANL. CBFO has proposed direct funding these characterization lines and their related operations.

The PMP contained only goals, detailed execution plans were absent. To develop detailed plans, therefore, a LANL project was created to support the acceleration initiatives. The objectives for the accelerated LW disposition initiative (referred to as "Project 2010") are currently being developed. They will appear in a baseline change proposal to be submitted to DOE in March 2003. Much of the following discussion is based upon these detailed plans.

Project 2010 divides LANL's accelerated LW disposition initiative into 12 subprojects, as defined in Table 11-1.

Table 11-1 Project 2010 Subproject Structure

01. Debris LW	07. TRU Waste Retrieval
02. Homogenous LW	08. MLLW
03. TRU NGW	09. Waste Facilities & Infrastructure
04. Remote-Handled (RH) Waste	10. TRU and MLLW Storage
05. OSRP Sources	11. Program Office
06. Oversized LW Crates and Containers	12. CCP Support

Each project has been assigned a Project Leader. Each project will have its own project execution plan, baseline, cost estimate, and planning assumptions. These planning documents will be updated when new information changes planning assumptions.

The first six projects comprise the ~42,000 Drum Equivalents (DEs) of TRU LW that must be processed, characterized, certified, and shipped. Five of the remaining projects provide infrastructure and management support elements needed to make the first six projects a success. Project 08, disposal of legacy MLLW, is largely unrelated to the other 11 projects, but is included in the scope of the 2010 Project.

As part of LANL's 2010 Plan, LANL has proposed a subproject, designated as the QTW Subproject. This effort has an objective of completing expedited characterization and shipment of 2,000 drums of "high-wattage TRU waste" (i.e., waste that has high-activity radionuclide concentrations and contains hydrogenous materials in the waste matrix). It is estimated that the high-wattage TRU waste accounts for about 60% of the potential radioactive material dispersion risk of TRU waste stored at Area G. The 2010 Plan/QTW Subproject is documented in a project execution plan.

Baseline planning for the Subproject has been significantly impacted–and dramatically improved–by recently approved changes to TRUPACT-II payload wattage limits. Revision 19 to the TRUPACT-II Safety Analysis Report for Packaging (SARP) and the corresponding TRU Authorized Methods for Payload Control (TRAMPAC) have been approved and have been incorporated into the LANL Certification Plans and related documents. This revision allows for "matrix depletion," which, in effect, allows a factor of three higher wattage limits to the allowed payload limits. Revision 19A to the TRUPACT-II SARP and the related TRAMPAC document have been approved by the Nuclear Regulatory Commission (NRC). This change will reduce the number of days (from 60 to five days) assumed as a basis for calculating potential hydrogen gas buildup in TRUPACT containers. There is a corresponding increase in the wattage limit for the reduced number of days for hydrogen buildup. These wattage limits changes will significantly reduce the hydrogen generation rate measurements currently required and the required repackaging of higher-activity drums.

The recently approved TRUPACT-II, Rev 19a only applies to the select 2,000 QTW inventory of drums. To achieve the accelerated 2010 Plan schedule, another revision to the TRUPACT-II and TRAMPAC will be needed. This revision would need to be extended to cover the remaining TRU LW inventory of higher-wattage drums. Implementation of higher-wattage limits could result in an estimated savings of approximately 3,000 shipments to WIPP, per the LANL PMP.

There are three different funding sources for LANL's TRU waste disposition initiative. NNSA funds much of the infrastructure needed to characterize, certify, and ship TRU wastes. This infrastructure consists of facilities, equipment, and personnel who perform centralized activities that will be needed after all TRU LW have been shipped to WIPP. The OSRP funds the characterization, certification, and shipping of OSRP waste. EM, the third funding source, provides financial support of two forms. The first is direct funding for the disposition of TRU LW by LANL personnel. The second will be indirect funding in the form of deployment of CCP equipment and personnel to LANL.

11.3 Legacy Waste Volumes

Table 11-2 summarizes known LW inventories and provides estimates of TRU waste volumes to be generated during the next eight years. Inventories may be located above- or below-ground. Below-ground TRU waste packages total 3,554. Drum quantities include both 55- and 85-gallon drums.

Table 11-2 Estimated Legacy Waste Volumes (FY 2003–2010)

Project	Number of Items	Cubic Meters	Input DEs	Output DEs	Output Shipments
Legacy Debris TRU	16,700	3,500	16,700	18,300	540
Legacy Homogenous TRU	10,200	2,100	10,200	12,600	350
Legacy Crates and Oversized Packages/Items	950	3,530	17,100	3,000	90
RH Waste	417	30	150	150	50
OSRP Wastes	1,400	290	1,400	1,400	40
TRU LW Totals	29,667	9,450	45,550	35,450	1,070

Notes:
Legacy TRU Debris: Includes 250 drums of offsite wastes from Sandia National Laboratories and Lovelace Respiratory Research Institute.
Legacy Crates: Includes other oversized packages, such as Standard Waste Boxes (SWB) and cemented culverts.
OSRP Waste: Includes existing inventory plus projections for FY 2003 through FY 2010.
DE: Drum-Equivalent volume

11.3.1 Debris Waste

TRU debris drums are currently stored in above-ground storage domes (~14,970 drums) and below-ground pits and trenches (~1,720 drums). The starting volume of debris LW for Project 2010 is ~16,700 drums. The wattage content of some of these drums exceed limits for shipment in a TRUPACT-II container. This population of drums will be divided and repackaged into multiple drums. The current estimate is that this splitting of drums will generate in the neighborhood of another 1,600 drums, which means that a total of 18,300 drums will have to be shipped from this waste category. It is assumed that the split drums will be shipped and will not require extended dome storage.

11.3.2 Homogeneous Waste

TRU homogeneous drums are also currently stored in above-ground storage domes (~9,280 drums) and below-ground retrievable pits and trenches (~920 drums). The total volume of homogenous LW to be disposed is ~10,200 drums.

11.3.3 Crates

Oversized boxes and crates that include metal boxes and fiberglass-reinforced plywood (FRP) crates were used to package contaminated equipment such as gloveboxes, construction and miscellaneous debris, and high efficiency particulate air (HEPA) filters. Some of the oversized boxes are over 30 feet in length. The boxes and crates are stored above-ground storage facilities and below-ground pits and trenches. There are a total of 420 TRU waste oversized

crates and metal boxes that require processing. Table 11-3 shows the breakdown in numbers and types of boxes and crates:

Table 11-3 Legacy Oversized Metal Boxes and Fiberglass Reinforced Plywood Crates

Content	Number Above-Ground	Number Below-Ground	Totals	Type
Gloveboxes	78	15	93	FRP
Metal Debris	24	41	65	Metal
Non-Metal Debris	77	104	181	Metal
Soils	12	6	18	FRP
HEPA Filters	23	25	48	FRP
Pencil Tanks	15	0	15	FRP
TOTAL	229	191	420	

This project also includes a number of oversize containers that are not metal of FRP crates, including above-grade SWBs and below-grade cement-filled culverts. The culverts, in particular, pose processing challenges. An additional 530 oversized packages and items have been identified. In total, the 2010 Project will disposition ~950 oversized packages.

Crates are subjected to volume reduction through the DVRS Facility. The volume reduction process has been successful to date in reducing the volume of TRU waste by a factor of four (i.e., three-fourths of the input volume exits the facility as LLW, not as TRU waste). It may be possible to achieve even further volume reduction of the TRU waste volume via compaction. This further reduction could be as large as another factor of 4:1, bringing total volume reduction to a factor of 16. However, compaction of metal items such as gloveboxes can result in waste drums that exceed the allowable weight limit of 1,000 pounds per drum, and compaction of softer items such as HEPA filters can result in waste drums that exceed wattage limits. Therefore, present planning projects an overall volume reduction of approximately 5:1, which will result in an output stream of ~3,000 drums to be processed through DVRS.

11.3.4 Remote-Handled Waste

RH was generated at LANL, primarily at the CMR Facility, from 1970 to 1994. The RH waste is currently stored in shafts at TA-54, Area G. There are two basic types of RH wastes. The first type is hot cell debris, consisting of metals, inorganic solids, and combustible solids that were packaged into one-gallon containers. The containers are comprised of a galvanized steel paint can (without a lid) inside of a plastic liner, and a steel outer canister with a welded lid. The second type is hot cell liners, which are essentially gloveboxes that were consolidated by cutting the legs off and packaged in steel boxes.

From 1971 to 1973, the one-gallon containers were placed into unlined shafts (~ 2' in diameter and 25' deep) bored into the tuff. The containers were bagged, two canisters to a bag, and dropped down the shaft. From 1979 to 1987, containers were placed into shafts (~3' in diameter and 18' deep). An carbon-steel pipe liner (8 ½" diameter) was placed in the bored shaft; the shaft was then backfilled with crushed tuff, cobbles, and sand between the pipe and the shaft wall. The one-gallon containers were dropped into the pipe liner. In 1991, the hot cell liner boxes were emplaced into bored shafts (10' in diameter) that had been lined with a ¼" carbon-

steel liner. The liner bottom is open and the top has a ¼" steel lid welded to the liner. The final RH waste storage configuration was completed in the 1990's, when the one-gallon containers were placed into 55-gallon drums. Three drums were then placed into stainless steel canisters (15' long by 30" in diameter). Canisters were certified to the 1993 WIPP WAC (Revision 3) and were designed to fit into the WIPP 72B cask. Canisters were placed into bored shafts (~16' deep and 3' in diameter) that were lined with corrugated steel liners.

Table 11-4 identifies the number of storage shafts and their RH waste contents.

Table 11-4 Remote-Handled Waste

Shaft Design	Number of Shafts	Emplaced Waste	Container Type	Number of Containers
Unlined	6	Hot cell debris	One-gallon containers	114
Lined	33	Hot cell debris	One-gallon containers	281
Hot Cell Liner	5	Gloveboxes	Metal boxes	5
Lined	17	Hot cell debris	WIPP canisters	17
Total	61			417

11.3.5 Offsite Source Recovery Project Waste

There are some uncertainties in the exact number of actinide sealed sources that will be declared excess and would require disposal. However, at present, it is estimated that approximately 15,000 to 18,000 actinide sources may be recovered and could require disposal by FY 2010. To date, LANL has approximately 200 drums containing sealed sources in inventory; about 1,400 drums of sealed sources are expected to be generated.

The projected number of actinide sources and the total curie content (by radionuclide) is given in Table 11-5. The actinide sources (Am_{241}, Pu_{238}, Pu_{239} combined with beryllium) are utilized to create neutron generators or Pu_{238} sources for heat or thermoelectric generation.

There are a limited number of disposition options for these sources. The options include either actinide recovery or disposal of sources in their entirety. These sources may not have material of sufficient value to warrant reprocessing through recovery operations.

Table 11-5 Projected Number of Sealed Sources by Radionuclide

Isotope Contained in Source	Excess	Activity Range (curies)	Mass Range (grams)	Total Activity	Total Mass	Waste Drums
Am_{241}	4,483	<0.001 to 54	<0.001 to 17	23,935	7,245	798
Pu_{238}	304	<0.001 to 510	<0.001 to 38	12,850	945	428
Pu_{239}	357	<0.001 to 10	<0.001 to 160	680	10,950	110
Cs_{137}	8	0.02 to 10	<0.001 to .13	14	0.2	1
Sr_{90}	47	15 to 685,000	0.3 to 12,460	3,882,440	61,220	47
Total	5,197					1,384

11.4 Newly Generated Waste

The majority of the TRU NGW is generated by core mission activities at TA-55 (the Plutonium Facility), the RLWTF, and the CMR Facility. Small amounts may be generated from ER and D&D activities. In addition, sealed source wastes are generated by the OSRP and is considered NGW. In addition, NGW includes debris waste and homogeneous waste from sources such as the solidification of sludge and liquids.

The projection of TRU NGW future generation rates is somewhat difficult, due to changes in laboratory missions, shifting priorities, and uncertain funding levels. In addition, LANL has identified P^2/Waste Min programs for implementation by FY 2005 to reduce the volume of routine-generated waste. The IFC Office is developing a formal waste volume forecast report to formalize an approach to forecasting NGW. This report is due in FY 2003, 2Q.

Table 11-6 presents actual and projected TRU waste receipt rates (i.e., waste received at Area G for storage) for NGW currently being used for TRU waste storage planning purposes.

Table 11-6 Actual and Projected Area G Transuranic Waste Receipt

Fiscal Year	Drums per Year	Cubic Meters
1996	658	137
1997	480	100
1998	629	131
1999	830	173
2000	739	154
2001	754	157
2002	902	188
2003	1,349	281
2004	1,027	214
2005	1,022	213
2006	1,056	220
2007	1,008	210
2008	917	191
2009	893	186
2010	869	181
2011	864	180
2012	835	174

Based on historical generation rates and projected missions and activities at TA-55, the CMR Facility, RLWTF, and the ER, D&D, and OSRP programs, TRU wastes transferred to TA-54, Area G, and needing storage (i.e., input drums) are projected to be received at Area G at a rate of between 100 and 300 m^3 (500 to 1,350 DEs per year), with an average receipt of ~875 DEs per year.

Table 11-7 provides an estimate of the number of NGW items, DEs, and shipments needed during the FY 2003 to FY 2010 timeframe.

Table 11-7 Estimated Newly Generated Waste Volumes (FY 2003–2010)

Project	Number of Items	Cubic Meters	Input DEs	Output DEs	Output Shipments
TRU NGW	7,650	1,590	7,650	7,650	230

Notes: Includes existing inventory in storage and projections for FYs 2003 through 2010.

11.5 Number of Shipments

A total of about 1,300 shipments of both LW and NGW are projected at this time for FYs 2003 through 2010 (eight planning years). LW shipments are estimated at a total ~1,070 (~134 per year). NGW output estimates, actual DEs to be shipped to WIPP, are estimated at 500 to 1,000 DEs per year, equating to ~14 to 29 shipments of NGW per year. Therefore, a maximum average annual NGW shipping rate of ~29 shipments per year is used for planning purposes, totalling ~230 shipments during the planning period. This is considered a conservative estimate for NGW.

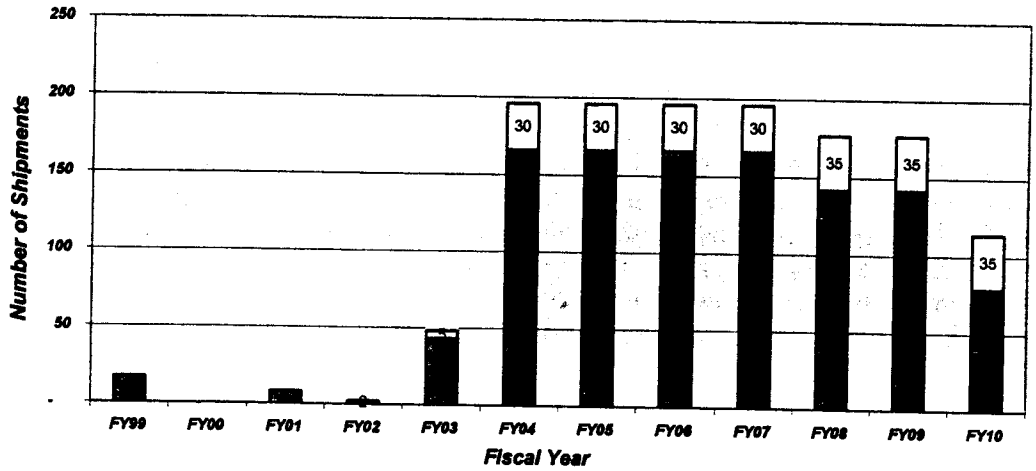
Table 11-8 Estimated Total Waste Volumes (FY 2003–2010)

Project	Number of Items	Cubic Meters	Input DEs	Output DEs	Output Shipments
LW Estimates	29,667	9,450	45,550	35,450	1,070
NGW Estimates	7,650	1,590	7,650	7,650	230
TRU LW and NGW Totals	37,317	11,040	53,200	43,100	1,300

A maximum of 42 drums can be carried in one shipment, but a number of factors (fissile gram loading, wattage, the need to ship in SWBs, etc.) combine to preclude maximum loading in all cases. For the most part, shipments are projected to contain 35 drums each, the estimated average number of drums per truck used by CBFO to estimate shipments from all DOE sites. An estimate of only 24 DEs per truck was used for QTW wastes and for some non-QTW waste. Further, ~50 shipments will be needed to ship RH waste.

Figure 11-2 provides the planned Project 2010 and NGW shipping schedules for FYs 2002 through 2010. In addition, actuals for FY 1999 through FY 2002 are provided for reference.

Figure 11-2 Transuranic Waste Shipments to Waste Isolation Pilot Plant



11.6 Existing Capacities

Existing TRU waste capacities for storage, processing, characterization, certification, shipping, retrieval, RH waste, and OSRP waste are discussed below.

11.6.1 Storage

TRU waste Area G storage capacity is comprised of a fixed number of above-ground storage domes and below-ground shafts to house drums, FRPs, and other waste containers. Currently, 10 domes are approved for TRU and MTRU storage. Eight are utilized for MTRU drum storage (17,320 drums) and two domes store FRPs (269 FRPs). One dome (Dome 375) is used exclusively for TRU waste and stores 4,300 TRU waste drums. In addition, shafts are utilized to store RH waste.

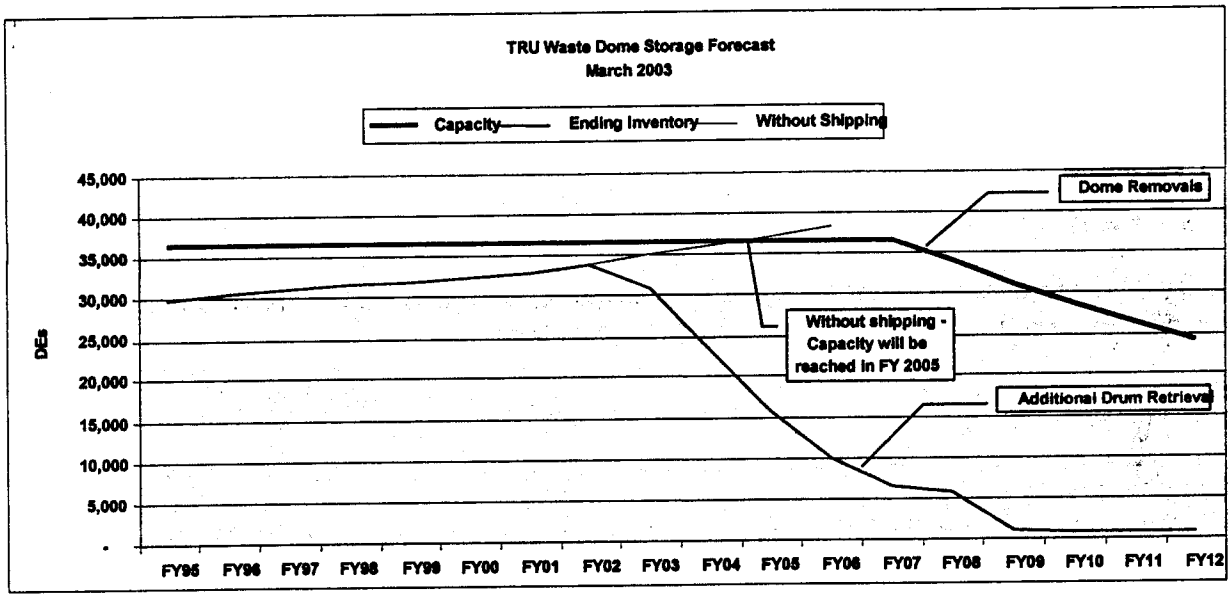
In total, Area G domes have a capacity of approximately 36,600 DEs, based on the current TRU waste storage configuration, without including possible storage enhancements. At this time, no new construction of TRU waste storage facilities is planned. The goal for TA-54, Area G is to reduce fixed storage capacity (by eliminating storage domes at Area G) as LW offsite shipments are completed and programmatic planning allows.

The current FY 2003 inventory stored in domes is ~21,000 DEs. Additional wastes are stored above-ground in other containers and below-ground in pits and shafts. With the successful implementation of the 2010 Plan, availability of storage capacity will not become an issue. However, should the shipment of TRU waste to WIPP be delayed for technical or administrative reasons, the availability of storage capacity could become an issue with the continuing generation of TRU waste. Area G's current TRU waste dome storage capacity was assessed

against current and future inventory needs to determine when the current storage capacity would be insufficient to support programmatic needs.

The results of this evaluation are charted in Figure 11-3, which indicates that Area G could run out of TRU waste storage in approximately two years (by the beginning of FY 2005). It was assumed that there would be no TRU waste shipments to WIPP; the Area G TRU receipt/storage rates would be as forecast by programs; and that the storage configuration would not be enhanced. It should be noted that there is some uncertainty regarding the NGW receipt/storage rate related to ongoing and routine operations at TA-55, CMR, and RLWTF, and from the OSRP, ER, and D&D programs. Further, it was assumed that TRU waste below-ground retrieval would not be initiated until TA-54, Area G has built up sufficient excess storage capacity as a result of TRU waste offsite shipments to WIPP.

Figure 11-3 Transuranic Waste Above-Ground Storage Forecast



As a contingency, assuming no WIPP shipments are made in the next two years, FWO-SWO has identified several measures that could be implemented to increase the existing TRU waste storage capacity at Area G. These include 1) triple-stacking 85-gallon repack drums versus the current RCRA-permitted two levels; 2) adding storage capacity by grating over sumps and making the grate space storage; 3) storing OSRP (sealed source drums) and straight (non-MTRU waste) in retrievable configurations in storage shafts (200 shafts are available); and 4) adding additional metal transportainers. Further, additional contingency measures could be developed, if needed.

Use of such contingencies, however, would require additional funding and some time to implement. LASO has committed to developing a joint policy on TRU waste storage to

determine if and when LANL should implement contingency plans. Evaluation and analysis of this issue will be conducted on a quarterly basis.

Further, it should be noted that additional storage space may also be gained through large FRP crate processing and volume reduction in the DVRS Facility. The current storage configuration for oversized crates is not space-efficient. FRPs were custom-made to store large, oversized waste. Waste was placed in FRPs without the application of volume reduction techniques and minimal concern for storage efficiency. However, once processed, the waste will be decontaminated; segregated into LLW and TRU waste; size-reduced, as appropriate; and repackaged into appropriate containers. Initially, the DVRS will be used to process FRPs with lower quantities of radionuclides that have a minimal volume reduction potential, but repackaging will allow for some increase in storage due to more effective packaging. As DVRS is authorized to process higher-activity FRPs and, with increased use of the shear baler, volume reduction factors are expected to increase.

11.6.2 Processing

There are a number of processing needs that must be supplied before some waste can be characterized and/or shipped to WIPP.

Drum Venting

TRU waste drums must be vented to prevent the buildup of hydrogen gas. This operation has been performed on all 55-gallon drums; will need to be performed on drums that have been overpacked into 85-gallon drums; and will need to be performed on all below-grade drums retrieved as part of Project 2010. The capability to vent 85-gallon drums does not exist.

Crate Processing

Crates of waste cannot be characterized with existing characterization equipment and, in most cases, are too large to be shipped in TRUPACT containers. These wastes must, therefore, be broken apart and repackaged. This operation is currently performed at the DVRS at TA-54, Area G. This system currently has capacity to process about 40 crates per year. Output from DVRS consists both of LLW, which is disposed at LANL, and of TRU wastes. The TRU wastes are size-reduced and packaged into 55-gallon drums so that they can be characterized, certified, and shipped to WIPP for disposal.

Special Processing

Other special processing needs exist. These include a need to place high-activity waste items inside pipe overpacks and a need to cut up large-diameter culverts filled with cemented TRU waste. Such capabilities do not currently exist at LANL.

11.6.3 Characterization

Before TRU waste can be shipped to WIPP for disposal, the waste must meet the WIPP WAC. The WIPP WAC requires that the waste be characterized in accordance with the LANL procedures that are approved by DOE CBFO. TRU waste characterization may require

- real-time radiography (RTR) of TRU packages to identify any prohibited items (containers with liquids or compressed gas cans or cylinders) that must be mitigated before shipment;
- NDA to determine the isotopic contents of packages;
- HGAS to assure headspace gases are below established limits;
- VE/RPK required for quality assurance purposes on a statistical subset of drums and required when drums contain prohibited items or exceed the wattage limit thresholds established for the TRUPAC-II shipping container (Note: With the approval of Revision 19 and 19A to the TRAMPAC the number of drums requiring re-packaging because of wattage limits is greatly reduced.); and
- drum coring to conduct visual examination of homogenous wastes.

Waste characterization capabilities are described below.

Real-Time Radiography

For 2010 Plan purposes, LANL requires capability for processing a minimum of 3,000 drums per year. The processing rate for the existing RTR unit is 1,800 drums per year. The existing unit at Area G is eight years old and is in need of refurbishment.

Non-Destructive Assay

Several different NDA devices are utilized to assay a package. Each drum must be characterized by the Fixed Energy Response Functional Analysis with Multiple Efficiencies (FRAM) unit and one of the other NDA units. As can be seen below, the estimated processing rate for the NDA activities is approximately 1,250 drums per year on a single-shift operation basis for the FRAM, and about 3,200 drums per year through the second NDA characterization step.

- FRAM–Processing capacity is about 32 drums per week, or 1,250 drums per year assuming two weeks for holiday and 20% downtime. This is a commercial production unit.
- Combined Thermal/Epithermal Neutron Counter (CTEN)–The CTEN provides assay for low-content waste drums. The unit is a prototype and can have high downtime. Processing capacity is about 20 drums per week, or 800 drums per year assuming two weeks for holiday and 20% downtime.
- High-nergy Neutron Counter (HENC)–The HENC provides assay for high-content waste drums. Processing capacity is about 20 drums per week, or 800 drums per year assuming two weeks for holiday and 20% downtime. This is a commercial production unit.
- Segmented/Tomographic Gamma Scanner (TGS)–The TGS units are used for mid-range content drums of waste. Two TGS units exist. The mobile TGS is eight years old, and a prototype unit. The portable TGS is a new production unit. Processing capacity is about 20 drums per week for each unit, or 1,600 drums per year assuming two weeks for holiday and 20% downtime.
- SuperHENC–This unit would be used to assay SWBs. The procurement of a unit is under consideration; cost ($2.5M) precludes an easy decision.

Head-Space Gas Sampling and Analysis

The existing process for performing this characterization step consists of drawing a sample of air from each drum into small metal sampling containers (summa canisters), and then shipping the samples to an offsite laboratory for analysis. At present, analytical services are being provided by a WIPP-certified lab at Idaho National Environmental Engineering Laboratory (INEEL). This process was audited by CBFO in FY 2002, and certified by DOE CBFO and NMED in February 2003. Currently, all of LANL's HGAS analyses are being handled by INEEL. This concept is being expanded by CBFO, and other DOE sites are beginning to use the INEEL laboratory for HGAS analysis.

Three steps affect the capacity of this operation: 1) storage space for controlled-temperature equilibrium of drums for a minimum of 72 hours before sampling, 2) the sampling itself, and 3) analysis of the samples. Sampling can be conducted at the rate of about 120 drums per week or 4,000 drums per year. The INEEL laboratory has a capacity to analyze 5,000 drums per year and is expected to fully support LANL's needs for the balance of Project 2010. Temperature equilibrium, however, is limited to about 60 drums per week, and restricts overall HGAS capacity to 2,400 drums per year.

Glovebox Operations

Three operations must be conducted within gloveboxes–VE, disposition of prohibited items, and waste repackaging. Currently, glovebox activities are conducted in a single glovebox in the WCRR Facility. A second walk-in glovebox has been restarted for operations. Additional personnel will be required to support operations. Waste repackaging is nearly identical to VE, and these two operations share the same capacity of about four drums per week, or about 160 drums per year. Prohibited item disposition is a simpler, faster, more efficient operation: ~18 prohibited item disposition activities can be performed per week. This equates to an annual capacity of about 720 drums.

Drum Coring

A statistical subset of homogenous drums must be cored and the contents of the core sample must be visually examined to verify that the drum contents are, in fact, homogenous. LANL does not currently have a drum coring capability. To develop, test, and certify this characterization step would require 12 to 18 months.

11.6.4 Certification

Certification steps include a number of non-routine activities and a larger number of production-related steps. Non-routine activities include the 1) preparation and maintenance of an acceptable knowledge information summary, which includes the definition of LANL TRU waste streams, 2) the annual calculation of the mis-certification rate to assure compliance with NMED permit requirements, 3) completion of quarterly reviews of a randomly selected subset of batch data reports for each characterization activity, 4) preparation of an acceptable knowledge accuracy report, and 5) compliance with a five-year requirement to summarize and detail LANL's TRU waste in a baseline inventory report, to be submitted to CBFO.

In addition, a waste stream profile form must be prepared by LANL for each waste stream. This form consists of characterization data for 42 drums, a waste stream summary report, and upper confidence limit-90 calculations for those 42 waste containers. This submittal is reviewed and approved by CBFO before waste from a profiled waste stream can be certified or shipped for disposal.

A large number of production-related certification steps are required for each container of waste that has been characterized. These include the preparation and review (five independent reviews) of batch data reports, reconciliation via acceptable knowledge of each characterization step (RTR, NDA, HGAS, and VE), the calculation of the upper control limit using data from each container, and demonstration that the characterization of each waste container meets data quality objectives, as specified by CBFO.

Actual data and calculation results must be entered into the production module of the CBFO certification database. CBFO personnel perform a check of data in the production module. If the data are deemed acceptable, container data are transferred into the certification module of the database, are approved by CBFO, and are released for use in building payloads for shipment. Payloads must also be pre-approved by CBFO before loading and shipment can proceed.

Certification capacity is defined by a number of factors. The number of identified TRU waste streams greatly impacts TRU waste certification and shipment requirements. Complexity of data calculations hinges, to a large extent, upon the definition of waste streams. Formerly, 109 waste streams were identified at LANL, in stark contrast to other DOE sites, which, typically, have two to five waste streams. In addition, the number of trained and certified personnel available for conducting certification activities impacts LANL's capacity to certify drums. LANL currently employs about 15 certified personnel–enough to certify about 1,000 drums annually.

11.6.5 Shipping

Current shipping capacity is about 1,400 drums per year (~one shipment per week and ~40 shipments per year). This capacity can only be achieved, however, if low-wattage drums are shipped. Existing MAR limits, for example, can be exceeded with as few as one or two of the QTW waste drums. Current LW and NGW planning requires enhanced shipping capability of ~200 shipments per year.

LANL currently uses the RANT Facility, Building 54-38, for shipping TRU wastes to WIPP. RANT is well-positioned at the west end of TA-54 for shipping purposes. RANT has a single high-bay area for loading containers into TRUPACT-II shipping containers and for loading TRUCPACT containers onto the trailer. Five trained and certified technicians comprise the current shipping staff at LANL. The largest shipping limitation, however, has been RANT itself, which had been categorized as a Nuclear Hazard Category 3 facility. This categorization places restrictions on the MAR that can be in the facility. Recently, RANT was upgraded to a HC2 facility by approval of a Limited Life BIO, effective until September 2003. This increased the RANT MAR threshold, and, accordingly, enhanced RANT's ability to increase shipments. The full RANT BIO, to replace the Limited Life BIO, is scheduled for submittal to NNSA in May 03.
Retrieval

Approximately 1,800 m^3 (~8,700 DEs), or about one-sixth of the TRU waste volume for Project 2010, is located below-grade. Although there will be similarities between this retrieval effort and

the recently completed TRU Waste Inspectable Storage Project (TWISP) effort, retrieval of these remaining below-grade wastes will be more challenging. In the TWISP effort, 17,000 drums of TRU wastes had been placed upon an above-grade asphalt pad and covered with earth. The remaining wastes, on the other hand, are all below-grade, most at depths greater than 25 feet. Capability to retrieve these wastes does not currently exist and must be designed, developed, and tested before being put to large-scale use.

11.6.6 Remote-Handled Waste Process

There are 420 containers of RH waste at LANL, with an estimated volume of about 30 m^3. In addition to the safety concerns associated with handling these wastes, challenges exist in that 1) no certification requirements exist, 2) containers are varied in shape and size, and 3) containers have been placed in both lined and unlined shafts at Area G.

Because of the differences among the waste packaging and storage configurations, it is expected that the retrieval and disposal activities would be conducted in a phased approach. Accordingly, the RH Project has been structured into the following four phases that correspond to the major storage and packaging conditions for the RH:

- Phase I Debris RH waste in WIPP canisters
- Phase II Debris RH- waste in unlined shafts
- Phase III Debris RH waste in lined shafts
- Phase IV Hot-cell liners in lined shafts

With the exception of Phase I, the activities in each of the phases have the same general activities that include planning, design, AB, procurement, retrieval, packaging, characterization, and certification activities. Phase I also includes general planning for the entire project and the development of a certification plan and associated quality assurance plan, specifically for RH waste.

No capacity presently exists for retrieval, handling, characterization, certification, or shipping of these wastes.

11.6.7 Offsite Source Recovery

An estimated 1,400 drums of OSRP wastes must be stored, characterized, certified, and shipped to WIPP, as part of Project 2010. There are many challenges associated with these wastes, including security concerns, characterization realities (e.g., the conduct of HGAS analysis may not be needed, since sources are wholly contained), and processing and shipping restrictions imposed by MAR limits (since some of these sources have large curie content). Due to these large uncertainties, the current capacity for processing OSRP wastes is unknown.

11.7 Needed Capacities

Table 11-9 summarizes capacities that are needed to achieve Project 2010 objectives. A discussion of these needs appears below and in the 12 subproject execution plans identified in Project 2010.

Area G has an existing dome storage capacity of approximately 36,600 DEs, based on the current TRU waste dome storage configuration (without including possible storage enhancements). This compares to the current FY 2003 inventory of approximately 34,000 DEs currently located in above-grade storage.

Analysis of available storage volume, existing waste inventory, and planned shipments of TRU waste (see Figure 11-2) shows that peak storage needs should occur during FY 2003. Inventory draw down should occur, since shipments should exceed NGW generation rates. At this time, no new construction of TRU waste storage facilities is planned or warranted. The goal for TA-54, Area G is to reduce fixed storage capacity, as waste shipments are completed and programmatic planning allows. In short, needed storage capacity is about 35,000 DEs. With the successful implementation of the 2010 Plan, availability of storage capacity will not become an issue.

However, should the shipment of TRU waste to WIPP be delayed for technical or administrative reasons, the availability of storage capacity could become an issue with the continuing generation of TRU waste. Current estimates reflect excess TRU waste storage capacity at ~2,000 DEs–with the ability to meet storage capacity within two years (by the beginning of FY 2005). Enhanced storage capacity could be added through application of a TRU waste storage contingency plan.

Table 11-9 provides a summary of needed storage, processing, characterization, certification, shipping, retrieval, and RH needed capacities to support accelerated planning schedules. In addition, additional TRUPACT-II loading capabilities may be needed.

Table 11-9 Needed Transuranic Processing Capacities

Activity	Needed Capacities *	Notes
Storage:	35,000	Maximum occurs in FY 2003 and should decline thereafter (due to DVRS processing, offsite shipping, etc.)
Processing: - 55-gal. drum vent - 85-gal. drum vent - Crate processing - Special processing	 1,000 200 60 ---	 Retrieval over 3 years New leaking drums plus existing overpacked drums 420 crates over 7 years TBD
Characterization: - RTR - NDA - HGAS - VE/RPK - Prohibited item disposition - Coring	 6,000 6,000 6,000 200 900 84	 **~43,000 DEs over 8 years **~43,000 DEs over 8 years **~43,000 DEs over 8 years Maximum to meet QTW deadline (Sept 2004) Maximum to meet QTW deadline (Sept 2004). One-time need (FY 2003)
Other: - Certification - Shipping - Retrieval - RH wastes - OSR waste	 6,000 6,000 3,600 50 300	 **~43,000 DEs over 8 years **~43,000 DEs over 8 years 10,700 DEs over 3 years 30 m^3 over three years 1,400 DEs in 5 years

*Note-Volume is expressed as DEs per year, except for crates.
**~43,000 DEs includes total of ~35,000 LW and ~8,000 NGW output DEs.

11.8 Planning Bases

Planning bases for TRU waste include the FSP; the TA-54 Master Plan; the FY 2003 TYCSP; and the 12 individual project execution plans for Project 2010.

11.8.1 Waste Facilities Management Facility Strategic Plan

To support formal institutional planning processes, LANL has developed a FSP, which is designed to address future facility needs at TA-21,TA-50, and TA-54, in support of the current TRU Waste Program mission and future TRU characterization activities. In addition, the FSP provides LANL's proposal for a robust (permanent construction) storage capability for long-term NNSA TRU WM needs. The document is a 10-year plan and will be updated annually by FWO as a planning tool.

The FSP was issued and submitted to LASO in September 2002. At this time, no official NNSA and/or LASO position has been developed regarding LANL proposals and recommendations. LASO/OPL will coordinate the NNSA review and comment process for the document.

FSP proposals related to the TRU Waste Program summarize planning proposals identified in the TA-54 Master Plan and include the consolidation of TRU WM operations, including the

transfer of TRU waste characterization equipment, operations, and personnel from various LANL facilities to TA-54.

11.8.2 Technical Area 54 Master Plan

The FWO-WFM issued the TA-54 Facility Master Plan on September 5, 2002. This document is intended to provide a 10-year Master Plan for facilities and operations at TA-54 for the time frame FY 2002 through FY 2012. The document provides background and historical information on TA-54; documents the FWO planning process for the facility; and summarizes the results of the process.

At this time, no official NNSA and/or LASO position has been developed regarding LANL proposals and recommendations. LASO/OPL will coordinate the NNSA review and comment process for the document.

Specific elements proposed in the TA-54 Master Plan include the

- incorporation of community concerns;
- improvement of the overall efficiency and safety by centralizing operations and developing permanent facilities; and
- separation of current and future land uses.

Overall, the Master Plan documents LANL proposed strategies to

- reduce the visual impact of WM facilities;
- transfer TRU waste characterization personnel from various LANL facilities to TA-54, and
- deploy TRU waste characterization and support facilities to a location adjacent to current active operations.

Master Plan recommendations include the

- incorporation of implementation plan actions into operations and capital funding budgets for FY 2003 through FY 2012, with annual budgetary reviews of the TA-54 Master Plan to keep current with future developments; and
- projects requiring line item capital budget should be formulated and submitted to NNSA for processing as soon as practical, given the lengthy timeframes typically required for final approval.

11.8.3 Ten-Year Comprehensive Site Plan

The FY 2003 TYCSP includes a summary description of the FWO-WFM vision and mission. WM facility input into the TYCSP is derived from the FSP developed by FWO-WFM.

11.8.4 Accelerated Transuranic Waste Disposition Initiative

As detailed in Section 11.2, a significant planning basis for TRU waste is the proposed Accelerated TRU Waste Disposition Initiative (2010 Plan).

11.9 Planned Activities

To support the TRU waste 2010 Plan offsite shipment acceleration effort, waste facilities, characterization capabilities, and transportation/loading capabilities need to be enhanced. This is readily seen by comparing existing capacities (Section 11.6) with needed capacities (Section 11.7).

Plans for enhancing capacities are described in this section. Major elements identified in Project 2010 planning include the

- deployment of two TRU waste characterization production lines from CBFO to LANL, with capacity to characterize and certify 4,000 TRU waste drums annually;
- upgrade of the existing LANL characterization capacity by 1) increasing MAR limits at the WCRR and RANT Facilities, 2) relocating characterization activities to Area G, and 3) obtaining more robust characterization equipment and processes; and
- design and installation of capabilities that do not currently exist (e.g., RH, waste retrieval, and coring capabilities).

In addition, LANL must hire, train, and certify additional personnel for characterization, certification, and shipping activities.

Table 11-10 presents a summary of existing capacity, needed capacity, and strategies for bridging the gaps. Some details of these bridging activities are expanded upon in the remainder of this Section.

11.9.1 Storage

Additional TRU waste storage capacity would not be needed if current Project 2010 plans are implemented on schedule. Successful project execution will result in inventory reduction faster than new TRU wastes are generated. Although not part of Project 2010, demolition of domes will be possible beginning in ~FY 2007, if not needed for other WM or ER operations and activities.

11.9.2 Processing

Drum Venting

Sufficient capacity exists for venting of 55-gallon drums; capacity does not exist, however, for venting of 85-gallon overpacks. This vent procedure requires the puncture of two rigid poly liners and two steel drums. FWO-SWO is currently developing design changes needed for 85-gallon drum venting, along with estimates of processing costs. This information will be available during FY 2003.

Crate Processing

The DVRS Facility has capacity to process about 40 crates per year. Capacity for processing 60 crates per year is needed. Facility operations on the basis of two shifts per day are being evaluated. The facility also requires an AB upgrade: the DVRS is currently categorized as a Radiological Facility, sufficient for processing about one-fourth of the crate inventory. An upgrade to HC3 would enable the processing of about 95% of the crates that are in inventory. An upgrade to HC2 is not deemed possible, which requires the formulation of a processing strategy for the remaining crates.

Special Processing

Pipe overpacks were widely used at Rocky Flats for the packaging and shipment of high-activity TRU waste drums. The LANL has proposed using pipe overpacks for waste content drums that exceed the 250 millirem per hour (surface) shipping limit. A copy of the Rocky Flats Environmental Technology Site procedure has been obtained, and a LANL-specific process is being developed by the Nuclear Material Technology Division. Approval of the LANL procedure, and certification by CBFO, will require ~12 to 18 months.

Table 11-10 summarizes the numerous strategies proposed to enhance storage, processing, characterization, certification, and shipping capabilities to support proposed acceleration schedules.

Table 11-10 Strategies to Bridge Capacity Gaps for Transuranic Waste Activities

Activity	Existing Capacity A	Needed Project Capacity B	Needed LANL Capacity C	Bridge Strategies D
Storage	36,600	34,000	34,000	Maintain capacity until FY 2007
Processing:				
- Drum vent (55-gal.)	1,000	1,000	1,000	Maintain capability
- Drum vent (85-gal.)	0	200	200	Develop or procure capability
- Crates	60	60	60	DVRS to HC3; two-shift operation
- Special processing	0	TBD	TBD	Develop capability, TBD
Characterization:				
- RTR	1,800	6,000	3,000	Replace existing unit, procure second unit, add people
- FRAM	2,000	6,000	3,000	Relocate to Area G, procure second unit, add people
- Other NDA	1,500	6,000	3,000	Relocate to Area G, replace prototype units, procure additional units.
- HGAS	2,400	6,000	3,000	Develop Entech process, maintain INEEL as backup, retain WCRR Facility, increase MAR
- VE	160	200	40	Install VE modular units at Area G, add
- Prohibited item disposition	720	1,200	1,000	people, add second glovebox line at WCRR
- Coring	0	300	0	Demonstrate absence of formaldehyde, use INEEL for coring

Activity	Existing Capacity A	Needed Project Capacity B	Needed LANL Capacity C	Bridge Strategies D
Other:				
- Certification	1,000	6,000	3,000	Waste stream consolidation, hire and train personnel
- Shipping	1,400	6,000	6,000	Increase MAR, install equipment at RANT; add people
- Retrieval	0	3,600	3,600	Develop capability
- RH waste	0	50	50	Develop capability
- OSR waste	1,800	300	300	Identify and address security issues.

A All capacities stated in DEs per year, except storage and crates (crates per year).
B Needed project capacity: for processing the entire inventory of wastes (~43,000 DEs) by 2010.
C Needed LANL capacity: assumes that CCP deploys to LANL to characterize and certify 4,000 drums per year.
D Strategies to expand LANL capacities only (assumes CCP deployment)

11.9.3 Characterization

CBFO has agreed to support LANL through the CCP. The CCP will provide two complete characterization lines, with all required waste characterization capabilities, including NDE/RTR, NDA, HGAS, VE/RPK. These lines are intended to achieve a throughput of ~2,000 drums per year per line, for a total of 4,000 drums per year. The two CCP production lines are planned for installation and operations in FY 2003 and FY 2004, respectively. At this time, given impacts of the FY 2003 Continuing Resolution on planning for the 2010 Plan, delays are expected.

The remainder of waste characterization capacity must come from LANL production lines. Planning described below is designed to 1) increase capacity for all characterization activities to at least 3,600 drums per year, 2) replace prototype instrumentation and equipment with more robust, commercial units, and 3) provide contingency plans (e.g., spare parts, vendor contracts) in the event of significant equipment failure or outage.

Real-Time Radiography

The processing rate for the existing RTR unit is 1,800 drums per year. The existing unit is also eight years old and in need of refurbishment. Currently, the plan is to lease and/or purchase two new units and keep the existing unit as a backup system. For contingency, some spare parts will be stocked to maintain the operating status of the RTR units. Additional staffing is required to operate the second RTR unit: significant on-the-job training (up to six months) is needed before technicians become adept at interpreting x-ray images. This expertise is vital for WAC compliance in areas such as determining the presence of prohibited items. Enhanced NDE/RTR should result in a 3,600 drum per year capability.

Non-Destructive Assay

Current deficiencies of NDA capabilities and capacities include the use of prototype instruments, MAR limitations that exist at the current NDA location (RANT), and an insufficient number of instruments.

The CTEN and portable TGS units are prototype systems. Recent, lengthy outages clearly demonstrate that these are not robust, commercial units. A replacement for the CTEN will cost about $1.5 million; has a lead time of 12 months; and will require another 6 to10 months to attain Environmental Protection Agency (EPA) and CBFO certification. A replacement for the portable TGS will cost about $0.5 million; has a lead time of six months; and will require another 6 to10 months to attain EPA and CBFO certification.

To eliminate production restrictions that exist because of MAR limitations at RANT, NDA operations will be relocated to TA-54, Area G during FY 2003. Two FRAM units, two TGS units, and the HENC will be moved. Each movement will result in 4 to 8 weeks of downtime for that unit. Because it is used only to assay low-content drums of waste, the CTEN unit can remain at RANT without impact to shipping operations.

NDA is currently equipped with three FRAM units, two TGS units, one HENC, and one CTEN. To provide capacity to NDA 3,600 drums per year, another FRAM and another TGS unit (in addition to the replacement TGS noted above) will be purchased.

The installation of new equipment and the relocation of some of the existing equipment from RANT to Area G represent activities that are much like other characterization activities and, as such, it is postulated that these activities could be performed under a negative unreviewed safety question determination. A formal evaluation will need to be completed. In addition, the new Area G DSA, planned for completion in FY 2003, includes these operations. Staffing will be increased, and a contract for technical support and maintenance services will be executed with a commercial vendor. Technical support may also be obtained from the LANL Nonproliferation and International Security Division, depending upon needs in areas such as homeland security and international terrorism.

Head-Space Gas Sampling and Analysis

Capacity increase will be achieved 1) by procuring and installing additional temperature equilibrium storage spaces, in the form of two transportainers, 2) by procuring and installing two Entech mass spectrometers for analysis of air samples, and 3) retaining a contract for analytical support with INEEL. The use of the CBFO HGAS system, previously envisioned, no longer looks possible due to difficulties experienced with the unit at other DOE sites and due to higher priorities by CCP personnel. Additional LANL personnel will also be trained and certified. These enhancements will provide an onsite sampling and analytical capacity of 4,800 drums per year and leaves use of INEEL as a contingency for analytical capacity.

Glovebox Operations

The WCRR Facility is currently a HC3 nuclear facility operating under approved interim technical safety requirements. The facility has a HC2 storage capability (Container Storage Unit) located outside and adjacent to Building 69. The existing MAR limits for TA-50, Building 69 and the Container Storage Area are limited to 900 grams and 15 kilograms, respectively. These limits restrict the handling and characterization of the TRU waste such that the higher-activity QTW drum inventory could not be characterized and/or repackaged at the WCRR Facility. To support the QTW campaign, LANL is proposing that the interim technical safety requirements be upgraded to a BIO to support increasing the WCRR Facility and the outside

Container Storage Unit MAR limits. The WCRR Facility BIO was submitted to NNSA in April 2003 and is undergoing NNSA review.

To support accelerated shipping, LANL requires capability for opening drums and/or containers that may contain prohibited items. Approximately 30% to 70% of certain waste streams are expected to require VE/RPK. According to actual information to date, the QTW inventory has a possible 40% to 70% need for VE/RPK. Other drum populations may need ~30% of the inventory repackaged. Therefore, a glovebox capability of approximately 1,400 drums per year is required to support accelerated shipment schedules.

The current onsite capability for conducting VE/RPK activities is located at the WCRR Facility. However, enhanced VE/RPK capabilities are needed. FY 2003 plans are being developed for installation of a Modular Unit (MU) for VE/RPK. The MU will be constructed to house equipment and activities associated with an additional VE/RPK process line. This unit has been approved and funded under the Cerro Grande Rehabilitation Project (CGRP) and is currently in the design phase (and will be designed to the requirements of a HC2 facility). This facility is expected to have a processing capability of 800 drums per year on a single-shift basis. The MU, once constructed, may be categorized as a new HC2 facility and, accordingly, would require a 10 CFR 830-compliant DSA and full readiness verification to operate. This project, one year behind schedule, originally planned to support QTW, will not be available to support the QTW completion deadline.

Therefore, plans are underway to add an additional glovebox at WCRR Facility. It should be noted that the recently-submitted WCRR BIO does not include AB coverage for an additional glovebox operation at the WCRRF. An unreviewed safety question determination would need to be completed to evaluate the second glovebox capability.
If all enhanced VE/RPK capabilities are implemented and double shifts are utilized, LANL should meet the minimum throughput of drums per year capability.

Current plans include the development of a streamlined procedure for prohibited item disposition operations; increasing the MAR at WCRR Facility; using two gloveboxes at WCCR Facility; and using two shifts and/or overtime to achieve production increases until the planned characterization capabilities come online. Subsequent to startup of planned characterization capabilities, WCRR Facility equipment and procedures will be retained for contingency production needs.

Drum Coring

Characterization of drums of TRU homogeneous waste requires similar characterization as debris drums (i.e., RTR, NDA, and HGAS on all drums, plus VE of a small percentage of drums). However, unique to the homogenous, cemented sludge drums is a requirement that these drums be sampled by means of a coring process, and that the core be analyzed for RCRA constituents.

CBFO is taking the lead in establishing this coring and analysis capability in Idaho and establishing the process as a national capability. Planning and negotiations are underway between CBFO and Argonne National Laboratory-West (ANL-W) in Idaho to perform the coring. If the capability is not established at ANL-W, then it would be necessary to perform the coring

operations in Dome 33 or CMR Facility. Development, startup, and certification of an onsite coring capability, however, would require ~two years.

In addition, CBFO is developing a national process to conduct the RCRA analyses required of the drum core samples. CBFO is negotiating with INEEL to perform these analyses. Unique to LANL, RCRA analyses must include the analysis of formaldehyde. It is possible that a waiver might be granted by the NMED. Further, the RCRA analysis process must be certified by CBFO before initiating operations. The CBFO funded the sampling and analysis national effort in December 2002. June and August 2003 are the target dates for the national process to be implemented and the inclusion and certification of the formaldehyde analytical process.

If the analysis capability is not certified or is not established at INEEL, then it will be necessary to contract with a commercial laboratory to conduct the analysis and obtain WIPP certification for this analytical capability through LANL.

11.9.4 Certification

Certification capacity must increase by a factor of eight if Project 2010 goals are to be met. A three-pronged strategy will be used.

First, the number of waste streams must be significantly reduced. Most other DOE sites have from two to five waste streams: LANL had identified 109 waste streams. It would not be physically possible to process drums from each of these waste streams in time to generate documentation, submit the documentation for CBFO review and approval, and then subsequently characterize, certify, and ship the remainder of each waste stream. More than one waste stream profile form per month would have to be prepared. In small-quantity waste streams; i.e., those with 42 or fewer drums, special characterization and certification procedures would have to be applied.

This overload of waste streams results from an overly conservative interpretation of CBFO and NMED requirements. CBFO and LANL are currently developing a strategy to justify redefining LANL TRU waste streams, an effort that should decrease the number of waste streams by a factor of six. Achieving such a consolidation is mandatory for the success of Project 2010.

Second, another key to increasing certification capacity is to assure that CCP can certify the 3,000 drums per year that are characterized through the deployed CCP characterization lines.

Third, additional staffing, to support quality assurance, certification, and special project management functions, is needed. Personnel will need to be hired, trained, and certified. Another 10 to 12 staff will be needed to expand LANL certification capacity to 3,700 drums per year.

11.9.5 Shipping

Three enhancements are needed to expand shipping capacity. The MAR must be increased at the RANT Facility; additional equipment must be procured; and additional personnel must be hired, trained, and certified.

The RANT Facility was categorized as a HC3 facility and had a MAR threshold limited to 900 grams. This limit restricted the handling and characterization of the TRU waste drums such that the higher-activity QTW drum population could not be loaded at RANT. To support the QTW campaign, LANL proposed that the RANT Facility MAR limit be upgraded to a higher threshold, which will accommodate the higher-wattage QTW drum population. The RANT Facility received approval on a Limited Life BIO, effective until September 2003 A full BIO is in development and is scheduled for submittal to NNSA in May 2003.

The RANT Facility is the only TRUPACT-II loading location at LANL. The current capability at RANT is not adequate to support the increased shipping schedules planned for the 2010 Plan. The RANT Facility is expected to accommodate the TRU waste to be characterized and shipped by LANL under the accelerated schedule. The CGRP is funding the purchase of additional LANL loading equipment for the RANT Facility.

There are currently five trained and certified shipping technicians. This staff must be tripled in size in order to meet the demands of shipping 6,000 drums per year.

11.9.6 Retrieval

This capability and capacity must be designed, developed, procured, tested, and installed. Plans for development of this capability should be initiated during FY 2004 and FY 2005 (NLT early FY 2006) to meet the Project 2010 goals. The retrieval effort is expected to be a three-year effort.

11.9.7 Remote-Handled Processes

This capability and capacity must be designed, developed, procured, tested, and installed. To meet planning schedules, RH processes should be developed during FYs 2004 and 2005.

11.9.8 Offsite Source Recovery Project Wastes

The OSRP wastes will comprise a small percentage of the total volume of TRU wastes that must be characterized, certified, and shipped as part of Project 2010 (~3% of the total LW inventory). Characterization equipment and infrastructure enhancements are, therefore, not needed.

There are challenges facing OSRP wastes, however. One issue is the disposal of non-defense and NRC-licensed sources. sealed sources can be classified into one of three categories: a) DOE-owned defense-related, 2) DOE-owned non-defense-related, or 3) NRC-licensed. Only 400 of the 1,400 drums of OSRP wastes, those with DOE defense-related sources, can be disposed at WIPP under the current legal framework.

Ultimately, the OSRP goal is to develop a pathway to dispose of all of the actinide sealed sources. WIPP is the preferred disposal site for sealed sources. WIPP, as currently authorized, is only allowed to dispose of defense-related waste. Disposal of non-defense sources can be accomplished by Congressional action to amend existing laws, specifically, Public Law 96-164, "DOE National Security and Military Applications of Nuclear Energy Authorization Act of 1980," which authorized WIPP, and Public Law 99-240, which requires that disposal of Greater-than-Class C waste (generated by NRC licensees) be restricted to a facility licensed by the NRC. In

addition, DOE is pursuing designation of all Pu_{239} sources as "defense-related". The DOE and LANL OSRP are developing a formal justification for this designation. Also, it may be possible for the NRC to authorize disposal of NRC-licensed sources at WIPP by accepting the WIPP EPA certification as an equivalent-licensing basis. Formal, legal opinions will be needed to sort out these issues.

Security for Pu_{239} sources is another challenge. Because these sources are classified as Category I Special Nuclear Material, appropriate safeguards and security are required for shipping, handling, and storage of these sources. At present, no Category I storage space is available at TA-54, Area G to store these sources, until they can be shipped for disposal. The OSRP is working with the LANL and LASO safeguards and security organizations to determine whether safeguards requirements can be terminated. It may prove necessary to store them at TA-18 or some other location at LANL.

Reducing or even eliminating characterization requirements is a third challenge and opportunity facing this waste stream. Ninety five percent of the inventory of actinide sources does not contain RCRA constituents. Therefore, these sources would not be regulated under the WIPP Hazardous Waste Facility Permit. For the remainder, it is impractical to open the sources for treatment of the RCRA-regulated constituents. Hence a request for a NMED variance from RCRA treatment requirements is being considered. In addition, a variance would also be required to the WIPP WAC, since WIPP is not permitted to dispose of reactive mixed waste.

In addition, characterization of sealed source drums currently requires HGAS and NDA steps. Yet it is clear that gases will not be generated by sealed sources. Gas generation testing has been conducted on sealed source drums to determine if it would be appropriate to seek a permit exemption from the HGAS requirements. These tests demonstrate that gas generation is not a concern for these drums. Further, NDA testing is being conducted to evaluate the applicability of WIPP-approved NDA methods. Because of the shielding involved in the sealed source packaging, a modified NDA procedure may be required. Another option may be to seek approval of acceptable knowledge as the basis for the isotopic content of the drum.

Another obstacle to shipping involves the recovery and packaging of physically large Pu_{238} sources. These sources do not fit into currently approved packages. A different package (such as an 85-gallon overpack or an SWB) may have to be approved for packaging and shipping these large sources.

11.10 Key Issues

Through FY 2003, LANL had shipped a maximum of 102 drums in a year. The LANL PMP prepared in July 2002 requires that this performance be increased to ~6,000 drums per year, and sustained at that level through FY 2010. Current capacity has been assessed at ~ 1,500 drums per year. In addition, some capabilities needed to meet the goal of 2010 do not exist. All of this information points to the need for major improvements in capabilities, capacity, and performance.

Building upon information contained in preceding sections, this section summarizes key issues in need of DOE, NNSA, and LANL attention to support Project 2010 goals. Key issues that need to be tackled in the short-term, FY 2003, are summarized in Table 11-11 and discussed below under several major headings.

11.10.1 Programmatic Issues

The PMP that was prepared in July 2002 was a statement of goals and was prepared without detailed underlying plans. As a result, the LANL 2010 Plan life cycle baseline document is still in process of being developed, finalized, and validated. That document will identify the details related to key milestones and schedule requirements. This document is due for formal submittal to NNSA and EM in March 2003. As part of NNSA and EM WM oversight responsibilities, NNSA and EM validation of the document will be needed.

Acceleration of TRU waste characterization and certification schedules requires that a production- oriented culture be adopted. More so than a project, the accelerated waste disposition initiative resembles a manufacturing process. There are standardized operations that need to be repeated hundreds of times each month using standard equipment and trained, certified technicians and support personnel. A key part of this culture is the need for a production control function that plans, schedules, and prioritizes workload for each work station. Work orders need to be issued in writing to production personnel on the factory floor.

A third programmatic issue is the need to increase production capacity. One key element of this increase is a commitment by DOE Carlsbad to deploy two full characterization lines to LANL, with the capacity to process 4,000 drums per year. Responsibility for the remaining capacity enhancement rests with LANL, and is discussed below. Also, the CBFO is committed to certifying the wastes that were characterized by the CCP lines.

Given EM commitments to initiate the QTW Project by December 2002; complete QTW operations by the end of FY 2004; and to dispose of all LW offsite by 2010, the TRU waste characterization and shipping programs are challenged to increase their productivity and performance to levels never before achieved.

11.10.2 Authorization Basis Issues

It should be highlighted that the planned facility modifications, enhancements, and changes to support the TRU Waste Program will result in changes to AB documents for storage (Area G) and characterization (Area G, RANT, and WCRR) facilities. Some additional AB documents will be required to support new operations and facility changes. Three facilities need AB upgrades. The new Area G DSAwas submitted in April 2003 for approval. Although this action is not because of TRU waste characterization activities, Project 2010 cannot move forward without the new Area G DSA. The RANT Facility has received approval on a Limited Life BIO to increase MAR thresholds to allow shipment of high-wattage QTW drums. A full BIO is in development and is scheduled for submittal to NNSA by May 03. Similarly, the WCCR Facility has submitted a BIO, currently under review by NNSA, to increase the hazard categorization of the facility. The WCRR Facility BIO, however, does not include the addition of a proposed glovebox.

The installation of new NDA equipment and the relocation of some of the existing equipment from RANT to Area G represent activities that would require evaluation.The unreviewed safety question process would be utilized to evaluate these changes. Approval of the Area G DSA, submitted to NNSA in April 2003, is needed and will include these operations. Another AB

requirement is for the MU VE/RPK: as a new HC2 facility to be located at Area G, the MU would require the necessary 10 CFR 830-compliant DSA.

Further, the DVRS, to support recategorization to a HC3 facility, will need the submittal, approval, and verification of a HC3 DSA to include an increase in the MAR threshold and to allow shearer/baler size reduction operations.

Given LANL and LASO AB resource constraints (due to 10 CFR 830 and other requirements) LANL must continue to maintain a current, detailed list of AB needs for prioritization and review and approval. LANL and LASO coordination on key AB issues will be ongoing.

It should be noted that, given the nuclear safety significance of the QTW effort, LASO has placed QTW WM AB needs at the higher prioritization levels. See Appendix H, a copy of the most current LANL AB priority list. This document is updated on an ongoing basis.

11.10.3 Characterization Capacity Issues

Existing capacity, currently 1,500 to 2,000 drums per year for characterization activities, needs to increase to 6,000 drums or more. A major step in this increase is the deployment of two characterization lines from Carlsbad. LANL capacity increases will be achieved by replacing prototype equipment with commercial units, by relocating operations to Area G to eliminate road closures and largely relieve MAR restrictions, by creating contingency strategies (e.g., use of INEEL analytical services for HGAS), and hiring, training, and certifying additional personnel. Use of INEEL for coring of drums of homogenous wastes is another key to achieving Project 2010 goals; to establish such a capability at LANL would require 18 to 24 months.

11.10.4 Certification Issues

LANL certification capacity is the area with the greatest needs. During FY 1999 though FY 2002, more than 3,000 drums were characterized, yet only 227 drums were certified and shipped. In order to achieve Project 2010 goals, it will be necessary to redefine waste streams, to establish a production-oriented culture, and to hire and certify additional special project management, quality assurance, and certification staff.

Shipping capacity needs to increase by a factor of four, from 1,600 to 6,000 drums per year. This will be accomplished by increasing MAR thresholds at the shipping facility (RANT Facility), by procuring and installing additional equipment, and by hiring and training additional technicians.

11.10.5 Retrieval Operations Issues

Current below-ground TRU waste retrieval operations at Area G are scheduled to be initiated in FY 2004, per the 2010 Plan. This effort, however, is funding-dependent. Given the FY 2003 Continuing Resolution, initiation of such an activity may be delayed. A study is to be initiated in January 2003 to evaluate the need and/or extent of retrieval operations to be considered. Issues associated with below-ground retrieval of RH waste will need definition.

11.10.6 Remote-Handled Waste Issues

To date, CBFO has submitted a RH waste permit to NMED. LANL is awaiting the NMED/EPA review and approval of the permit. Further, 17 LANL RH containers have been packaged and characterized and are prepared for shipment and are expected to be approved for shipment to WIPP through approval of the WIPP RCRA Permit. The most significant issues associated with RH waste is the development of RH waste handling and shipping capabilities.

11.10.7 Offsite Source Recovery Project Waste Issues

Issues include finding a path forward for the estimated 1,000 drums of non-defense sources; defining security requirements solutions for storage, shipping, and movements of drums of OSR wastes; and streamlining characterization requirements.

Table 11-11 summarizes the TRU Waste Program issues. Programmatic; AB; storage; processing; characterization; certification; and shipping issues have been identified.

Table 11-11 Transuranic Waste Program Issues

Program Area and Issue	Description of Issue	Responsibility (LANL)	Responsibility (NNSA)
Programmatic/Baseline	To date an executive-level plan (PMP) has been developed for accelerating TRU disposition from 2032 to 2010. A detailed life cycle baseline is needed.	Dep Proj Dir, RRES Prog Mgr, RRES	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
Programmatic/Production Control	Production control is needed to prioritize and push production, certification, and shipping activities.	Dep Proj Dir, RRES	None
Programmatic/CCP Support	CBFO has committed production support (deployment of two characterization lines) to LANL. LANL planning assumes this support will be provided in the FYs 2003 and 2004 timeframes. Continued coordination between LANL and CBFO is needed.	Dep Proj Dir, RRES Prog Mgr, RRES	AM, LASO/OFO WM Ops Mgr, LASO/OFO
AB:	Critical operational changes, and hence AB modifications, are needed at Area G, RANT, and WCRR Facility. These include the Area G DSA, the RANT BIO, and the WCRR Facility BIO.	FM, FWO-WFM Dir, OAB	Safety AB Mgr, LASO/Safety Authorization Basis Team (SABT) AM, LASO/OPL WM Prog Mgr, LASO/OPL AM, LASO/OFO WM Ops Mgr, LASO/OFO
Storage/Capacity	More accurate volume forecast is needed. Storage capacity will be exceeded within two years unless wastes are shipped to WIPP.	Prog Mgr, IFC FM, FWO-WFM Grp Ldr, FWO-SWO Dep Proj Dir, RRES	AM, LASO/OPL WM Prog Mgr, LASO/OPL

Program Area and Issue	Description of Issue	Responsibility (LANL)	Responsibility (NNSA)
Waste Processing/Drum Venting	No capability exists for venting of drums that have been overpacked with 85-gallon drums.	Dep Proj Mgr, RRES Prog Mgr, RRES Grp Ldr, FWO-SWO	None
Characterization/ Capacity restrictions	To increase production capacity, old and prototype instrumentation need to be replaced, activities need to be relocated to Area G, and additional equipment is needed. Of special need is a reliable process for HGAS	Dep Proj Dir, RRES Contact-Handled Grp Ldr, RRES	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
Characterization/ QTW Drums	Critical issues need to be identified and resolved, and QTW drums need to be scheduled and processed.	Dep Proj Dir, RRES Prog Mgr, RRES QTW Proj Ldr, RRES	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
Characterization/ Coring	Capabilities to core and analyze for formaldehyde do not exist. CBFO plans to develop INEEL as national coring center. Plans need to be detailed and implemented for activities such as shipping drums to INEEL and certifying a laboratory for analysis of formaldehyde.	Dep Proj Dir, RRES Prog Mgr, RRES Homogenous Waste Proj Ldr, RRES Proj Ldr, RRES RRES SPM	AM, LASO/OFO WM Ops Mgr, LASO/OSO AM, LASO/OPL WM Prog Mgr, LASO/OPL
Certification/ Waste Stream Definition	Project completion by 2010 is not possible with existing number (~120) of waste streams. Most DOE sites have just two or three waste streams defined for LW.	Dep Proj Dir, RRES Special Proj Mgr, RRES	DOE CBFO
Crate Processing	DVRS would need a recategorization from aHC3 facility to HC2 to process highest activity crates. If not deemed possible, formulation of a processing strategy for the remaining crates would be needed.	Dep Proj Dir, RRES FM, FWO-WFM	AM, LASO/OFO WM Ops Mgr, LASO/OFO
Shipping/ Capacity	Capacity enhancements in the form of additional equipment, additional personnel, and MAR	Dep Proj Dir, RRES Production Control Mgr, RRES	AM, LASO/OFO WM Ops Mgr, LASO/OFO

Program Area and Issue	Description of Issue	Responsibility (LANL)	Responsibility (NNSA)
	increases are needed to expand shipping capacity from 1,600 to 7,000 drums per year.		AM, LASO/OPL WM Prog Mgr, LASO/OPL
Retrieval Capabilities	TRU waste below-ground retrieval is scheduled for FY 2004, but is funding-dependent. Detailed plans are needed.	Dep Proj Mgr, RRES Prog Mgr, RRES Retrieval Proj Ldr, RRES	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
RH Wastes	Need to define retrieval mechanism for RH waste in storage shafts. Need to reach agreement with CBFO and NMED on characterization requirements. Possible need for hot cell facilities to package/characterize waste.	Dep Proj Mgr, RRES Prog Mgr, RRES RH Proj Ldr, RRES	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
OSRP Wastes	Currently assigned Pu_{239} Safeguard & Security Attractiveness Level coupled with absence of Class I storage area.	Dep Proj Mgr, RRES Prog Mgr, RRES OSR Proj Ldr, RRES	AM, LASO/OPL WM Prog Mgr, LASO/OPL Special Nuclear Material Legacy Mgr, LASO/OPL EM Prog Mgr, NNSA Svc Ctr OSRP Proj Mgr, NNSA Svc Ctr
OSRP Wastes	Non-defense sources with no authorized disposal path.	Dep Proj Mgr, RRES RRES Prog Mgr RRES OSR Proj Ldr	AM, LASO/OPL WM Prog Mgr, LASO/OPL SNM Legacy Mgr, LASO/OPL EM Prog Mgr, NNSA Svc Ctr OSR Proj. Mgr, NNSA Svc Ctr
OSRP Wastes	Sources containing reactive lithium (a RCRA constituent) requires variance to receive sources at LANL and a variance to dispose at WIPP	Dep Proj Mgr, RRES RRES Prog Mgr RRES OSR Proj Ldr	AM, LASO/OPL WM Prog Mgr, LASO/OPL SNM Legacy Mgr, LASO/OPL EM Prog Mgr, NNSA Svc Ctr OSRP Proj Mgr, NNSA Svc Ctr

Program Area and Issue	Description of Issue	Responsibility (LANL)	Responsibility (NNSA)
			RCRA Prog Mgr, LASO/OFO
OSRP Wastes	Exemption from WIPP RTR, NDA, and/or HGAS requirements.	RRES Program Manager RRES OSR Project Leader	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL

11.11 Key Milestones

Table 11-12 provides a list of TRU Waste Program key milestones. These milestones include expected EM 2010 Plan deliverables; facility modifications; revisions to safety basis documents; readiness reviews; CBFO audits; RCRA permit changes; and operational activities.

Table 11-12 Transuranic Waste Program Milestones

Program Area	Milestone	DueDate
Programmatic:	2010 Plan/QTW Plan FY 2003 Work Plan and Baseline	03/15/03
	2010 Plan Project Life Cycle Baseline	03/15/06
	CCP Production Line #1 operational	09/30/03
	CCP Production Line #2 operational	09/30/04
AB Submittals:	Area G DSA	04/10/03
	RANT Facility BIO	05/19/03
	WCRR Facility BIO	04/08/03
		TBD
	WCRR AB (second glovebox)	TBD
	Modular Unit VE/RPK AB	TBD
	CCP production lines AB	
Storage:	Refined storage capacity analysis completed and maintained	Quarterly Analysis
Processing:		
- 55-gal. drum vent	Vent all above-grade legacy drums	12/31/03
- 85-gal. drum vent	Define path forward and costs for venting 85-gallon drums	03/31/03
- Crate processing	Initiate develoment of DVRS HC3 DSA	10/02/03
	Submit and receive approval for DVRS HC3 DSA	09/30/04
	Finalize strategy for HC2-level crate processing	FY 2008
Characterization:		
- RTR	Two units installed and operational	09/30/03
- NDA (old)	NDA systems relocated from RANT to Area G	03/31/03
- NDA (new)	Orders placed for robust, commercial equipment	09/30/03
- HGAS	NMED authorization of INEEL process	02/15/03
- HGAS	NMED authorization of new onsite Entech process	09/30/03
Characterization:		
- Prohibited item disposition	Approval of new LANL procedure regarding prohibited item disposition	12/31/03
- VE/RPK	Additional VE/RPK glovebox capability installed and operational at WCRR Facility	12/31/03
- VE/RPK	Modular units installed and operational at Area G	09/30/04
- Coring/Sampling	Homogenous, cemented sludge drum core drilling/sampling (ANL-W) and sampling analysis (INEEL) processes operational	09/30/03
Other:		
- Certification	Waste stream re-definition approved by CBFO	01/31/03
- Shipping	Shipment of first QTW drum using TRUPACT-II backfill and evacuation operations initiated	12/30/02
- Shipping	Additional shipping equipment procured and installed	09/30/03
Other:		
- Retrieval	Detailed plans, Revision 0, issued and costed	08/31/03
- RH wastes	CBFO agreement of characterization steps	08/31/03
- OSR waste	OSR final CBFO certification	01/31/03

12.0 Low-Level Waste Operations

12.1 Introduction

LANL generates radioactive waste as a result of various activities. The majority of this waste is LLW and is disposed of at TA-54, MDA G. Disposal operations began at this facility in 1957 and are projected to continue until 2044. The waste consists of debris such as paper, plastic, used equipment, personnel protective clothing, tape, and bottles. The waste is typically packaged into either 55-gallon drums or B-25 boxes (4'x4'x6' boxes) at the waste generator's facility and is transported to TA-54, Area G for disposal. Larger items such as gloveboxes are packaged in customized steel boxes. Some waste is transported to Area G in dumpsters, where it is reduced in volume by compaction and packaged into B-25 boxes. Disposal is by direct burial in excavated trenches, which are backfilled with additional material to achieve optimal waste densities.

Waste generated inside many radiological control areas, but expected to be free of radioactive contamination, is run through the Green is Clean Project. Such waste is transported to Area G, where it is subjected to highly sensitive radiation detection equipment to verify the absence of radioactive materials. The waste is then shipped to an industrial landfill saving LLW disposal capacity. Currently the project is implemented at most LANL sites and efforts continue to include additional radiological control areas.

12.2 Waste Generation Rates

For the past five years, the average volume of LLW received at Area G, including both routine NNSA and ER Project wastes, has been approximately 3,500 m^3 per year. Some years have seen greater volumes because of waste generated through the ER Project, D&D projects, and other construction projects. Routine waste generated from NNSA operations are not forecasted to change significantly over the next few years. Further Waste Min efforts for routine LLW have been very successful. LANL has already met the Secretary's waste reduction goal for 2005. Over the next few years it is expected that non-routine LLW from ER and D&D projects will increase given the planned acceleration of the ER Project and possible new funding for D&D projects by the Facilities and Infrastucture Program and EM. Future P^2/Waste Min efforts will continue to offset some of these non-routine increases.

12.3 Current Capabilities

With existing equipment and at current staffing levels, the single-shift disposal capability is approximately 5,000 m^3 per year of LLW. Multi-shift operations are capable of managing up to the 12,230 m^3 per year volume previously analyzed in the Site-Wide Environmental Impact Statement (SWEIS).

12.4 Planning Bases

The primary planning bases documents include the FSP and the TA-54 Master Plan.

12.4.1 Waste Facilities Management Facility Strategic Plan

LANL has developed a FSP to support formal institutional planning processes, which is designed to address future WM facility needs. In addition, this document provides LANL's proposal for more robust (permanent construction) storage capabilities for long-term NNSA LLW management needs.

The resulting integrated development plan consists of a number of key elements and initiatives related to the LLW Program. TA-54 major proposals include the separation of current and future land uses; consolidation of WM operations/facilities; and the development of limited permanent facilities. The FSP describes LANL's proposal to develop a WM Campus at TA-54 West incorporating permanent office buildings, LLW processing, chemical/mixed waste processing, and related support facilities. Also, the FSP describes LANL's goal of physically separating LLW operations from RCRA operations to simplify regulatory oversight. In addition, the FSP summarizes the LANL goal to move toward Area G closure and transfer to the ER Program.

12.4.2 Technical Area 54 Facility Master Plan

The TA-54 Master Plan documents LANL recommendation to shift the location and character of TA-54 facilities that reflect the following key elements

- the development of a WM Campus at TA-54 West incorporating permanent office buildings, LLW processing, chemical/mixed waste processing, and support facilities,
- as Area G approaches full disposal capacity in or about FY 2006, transfer LLW operations from Area G to Mesita del Buey Norte, and
- transfer Area G to the ER Program for assessment and closure activities.

12.5 Expansion of Disposal Capacity

Currently LLW disposal capacity is estimated to be reaching capacity by ~FY 2006.

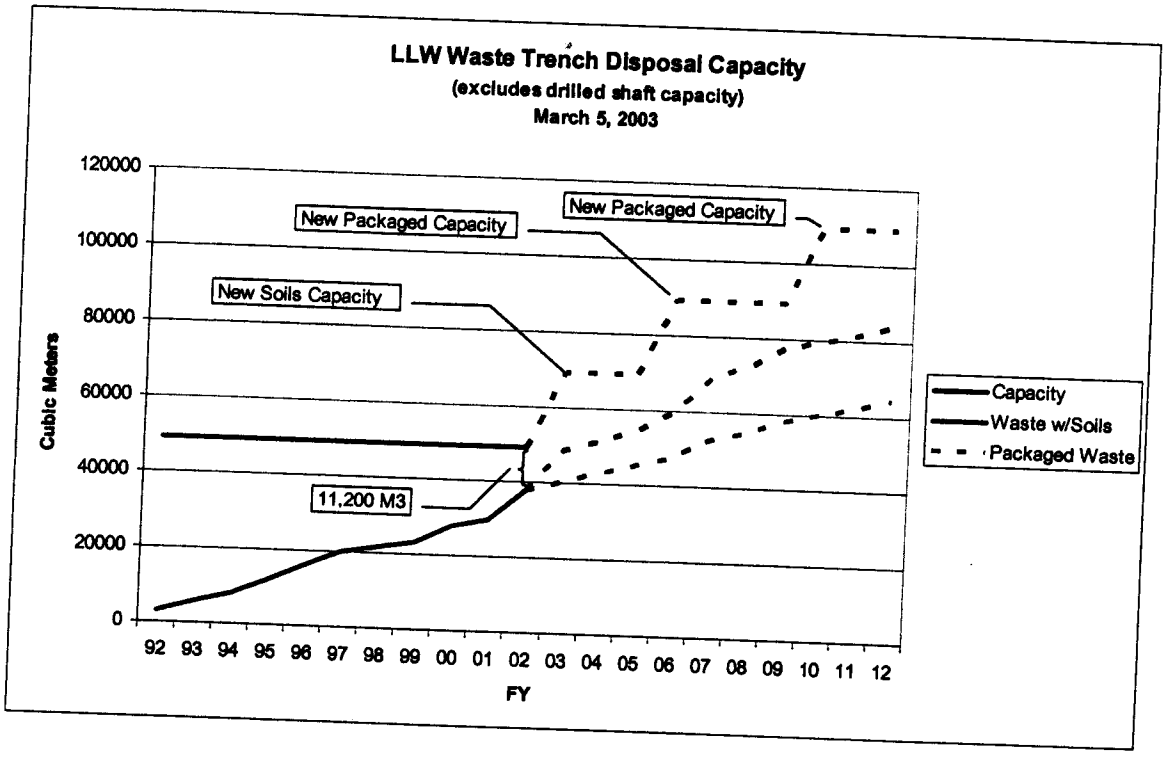
12.5.1 Current Disposal Capacity

Figure 12-1 represents the current trench disposal capacity. Area G also has a number of drilled shafts that are deemed adequate for forecasted requirements. Based on physical surveys of Pit 38 performed in February 2003, the remaining capacity for LLW pit waste disposal is estimated to be approximately 11,200 m^3 (with 47% efficiency). LLW generation rates through FY 2001 were fairly steady. However, recently LLW generation requiring disposal has increased due to non-routine activities of ER and D&D Programs and some construction projects. These projects are generating relatively large volumes of bulk, contaminated soils in need of disposition. In FY 2002, for example, the remediation work at the TA-53 lagoons produced large unexpected soil volumes. In FY 2003, a CGRP risk mitigation project at the RLWTF is anticipated to generate large volumes.

The volume forecasts reflected in Figure 12-1 include estimates for routine LLW generation that have been correlated to funding levels of the key NNSA programs/projects that generate

LLW. The forecast includes waste volumes for the ER Program based on the current accelerated baseline. Waste volumes have been included for currently planned D&D projects such as the Tritium System Test Assembly Facility and Ion Beam Facility D&D efforts. An allowance has been included for future construction projects that may occur in areas with potential soil contamination. Also, the forecast includes reductions to out year generation of routine LLW to account for future P^2/Waste Min efforts.

Figure 12-1 Low-Level Waste Disposal Capacity



As seen in the chart, expansion of the Area G pit disposal capacity will be required in the next few years (by FY 2005 to FY 2006) at currently projected waste volume generation rates. If ER and D&D projects generate larger volumes of waste than projected, this timeframe could be reduced. FWO-Solid Waste Operations (SWO) has taken operational steps to make the most of the space that remains. When the SWEIS was issued, LLW pit efficiency was assumed to be ~25%. Current pit efficiency is ~50% to 60%. Increased efficiencies have been achieved through the use of containers for waste disposal; minimizing container void space; use of a LLW box compactor for compactable waste; and the expansion of the Green is Clean Waste Min Program.

12.5.2 Disposal Capacity Alternatives

Studies are underway to evaluate disposal alternatives and to identify the optimum combination of actions that will provide long-term reliable disposal capability to support ongoing NNSA

programs at LANL. FWO-SWO will provide near-term recommendations for LANL/NNSA management consideration in FY 2003 and long-term recommendations in FY 2004.

Development of additional onsite disposal capacity would involve the construction of additional disposal trenches in a location at TA-54. Potential locations include Zone 4, Zone 6, and Mesita del Buey Norte. The selection, planning,and design of the expansion capability should begin in the next two years to ensure that the capability is available when needed.

Expansion of the Area G LLW Disposal Area was evaluated in the LANL SWEIS and a Record of Decision (ROD) was issued on September 13, 1999. The ROD provides National Environmental Policy Act coverage for expansion of onsite LLW disposal at Area G and provides for a phased approach into both Zone 4 and Zone 6, as demand requires. Expansion was also authorized onto Mesita del Buey Norte. The ROD provides coverage for

- authorization of LLW disposal using the existing footprint until depleted;
- maximization of the disposal capacity of the existing Area G disposal capability;
- continuation of evaluation and updates of the remaining capacity of the existing Area G disposal capacity;
- continuation of the baseline monitoring program for expansion into Zone 4 until occupied; and
- development of the Zone 4 pit design during the FY 2003 to FY 2004 timeframe.

It should be noted that although the ROD endorsed continued onsite disposal at TA-54, Area G, LANL stakeholders have expressed concern about this continuing activity.

At current LLW inventory and generation rates, and assuming ~50% LLW pit efficiency, Zone 4 could provide an additional 60 years of LLW disposal capacity, if areas on both sides of the roadway were developed. However, significant archaeological sites exist on the south side of the road and may not allow efficient utilization of the areas. LANL has proposed consideration of this area for other activities, as described in the FSP. New infrastructure improvements and engineering controls to reduce slopes and increase pit efficiency would be required to implement this option. It is anticipated that Zone 4 LLW pits would be smaller than the current population of LLW pits located at TA-54.

WFM has identified Mesita del Buey Norte as the preferred expansion area in the FY 2002 FSP. If Mesita del Buey Norte were selected for LLW disposal as a new site, it would require environmental characterization activities to develop baseline data from which a new or modified Performance Assessment (PA) and Composite Analysis (CA) can be developed. In addition, new facilities will be needed at the new location to support LLW disposal operations. The advantage of this location is the ability to separate LLW disposal operations (that are regulated by the DOE) from HAZ/CHEM, MLLW, and TRU operations (that are regulated by the NMED). Additionally this option would allow the ER Program to begin closure sooner than would otherwise be possible.

These studies will also evaluate the role that offsite disposal should play in an integrated disposal strategy that includes both onsite and offsite facilities. The Laboratory is currently using commercial facilities for selected wastes. In addition, the Nevada Test Site is capable of accepting LANL wastes. Current DOE policy directs sites to dispose of LLW onsite unless this is not feasible. LANL has occasionally requested a waiver from this requirement to allow offsite

shipment in the past. Based on recently released cost studies by EM, it is expected that this requirement will be revised to allow sites to make disposal decisions based on life-cycle cost analysis. In general, offsite disposal is more costly; however, there are circumstances where selected wastes may be better candidates for offsite disposal.

These LLW studies will evaluate contingency actions that can be deployed in the event that existing capacity is consumed earlier than expected. Contingency actions that will be considered include reserving onsite space for core NNSA activities and shipping all other wastes offsite; or development of additional volume from small pits within the current Area G boundary. Additional options, for example, include placing soils above existing closed disposal cells and the use of excess LLW shafts.

Lead time to develop additional capability is needed, making this a near-term strategic WM issue. To move forward, LANL and NNSA management must authorize both the direction and the funding for this work. These studies will form the basis for a decision package that will be reviewed with management. Funding for the development of new LLW disposal capability is not currently identified in NNSA program plans.

12.6 Current Projects and Planned Activities

Projects and activities that have been authorized for implementation include an effort to upgrade the Area G PA/CA and the CGRP risk mitigation efforts. In addition, several projects are in various stages of planning and development, but are not yet funded nor authorized for full implementation. One of the development projects is an operational/safety project to reconfigure the existing access point into TA-54.

12.6.1 Disposal Authorization

The DOE Order 435.1, as implemented by the Radioactive Waste Management Manual, DOE M 435.1-1, requires that site-specific PAs and CAs be prepared for LLW disposal facilities that accept waste after September 26, 1988. These assessments and analyses project the potential impacts of the waste on human health and safety and are used to ensure that potential risks are maintained at acceptable levels. The PA specifically addresses waste disposed of after September 26, 1988. The CA accounts for all sources of radioactive material that may interact with a LLW disposal facility and that contribute to any projected impacts on human health and safety.

The MDA G PA and CA were prepared in 1997, in compliance with DOE Order 5820.2A, the predecessor to DOE Order 435.1. These analyses define, quantify, and model the engineering, social, and environmental variables associated with the disposal units located at Area G. The PA is specific to LLW disposed of after September 26, 1988 and through 2044. The CA evaluates the entire radioactive waste inventory disposed of at Area G between 1957 and 2044. In addition, the CA considers the impacts of neighboring facilities at the Laboratory. The results of the analyses were compared to performance objectives defined in DOE Order 5820.2A, the requirements in effect at the time, to assess the long-term safety of the facility.

Based on a review of the LANL PA and CA by the DOE Low-Level Waste Disposal Facility Federal Review Group, LLW disposal at Area G was authorized by EM on October 2, 1998.

The Disposal Authorization Statement issued for Area G approved the PA and CA with conditions. The DOE Review Team's final report requires that the PA and CA be maintained and that the maintenance program adequately reduce uncertainties in existing data, data analyses, and the conclusions reached by the PA and CA. In addition, the Disposal Authorization Statement specifies several long-term conditions that must be addressed under the maintenance program. These conditions identify potential deficiencies in the approach, data, and/or analyses used to conduct the PA and CA. The PA and CA are considered to be dynamic processes, subject to modification to ensure that they adequately represent the current and future state of the LLW disposal facilities for which they are prepared.

The LANL PA and CA Maintenance Program Plan for MDA G, issued in 2000, describes the maintenance program and conforms to guidance issued by DOE on maintenance activities. In addition to meeting the maintenance program requirements provided in the DOE guidance, this plan is designed to satisfy conditions specific to the MDA G PA and CA.

The maintenance plan describes a number of activities that will be completed in support of submitting a revised PA and CA. FY 2002 work that was completed includes

- a flow and transport model,
- acquisition of 50 wind erosion samplers,
- assessment of surface erosion, and
- task P-J Investigation for MDA G.

Additional work is required to complete the revised PA and CA. The maintenance plan originally indicated that a revised PA and CA would be submitted in FY 2003. This date was later extended to FY 2004 to allow the incorporation of new data from recently drilled monitoring wells. The NNSA RTBF Program provides funding for the PA and CA maintenance activity. This funding is constrained by the NNSA Future-Years Nuclear Security Program funding plan and competing site priorities. At current funding levels, and with the amount of work planned for this revision, the revised PA and CA cannot be completed until FY 2005. LANL will notify the DOE in the FY 2003 annual report of this possible delay. Although no specific impacts have been identified, this document is of interest to LANL stakeholders and delay may draw criticism.

12.7 Key Issues

Table 12-1 provides a matrix of key LLW operations issues. Primary issues are related to need for planning and expansion of onsite and offsite LLW disposal capacity. In addition, improvements to LLW estimating is needed.

Table 12-1 Low-Level Waste Program Issues

Description of Issue	Alternatives to be Evaluated	Plan for Resolution	Responsibility (LANL)	Responsibility (NNSA)
Potential delay in PA/CA Revision	Increased NNSA funding Accept delay Reduce scope of Revision Defer facility maintenance	Without increases in Future-Years Nuclear Security Program, PA revision would be submitted in summer of FY 2005, a one year delay from current plans; no negative program impact identified	Facility Manager, (FM), FWO-WFM FWO-SWO, Grp Ldr	AM, LASO/OPL WM Prog Mgr, LASO/OPL WM Prog Mgr, NNSA Svc Ctr AM, LASO/OFO
LLW disposal capability	Evaluation of merits of on-site LLW waste disposal at Mesita del Buey Norte versus Zone 4. Offsite disposal at Nevada Test Site and commercial facilities. Contingency actions	Issue to be studied by LANL in FY 2003. Analysis and recommenda-tions will be developed and submitted to LASO for review and approval.	FM, FWO-WFM FWO-SWO, Grp Ldr	AM, LASO/OPL WM Prog Mgr, LASO/OPL WM Prog Mgr, NNSA Svc Ctr AM, LASO/OFO
Permanent LLW storage facility to consolidate operations and separate from RCRA management areas	Evaluation of program/ mission need Need to develop and evaluate alternative strategy (e.g., possible line item project)	LANL to develop Mission Need document in FY 2003 and include in FSP Annual Update due 09/03	FM, FWO-WFM FWO-SWO, Grp Ldr	AM, LASO/OPL WM Prog Mgr, LASO/OPL WM Prog Mgr, NNSA Svc Ctr AM, LASO/OFO
Update of FSP LLW estimates	Improve ER and D&D Program and construction project LLW generation estimates	Develop LLW generation estimates	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL
Integration of RLWTF CGRP Risk Mitigation project waste estimates (~7,000 m^3) into FSP	Possible alternatives include use of small, newly excavated pits at Area G, excess LLW shaft capacity, use of soils as higher elevation cap for Pit 39	TBD	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL CGRP Mgr, LASO/Office of Project Management

12.8 Key Milestones

Table 12-2 provides a list of LLW Program milestones.

Table 12-2 Low-Level Waste Program Milestones

Milestones	Description	Date Needed or Due
Area G PA/CA Upgrade	Submit revised document to DOE Low-Level Waste Disposal Facility Federal Review Group	Planned for FY 2004, schedule revised to Summer FY 2005
Revision of FSP LLW generation rate estimates	Revision of FSP LLW generation rate estimates to include updated ER and D&D Program and construction project activities	3Q FY 2003
LLW near-term disposal capacity alternatives analysis and recommendation	FWO to submit to LANL senior management and LASO/OPL for review and approval	3Q FY 2003
LLW long-term disposal capacity alternatives analysis and recommendation	FWO to submit to LANL senior management and LASO/OPL for review and approval	FY 2004
LLW permanent storage facility recommendation	FWO to submit Mission Need document to LASO/OPL for review and approval	FY 2004
FSP Update	FWO to submit to LASO/OPL for review and approval	Sept 2003

13.0 Mixed Low-Level Waste Operations

13.1 Introduction

The MLLW Program has two primary goals: to dispose of MLLW that had been placed in storage before 1999 by the end of 2004 and to dispose of all NGW within one year after generation, if a treatment/disposal capability exists.

MLLW includes both LW (waste generated and packaged before October 1998) and NGW (resulting from on-going activities). Similar to assigned WM responsibilities for TRU/MTRU waste, EM is responsible for the disposition of legacy MLLW and DP for newly generated MLLW.

13.2 Waste Volumes

The original MLLW inventory, at the initiation of the 1995 Site Treatment Plan (STP) was approximately 700 m^3. The estimated inventory, reported in the *FY02 STP Annual Update*, has been reduced significantly to approximately 36 m^3.

The current inventory and estimated work off dates for LANL MLLW by "treatability group," is given in Table 13-1.

Table 13-1 Treatability Groups

Treatability Group	Volume m^3
Lead waste	0.68
Water-reactive metals	2.69
Compressed gas requiring scrubbing	0.30
Compressed gas requiring oxidation	1.41
Elemental mercury	0.18
PCB wastes	5.56
Mercury waste	6.85
Lab packs	1.39
High-activity waste	5.21
Other	12.03
Total	36.30

The projection of future newly generated MLLW volumes is somewhat uncertain and is dependant on future missions, such as ER and D&D Program activities. For planning purposes, it is estimated that 25 to 30 m^3 per year of newly generated MLLW will be managed by LANL. NGW must be managed within 12 months of receipt by DOE policy.

13.3 Current Capabilities

LANL MLLW waste is currently stored in above-ground storage facilities at Area L, Dome 215 and Area G, Dome 224. Given the significant reduction in volumes accomplished over the last several years, there is ample storage space within the MLLW facilities.

Offsite treatment and disposal is used for the majority of MLLW. Onsite lead waste decontamination is used to allow recycling in scrap metal markets.

The preferred MLLW treatment option is offsite treatment with both commercial and non-commercial companies and facilities. Currently, LANL has subcontracts with several commercial companies for the offsite treatment of MLLW. Additional subcontracts can be awarded, as appropriate.

Table 13-2 presents offsite MLLW capabilities.

Table 13-2 Offsite Capabilities

Treatment and disposal	Solvent extraction
Stabilization	Chelation
Deactivation	Ion exchange
Neutralization	Absorption
Oxidation-reduction	Chemical decontamination
Chemical fixation	Metals precipitation
Polymer encapsulation	Chemical extraction
Processing scintillation cocktail vials and other mixed waste fluids	Treatment of organic and inorganic mixed waste to meet Land Disposal Restrictions (LDR) criteria
Decommissioning of lab packs	Neutralization
Thermal treatment of organics	Consolidation
Stabilization and solidification of inorganic wastes	Repackaging Debris treatment
Chemical treatment capabilities – demulsification, precipitation, flocculation	Thermal desorption Treatment & direct disposal of PCBs and contaminated materials
Distillation of halogenated organics	

13.4 Planning Bases

The most significant planning basis for MLLW management is the LANL STP, which provides a detailed plan for identifying, treating, and disposing of MLLW. The STP is updated annually. However, modifications to the waste types, volumes, and work off schedules are routinely made to reflect changes in funding actual work off activities and to add newly generated MLLW that cannot be shipped within the 12-month limitation. Given the success in reducing these MLLW volumes to very manageable levels, LANL and the NMED have a very positive working relationship regarding these wastes and the maintenance of the STP commitments. The MLLW disposal activity contains some of the more challenging technical issues; however, no major changes in MLLW management are needed or planned at this time.

13.4.1 Site Treatment Plan

The 1992 Federal Facility Compliance Act addresses compliance by the DOE with RCRA LDRs for the storage of mixed waste. This act requires that DOE submit a STP for developing treatment capacities and technologies to treat all facility mixed wastes, regardless of the date generated, to RCRA LDR standards. The STP is intended to fulfill the requirements of the Federal Facility Compliance Act.

In October 1995, NMED issued a Federal Facility Compliance Order to DOE and UC requiring implementation of a STP for the treatment of mixed waste at LANL. The compliance dates are enforceable time periods under which respondents are required to treat or otherwise meet the requirements set forth for LDRs under the Hazardous Waste Act and RCRA. An annual update must be submitted by March 31 of each year.

The STP Compliance Plan Volume includes a volume for submittal of application for permits, construction of treatment facilities, technology development, offsite transportation for treatment, and the treatment of mixed wastes. Updated annually, revisions include proposed compliance date changes, deleted waste, etc. The STP Background Volume identifies the estimated volume of MLLW in storage at LANL at the end of each FY and the estimated volume to be placed in storage for the following five-year period. Also, it includes a progress report describing treatment progress.

13.5 Current Projects and Planned Activities

Current projects and activities are associated with the work off of MLLW with defined treatment and disposal paths.

13.5.1 Planned Activities

Planned and future activities are aimed at the treatment and disposal of all remaining legacy MLLW and the ongoing management of newly generated MLLW. An example of a planned activity is the characterization of high-activity waste items and materials (such as gloveboxes and discarded equipment), for which characterization data are incomplete and the waste designation is unknown.

13.5.2 No Path Forward Waste

The NNSA has a policy of not generating MLLW without a defined path to disposal, unless authorized in advance. Specific MLLW program activities include investigating and monitoring of technologies for the treatment and disposal of MLLW for which there is no current treatment available. For these waste streams, LANL monitors and sponsors the development of potential treatment technologies that may become available. Generally, any future LANL technology development initiatives will be limited to technologies or applications for specific needs that cannot be addressed by commercial facilities.

NPF MLLW inventories currently stored at LANL include Greater-than Class A, non-elemental mercury-contaminated debris, water-reactive waste, and PCB-contaminated waste.

Currently, there is no disposal option for 5 m^3 of MLLW that exceeds Nuclear Regulatory Commission (NRC) Class A waste limits. The EM LLW/MLLW treatment and disposal Programmatic Environmental Impact Statement identified the Hanford site as a DOE regional Greater-than-Class A MLLW disposal site. Hanford is developing an Environmental Impact Statement to allow MLLW disposal for offsite wastes. Hanford is scheduled to issue a MLLW ROD in FY 2003.

A LANL subcontractor is developing treatment technologies for handling non-elemental mercury-contaminated debris. Water-reactive wastes will be treated by deactivation of the reactive constituents and are currently scheduled for disposition in FY 2004. PCB-contaminated organic liquid waste can be treated by a Toxic Substance Control Act (TSCA)-permitted incinerator at Oak Ridge, Tennessee. However, LANL is not currently on the TCSA incinerator burn plan. LANL is working with the Oak Ridge site to pursue use of this option.

13.6 Key Issues

LANL has been able to systematically reduce its MLLW inventory to manageable levels. A number of issues still remain, primarily regarding MLLW NPF waste inventories currently stored at LANL.

The FSP describes plans to move and consolidate MLLW and hazardous/chemical operations in a new location near the RANT Facility. Area L is larger than needed for the smaller volumes of material currently being managed. Moving operations away from Area L would enable early closure of the solid waste management unit that lies underneath. Out year funding would be required to support this facility consolidation initiative.

Table 13-3 presents key issues related to the MLLW Program.

Table 13-3 Mixed Low-Level Waste Program Issues

Description of Issue	Alternatives to be Evaluated	Plan for Resolution	Responsibility (LANL)/	Responsibility (NNSA)
NPF Wastes–no disposal method available for Greater-than-Class A MLLW	Hanford Site in process of developing an Environmental Impact Statement to accept offsite Greater-than-Class A MLLW	ROD to be issued for Hanford Site MLLW Environmental Impact Statement	Grp Ldr, FWO-SWO MLLW Mgr, FWO-SWO	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
NPF Waste–no treatment method for non-elemental mercury-contaminated debris	Emerging commercial treatment technologies for handling non-elemental mercury-contaminated debris		Grp Ldr, FWO-SWO MLLW Mgr, FWO-SWO	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
NPF Waste–no treatment method for water-reactive MLLW waste	Alternatives include LANL and/or commercial deactivation treatment		Grp Ldr, FWO-SWO MLLW Mgr, FWO-SWO	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL
NPF Waste–no treatment method for PCB-contaminated liquid MLLW waste	Waste can be treated by the Oak Ridge incinerator LANL to pursue path forward to get waste listed on Oak Ridge burn plan		Grp Ldr, FWO-SWO MLLW Mgr, FWO-SWO	AM, LASO/OFO WM Ops Mgr, LASO/OFO AM, LASO/OPL WM Progr Mgr, LASO/OPL
No disposition dates established for lead and other waste	Waste disposition dates need to be established in schedule		Grp Ldr, FWO-SWO MLLW Mgr, FWO-SWO	AM, LASO/OFO WM Op Mgr, LASO/OFO AM, LASO/OPL WM Prog Mgr, LASO/OPL

13.7 *Key Milestones*

Table 13-4 provides a list of MLLW Program milestones. Most MLLW inventories have planned waste treatment and disposition approaches, with established dates for final disposition. The STP can be referenced for current compliance dates.

Table 13-4 Mixed Low-Level Waste Program Milestones

Milestone	Description	Date Needed or Due
STP Annual Update	Submit and get NMED approval on STP Annual Update	03/31/03
Shipment of all other inventoried LW, such as MLLW, to appropriate disposal locations	EM commitment to ship all MLLW LW offsite to appropriate disposal locations between FY 2003 and FY 2010	Shipments to be completed by 2010
Lead waste	Waste treated and disposed	TBD
Water-reactive metals	Waste treated and disposed	04/21/2004
Compressed gas requiring scrubbing	Waste treated and disposed	08/28/2003
Compressed gas requiring oxidation	Waste treated and disposed	08/28/2003
Elemental mercury	Waste treated and disposed	12/20/2003
PCB wastes	Waste treated and disposed	02/01/2004
Mercury waste	Waste treated and disposed	12/20/2003
Lab packs	Waste treated and disposed	12/20/2003
High-activity waste	Waste treated and disposed	12/20/2003
Other	Waste treated and disposed	TBD

14.0 Hazardous and Chemical Waste Operations

14.1 Introduction

Hazardous waste is waste regulated under RCRA regulatory requirements. Chemical waste is regulated under TSCA regulatory requirements. HAZ/CHEM waste operations are conducted by FWO-SWO at TA-54, Area L. Offsite treatment and disposal operations have been effective in minimizing the amount of waste that requires storage at TA-54. Further, LANL collaborations with other DOE sites are resulting in the optimization of HAZ/CHEM WM operations.

14.2 Waste Generation Rates

In general, HAZ/CHEM Program waste characteristics are not expected to change over the horizon of this Program Plan. The generation rate of hazardous chemicals, exclusive of the ER Program, is fairly typical and is expected to continue into the future. However, the ER Program HAZ/CHEM wastes generation rates are somewhat unpredictable and will vary depending on the specific activities being funded and executed.

In FY 2002, for example, ~600 metric tons of HAZ/CHEM wastes were generated (exclusive of the ER Program). In that same year, the ER Program generated ~1,651 metric tons of hazardous waste.

14.3 Current Capabilities

HAZ/CHEM waste management capabilities include characterization, packaging, and labeling, collection/transportation, receipt and acceptance, storage, decontamination, waste processing, disposal (administratively controlled waste), facility management, and administration.

The preferred treatment and disposal option is offsite treatment and disposal with commercial facilities. Currently, LANL has a single support contractor that brokers the waste to other commercial treatment and disposal companies.

The SWEIS analyzed for the management of 3,250 metric tons per year of HAZ/CHEM wastes. On a single shift basis, LANL has the capability to manage ~3,000 metric tons per year of non-ER and 35,000 metric tons per year of ER Program HAZ/CHEM waste. These volumes are generally consistent with past historical trends.

14.4 Planning Bases

In accordance with the FY 2002 NNSA RTBF Implementation Plan, HAZ/CHEM facilities and operations are required to support the

- disposal of all newly generated HAZ/CHEM waste with a defined disposition path forward and shipment of newly generated HAZ/CHEM waste offsite for treatment and disposal, within one year of generation;
- identification of HAZ/CHEM Program improvements to streamline site operations and facility management and/or reduce overall cost; and

- evaluation of the impacts of the ER Program on Area L and to establish an appropriate path forward.

14.4.1 Area L Resource Conservation and Recovery Act Permit

The NMED RCRA Permit process may require operational and facility changes, but the details of the permit are not finalized and specific requirements cannot be established until issuance of the RCRA permit. It is expected that the Area L RCRA Permit application will be re-submitted to NMED in FY 2003, and NMED approval could be expected some time in FY 2004.

14.5 Current Projects and Planned Activities

No new projects, activities, or operations have been authorized for implementation in the area of HAZ/CHEM WM. Area H is inactive and Area J has been closed. A formal Area J closure report has been submitted to NMED for approval. LANL is awaiting NMED review and approval.

With the reduction in the volume of legacy MLLW, planning is underway to determine the optimum Area L footprint and determine if a reduction in the number of facilities or consolidation with other permitted facilities is feasible. Area L consolidation plans need to be sufficiently developed to support funding acquisition.

Additionally, an effort is under way to examine the possibility of LANL-wide waste profiles for unused/unspent chemicals. To assist in the standardization and classification of unused/unspent chemicals databases, consistency in LANL chemical inventory databases and the FWO-SWO database is being evaluated.

14.6 Key Issues

At this time, no significant issues have been identified in the area of HAZ/CHEM WM.

The development of the inactive Area H RCRA remediation strategy will be pursued in FY 2003. Table 14-1 summarizes this issue.

Table 14-1 Hazardous and Chemical Waste Program Issues

Issue	Alternative(s) to be Evaluated	Plan for Resolution	LANL Responsibility	NNSA Responsibility
Development of RCRA remediation strategy for Area H (inactive MDA)	Development of RCRA remediation strategy	Finalization of strategy	FM, FWO-WFM RRES ER Prog Mgr	AM, LASO/OFO AM, LASO/OPM ER Proj Mgr, LASO/Office of Project Management RCRA Mgr, LASO/OFO

14.7 Key Milestones

Table 14-2 provides a list of HAZ/CHEM Waste Program milestones.

Table 14-2 Hazardous and Chemical Waste Program Milestones

Milestone	Description	Date Needed or Due
Area H RCRA remediation strategy	Development of Area H RCRA remediation strategy	Strategy Report FY 2003
Area H transfer to ER Program	Area H transfer to ER Program	TBD
Area J final closure completed and documented	Area J has submitted final report to NMED; NMED approval of Area J final closure report required	TBD
LANL-wide profile for unused and/or unspent chemicals	LANL chemical profile to be developed	TBD
Development of improved database link between LANL chemical databases and FWO-SWO chemical database	Chemical databases to be evaluated to determine if LANL databases can be made more consistent with FWO-SWO database	TBD

15.0 Radioactive Liquid Waste

15.1 Introduction

The RLWTF receives the bulk of the RLW generated at LANL and is used as the central treatment facility for such wastes. RLW is generated by numerous LANL facilities. The majority of the liquid waste is piped directly to the RLWTF through the Radioactive Liquid Waste Collection System (RLWCS). For LANL facilities not connected to the RLWCS, RLW is transported by approved shipping containers for further treatment to either TA-53 or the RLWTF, depending on constituents in the waste stream.

In addition, there are operating liquid waste treatment facilities at TA-21 (the former Plutonium Facility) and TA-53 (LANSCE). A small volume of liquid waste from TA-21 Tritium Science Test Area activities is treated at TA-21, and then trucked to TA-53 basins, if the waste meets the required TA-53 WAC. The TA-53 liquid waste stream results from the production of accelerator-produced short-lived radionuclides. Both waste streams are processed at LANSCE using a treatment process that includes the use of liquid waste holdup tanks to provide radioactive decay of short-lived radionuclides in the waste stream. Following the decay process, the liquid waste is evaporated in evaporation basins. The resulting solids are periodically removed from the basin and transported to TA-54, Area G for disposal as LLW.

If the TA-21 Tritium Science Test Area treated liquid waste stream exceeds the LANSCE treatment process WAC, then the TA-21 treated waste stream is transported to the RLWTF for further treatment. All other LANL facilities that generate liquid waste transfer the waste by pipe or truck directly to the RLWTF for processing at the Main Treatment Plant. In addition TA-55 generates high-activity liquid waste (in the form of a neutralized caustic stream and a nitric acid stream) that is received and pretreated in the RLWTF, Building 1, Room 60. The pretreated TA-55 waste is then transferred to the RLWTF Main Treatment Plant for additional treatment. Although these waste streams are small in volume, they contribute to greater than 95% of the radioactivity received at the RLWTF.

Primarily, the waste is treated in the Main Treatment Plant to remove soluble and insoluble radioactive contaminants. Secondarily, the liquid waste is treated to remove specific non-radioactive contaminants, such as nitrates and perchlorates. The liquid waste is received and treated, as appropriate, for the concentration of the contaminants in the waste, with the effluent discharged at the National Pollution Discharge Elimination System (NPDES)-permitted outfall located at Mortandad Canyon, outside of the RLWTF. The contaminant concentrations in the discharge must meet limits established by the EPA (and documented in the LANL NPDES discharge permit); the State of New Mexico (and codified in New Mexico's groundwater quality standards); and the DOE (per the DOE Order 5400.5 Derived Concentration Guidelines for radioactive discharges).

15.2 Waste Generation Rates

The historical liquid waste volumes received at the RLWTF Main Treatment Plant have ranged from 20 to 25 million liters per year. With recent modifications in upstream generator facilities to eliminate non-radioactive inputs, the input volumes to RLWTF have dropped to approximately

10 million liters per year. It should be noted that the contaminant loading did not change. Based on projections that account for existing and new missions, it is expected that the input volume to the RLWTF will be approximately 20 million liters per year.

TA-55's caustic and nitric acid liquid waste transferred to the RLWTF's Room 60 Pretreatment capability has historically been approximately 100,000 liters per year.

15.3 Current Capabilities

The TA-55 Pretreatment Process is located in the RLWTF, Room 60. The TA-55-generated caustic and nitric acid waste streams are treated by precipitation utilizing lime and polymer to aid in settling. The sludge is then drawn from the clarifier to TK-7 to decant the supernate from the sludge. The sludge is then metered from TK-7 through TK-6, and then added to 55-gallon drums with concrete and vermiculate. The drums are tumbled for a thorough mixing, resulting in cemented TRU sludge. The effluent from treatment is then processed through a vendor owned/operated evaporator for further nitrate removal. Tritium may be present in the distillate, which is discharged if the tritium concentrations are below 20 nCi/l. If the tritium concentration is above this limit it is transported to the TA-53 basins, assuming the TA-53 WAC limits are met.

The RLWTF Main Treatment Plant includes a pretreatment step with oxidation and pH adjustment chemicals; co-precipitation with iron in a clariflocculator; and filtration with three stages of filtration, including an ultrafilter and reverse osmosis (RO) capability. The tubular ultrafilter permeate is processed through the ion exchange columns for perchlorate removal prior to treatment through the RO process, or is discharged through the NPDES-permitted outfall. The RO reject is treated through the Electro Dialysis Reversal (EDR) equipment for volume reduction and the EDR reject is transferred to storage until the next evaporator campaign. The concentrate from the evaporator is shipped offsite for final dewatering and drumming.

The RLWTF Main Treatment Plant has a processing capacity of approximately 60 gallons per minute (20 million liters per year) on a single-shift operating basis. On a multi-shift basis, up to 35 million liters per year could be processed. Based on the current volume input and the historical input volumes, this capacity should be adequate to treat the RLW generated at LANL during the 10-year planning timeframe described in this Program Plan. The RLWTF, Room 60, processing equipment has the capacity to treat up to 235,000 liters per year, although it is not likely that this capacity could be achieved because of the condition of the processing equipment The limiting capacity to treat nitric and caustic waste is governed by the batch volume of TK-7, in combination with the required settling time.

15.4 Planning Bases

RLWTF planning bases include the SWEIS; regulatory drivers; DOE-mandated treatment process improvements; TYCSP institutional planning, the FSP, the RLWTF Tactical/Strategic Plan, CGRP fire vulnerability planning, and RCRA projects.

15.4.1 Site-Wide Environmental Impact Statement

The LANL SWEIS has established a continuing long-term need for RLW treatment at LANL. LANL's role in supporting the Stockpile Stewardship Program, the Pit Manufacturing Project,

and other NNSA programs will continue to result in the generation of industrial waste and RLW for the foreseeable future. The RLWTF provides an enabling capability that supports mission programs. The RLWTF is required to treat wastes from these programs to defined water quality standards in compliance with a wide range of regulations.

15.4.2 Regulatory Drivers

The RLWTF planning bases include key legal and regulatory drivers, such as the NPDES permit discharge limits; the State of New Mexico water quality standards; and DOE directives regarding radionuclide discharges.

Prior to FY 1998, the RLWTF-treated discharges were not compliant with limits established by the DOE and the State of New Mexico. As a result, between FY 1998 and FY 2002, numerous changes were made to the RLW treatment processes to reduce radioactive and non-radioactive contaminants in treated discharges. Membrane technologies (such as ultrafiltration and RO), perchlorate removal, and evaporation equipment were installed at the RLWTF. These RLW technologies are currently operating to achieve contaminant reductions in the facility's treated discharge. The discharges are currently meeting all established legal and regulatory limits. In FY 2003, the State of New Mexico will conduct their tri-annual review of surface water discharge standards, which could result in more stringent discharge limits. In addition, the State is also in the process of finalizing groundwater discharge standards, which likewise could result in more stringent discharge limits.

15.4.3 Department of Energy-Recommended Process Improvements

Even though discharges are in compliance with existing laws and regulations, LANL and NNSA support goals to improve the contaminant removal efficiencies of the RLW treatment system and to improve the operability and reliabilities of the RLW unit processes and operations. Accordingly, DOE has provided guidance (beyond legal and regulatory requirements) to the RLWTF regarding tritium treatment and contaminant reduction in treated discharges.

15.4.4 Ten-Year Comprehensive Site Plan

The TYCSP is a site-wide facility management planning tool. The FSP identifies proposed WM projects that are prioritized by the institution before being included in the TYCSP. The TYCSP includes both near- and far-term planning and only addresses investments in physical facilities. The FY 2003 TYCSP identifies several projects related to the RLWTF to align program needs with facility capabilities and needs, Further, the RTBF FY 2002 Program Plan identifies an integrated maintenance program that includes, among other items, elements of the Facilities and Infrastructure Recapitalization Program that address deferred maintenance items that are impacting cost and performance. The integration of maintenance activities is accomplished through the NNSA TYCSP process.

15.4.5 Cerro Grande Rehabilitation Project Waste Management Risk Mitigation Project

The CGRP, which was initiated as a result of the Cerro Grande fire, was established to identify projects that would mitigate, reduce, or eliminate the risks of future fires. Four projects related to the RLWTF, as discussed in Section 15.5.3, were approved and funded for the RLWTF.

15.4.6 Radioactive Liquid Waste Treatment Facility Tactical/Strategic Plan

The RLWTF Tactical/Strategic Plan, and it's associated RLWTF Vulnerability Study, identified projects and improvements to process capabilities. These documents provided input into the FSP. FWO-WFM has identified proposed operational activities and projects for near- and long-term planning purposes. These projects are documented in the RLWTF Strategic/Tactical Plan and its associated RLWTF Vulnerability Study. The Vulnerability Analysis completed by FWO-WFM identified several areas where modifications could be made to the facility to improve the treatment availability of the facility and avoid failure-related unavailability events. These projects will be implemented consistent with NNSA RTBF annual approved funding levels. Projects identified through this effort are discussed below.

15.4.7 Resource Conservation and Recovery Act Permit

The facility RCRA permit is being modified to downgrade the Treatment, Storage, and Disposal Facility status of the facility to Less-than-90-Day Storage Areas. This will reduce the impact on operations and facility management.

15.5 Current Projects and Planned Activities

15.5.1 Radioactive Liquid Waste Treatment Facility Upgrade Project

The RLWTF was constructed in 1963 and is 39 years old. The plant has been well maintained and has served its purpose. Because of its age, changing regulations, and long-term reliability concerns, this facility may require a substantial upgrade to extend its service life to meet long-term program needs and NNSA/RTBF availability objectives. The proposed upgrade effort has been incorporated into NNSA planning initiatives: The FY 2003 TYCSP includes a $20M replacement/upgrade project. Also, the NNSA Integrated Construction Program Plan includes a planned $22M replacement/upgrade project for the RLWTF in FYs 2004 through 2007.

Preconceptual planning will be required in FY 2003 to establish scope and budgets that are consistent with the planned $20M in funding. A siting study was completed in FY 2002 to support the Integrated Nuclear Planning initiative. The study will evaluate the feasibility of siting the upgraded facilities at RLWTF, rather than more distant sites in green-field areas.

15.5.2 Replace/Upgrade Room 60 Operations

The FY 2003 TYSCP also identified the need to either replace or relocate the Room 60 processing equipment. The currently installed equipment in Room 60 for the pretreatment of the high activity nitric acid and caustic waste from TA-55 has been in service for many years and has seriously deteriorated. The equipment is in need of replacement. In addition to replacing the equipment, it has been proposed that the equipment could be relocated from Room 60 to another location to reduce the hazard classification of TA-50, Building 1. A feasibility study was completed in FY 2001 to investigate the relocation of the equipment to alternative locations. Additional studies are planned for FY 2003.

15.5.3 Cerro Grande Rehabilitation Project Waste Management Risk Mitigation Project

During the Cerro Grande fire, the RLWTF was identified as one of the few LANL facilities that had operations considered essential and were required to operate during the two weeks of the fire. Even though key nuclear facilities were not operating during the fire, automatic RLW transfers continued. RLWs were generated at a rate of approximately 6,000 to 7,000 gallons per day during this period.

After the Cerro Grande fire, a special appropriation from Congress to mitigate and eliminate vulnerabilities was provided to LANL. The CGRP was specifically established to identify fire risk mitigation and elimination projects. The RWLTF identified several potential vulnerabilities associated with the continued management of RLW, in the event of a fire similar to the Cerro Grande fire.

The CGRP provided funding for RLWTF improvements: a remotely controlled and monitored ventilation system and increased influent tankage. The upgrade of the ventilation system will allow for the remote control and restart of the ventilation system from outside the building. The installation of tanks provides 300,000 gallons of additional influent storage for the Main Treatment Plant. A new headwork, that includes pumping capabilities, influent monitoring, and pre-treatment, supports the Main Treatment Plant. Table 15-1 shows the recommended CGRP headworks modifications for the Main Treatment Plant.

Table 15-1 Cerro Grande Rehabilitation Project (Main Treatment Process)

Main Treatment Process	Recommendations
Headworks	Complete influent storage capacity (300,000)
Headworks	Complete installation of a new pump house and bypass existing single-walled piping
Headworks	Discontinue use of and decommission the 75K tank

Table 15-2 shows the CGRP recommendations for "Other Systems" in the RLWTF. The project supports heating, ventilation, and air conditioning (HVAC) system improvements.

Table 15-2 Cerro Grande Rehabilitation Project (Other Systems)

Other Systems	Recommendations
HVAC	Complete repair of ventilation ductwork; provide remote monitoring; balance flows

15.5.4 Efforts to Upgrade Nuclear Controls

In FY 2002, the DOE/HQ Office of Independent Oversight and Performance Assurance (OA) conducted a detailed review of the RLWTF. Recommendations include upgrading nuclear facility controls through an assessment of conduct of operations; revising the RLWTF DSA; updating as-built drawings and facility design documents; and formalizing change control and process specifications. The assessment resulted in the identification of several corrective actions that have site-wide implications. This currently unfunded effort would result in

modification of RLW procedures and configuration management methods in response to the OA findings.

Table 15-3 shows the recommendations regarding efforts to upgrade nuclear controls for "Other Systems" in the RLWTF.

Table 15-3 Nuclear Controls Upgrade Recommendations (Other Systems)

Other Systems	Recommendations
Nuclear Controls	Baseline RWLTF equipment by creating facility design descriptions
Nuclear Controls	Streamline facility procedures through consolidation and elimination
Nuclear Controls	Increase operations control through the use of process specifications
Nuclear Controls	Update all as-built drawings to existing plant conditions

15.5.5 Process Improvements

A formal Vulnerability Analysis was completed by FWO-WFM. This document identified several areas where modifications could be made to the facility to improve the treatment availability of the facility and avoid failure-related unavailability events. In addition, DOE has provided guidance to the RLWTF to continue improving the performance of the RLW treatment processing systems, consistent with the LANL's P^2/Waste Min objectives and goals. The RLWTF, following that guidance, has developed a number of proposals. The following projects and efforts are in various stages of planning and development and have not been authorized for implementation.

Process Optimization Projects

Studies are underway to develop the appropriate treatment strategy for RO concentrate. The scope of the study includes the assessment of the EDR unit (that does not perform as expected); chemical pretreatment strategies; and evaporation technologies for the treatment of RO concentrate.

In addition, there are ongoing process engineering efforts to improve the performance of the RLW systems and to improve the reliability of the processes. FWO-WFM has developed near-term (FYs 2003 through 2005) improvement recommendations for the existing RLWTF that could be implemented on a priority basis, as funding becomes available. These recommendations have been categorized into three areas: 1) Main Treatment Plant; 2) Other Treatment Processes; and 3) Other Systems.

Table 15-4 shows RLW process recommendations for Main Treatment process capabilities. These include process building, clarifier, sand filter, Tubular Ultra Filter (TUF), and RO improvements.

Table 15-4 Process Optimization Recommendations (Main Treatment Process)

Main Treatment Process	Recommendations
Process building	Preconceptual planning for new RLW building and equipment
Clarifier	Clean the outer weir and check weir levels
Clarifier	Locate manufacturers of replacement mechanical drive systems
Sand filter	Develop design specifications for a pressure sand filter
Sand filter	Install a storage tank for membrane permeate to be used to backwash the sand filter
Sand filter	Procure and install a pressure sand filter as a backup unit
TUF	Install a permeate pump to reduce back pressure and increase throughput by 6 gpm
TUF	Stage spare pressure-regulating valve for TUF concentrate
TUF	Stage spare flow meters for the recycle, concentrate, and permeate process streams
TUF	Install an in-line alpha radiation detector to direct permeate to effluent tanks or TK-9
TUF	Install heaters on TK-71, which could increase capacity by six gallons per minute
RO	Conduct pilot tests to evaluate nanofiltration as a backup to the reverse osmosis unit

Table 15-5 shows RLW process optimization recommendations for "Other Treatment Processes." These include pretreatment analyses and improvements to the Rotary Vacuum Filtration (RVF), EDR, and Evaporator capabilities.

Table 15-5 Process Optimization Recommendations (Other Treatment Processes)

Other Treatment Processes	Recommendations
Room 60	Monitor progress of TA-55 technologies for the treatment of caustic wastes
TA-21	Evaluate (alternatives, impediments, benefits) no pretreatment at TA-21, while TA-21 is in operation
RVF	Evaluate polymeric dewatering aids to enhance sludge settling in TK-8
RVF	Process the inventory of sludge in the sludge tank
RVF	Evaluate alternatives to RVF and sludge disposal
RVF	Decommission the sludge tank
EDR	Conduct bench and pilot tests for the treatment of EDR product through an IX step
EDR	Conduct plant tests for the treatment of RO concentrate in Clarifier #1
EDR	Stage spare parts for EDR pumps and valves
Evaporator	Complete the design of a permanent evaporator
Evaporator	Procure, install, and operate the permanent evaporator
Evaporator	Evaluate evaporators designed to handle liquid waste with high concentrations of total suspended and dissolved solids

Table 15-6 shows process optimization recommendations for "Other Systems" in the RLWTF, including process control, HVAC, solid waste, and natural gas improvements.

Table 15-6 Process Optimization Recommendations (Other Systems)

Other Systems	Recommendations
Process Control	Continue to investigate and document plant performance by conducting annual plant tests
Process Control	Initiate scheduled reporting and review of unit operation performance
Process Control	Assess and revise the collection of routine samples
HVAC	Replace the FE-22 filter plenum
HVAC	Design and cost a replacement for the FE-2 filter plenum
HVAC	Replace the FE-2 filter plenum
Solid Waste	Create paved, posted outdoor storage areas for LLW (housekeeping)
Solid Waste	Halve the existing time (4 to 6 months) required to receive approval to ship solid waste
Natural Gas	Stage spare parts for the natural gas control panel for the boiler

Tritium Treatability Studies

Currently, the reactor-produced tritium concentrations in the RLWTF discharges are generally below the 20,000 pCi/l drinking water standard for accelerator-produced tritium. However, DOE has requested that LANL evaluate means to reduce the tritium concentrations in discharges to meet the drinking water standard. A tritium removal study has been proposed for future funding and pilot studies. The RO membrane technology is well developed for desalination and other industrial/ municipal applications. These membrane systems have been proven to be energy efficient. Polymeric membranes are being developed to remove tritium from contaminated water at DOE sites.

15.5.6 Resource Conservation and Recovery Act Unit Improvements

The RLWTF RCRA permit is being modified to downgrade the Treatment, Storage, and Disposal Facility status of the RWLTF to less-than-90-day storage areas. This will reduce regulatory operating issues with the facility.

15.6 Authorization Basis Impacts

The RLWTF Safety Analysis Report was prepared and approved in 1995. With the issuance of new AB requirements in 10 CFR 830 and the many RLW process and facility changes have occurred since the 1995 Safety Analysis Report, an updated and revised RLWTF AB document is needed.

Therefore, in accordance with the requirements established in Appendix O of the UC contract, LANL upgraded the RLWTF DSA to comply with 10 CFR 830 and submitted the DSA for NNSA approval by September 30, 2002. The RLWTF is currently being upgraded from a HC3 nuclear facility to a HC2 nuclear facility. After a DOE review, the DSA was returned to FWO. A revised RLWTF DSA has been resubmitted to DOE for review and approval.

15.7 Key Issues

Submittal and approval of the RLWTF DSA, and related readiness review and verification, is a significant RLWTF requirement for FY 2003.

In addition, evaluation of future RLW needs will be a high-priority need. Establishing a formal, joint LASO/LANL process for developing a position on future RLWTF needs will be a significant partnering activity for FY 2003. Several issues have been identified for future investigations in the evaluation of future RLW needs, including evaluations of the:1) possibility of eliminating the use of the RLWCS by the use of trucks to transport the liquid waste to TA-50 for treatment, 2) extent and nature of upstream treatment to reduce the reliance on TA-50 and the RLWCS, 3) P^2/Waste Min initiatives at generator facilities to further reduce the processing demand at TA-50, 4) tritium removal process for TA-50, (5) development of plans to comply with more stringent State of New Mexico discharge standards, and 6) reassessing RLWTF processing capabilities to evaluate goals of achieving discharge to levels ALARA, in accordance with ALARA guidance. In the process of evaluating discharges consistent with ALARA principles, the concept of zero discharge may be evaluated.

Some of these investigations are not currently funded, but could be initiated if funding was provided.

Table 15-7 provides a summary of key RLW Program issues.

Table 15-7 Radioactive Liquid Waste Program Issues

Description of Issue	Alternative(s) to be Evaluated	Plan for Resolution	Responsibility (LANL)	Responsibility (NNSA)
Process design for the new RLWTF	Alternatives include maintain as is; upgrade current RLWTF; and construct new facility as a Line Item project	Formal evaluation to be conducted consistent with DOE project management requirements	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL
Evaluation of "trucking" option to eliminate/ minimize the RLWCS	Alternatives include trucking RLW to the RLWTF; eliminate some RLWCS lines; eliminate RLWCS	Evaluation to consider advantages and disadvantage of trucking versus continued use of the RLWCS	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL
Evaluation of extent and nature of upstream treatment or pretreatment options	Alternatives include evaluation of current upstream facilities and new construction	Evaluate the cost and benefits of providing upstream treatment or pretreatment at generator facilities	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL

Description of Issue	Alternative(s) to be Evaluated	Plan for Resolution	Responsibility (LANL)	Responsibility (NNSA)
Application of P^2/Waste Min initiatives at generator facilities	Alternatives include evaluation of current upstream facilities and new construction	Evaluate establishing P^2 initiatives at generator facilities to reduce input to TA-50	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL
Reevaluation of RLWTF processing capabilities to maintain RLW discharges at ALARA levels	Alternatives include evaluations of process improvements	Evaluate cost and benefits of operating TA-50 discharge operating mode to result in discharges compliant with requirements, but ALARA.	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL
Evaluation and improvement of tritium removal processes	Alternatives include different methods for the removal of tritium	Evaluate tritium removal processes	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL
Evaluation of potential application of more stringent NMED discharge standards		Monitor NMED proposals for discharge standard changes and develop plans for compliance with proposed new standards.	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL
Integration of RLWTF CGRP Risk Mitigation efforts waste generation estimates (~7,000 m^3) into FSP planning efforts	Possible alternatives include use of small, newly excavated pits at Area G, excess LLW shaft capacity, use of soils as higher elevation cap for Pit 39	TBD	FM, FWO-WFM DP WM Prog Mgr, IFC	AM, LASO/OPL WM Prog Mgr, LASO/OPL CGRP Mgr, LASO/Office of Project Management

15.8 Key Milestones

Table 15-8 provides a list of RLW Program key milestones.

Table 15-8 Radioactive Liquid Waste Program Key Milestones

Milestone	Description	Date Needed or Due
RLWTF 10 CFR 830-compliant DSA	Complete all documentation, AB documents, readiness review, and verification activities	FY 2003, 4Q
Evaluation process of current and future RLWTF needs	Development of the joint evaluation process for RLWTF needs, which could involve workshops, meetings, and studies.	FY 2003 and FY 2004
Technical study of relocating Room 60 operations	Complete study of either relocating Room 60 operations to another location or replacing the equipment in Room 60.	FY 2003
CGRP WM Risk Mitigation "Main Treatment Process" and "Other Systems" efforts	Complete all site preparation, construction, documentation, AB, readiness review, and verification activities	TBD
Evaluation of "trucking" versus continued use of RLWCS	Complete evaluation	FY 2004
Evaluate upstream pretreatment or pretreatment options	Evaluate extent and nature of upstream and pretreatment options	FY 2004
Evaluation of P^2/Waste Min initiatives	Complete evaluation of waste generator facilities and P^2/Waste Min options	FY 2004
Evaluate RLW discharge to ALARA	Evaluate cost and benefits of operating RLWTF to result in ALARA discharges	FY 2004
Complete all Nuclear Controls Upgrade "Other Systems" corrective actions to close findings from HQ OA Report	Complete all construction preparation, construction, documentation, AB, readiness review, and verification activities	TBD

Key milestones have not been identified for Completion of Process Optimization Projects ("Other Treatment Processes" and "Other Systems Processes") due to lack of FY 2003 funding. No date has been established for completion for unfunded projects.

16.0 Administrative Matters

16.1 Waste Management Program Performance Measure Process

Under the NNSA/UC Management and Operating contract, prior to FY 2002, detailed annual PMs were drafted and incorporated into the LANL contract to incentivize the accomplishment of defined DP expectations. Per guidance from NNSA, the new FY 2003 approach to PMs is based on the concept of focusing on a "critical few" top-tier PMs, rather than on more detailed PMs utilized prior to FY 2003. Accordingly, FY03 Tier I and Tier II PMs have been incorporated into the NNSA/UC contract. In addition, Tier III, initially developed by UC, resulted in a submittal of a formal Self-Assessment Plan. NNSA will concur on the LANL Self-Assessment Plan. This process is still evolving and is in process of being finalized.

Consistent with the new FY 2003 NNSA/UC PM process, this PPWM documents the FY 2003 PMs relevant to the WM Program. Appendix A provides a copy of the latest FY 2003 PM information incorporated into the NNSA/UC Contract (Tier I and Tier II). The FY 2003 PM Tier III level was provided by LANL to NNSA in January 2003 and, once submitted and finalized, will be added to Appendix A.

16.2 Waste Management Program Performance Indicators

To track and trend success in achieving the jointly developed Program Plan goals and objectives, PIs have been developed and are identified in Appendix B. The PIs are not identified in the strategic-level PPWM (which will be updated annually). Instead, the PIs are included in Appendix B, and can be revised, as needed throughout the year.

The PIs were developed as part of the development of this Program Plan. WM program representatives from LASO and LANL were involved in the development and review of the PIs. In addition, the LASO/OPL coordinated with other LASO offices and the NNSA Svc Ctr.

The PIs flow down from the program goals stated in the beginning of the Program Plan. They are tiered to support WM performance on the NNSA RTBF performance measures as reflected in the latest NA-117 guidance. Further, the PIs reflect program production goals, cost-reduction and -efficiency efforts, and quality of operations.

It should be noted that many of the PIs are funding-dependent (e.g., the "2010 Plan" production goals). The PIs will be utilized as tools for prioritizing and planning work and evaluating contractor performance at the end of the performance period (September 2003). Accordingly, LASO and LANL work collaboratively to determine what final indicators will be appropriate after FY 2003 budgets are finalized. The LASO and LANL representatives will identify the organization that has responsibility for implementation of the PIs. Many of the PIs require data collection systems that may not directly relate to the WM Program scope. The LASO and LANL will work jointly to define these indicators to support adequate data collection. Also, some of the PIs relate to generator activities. This Program Plan was originally envisioned as a tool for measuring the performance of activities funded by WM program sponsors. Evaluation of waste generators will be more difficult and require

additional discussion and collaboration between LASO and LANL.

16.3 Change Control Process

The Program Plan Change Control Process requires that the Program Plan be controlled to track changes to the document. In addition, Appendix B: Fiscal Year 2003 Waste Management Performance Indicators, will undergo change control.The remaining Program Plan Appendices are provided for information only and will not require documentation of changes.

Appendix A

Fiscal Year 2003 Waste Management Performance Measures (Tiers I and II)

Consistent with the new Fiscal Year (FY) 2003 National Nuclear Security Administration (NNSA)/University of California (UC) Performance Measure (PM) process, this Program Plan for Waste Management (Program Plan or PPWM) documents the FY 2003 PMs relevant to the Waste Management (WM) Program. This Appendix provides a copy of the latest FY 2003 WM Program PM information incorporated into the NNSA/UC Contract (Tier I and Tier II). The FY 2003 PM Tier III level was provided by LANL in January 2003 and, once finalized, will be added to Appendix A.

The following Standards of Performance consist of Strategic Performance Objectives and supporting PMs and are the primary components of the performance-based management system described in the NNSA/UC contract. The NNSA/UC contract includes specific Performance Areas. The Performance Areas incorporated into this Appendix are those most related to the WM Program mission.

Implementation of the expectations defined in Appendix F of the NNSA/UC contract is supported by the Contractor's Evaluation Plan (CEP) that includes implementation guidelines for each PM. Those guidelines establish points of accountability and include procedures for addressing budget planning milestones consistent the Basis for Budget Planning as agreed at the NNSA Navigators' meeting on August 2, 2002.Where appropriate, they contain performance targets and related dates for each measure.

The Parties agree that the NNSA Site Office Managers, UC Office of the President, and the Laboratory Directors will jointly review the CEP's implementation guidelines for the purpose of obtaining NNSA comment and input. The Site Office Managers will collect and summarize input from NNSA offices on the Contractor's CEP implementation guidelines and communicate the input to the Contractor as appropriate. It is the intent of the Parties that issues involving the CEP implementation guidelines will be resolved to the maximum possible extent and that unresolved issues, if any, will be included in NNSA's annual Performance Evaluation Report.

The NNSA/UC contract includes specific Performance Areas. The following Performance Areas are those most related to the Waste Management Program mission, directly extracted from Appendix F of the FY 2003 NNSA/UC contract:

Performance Area: Mission

Performance Objective # 6: Achieve successful completion of projects and development of user facilities

Performance Measures:

1. Execute significant construction projects as identified and agreed to between the Site Offices and laboratories within budget, scope, and schedule.

Performance Area: Operations

Performance Objective # 7: Maintain an effective and efficient operations basis in support of mission objectives

Performance Measures:

1. Meet facility short and long term needs to support mission requirements; critical facilities, including nuclear facilities, will meet operational needs for programmatic work requirements by minimizing unplanned system outages and downtime. Achieve the objectives in the approved FY03 Ten-Year Comprehensive Site Plan.

2. Achieve continual improvement in ISM:

   - Develop and implement simplified facility safety basis and related operational requirements for non-nuclear facilities based on benchmarking of best practices.
   - Assure consistent application of ISM principles across all organization levels and across all Laboratory facilities.

3. Comply with 10 CFR 830 subpart B for the operations of the Laboratories' category 2 and 3 nuclear facilities by completing the required Documented Safety Analysis and Technical Safety Requirements according to the Master Schedule (LANL).

4. Complete the NNSA-approved action plans and UC-approved project plans for implementing Integrated Safeguards and Security Management and after that, achieve continuous improvements by providing consistency throughout the Laboratory.

5. Develop with NNSA a long-term plan to reduce inventories of surplus and excess SNM and onsite waste.

6. Develop and execute an Environmental Management Program consistent with regulatory and mission requirements. (LANL)

Performance Area: Management

Performance Objective # 8: Utilize UC strengths to recruit, retain and develop the workforce basis

Performance Measures:

1. Provide skills necessary to enhance the science base by implementing integrated recruiting and retention strategies to meet the Laboratories' long-range skills requirements.

2. Implement leadership and management development programs aligned with workforce planning and diversity objectives.

Performance Objective # 9: Sustain effective Community Initiatives

Performance Measures:

1. Support community and tribal initiatives that leverage community and corporate UC resources in order to foster economic development and corporate citizenship, including educational activities, regional procurement, and workforce development. (LANL Only)

Appendix B

Fiscal Year 2003
Waste Management Performance Indicators

The Program Plan for Waste Management (Program Plan or PPWM) contains the Waste Management (WM) Program Vision Statement and related Goals and Objectives. The Program Plan will be updated annually.

The Performance Indicators (PIs) identified in this Appendix flow down from the Program Plan "Vision Statement" and "Goals and Objectives". This Appendix is considered a separate document to be revised, as needed, throughout the year. This Appendix will be a working tool to support LASO/LANL discussions and performance evaluation areas of interest. The specific PIs that will be reported and the criteria to be used for measuring performance will be based on separate negotiations between Los Alamos National Laboratory (LANL) WM organizations and the National Nuclear Security Administration (NNSA)/Los Alamos Site Office (LASO).

The PIs are intended to be consistent with the Fiscal Year (FY) 2003 NNSA/UC Performance Measures still being negotiated and not yet finalized. If any inconsistency is identified, the NNSA/UC contract PMs would have precedence.

The PIs consider program production goals, cost reduction and efficiency efforts and quality of operations. The PIs support WM performance on the NNSA Readiness in Technical Base and Facilities (RTBF) Performance Measures, as reflected in the latest NNSA Headquarters (NA-117) guidance. While the primary emphasis of the Program Plan is WM Program-funded work scope, some PIs measure waste generator activities. Many of the PIs are funding-dependent (e.g. 2010 production goals). Los Alamos Site Office and LANL will work collaboratively to determine what the final measures will be after budgets are approved for FY 2003.

Table B-1, below, provides the WM Program "Vision Statement", "Goals and Objectives", and negotiated Performance Indicators (PIs).

Table B-1 Waste Management Program Vision Statement and Related Goals and Objectives

Vision Statement	Goals and Objectives	Performance Indicators
Provide efficient and effective WM customer services to LANL core mission programs	*Support Programmatic Operations and Maintain WM Facilities*: LANL WM shall ensure that no core mission program deliverables are impacted by WM facility closures and maintain the WM facilities, equipment, and technologies in an appropriate condition such that WM Program is not a limiting factor in the accomplishment of NNSA activities. (e.g., inability of WM Program to accept generator waste because of inadequate storage capacity).	Volume of waste from generators that is compliant with the WAC and not capable of receipt at WM facilities
Manage LW and NGW in an efficient and compliant fashion	*Protect the Public and Worker Health and Safety*: WM operations will be compliant with all WM and environmental laws and regulations. WM operations shall not affect public safety and/or worker health. WM facilities shall be operated in a manner consistent with proactive implementation of LANL Integrated Safety Management objectives.	Number of significant findings against the Integrated Safety Management Program
	Protect the Environment: WM operations will be compliant with all WM and environmental laws and regulations. WM operations shall not negatively affect the environment.	Number of noncompliant activities with WM and/or environmental laws and regulations Number of significant findings and/or Notices of Violation and/or Notices of Deficiency received.
	Protect the Security of WM Facilities and Operations: WM facilities and operations shall be managed in a manner consistent with proactive implementation of LANL Integrated Safeguards and Security Management objectives. The WM Program shall ensure that security-significant waste materials are managed in accordance with applicable DOE requirements.	Number of significant findings against the Integrated Safety and Security Management Program Number of noncompliant activities with security requirements Number of significant findings and/or Notices of Violation and/or Notices of Deficiency received
	Treat, Store, and Dispose of Waste per Requirements: Radioactive waste shall be treated, stored, and disposed of per all relevant WM treatment, storage, and disposal requirements.	Number of noncompliant activities with WM and/or environmental laws and regulations Number of significant findings and/or Notices of Violation and/or Notices of Deficiency received Number of noncompliant NPF waste (i.e., not approved prior to generation)

Vision Statement	Goals and Objectives	Performance Indicators
	Manage WM Operations Cost-Effectively and Per Applicable Requirements: Radioactive and hazardous wastes shall be cost-effectively managed in compliance with applicable laws, regulations, DOE Orders, and LANL guidance and policy documents, and consistent with approved baselines.	Number of exceedances to authorized funding levels
	Conduct WM Operations per NNSA/UC Contract Requirements: All WM facilities management and WM operations shall be conducted in accordance with the requirements and expectations specified in the NNSA/UC contract and the LANL Work Smart Standards.	Number of noncompliant activities with contractual requirements Number of significant findings and/or notices of contractual violation and/or notices of deficiency received
	Apply Quality Assurance to WM Facilities and Operations: WM facilities, operations, and projects shall be conducted under appropriate quality assurance program(s) meeting DOE and LANL requirements using a graded approach.	Number of noncompliant activities with requirements identified in the quality assurance plans Number of significant quality assurance findings
Work off LW inventories within the next 10 years	*Plan and Implement Accelerated Shipment of LW 2010 Plan*: Implement accelerated EM WM characterization, packaging, and shipping program and achieve milestones identified and documented in the 2010 Plan (per the Performance Management Plan for Accelerating Cleanup [PMP]).	Key FY 2003 milestones and deliverables, as identified in the LANL 2010 Plan PMP and/or Life Cycle Baseline, which is more current (to be completed in FY 2003).
		Per the FY 2003 Approved Shipping Schedule, LANL will complete LW shipments to WIPP (by September 30, 2003)
		LANL will ship cubic meters consistent with 2010 Plan" of LW to WIPP (by September 30, 2003)
		Consistent with the FY 2003 LANL STP, MLLW will be treated and disposed per regulatory requirements and schedules
	Develop and Implement Accelerated Shipment of LW 2010 Plan Life Cycle Baseline: Develop, document, and implement a detailed FY 2003 through FY 2010 life cycle baseline, within integrated work scope and schedules.	
Dispose of NGW inventories within one year of generation	*Plan for Shipment of NGW*: Develop and implement a detailed FY 2003 to FY 2010 NNSA plan to dispose of NGW per NNSA policy expectations.	A study documenting NGW projection estimates for FY 2003 to FY 2013 will be completed by September 30, 2003 All radioactive and hazardous NGW with a disposal path will be shipped offsite within one year of generation (by September 2003), except for TRU NGW, which will meet this requirement by FY 2004 to FY 2005

Vision Statement	Goals and Objectives	Performance Indicators
	Manage NGW generating processes: Prior to generating wastes with no disposition path, comply with requirements to plan for generation of NPF wastes and receive NNSA approval prior to generation of new wastes.	NPF wastes will not be generated without prior NNSA approval
	Meet Generator Compliance Requirements: Generators shall comply with all appropriate requirements and WAC.	Number of WAC nonnompliances identified
Reduce RLW discharges to ALARA	*Meet all Standards and Requirements for RLW Discharges*: Meet all applicable laws and regulations associated with the management of RLW and RLW discharges. Reduce such discharges to ALARA.	The RLWTF will have no violations of environmental and/or WM regulations which result in Notices of Violation and/or Notices of Deficiency during FY 2003
	Provide Right-Sized and -Scoped WM Capabilities: Provide the right WM facilities, infrastructure, operational capabilities, and technologies to support a state of operational readiness.	
Provide right-sized and right-scoped facilities and capabilities that support WM operations	*Provide Right-Sized and -Scoped WM Facilities and Capabilities:* WM facilities and capabilities shall be provided for TRU, MTRU, LLW, MLLW, and HAZ/CHEM waste, including required facilities, equipment, infrastructure, and operations support.	WM facilities shall be operational for a minimum of 90% of planned working days during FY 2003 Operational capabilities to support all required waste characterization requirements are operational for a minimum of 90% of working days during FY 2003
	Maintain WM Facilities per RTBF Requirements: LANL WM facility management shall ensure that no WM Program deliverables are impacted by facility closures; maintain warm standby operations in a safe, secure, compliant, and cost-effective manner; and sustain a defined level of WM operational readiness; and Maintain the WM facilities and technologies in an appropriate condition such that WM is not a limiting factor in the accomplishment of NNSA and EM WM activities.	No key WM Program deliverables and/or milestones shall be impacted by WM facility closures
		The Area G DSA will be submitted to LASO for review and approval consistent with the Safety Basis Office (SBO) Prioritization List
		The RLWTF DSA will be submitted to LASO for review and approval consistent with the SBO Prioritization List
		The DVRS HC3 DSA will be submitted for LASO approval consistent with the SBO Priority List.
		The RANT Full BIO will be submitted for LASO approval consistent with the SBO Priority List
		The WCCR Facility AB documentation needed to support an additional glovebox at WCRR Facility will be submitted for LASO approval consistent with the SBO Priority List

Vision Statement	Goals and Objectives	Performance Indicators
		The DSA for the HC2 Modular Unit for Visual Examination/ Repackaging will be submitted for LASO approval consistent with the SBO Priority List
		The Centralized Characterization Project Production Lines AB documentation will be submitted for LASO approval consistent with the SBO Priority List
	Manage WM Facilities per Cost-Effective and Applicable Requirements: WM facilities shall be cost effectively managed in compliance with applicable laws, regulations, DOE Orders, and LANL.	WM facilities and operations will be conducted in a manner consistent with authorized and allocated funding levels for FY 2003 Identify cost savings to decrease facility costs while not negatively impacting operations
Support and implement joint LASO/LANL WM program planning activities	*Develop, Approve, and Implement a Formal Program Plan for WM*: Support the joint development, a implementation of a formal Program Plan B-4	Finalize formal Program Plan for WM (to be jointly developed and approved by LASO and LANL)
	Plan for Long-Term WM Mission: WM operations and projects shall be planned and implemented assuming a long-term ongoing NNSA mission to extend beyond the horizon of this Program Plan.	Planning for the long-term NNSA WM mission shall be incorporated into the joint LASO/LANL Program Plan for WM effort.
	Meet Joint LASO/LANL WM Expectations and Requirements: Comply with WM expectations, as defined and approved by this Program Plan.	Number of Program Plan key milestones not completed and deliverables not submitted per agreement
Improve the efficiency of WM logistics and operations through the development and implementation of specific continuous improvement efforts	*Identify/Implement Innovative Business Processes*: To reduce inefficiencies, eliminate non-productive direct and indirect costs and streamline the cost of operating these facilities.	The WM Program will identify opportunities for improving business practices through continuous improvement and will implement two (2) improvement efforts (by September 30, 2003)
Incorporate the principles of Waste Min and P^2 into day-to-day operations through program and project planning	*Integrate WM Operations with Program Activities*: WM operations shall be integrated with Division program activities, and the pollution prevention & regulatory compliance expectations of NNSA, EM, and LANL. P^2 and Waste Min will be incorporated into day-to-day operations by designing these work principles into all work activities and developing and implementing specific P^2/Waste Min efforts.	FY 2003 P^2 and Waste Min goals, as negotiated will be accomplished by September 30, 2003
Continue to develop and implement efforts supporting inter-site cooperation and sharing of resources	*Support Inter-Site Cooperation in the WM Arena*: WM operations shall be integrated, to the extent possible, with other sites to develop and implement efficiencies.	Two (2) inter-site cooperation efforts will be completed in FY 2003.

Vision Statement	Goals and Objectives	Performance Indicators
Support internal and external WM Program reviews and assessments	*Support Oversight and Expectations*: WM facilities shall provide support to NNSA, Office of Inspector General, and Defense Nuclear Facility Safety Board oversight activities, as needed.	The WM Program will respond to all requests for information from NNSA, the Office of Inspector General, and the Defense Nuclear Facility Safety Board, in support of NNSA oversight activities

Appendix C

Department of Energy
Waste Management Organizations

The "New National Nuclear Security Administration"

On December 17, 2002, the National Nuclear Security Administrator announced the "National Nuclear Security Administration of the Future." These efforts are designed to implement the President's Management Agenda and create a more effective National Nuclear Security Administration (NNSA).

The organizational changes were made effective on December 20, 2002. Other aspects will be phased in through the end of Fiscal Year (FY) 2004 (September 30, 2004). These changes do not involve positions at NNSA sites funded by other Department of Energy (DOE) organizations such as Environmental Management (EM).

Organizational changes that impact federal oversight of the Los Alamos National Laboratory include disestablishment of the Albuquerque Operations Office, effective December 20, 2002 and establishment of that same office as the NNSA Service Center. Also, existing Area Offices, such as the Los Alamos Area Office, were renamed as Site Offices. A Site Office Manager will head each Site Office and will serve as the formal Contracting Officer for their facility. Site Office Managers will establish their own internal organization tailored to their own considerations; there will be no "standard" Site Office internal structure prescribed by NNSA Headquarters (HQ). Accordingly, the Los Alamos Site Office (LASO) was stood up on December 20, 2002. Site Office Managers report directly to the Principal Deputy Administrator.

National Nuclear Security Administration Headquarters Defense Programs Organizations

National Nuclear Security Administration HQ Waste Management (WM) Program direction, policy guidance, and oversight are provided through the NNSA/Defense Programs (DP) organization. The DP organization that provides oversight of newly generated waste activities at LANL is the Assistant Deputy Secretary for Research Development and Simulation (NNSA/DP/NA-11). The Office of Facilities Management and Environment, Safety, and Health (NA-117) provides direction and guidance on WM issues and provides WM funding for WM facilities through the Readiness in Technical Base and Facilities Program.

National Nuclear Security Administration/Los Alamos Site Office

In FY 2002, the former Los Alamos Area Office (LAAO) was reorganized into the Office of Los Alamos Site Office (OLASO). In December of 2002 that office was renamed the Los Alamos Site Office (LASO) under the "New NNSA" initiative, and was reorganized as a direct report to NNSA Headquarters (HQ). This Appendix includes a LASO organizational chart for reference. In addition, as part of that reorganization, roles and responsibilities for the WM functions have

been realigned. Included in Appendix D is a LASO WM roles and responsibilities memorandum, with a summary chart by organization.

National Nuclear Security Administration/Service Center

As part of the "New NNSA" restructuring initiative described above, the former AL has been chartered as the NNSA Service Center to provide technical and administration support to NNSA Site Offices. An organization chart for the new NNSA Service Center is provided in this Appendix.

The NNSA Service Center senior-level positions have been established and selections were announced in February 2003. A Service Center Director, heads the Service Center with the title, Director, NNSA Service Center. A Principal Deputy supports the Director. The NNSA Service Center consists of four major components: Technical Services, Federal Services, Business Services; and Field Financial Management. Additional internal organization will be as specified by the Service Center Director. Physical consolidation of the NNSA Service Center in Albuquerque will be completed by September 30, 2004.

Historically, the former Albuquerque Operations Office (AL)/Office of Environmental Operations and Services (OEOS) had overseen Environmental Restoration, WM, LANL site and facility management, and transportation activities at LANL. Further, in the past, AL Waste Management Division (OEOS/WMD) has worked with its DOE contractors to manage hazardous and nuclear wastes at AL sites. This work involved treating, storing, and disposing of waste and developing programs to prevent or minimize generation of new waste. The WMD provided expertise and oversight to DOE sites and to states, tribes, and others in areas such as pollution prevention, waste treatment, waste storage, waste disposal, as well as in program and project management.

As a result of the NNSA reorganization, the newly established NNSA Service Center, Office of Technical Services, houses the Environmental Programs Department. This organization is tasked with providing WM technical and administrative support to the new site offices, including LASO.

Appendix F provides the DRAFT DOE/NNSAL Service Center Agreement, in process of concurrence and approval, which, once finalized, will summarize the key functions this office will be delegated.

Environmental Management Headquarters Organizations

Department of Energy HQ EM provides direction and oversight of legacy waste activities at LANL. HQ organizations that provide guidance and direction include the Offices of the Deputy Assistant Secretaries for Policy, Planning and Budget (EM-10); Integration and Disposition (EM-20); Site Closure (EM-30); and Science and Technology (EM-50). The Small Sites Closure Office, EM-34, provides oversight of site WM activities and operations.

LOS ALAMOS SITE OFFICE

PUBLIC AFFAIRS OFFICE (OOM)

Vacant, Public Affairs
B. Romero, Comm Reuse & Corp Prog Mgr, 5-4418
T. Taylor, Environmental Protection Specialist, 5-7203

SENIOR SAFETY ADVISOR (OOM)

G.Schlapper, Senior Safety Advisor, 5-7111

SAFETY AUTHORIZATION BASIS TEAM (SABT)

C. Steele, Senior Authorization Basis Mgr, 7-3418
R. Capshaw, Gen Eng, 5-3555
R. Cramberg, Mgmt/Program Analyst, 5-9234
R. Janke, Gen Eng, 5-4205
C. Knoell, Gen Eng, 5-3161
D. Nez, Gen Eng, 845-4235
N. Sandoval, Gen Eng, 5-5937
R. Tom, Gen Eng, 5-5326
J. Houghton, Gen Eng (Lead), 7-5288 (Detail)
Vacant, Gen Eng (Deputy)
Vacant, Gen Eng (AB Analyst)

OFFICE OF THE MANAGER (OOM)

R. Erickson, Manager, 7-5105
E. D. Martinez, Deputy Manager, 7-5105
I. Tainter, Executive Assistant, 7-5105
I. Sando, General Clerk, 5-5036
D. Vigil, Community Affairs Specialist, 7-0451

B. Osheim , Counsel, 7-4667
P. Wolford, Legal Support Asst, 7-4667
L. Cummings, General Attorney, 7-4667
P. Griego, Legal Support Spec, 5-5331
T. Hornsby, General Attorney, 7-4667

ASSISTANT MANAGER FOR SECURITY MANAGEMENT (SM)

Vacant, Assistant Manager
F. Ward, Sec Spec (Lead), 5-4940
D. Menapace, Sec Spec, 5-3229
C. Murdock, Sec Spec, (MC&A), 5-7121
P. Valdez, Sec Spec, 7-5118
Vacant, Information Technology (Cyber Security)
Vacant, Sec Spec (Pro Force)
Vacant, Sec Spec (Systems)
Vacant, Sec Spec (VA)

Vacant, Assistant Manager
Y. Alarid, Procurement Tech, 5-5034
M. Craig, Program Analyst, 5-9175
V. Estes, Mgmt/Program Analyst, 5-3227
M. Griego, Admin Support Assistant, 7-6146
A.Lovato, Contract Spec (Acting Lead), 54639
R. Ortiz, Staff Accountant, 7-6148
R. Romero, Realty Spec, 7-4662
Vacant, Budget Analyst
Vacant, Contract Specialist
Vacant, Information Technology
Vacant, Prog Analyst (Assess Prog Mgr)

ASSISTANT MANAGER FOR PROGRAM LIAISON (PL)

G. Rodriguez, Assistant Manager, 7-1968
B. Harwood, QA Eng, 5-5025
L. Kwei, Pit Eng, 5-8774
L. Le-Doux, Fac Eng, 5-9235
A. Leivo, QA Eng, 7-1021
P. Moss, Gen Eng (Intern), 7-6023
S. Shaw, QA Specialist, 5-6028
T. Wald, Gen Eng, 7-579
D. Newell, Gen Eng/Phys Sci, 7-9373
Vacant, Mgmt/Program Analyst
Vacant, Weapons Prog Eng
Vacant, LDRD (slot from NA-116)
Vacant, WFO (slot from NA-116)

ASSISTANT MANAGER FOR PROJECT MANAGEMENT (PM)

H. Le-Doux, Assistant Manager, 7-9875
I. Lucero, Technical Prog Asst, 7-9875
J. Amezquita, Gen Eng, 7-2268
P. Badhedka, Project Manager, 5-0171
J. Cedillos, Gen Eng, 5-6437
E. Colton, Phys Sci, 7-4241
S. Fong, Gen Eng, 5-5534
J. Gallegos, Gen Eng (Intern), 5-8439
J. Griego, Gen Eng, 5-6439
A. Nash, Gen Eng (Intern), 5-5026
T. Rush, Gen Eng, 7-5280
L. Smith, Gen Eng, 7-4235
E. Trollinger, Gen Eng, 7-0281
E. Trujillo, Gen Eng (Intern), 5-5914
I. Trujillo, Gen Eng, 7-4664
M. Weber, Gen Eng (Intern), 7-4075
Vacant, Gen Eng
Vacant, Quality Assurance Eng

Environmental Restoration Team

D. Gregory, Gen Eng/Phys Sci(Acting Lead), 75808
R. Enz, Gen Eng/Phys Sci, 7-7640
T. Whitacre, Geologist, 5-5042
L. Woodworth, Geo Chemist, 5-5820

ASSISTANT MANAGER FOR FACILITY OPERATIONS (FO)

J. Vozella, Assistant Manager, 5-6351
M. Proctor, Technical Prog Asst, 5-6351

Facility Representative Team

F. Bell , Gen Eng (Lead), 5-4856
R. Allen, Gen Eng, 5-0004
E. Christie, Gen Eng, 5-2821
S. Frye, Gen Eng, 7-2524
W. Gentile, Jr., Gen Eng, 7-5828
K. Keilholtz, Gen Eng, 7-8689
B. Le-Brun, Gen Eng, 5-6348
T. Lewis, Gen Eng, 5-6632
J. Lipsky, Gen Eng, 7-4140
J. Lorence, Gen Eng, 5-0007
D. Luke, Gen Eng, 5-0503
M. Martinez-Woodson, Gen Eng, 5-9867
A. Trujillo, Gen Eng, 5-8527
J. Williams, Gen Eng, 5-4806
M. Johansen, Gen Eng (Lead) (Detail), 5-5046

Safety & Health Team

D. Barber, Indust Hygienist,7-3818
R. Gall, Fire Prot Eng, 5-7202
D. Styers, Health Physicist, 5-5050
Vacant, Maintenance Prog Eng
Vacant, Occupational Safety Mgr

Environmental Prot Prog/NEPA

K. Benally, Gen Eng (Intern), 7-6830
V. Loucks, Env Prot Spec, 7-6819
J. Nunz, Phys Sci, 7-0573
G. Turner, Gen Eng (RCRA), 7-5794
E. Withers, Env Sci, 7-8690
Vacant, Gen Eng (Groundwater)

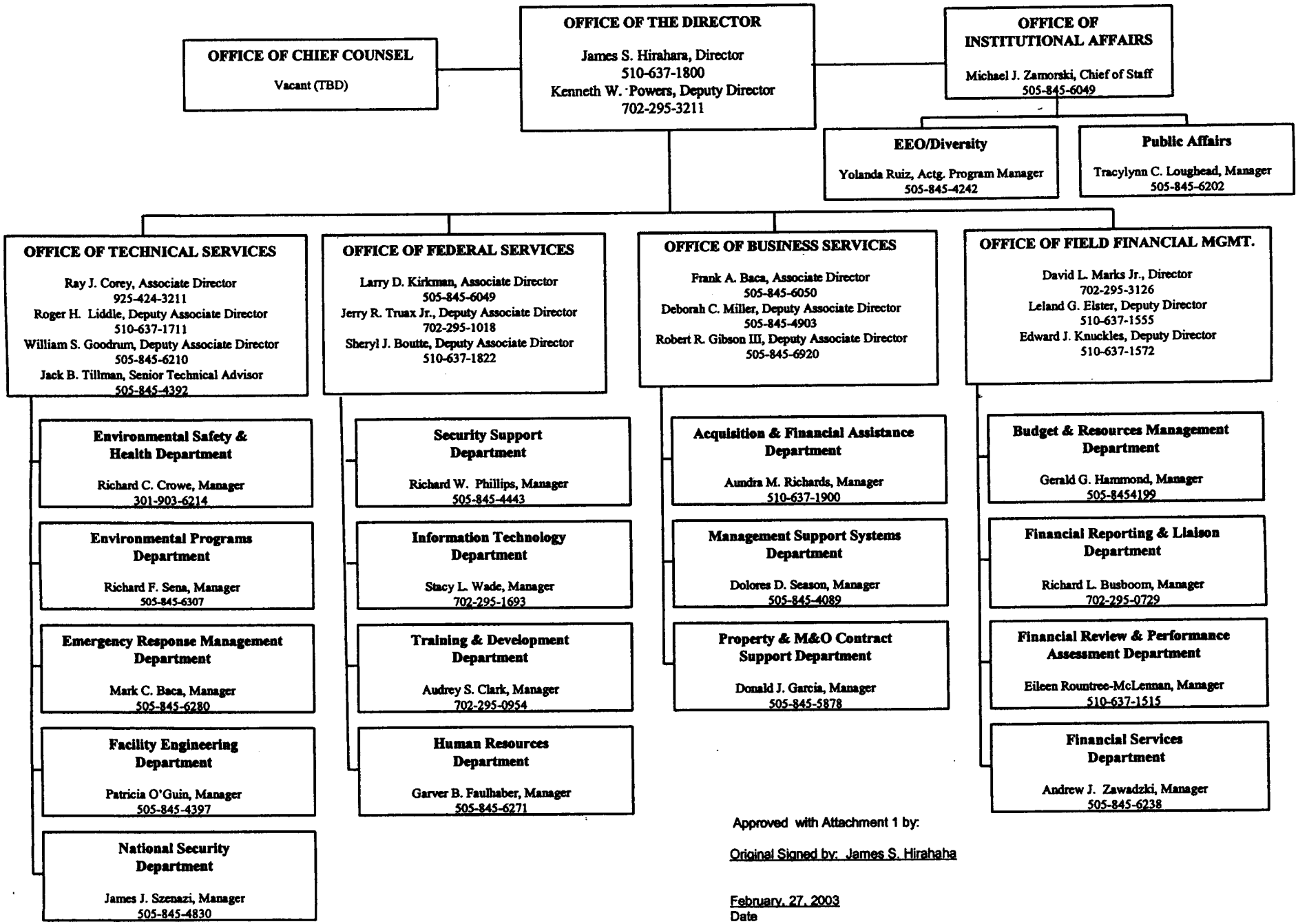
LOS ALAMOS SITE OFFICE

Authorized	DP 102 EM 7	= 109
On Board	DP 79 EM 7	= 86
Vacancies	DP 23 EMO	= 23

Black = DP
Blue = DP Vacancies
Red = EM

Telephone prefix: (505) 667 or 665
5/29/03

NATIONAL NUCLEAR SECURITY ADMINISTRATION
SERVICE CENTER

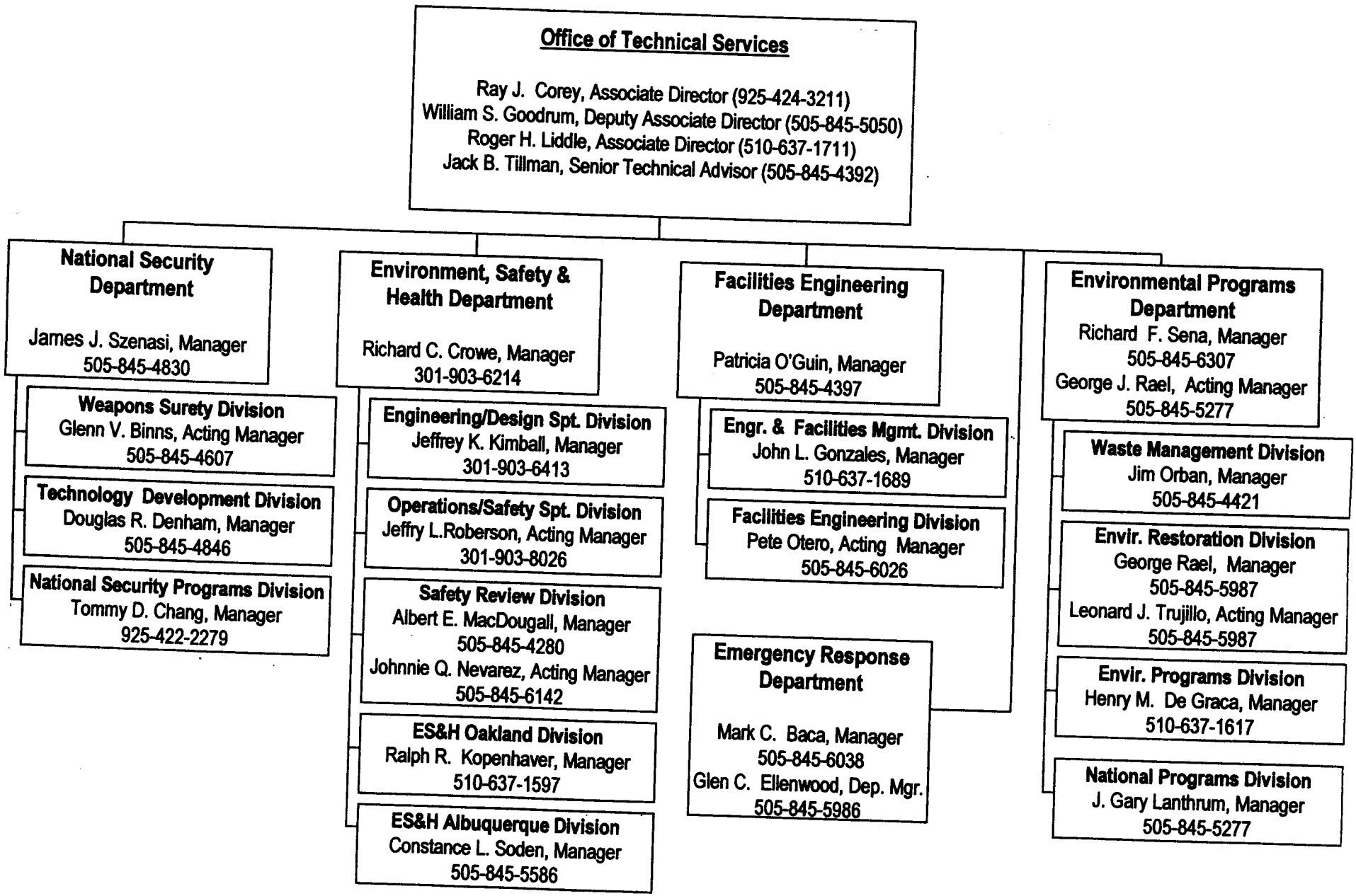


Approved with Attachment 1 by:

Original Signed by: James S. Hirahaha

February, 27, 2003
Date

Office of Technical Services



Appendix D

Los Alamos Site Office
Waste Management Roles and Responsibilities

Consistent with the recent standup of the Los Alamos Site Office (LASO), LASO has realigned the Waste Management (WM) roles and responsibilities. This Appendix includes a copy of the LASO WM roles and responsibilities letter, dated June 21, 2002, currently in effect.

:ed States Government

Department of Energy

Albuquerque Operations Office
Office of Los Alamos Site Operations
Los Alamos, New Mexico 87544

memorandum

DATE: JUN 21 2002
REPLY TO ATTN OF: OPL:3DMN-011
SUBJECT: Office of Los Alamos Site Operations Roles and Responsibilities in Waste Management

TO: Distribution

As you are aware, the Los Alamos Area Office (LAAO) was recently reorganized into the Office of Los Alamos Site Operations (OLASO). Attachment 1 provides a current OLASO organizational chart. As part of that reorganization, roles and responsibilities for the Waste Management (WM) functions have been realigned. This memorandum is intended to clarify OLASO WM roles and responsibilities. Attachment 2 provides a summary of WM functional responsibilities and OLASO points-of-contact.

The new OLASO organization emphasizes the application of an integrated approach to WM activities to ensure continued support of core mission needs. Full coordination with the Albuquerque Operations Office (AL) and Headquarters will be maintained in this construct.

The OLASO Office of Program Liaison (OPL) serves as the OLASO Program Lead and provides a strategic site planning and site integration emphasis for legacy and newly generated waste. Mission needs definition and validation, integration, and change control are delegated to this office. Also, activities such as the integration of WM facility authorization basis issues and the validation of project needs for projects within the RTBF are OPL responsibilities. In addition, this office is responsible for WM budget integration and coordination issues, including input to the AL Environmental Management budget change control process. Further, OPL serves as the lead for integration of programmatic and operations Performance Measures (PM) and programmatic PM definition and assessment. Finally, the integration of reporting requirements is an OPL-assigned function.

The OLASO Office of Project Management (OPM) is responsible for review of LANL WM construction project authorization requests; approval of such projects; and evaluation and oversight of cost, scope, and schedule activities for approved projects. Examples of WM projects currently being overseen by this organization include: approved WM Cerro Grande Rehabilitation Project tasks (such as Radioactive Liquid Waste Treatment Facility upgrades; the Modular Unit characterization efforts; and the High Activity Waste Facility) and the Decontamination and Volume Reduction System (DVRS).

The OLASO Office of Facility Operations (OFO) provides technical oversight of WM daily operations. In addition, OFO evaluates, baselines, and benchmarks operational activities and makes recommendations regarding more efficient operations. Further, OFO manages approved operations baselines to cost, scope, and schedule expectations. This organization is also responsible for regulatory issue management and resolution, including

issues associated with compliance and permitting expectations and requirements. Finally, PM development and assessment for operational activities are performed by OFO.

The OLASO Safety Authorization Basis Team (SABT) reviews and approves safety basis documents for nuclear facilities. This office also provides technical advice and recommendations on safety basis issues, as needed. Accordingly, all WM facilities safety basis documentation is reviewed and approved by SABT.

Finally, the **OLASO Office of Legal Counsel** provides legal advice and counsel in legal and regulatory WM issues.

In conjunction with my emphasis on WM integration, we have established two Integrated Project Teams (IPTs). Dorothy Newell serves as the Team Leader for the DVRS IPT and James Nunz is the Team Leader for the "2010 Plan" /"Quick to WIPP" IPT.

I appreciate your support for the new organization. If you have any questions regarding this clarification, please call me at 505/667-5105.

E. Dennis Martinez
Acting Director
Office of Los Alamos Site Operations

Distribution:
See page 3

Distribution:
D. Miotla, NA-117, HQ/GTN
E. Schmitt, EM-10, HQ/GTN
J. Fiore, EM-43, HQ/GTN
M. Frei, EM-30, HQ/FORS
X. Ascanio, NA-124, HQ/GTN
G. Rudy, NA-50, HQ/FORS
J. Arthur, OOM, AL
K. Boardman, DPE, AL
C. Cruz, OCR, AL
J. Tillman, OEP, AL
G. Rael, ERD, AL
J. Orban, WMD, AL
C. Murnane, WMD, AL
J. Holt, ADOPS, LANL, MS-A104
S. Gibbs, ADOPS, LANL, MS-A104
C. Zerkle, ADOIFC, LANL, MS-F627
C. Bachmeier, ADOIFC, LANL, MS-F627
B. Ramsey, RRES, LANL, MS-J591
K. Hargis, RRES, LANL, MS-J591
B. Martin, RRES, LANL, MS-J552
T. Stanford, FWO, LANL, MS-K492
D. McLain, FWO-WFM, LANL, MS-J593
J. Loughead, FWO-WFM, LANL, MS-J593
R. Alexander, FWO-WFM, LANL, MS-J593
R. Hahn, FWO-SWO, LANL, MS-J595
S. Helmick, CFM, LANL, MS-J519
B. Osheim, Counsel, OLASO
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J. Nunz, OPL, OLASO
H. LeDoux, OPM, OLASO
C. Steele, SABM, OLASO
J. Vozella, OFO, OLASO
F. Bell, OFO, OLASO
J. Eschenberg, OFO, OLASO
R. Allen, OFO, OLASO

Attachment 2

Office of Los Alamos Site Operations
Waste Management Points of Contact and Functional Responsibilities

OLASO Organizations	Waste Management Functional Responsibilities	Lead Waste Management Point of Contact	Phone Number
Office of Program Liaison (OPL)	WM program direction and guidance	Gene Rodriguez (Associate Director)	505/667-1968
	WM strategic site planning and integration, Program needs definition, validation, integration, change control; programmatic integration of AB issues (with SABT); projects integration (with OPM) Budget integration and coordination Programmatic Performance Measure (PM) definition and assessment; Integration of programmatic and operations PMs Integration of WM reporting requirements	Dorothy Newell (Waste Management Program Liaison Manager)	505/667-9373
	Decontamination and Volume Reduction System Integrated Project Team (DVRS IPT)	Dorothy Newell (Lead DVRS IPT)	505/667-9373
Office of Facility Operations (OFO)	Daily environment, safety and health operations oversight	Joe Vozella (Associate Director)	505/665-6351
	Daily technical oversight	Randi Allen (TA-50/TA-54 Facility Representative)	505/665-0004
	Baseline, benchmark operations, and make recommendations for efficiencies Manage operations to cost and schedule Packaging and transportation Operations PM definition and assessment	James Nunz (Waste Management Operations Manager)	505/667-0573
	"2010 Plan"/"Quick to WIPP" Integrated Project Team (DVRS IPT)	James Nunz (Lead 2010 Plan IPT)	505/667-0573
	Regulatory Compliance, Permits	Gene Turner (RCRA and surface water) Mat Johansen (Groundwater) Steve Fong (Air quality) James Nunz (Packaging and Transportation) Elizabeth Withers (NEPA)	505/667-5794 505/665-5046 505/665-5534 505/667-0573 505/667-8690
Office of Project Management (OPM)	WM construction projects authorization and oversight of construction project cost, scope and schedule	Herman LeDoux (Associate Director)	505/667-9875
Safety Analysis Basis Team (SABT)	WM authorization/safety basis review and approval	Christopher Steele (Safety Authorization Basis Manager)	505/667-3418
Office of Legal Counsel (LC)	WM legal and regulatory review and development of legal opinions	Elizabeth Osheim (Counsel)	505/667-4667

Appendix E

Los Alamos Site Office
Contracting Officer Representative Delegations

All University of California contractual requirements are identified, authorized, and conducted through a formal contract process. In January 2003, the Los Alamos Site Office (LASO) expanded its contract management and oversight functions by providing additional Contracting Officer and new Contracting Officer Representative (COR) delegations to the Site Office.

This Appendix provides a copy of the NNSA/LASO COR delegation letter for WM COR direction. The LASO memorandum, dated January 27, 2003, provides the names of CORs and their functional responsibilities relative to contractual requirements.

United States Government

memorandum

Department of Energy
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

DATE: JAN 27 2003
REPLY TO ATTN OF: LASO
SUBJECT: Appointment of Contracting Officer Representative for Contract No. W-7405-ENG-36 with the University of California

TO: Joseph C. Vozella, Office of Environment
Eugene T. Rodriguez, Office of Program Liaison
Herman C. Le-Doux, Office of Project Management

Pursuant to and in accordance with NNSA Policy Letter BOP.003.0302, *Appointment of Contracting Officer Representatives*, for NNSA Management and Operating Contracts, and the proposed Contract Clause entitled "Performance Direction", you are hereby appointed to act as the Contracting Officer's Representative (COR) in relation to the services provided to the Government by the contractor in performance of work under Contract No. W-7405-ENG-36 for the following functional area(s):

Functional Area	Contracting Officer's Representative (COR)
Environment, Safety, and Health	Joseph C. Vozella
Program Liaison including Quality Assurance, Nuclear Materials Management, RTBF Readiness, Pit Manufacturing, Waste Management, Weapons Program, Nuclear Non-Proliferation Program	Eugene T. Rodriguez
Project Management including Environmental Restoration	Herman C. Le-Doux

This appointment pertains to contract oversight activities and other functions under your purview associated with performance not involving a change in scope, cost, terms, or conditions of the contract. In this regard, you should ensure that you are familiar with the requirements of the contract and your functional responsibilities relative to the contractual requirements. Neither this appointment nor any COR responsibilities may be re-delegated to others.

Monitor Contract Compliance. Ensure that the contractor complies with all technical requirements of the work defined in the scope of work, including reports, documentation, data, work products, milestone schedules, and deliverables. In this connection, you shall:

a. Inform the Contracting Officer (CO), in writing, of any performance failure by the contractor.

b. Inform the CO if you foresee that the contract or any Work Authorization will not be completed according to schedule, and or estimated cost. Your written notice should include your recommendations for resolving the schedule problem, and or revising the estimated cost.

c. Ensure that the Government meets its contractual obligations to the contractor. This includes, but is not limited to, furnishing any Government property and services specified in the contract and providing timely Government comment on or approval of contract deliverables as may be required by the contract.

d. Issue written technical direction within the limitations set forth in this appointment and in accordance with the Performance Direction clause of the contract. A copy of all technical direction sent to the contractor shall be provided to the CO.

e. Assist the contractor in interpreting the technical requirements of the contract. Immediately report to the CO, in writing, all technical issues that cannot be resolved without increasing costs or changing the contract. Also, immediately report, in writing, any issues that cannot be mutually agreed to so that the CO can take action to resolve the issues. Such reports must include the facts pertinent to the issues and the recommended action.

f. Inspect and accept all deliverables within the scope of your appointment. Review contract deliverables for unauthorized work.

g. Assist in the development of the annual performance measures that will be included in the Performance Evaluation and Measurement Plan (PEMP) and provide input into the Performance Evaluation Report (PER) for assessing contractor performance.

h. Inform the CO of any potential or evidence of real or perceived organizational conflict of interest (OCI) matters or employee ethics or integrity issues.

i. Upon contract completion, forward a written statement to the CO attesting to the contractor's completion of technical performance, delivery, and acceptance of all goods and services for which inspection and acceptance are delegated. Provide any required closeout information to the CO and make disposition of all records and documents pertinent to the administration of the contract which you retained in your capacity as COR during the period of performance.

As a matter of practice, the COR should prepare a written record of meetings, trips, and telephone conversations relating to the contract. Each record and all correspondence relating to the contract should cite the contract number, date, time, and location, as necessary to be a complete record. It is requested that a copy of records or correspondence that you generate or receive relating to the contract be accessible to or furnished to the CO upon request and all other interested parties having a need to know. The utmost care must be given to restrictions regarding proprietary data and classified and business-sensitive information.

In performing these responsibilities, you are <u>not</u> authorized to re-delegate any COR responsibility to others or negotiate terms or make any agreements or commitments with the contractor that involve a change in the scope, price/cost, terms, or conditions of the contract. Only the CO is authorized to modify any term or condition of the contract, waive any requirement of the contract, or approve costs incurred or make determinations of cost allowability.

This appointment and its authority shall become effective upon your acceptance and shall remain in effect as long as you are assigned to the contract, this delegation is rescinded in writing, or the contract is completed.

Please acknowledge acceptance of the COR appointment and return one copy to the CO identified below.

E. Dennis Martinez
Contracting Officer
Los Alamos Site Office

Ralph E. Erickson
Manager
Los Alamos Site Office

ACCEPTANCE OF APPOINTMENT

I hereby accept the responsibility to perform the functions delegated herein to the best of my ability. I understand and will abide by the principles of ethical conduct for Government officers and employees.

Typed or Printed Name of Appointed COR: Eugene T. Rodriguez

Signature of COR: Eugene T. Rodriguez Date: 1/27/03

Appendix F

National Nuclear Security Administration Service Center Agreement

This Appendix includes the latest draft of a Service Center Agreement prepared by the National Nuclear Security Administration (NNSA) Service Center and NNSA Site Offices. This DRAFT agreement describes functions, roles and responsibilities to be provided by the NNSA Service Center to the Los Alamos Site Office.

The DRAFT NNSA Service Center Agreement is still undergoing detailed review and comment. NNSA plans are to finalize the DRAFT NNSA Service Center Agreement by March 28,2003 and to approve the finalized agreement by April 25, 2003.

DRAFT

SERVICE LEVEL AGREEMENT
Between the
National Nuclear Security Administration (NNSA)
Albuquerque Service Center (ASC) & NNSA's Los Alamos Site Office
For

ENVIRONMENTAL MANAGEMENT

Service Area Agreements:

EM Roles and Responsibilities

Functional Areas:

Expectations Leads have of those in Participant Role: Leads will be provided information, data and support from Participants to accomplish mission requirements. The NNSA functions and activities have been accepted as follows: multi-site EM activities, EM technical expertise, and EM project management integration will be provided by the Service Center while the Site Offices must perform site specific EM activities.

Expectations those in Participant role have of the Leads: The Participants expect the Leads to perform integration, coordination, and responsibilities as detailed in the authorities and responsibilities matrix, and identify/communicate specific resources needed to successfully complete the EM mission.

Suggested Authority for Leads: The Leads need the authority necessary to execute responsibilities in the authorities and responsibilities matrix.

Suggested decision-making process: Leads should have all decision authority based on the authorities and responsibilities matrix used for issues that crosscut the sites.

Ideas for ensuring clear, timely communication takes place among and between the sites, the service centers and the contractors: All coordination should be done within the authorities and responsibilities matrix. Weekly, monthly, and quarterly conference calls should be used to ensure communications.

Criteria Service Centers will use the following to measure success at the level of service provided:

Measure of Success

Objective	Measure
SO: Successful EM Project Execution	1. Accomplish scope within schedule/cost 2. Regulatory compliance 3. Stakeholder confidence

SC: Re-engineered Project	Reduced # of reports and time required to report. Timely and accurate reports.
SC: Effective HQ Interface	Site needs are known at HQ. Reduced # of inquires from HQ (EM and NNSA) to the sites.
SC: Efficient use of technical Resources matrixes	% of service request provided compared to the new technical resources added at site office and technical services are available upon request.
SC: Effective CRB	All sites and programs are represented. Timely implementation of CRB decision.
SO & SC: Effective baseline mgmt	Timely baseline changes. Appropriate and documented change control thresholds.
SO: Effective contractor mgmt	1. Contractor has timely written direction. 2. Site has EM COR
SO & SC: Effective transfer of EM responsibilities to LTES	Agreed upon strategic plan for each site.

Work Elements

Agreed on Site Office/OTS/PIO/NA-12 Authorities and responsibilities

Site Office Functions/Definitions

Function	Definition
Line Management/Project Execution	Execution Project thru Contracts
Project Management	Day to Day Federal Project Management
IPABS Input/Review	Site Office Project Input to IPABS
Baseline Execution	Oversight and Management of Baseline
Develop Performance Metrics/Milestones Monitoring; Contractor Performance Criteria/Evaluation	Negotiate PM with Contractor/Evaluate; Develop Performance Criteria and Evaluate Performance
Change Control Approval within Baseline	Site Office Threshold
Regulatory Compliance	Compliance with Regulations
Public/Stakeholders Interface	Direct Interface w/Public, stakeholders, and Native Americans
Day-to-Day Oversight	Oversight of Contractor's Execution
Operational Readiness Review Approvals	Threshold Approvals (per Delegation Authority)
Authorization Basis	Approval/Disapproval
Site Operational Plans	Operational Plans for FY Accomplishments

PARS Reporting	Reporting Capital Asset Projects per EM-6 designation (Re-engineering IPABs)
Quarterly Reports	Reporting Project Status
Contractor Administration	EM COR Function
Performance Management Plan Review/Development	Manages/Develops PMPs
Site Budget Execution & Formulation	Manages/Develops Project Budget and Executes
ORPS Review/Approval	Review and Approval of ORPS
Regulator Interface	Direct Interface w/Site Specific Regulators
Work Authorization	Authorizes Work
Long-term Environmental Stewardship Implementation	Manages implementation of LTES
Site Specific Grant/Cooperative Agreement Management	Manages Grants/Cooperative Agreements
Implementation of Project Risk Management	Manages implementation of Project Risk

Agreed on Service Center support to be provided

Service Center Functions/Definitions

Function	Definition
Program Integrator	Integrates Program Activities for Rollup/HQ Interface
Regulatory Approval-Rad Sites/CERCLA vs. non-CERCLA	Approval Authority independent of Project Team
Technology Development/Deployment (EM-50)	Developing and/or Deploying EM Technology
Strategic Planning Support	Strategic Plan for EM Scope across NNSA Sites
Corporate Review Board	Integration of Budget (Dealing w/Shortfalls and Priority Integration)
Budget Targets	Establishing Budget Targets based on CRB input
Budget Guidance Integration	Guidance on Budget
Consolidate Management Commitments/Performance Metrics	Consolidating and ensuring consistency of measures
IPABS Review/Approval/Re-engineer	Consistency and Accuracy
Technical Expertise	Subject Matter Expertise Centrally Managed
ESAAB	EM Delegation of Authority (less than $100M)
EM Facility Transfer	Preparing Candidate Excess Facilities that are Process Contaminated for transfer to EM
Cross Cutting Issues/Lessons Learned	Cross Cutting/Lessons Learned in multiple areas: Safety, Technologies, Initiatives, etc..
Baseline Management/ Baseline Guidance/Validation	Approving Baselines at appropriate thresholds, Change Control Threshold Approvals within Baseline; Guidance and validation prior to approval
Performance Management Plan Integration	Integration of PMPs

Quarterly Review/Report	Quarterly Project Reviews
EM Change Control Log	Change Control log for all EM Projects
Long-term Environmental Stewardship Program Guidance/Integration	Guidance on the Long-term Environmental Stewardship
Grant Cooperative Agreements excluding Site Specific AIP	Administration and Management

Unique Arrangements

None

Agreed To by

Jack B. Tillman, Director, Office of Environment, Science and Technology, ASC
Herman C. Ledoux, Associate Director for Project Management, LASO

Appendix G

Los Alamos National Laboratory Waste Management Organizations

Waste Management Program Organizations

The three (LANL) organizations that own the majority of facilities and operations management responsibilities in the Waste Management (WM) arena are housed under the Operations Directorate: LANL Office of Infrastructure, Facilities, and Construction (IFC); Facility Waste Operations (FWO), and Risk Reduction and Environmental Stewardship (RRES). At this time the Strategic Research Directorate also provides facility management support for two WM facilities under the auspices of the Chemistry Division – Facility Management (C-FM). Organizational charts for FWO, IFC, and RRES are included in this Appendix.

Newly-Generated Waste Management

The IFC provides Readiness in Technical Base and Facilities program management support for NNSA/DP WM Program facilities and operations. Accordingly, the IFC provides funding for a portion of WM facilities. In addition, IFC provides program support for Newly-Generated Waste operations.

Waste Management Facilities Management and Operations

The FWO-WFM and C-FM organizations provide facilities management services for LANL WM facilities. Further, FWO manages, maintains, operates, and provides other facility services for some of the LANL waste facilities. Management of operations activities is conducted by the FWO/SWO group. In addition, FWO-SWO is responsible for the management of Asbestos, Chemical, Hazardous, LLW, Mixed, PCB, and TRU waste.

Legacy Waste Management

RRES-DO manages EM efforts, including Legacy Waste Management. In December 2002, the RRES-DO announced a reengineering effort to improve the efficiency and effectiveness of the Legacy Waste Management functions.

Following the RRES-AT (Applied Technologies) and RRES-WD (Waste Disposition) reengineering efforts late this summer, the Division Director of RRES announced the realignment of RRES capabilities and programs/projects. Effective December 2002, the work will be managed as a major project entitled "Project 2010". This will allow the accomplishment of capability and project/program integration at the Division level, consistent with the Laboratory's policies. In addition, "Project 2010" will allow implementation of the RRES TRU Waste Disposition Program, consistent with the LANL Performance Management Plan for Accelerating Environmental Management actions.

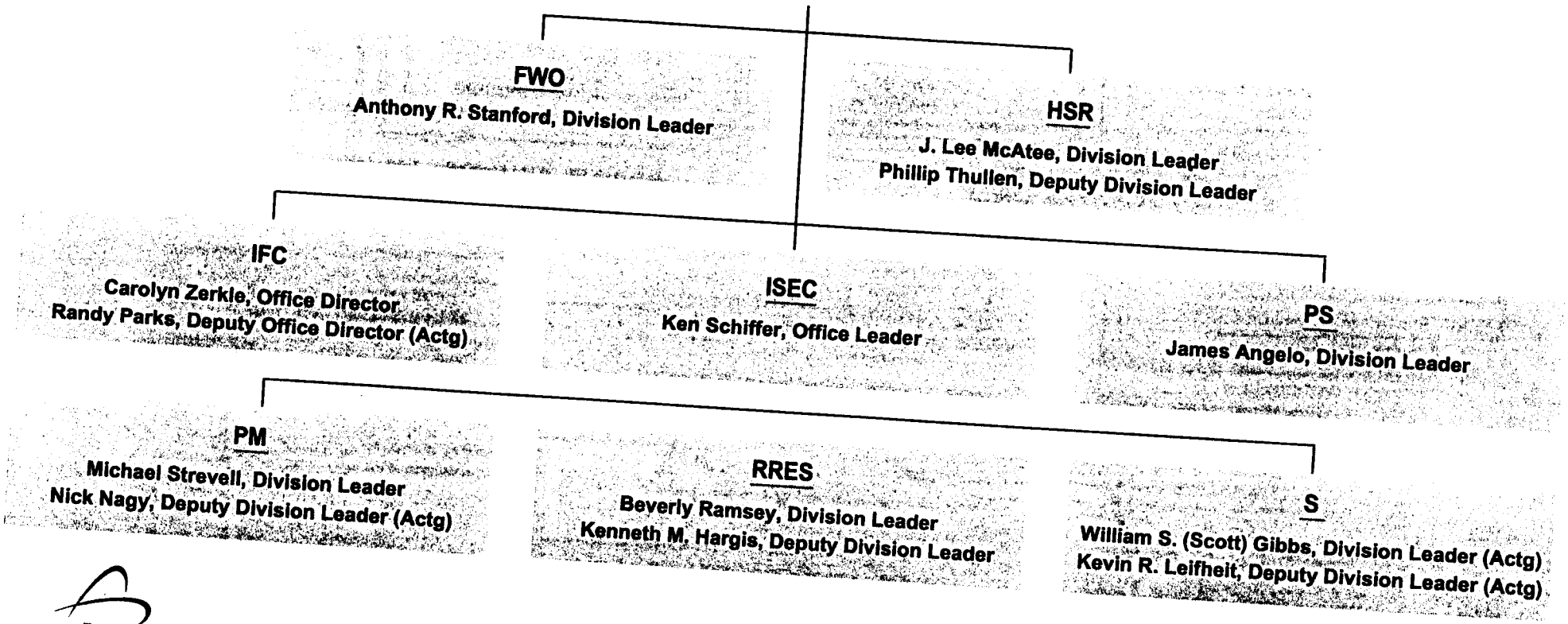
The RRES now has a "Project 2010" Director; an Acting Deputy Project Director (DPD), and Group Leaders for Characterization, Certification, and Waste and Decontamination Services. Further, a new program function, Production Control, has been established to coordinate and prioritize work assignments across groups. This function will be managed by a Program Manager. Finally, the Waste Disposition Program Office will continue to be led by a Program Manager. Several projects are included within the WD Program, including "Quick to WIPP", Infrastructure Development, Legacy Workoff, Remote Handled Waste Disposition, Retrievable TRU Waste Disposition, Newly Generated Waste Disposition, and the Site Treatment Plan/Project. A "Project 2010" organization chart is provided in this Appendix.

Operations Directorate

James L. Holt
Associate Director

Barbara A. Stine
Principal Deputy

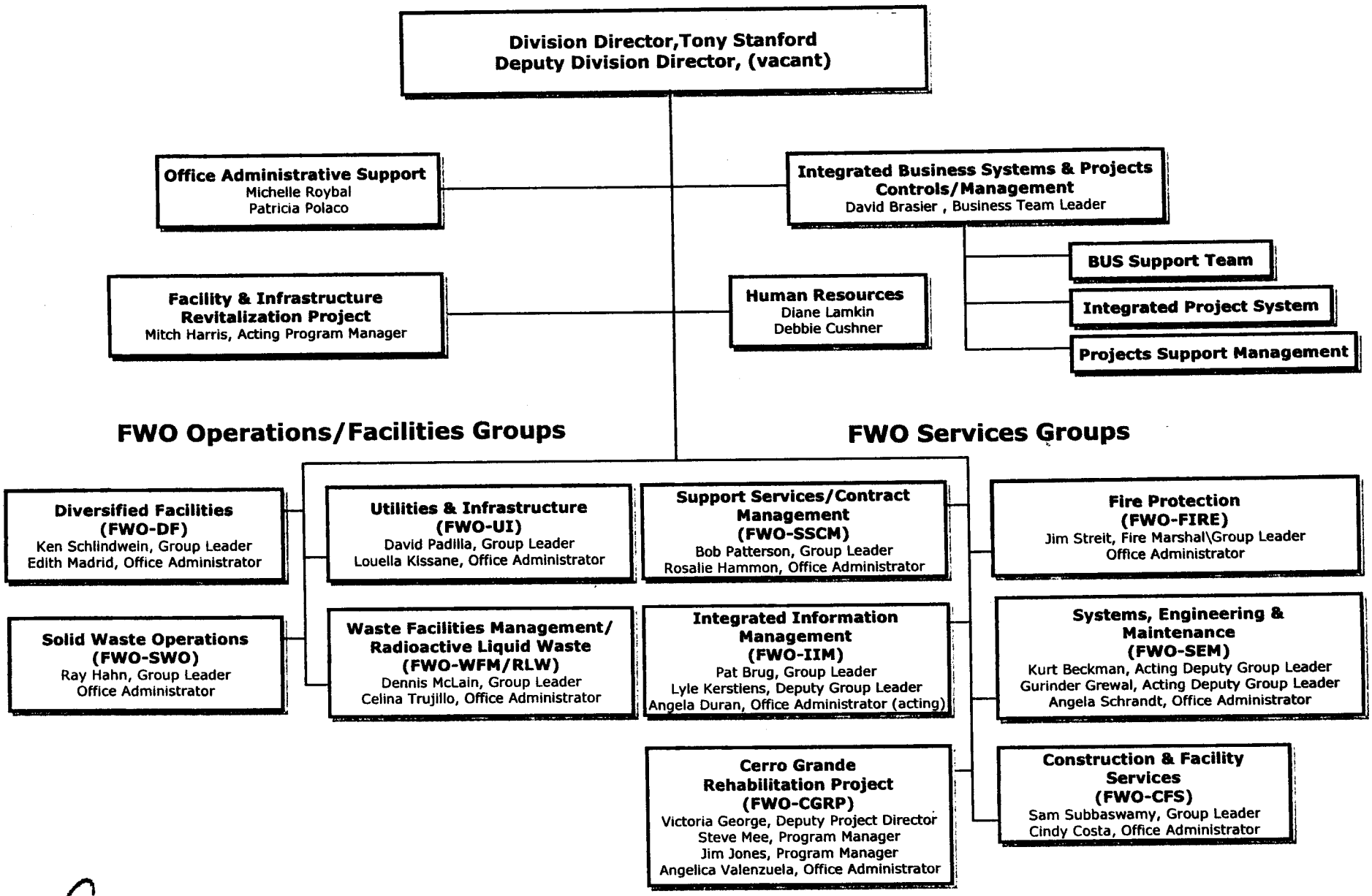
William S. (Scott) Gibbs, Deputy



Los Alamos
NATIONAL LABORATORY

February 12, 2003

Facility & Waste Operations



Los Alamos
NATIONAL LABORATORY

10/18/02

Operations Directorate

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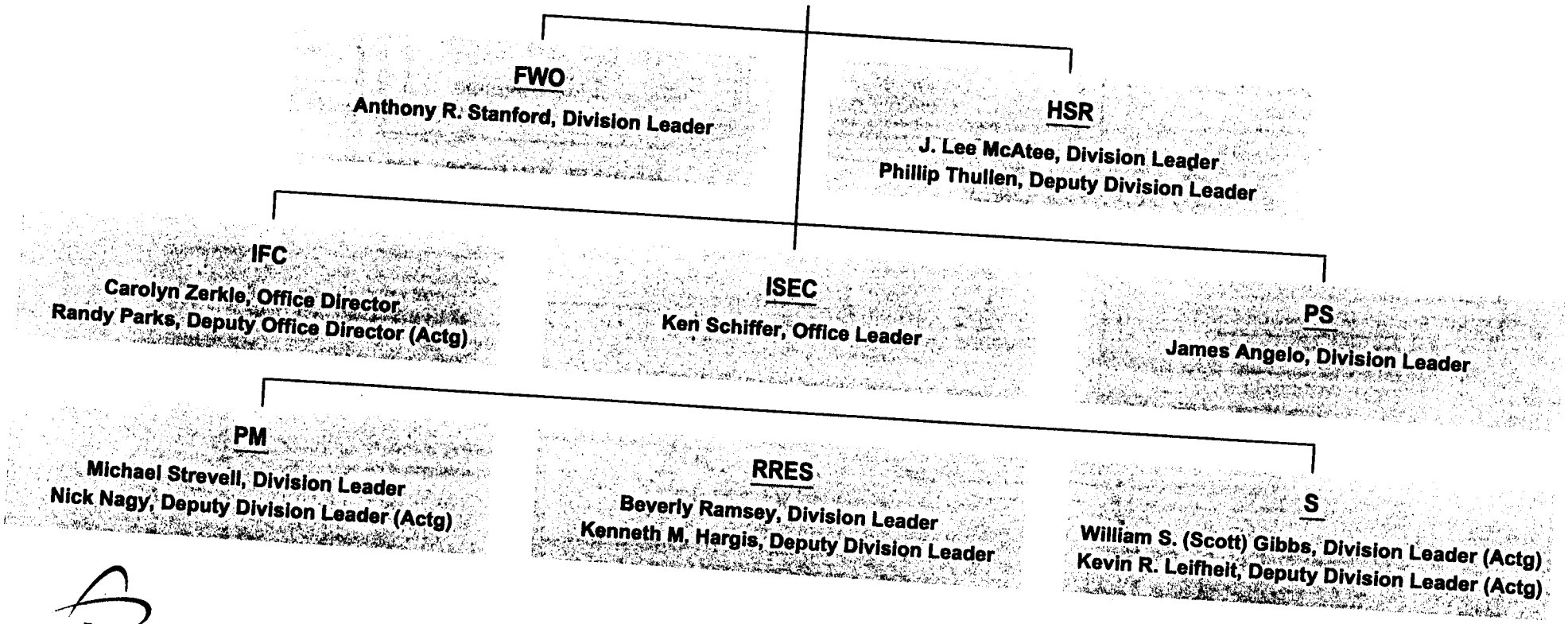
Associate Director

Barbara A. Stine
Principal Deputy

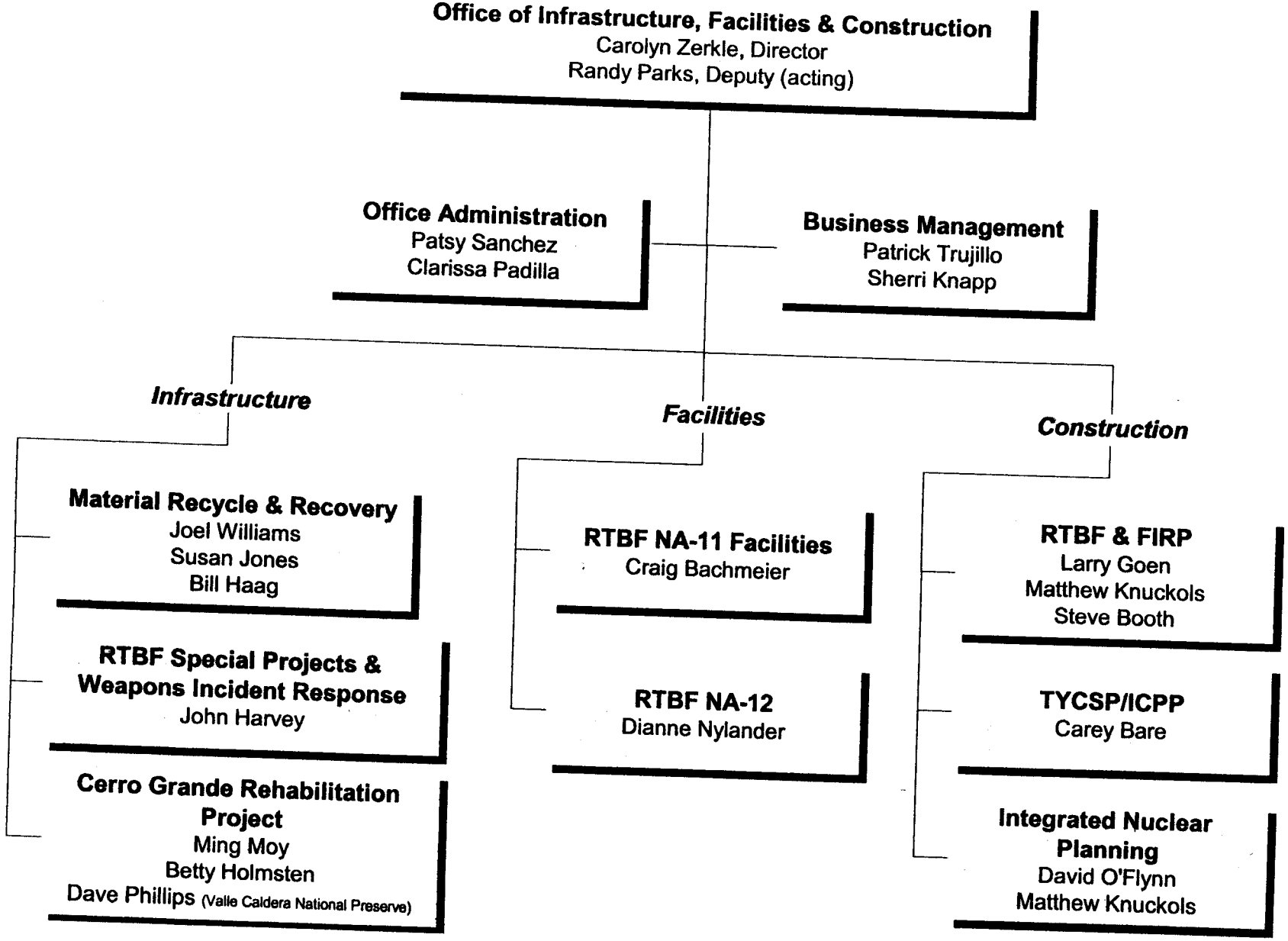
William S. (Scott) Gibbs, Deputy



Los Alamos
NATIONAL LABORATORY

February 12, 2003

2-28-03


Office of Infrastructure, Facilities & Construction
Carolyn Zerkle, Director
Randy Parks, Deputy (acting)
Office Administration
Patsy Sanchez
Clarissa Padilla
Business Management
Patrick Trujillo
Sherri Knapp
Infrastructure
Facilities
Construction
Material Recycle & Recovery
Joel Williams
Susan Jones
Bill Haag
RTBF Special Projects & Weapons Incident Response
John Harvey
Cerro Grande Rehabilitation Project
Ming Moy
Betty Holmsten
Dave Phillips (Valle Caldera National Preserve)
RTBF NA-11 Facilities
Craig Bachmeier
RTBF NA-12
Dianne Nylander
RTBF & FIRP
Larry Goen
Matthew Knuckols
Steve Booth
TYCSP/ICPP
Carey Bare
Integrated Nuclear Planning
David O'Flynn
Matthew Knuckols

Risk Reduction & Environmental Stewardship

Division Leader, Beverly Ramsey
Principal Deputy Division Leader, Ken Hargis
Deputy Division Leader, Vacant
Chief Scientist, Bob Vocke
Chief Engineer, Mark Pickrell

Contract Mgmt./Acquisition, Howard Granzow
Business Team Leader, Amy Curtis
Human Resources, Lois McFarland
Office of Env. Information Management, John Zoltai
- GIS Team Lead, John Huchton
- Administrative Record, Michelle Kirsch

Office of Program Integration, Tom Starke (Acting)
Health & Safety Oversight, Cheryl Olson
Chief of Staff, Vacant
- Outreach, Paul Schumann
- Communications, Brian Thompson
- Continuous Improvement, Allyn Pratt
- Training & Qualification, Tina Salazar-Langley

Technical Capabilities

--Meteorology & Air Quality
Jean Dewart, GL
Scott Miller, DGL
--Water Quality & Hydrology
Steve Rae, GL
Tina Sandoval, DGL
--Solid Waste Regulatory Compliance
Tony Grieggs, Acting GL
Jack Ellvinger, Acting DGL
--Ecology
Ken Rea, Acting GL
--Environmental Characterization & Remediation
Alison Dorrics, Acting GL
--Science Applications
Bruce Erdal, GL
David Janecky, Acting DGL

Operations (Functional)

--Conduct of Operations/ Nuclear Hazardous Operations, Johnny Harper
--Environmental Emergency/ Recovery Operations
Jean Dewart

Programs & Projects

--Project 2010
Chris Del Signore, Acting Deputy PD
- Certification, Ware Hartwell, Acting GL
- Characterization, Johnny Harper, Acting GL
- Waste & Decon Service, Myrna Romero, Acting GL
- Waste Disposition Program, Beverly Martin, Acting PM

--Environmental Protection, Doug Stavert, PM
- Groundwater Protection, Charles Nylander
- Watershed Management, vacant
- IRMP, Ted Doerr
- Risk Communication, vacant

--Environmental Technical Deployment, Bruce Erdal, PM
- OSR, Lee Leonard, PL

--Pollution Prevention/Sustainability, Denny Hjereson, Acting PM
--Remediation, David McInroy, Acting PM

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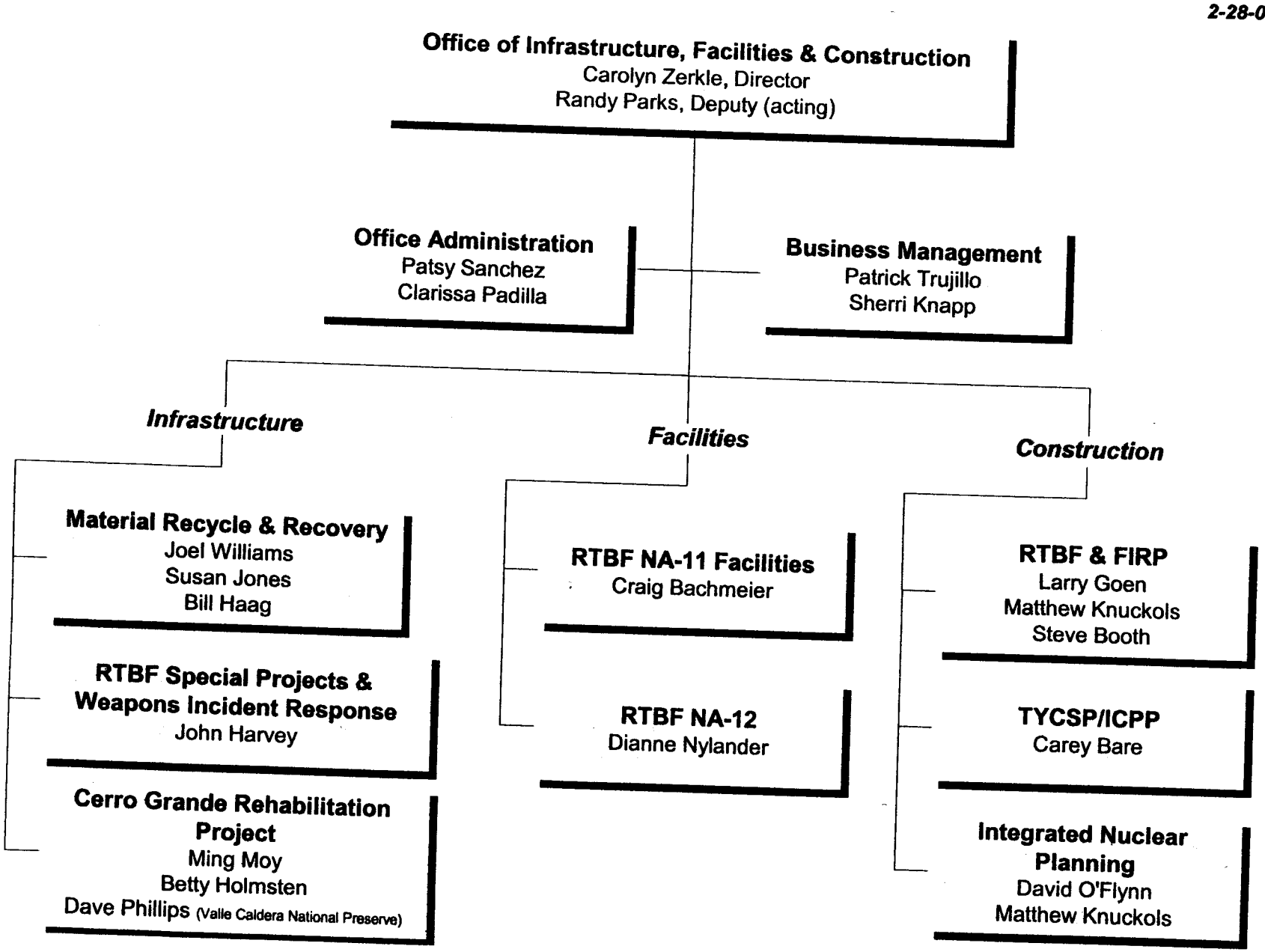
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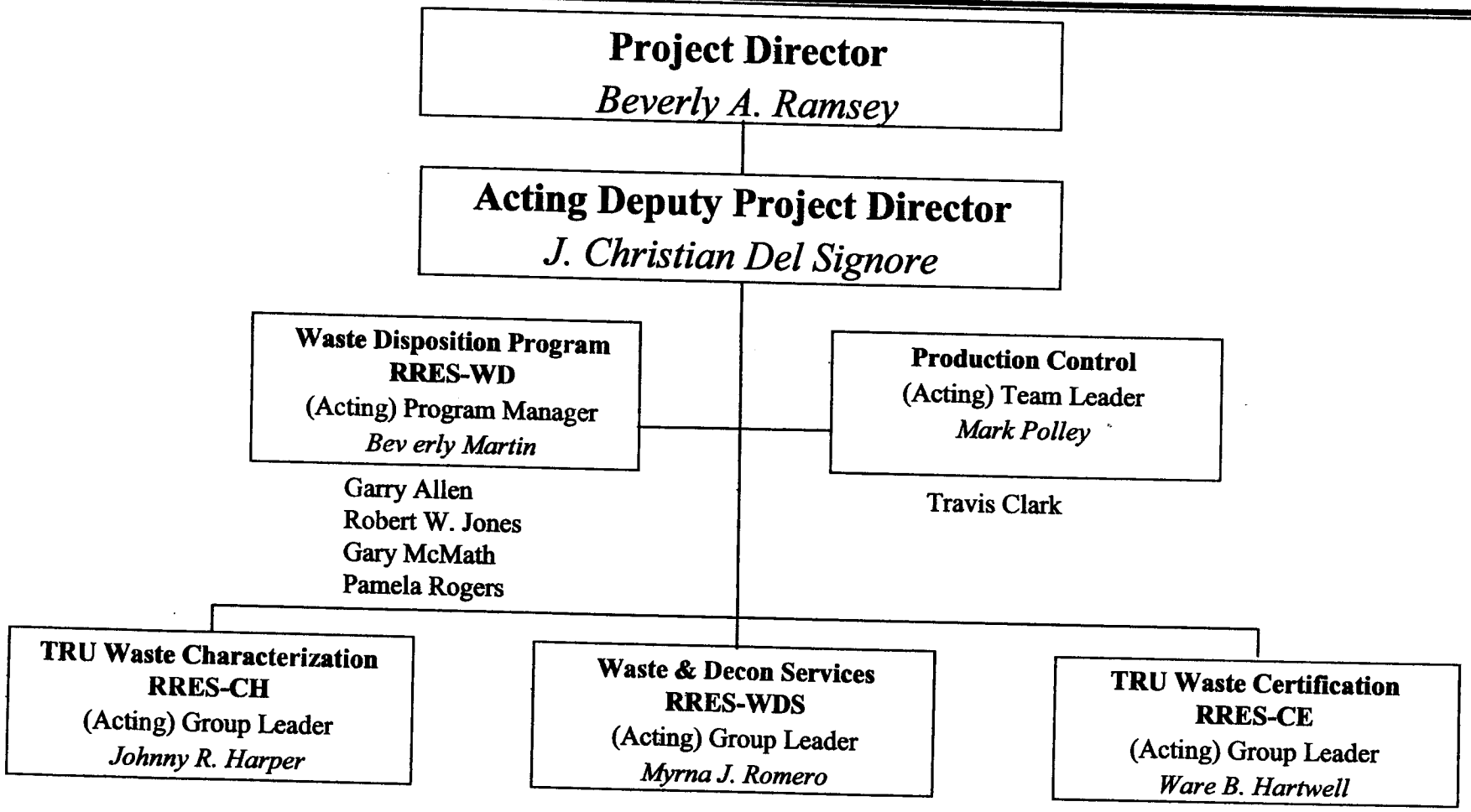
Risk Reduction & Environmental Stewardship Division
Project 2010



Appendix H

Authorization Basis Prioritization List

The Los Alamos National Laboratory (LANL) Safety Basis Office (SBO) maintains a prioritized list of Authorization Basis (AB) deliverables due to the National Nuclear Security Administration for review and approval. This Appendix provides the latest AB Prioritization List.

At the May 14, 2003 Los Alamos Site Office/Safety Authorization Basis Team (SABT) and LANL/SBO meeting, the AB Prioritization List was updated. All WM AB needs related to the LANL plan to accelerate legacy waste off-site by 2010 and accelerate shipment of high-wattage waste to WIPP (the "Quick to WIPP" (QTW) subproject) were elevated to "S-1" (Safety Priority 1) to focus and maintain the highest priority on reducing waste by shipping 2,000 QTW drums by September 30, 2004. This is consistent with the May 5, 2003 LANL memorandum which stated that LANL is committed to ship the 2,000 QTW drums to the Waste Isolation Pilot Plant by September 30, 2004. A quotation, by James Holt, Associate Director for the Operations Directorate, was made in the same memorandum, stating, "There is no higher nuclear safety goal for the Laboratory."

DOE/NNSA/LASO SAFETY BASES PROJECT PRIORITIZATION

/2003

Facility	Classify	Type	Title/Description	Status Next Action	Next Action	Date Next Action Due	Est. Date to DOE	Date Received by DOE	Date Complete	Lead(DOE, SBO, DIV)	Class
WETF	usq-pisa	Facility	WETF USQ (PISA) on "Standard Tub" Containers. See Memo RRES-DO:03-52 for safety statement.	Under Review of LANL Submittal	DOE			5/12/2003		Sandoval/Reed/Sutcliffe	S1
WETF	USQ	Facility	Teperature. See Memo RRES-DO:03-52 for safety statement.	TBD	LANL			TBD		??/??/Sutcliffe	S1
RANT	m	Facility	Developing a BIO for a hazard category 2 facility. See Memo RRES-DO:03-52 for safety statement.	100% Under final review	LANL		5/19/2003			Steele, Janke, Kobl, Vigil	S1
CCP Lines		Facility	CCP (Central Characterization Project) - Accelerated Process Lines (APLs) - PDSA development. See Holt RRES-DO:03-52 for safety statement.	Funds have been reappropriated. SBO awaiting the DRAFT 30% PDSA	LANL	4/15/2003	TBD			TBD, Peters, TBD	S1
WCRRF (N)	m	Facility	Development of Hazard Category 2 BIO (TA-50). See Memo RRES-DO:03-52 for safety statement.	Reviewing LANL Resubmittal	DOE			4/8/2003		Nez, Peters, Vigil	S1
Mod Units		Facility	PDSA: LANL to complete engineering only Modular Units (MUs) are for TRU Waste verification prior to WIPP shipments See Memo RRES-DO:03-52 for safety statement.	SBO awaiting DRAFT 70% PDSA	LANL	3/18/2003	5/23/2003			Steele, Janke, Peters, Schepens	S1
TA-8-23 (N)	m	Facility	DSA	Reviewing LANL Resubmittal	DOE			3/28/2003		Tom, Reed, Anaya	C1
TSFF (N)	m	Facility	BIO Facility Cat 2 to Cat 3	Reviewing LANL Resubmittal	DOE			4/10/2003		Tom, Reed, TBD	C1
Area G (N)	m	Facility	Development of Hazard Category 2 DSA and TSRs (TA-54)	Reviewing LANL Submittal	DOE			4/10/2003		Sandoval, Peters, McLain	C1
RLWTF (N)	m	Facility	Development of Hazard Category 2 DSA and TSR (TA-50)	Reviewing LANL Resubmittal	DOE			4/4/2003		Janke, Peters, McLain	C1
Site Wide		Facility	Changes to AB Documentation Required by the JCO for Integrated Facility Management. R. Capshaw of DOE will be the POC for TSR reviews for FWO-JCO concerning commitments	Nuclear Facility Owning Division Leaders submit all change page requests to the SBO (TA-55, LANSCE, CMR)	DOE	1/18/2003	2/1/2003	TA-55: 3/31/03 LANSCE: 4/7/03 CMR: 1/27/03 RC-1: 4/10/03		Capshaw, Satterwhite, Hayes	C1
ER Sites		ER Site	Categorization of ER Sites	Complete categorization of Potential Release Sites that are consifered inactive.	LANL		6/12/2003			TBD, Villegas, Criswell	C1
RC-1		Facility	Hazrd Categorization to categorize RC-1 as non-nuclear hazard category B	Extended to 5/23/2003. LASO requested procedure.	LANL	5/2/2003	5/23/2003			Janke, Villegas, Bolig	C1
RC-1		Facility	Interim FSA	Under review by NNSA/LASO. Contigent upon resolution of RC-1 Nonnuclear Categorization	LANL		5/23/2003			Janke, Villegas, Bolig	C1
RC-1		Facility	Hazard Categorizaiton to downgrade RC-1 from Hazard Category 3 to Radiological	Request under development	LANL					??, Villegas, Bolig	C1
ER-Site (General's Tanks)		ER Site	Request ot categorize as Cat 2 nuc and to use a HASP to conduct characterizaoitn activities..	Under Review by NNSA	DOE	4/21/2003	5/5/2003	5/9/2003		Hooughton, Villegas, Criswell	C2

Performance Surety
Safety Basis Office (PS-4)
AJV

LANL PS-SBO
DOE/NNSA/LASO SAFETY BASES PROJECT PRIORITIZATION

Last Updated 5/19/2003

Facility	Classify	Type	Title/Description	Status Next Action	Next Action	Date Next Action Due	Est. Date to DOE	Date Received by DOE	Date Complete	Lead(DOE, SBO, DIV)	Class
Flyover	usq	Site wide	PISA/USQ	Declare USQ and file occurrence. SBO memo to LASO request approval of corrective actions	LANL	5/23/2003	5/23/2003			Sandoval/Marth	C2
CMR (R)		Facility	PDSA at CD1 Level	Comments to D Gordon	LANL					Knoell, Koch	C2
TSTA		Facility	Review of TSTA Implementation Plan	Under NNSA review	DOE			5/30/2003		Nez/TBD/TBD	
Scrap Recovery (TA-55)		Facility	Hazard Analysis: DNFSB commitment and tied to a NASA mission to Pluto	Reassigned within SABT due to higher priorities	DOE		1/6/2003	1/15/2003		Knoell, Steele	O1
WETF		Facility	Request to accept meeting SER commitment on containerization	LANL to respond	LANL		4/24/2003			Knoell/Hanson	O1
WETF		Facility	Request to change date for annual update to 8/31/2003	LANL to send request	LANL		4/16/2003			TBD/ Reed / Sutcliffe	
TA-55		Facility	MIS Can PrHA: this project is need to characterize the DOE complex that will be packaged an stored in 3013 containers, no containers in the DOE complex may be stored in these containers unless characterized in this process [UPGRADED from L2 to O1]	DOE Reviewing	DOE	12/20/2002	1/3/2003	1/3/2003		Capshaw, Koch	O1
Nuclear Facility List		Document	Update of the Existing Nuclear Facility List	Under development	LANL		7/27/2003			???,Villegas	O2
ER-Site (General's Tanks)		ER Site	HASP to conduct characterization activities at the General Tanks	In development	LANL		TBD			TBD, Villegas, Criswell	L2
DYNEX		Facility	DSA	30% Milestone	LANL		TBD			Steele, Reed, Papazian	L2
Waste Management Plan		Facility	Program for Waste Management (a joint LANL/LASO document)	Under NNSA review	DOE			??		Nez/(Holt-Zerkle-Ramsey-Stanford)/??	L2
WMRM (Waste Mgmt & Risk Mitigation) Dup		Facility	PDSA (TA-50 tanks): New tanks at RLWTF to replace existing tanks.	Under Review by NNSA	DOE			5/7/2003		Nez, Lambergeti, Kobi	L2
DVRS		Facility	A Phaxe 2B technical justification	Under development by LANL, incorporating comments	LANL					???/Peters/Christenson	L2
Site Wide	usq	Facility	LANL WITHDRAWS: USQ Procedure (Rev. 3) :	Pendling resubmittal	LANL					Nez, Satterwhite, Marth	L3
CMR		Facility	Annual Update	90% Review	LANL		6/20/2003			TBD, Peters, Pertain	L3
BSL-3		Facility	Nonnuclear: Safety basis based on LIR 300-00-07.2 for Category B facility.	LANL is developing scope of work to develop SB .	LANL			TBD			L3
TA-18		Facility	Request for TSR modification for adding Fire King #kr5021-2 safe to te list of approved ROBUST CONTAINERS (NIS-6 03:58)	Reassign within SABT	DOE			4/1/2003		Sandoval/Pellette	L3
TA-18		Facility	Request for amendment to TST increased MAR Levels (NIS-06-=0-60)	Reassign within SABT	DOE			4/1/2003		Tom/Pellette	L3
BTF Cartridge Filter House		Facility	Install enclosure arouod filter house to protect from NPH as part of improvement plan in SA	Under development	LANL		6/1/2003			TBD/TBD/Barnett	L3
BTF Storage Vault Addition		Facility	Vault as part of improvement plan in SA	Under development	LANL		6/1/2003			TBD/TBD/Barnett	L3