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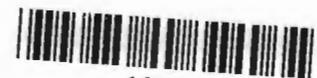
Mr. John W. Arthur, III  
Manager  
Albuquerque Operations Office  
U.S. Department of Energy  
Pennsylvania & H Streets  
Kirtland Air Force Base  
Albuquerque, New Mexico 87116

Dear Mr. Arthur:

On behalf of Los Alamos National Laboratory, I am transmitting a copy of the final Performance Management Plan (PMP) for Accelerating Cleanup at LANL. This letter also conveys my support for the accelerated cleanup plan and intent to achieve the commitments in the PMP, contingent upon receipt of the budget as outlined in the plan.

As you know, the Laboratory already has in place a sound and comprehensive plan for addressing environmental restoration at the site, and we are well underway in implementing that plan. However, with additional funds, the achievement of the final objectives of the plan can be accelerated. Accordingly, I believe that the approach for accelerating cleanup as outlined in the PMP is the appropriate thing to do to reduce risk at LANL and to reduce costs for completing the work. After DOE-Environmental Management cleans the sites, lands within LANL will become available for other uses by the National Nuclear Security Agency (NNSA), and for transfer to the Los Alamos County and San Ildefonso Pueblo as the Department of Energy (DOE) fulfills its Congressionally mandated Land Transfer Commitments. Further, by accelerating legacy waste disposition, the programmatic risk to stockpile management becomes greatly reduced. The PMP actions will also enable a clear and timely handoff between DOE-EM and NNSA of post-cleanup responsibilities through long-term environmental stewardship.

Another significant benefit of implementing this PMP is that it will substantially resolve issues underlying the Draft Administrative Order and the Determination of Imminent and Substantial Endangerment that DOE and UC received from NMED in May, 2002. The NMED has stated on a number of occasions, that a purpose of the Order is to ensure more stable funding of cleanup projects at LANL and to reduce potential impacts to drinking water supplies through the groundwater pathway. This PMP addresses these issues by advancing groundwater protection, reducing the highest-priority risks to the public and the environment, and calling for the appropriate funding to accomplish these goals.



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Finally, the PMP also reiterates the reform in business practices related to environmental cleanup that LANL is making to reduce costs and streamline internal processes.

Thank you for your continued support with this effort.

Sincerely,



John C. Browne  
Director

- Cc. R. Erickson, OLASO  
H. LeDoux, OLASO  
E. Trollinger, OLASO  
M. Johansen, OLASO  
J. Tillman, DOE/AL  
G. Rael, DOE/AL  
J. Orban, DOE/AL  
D. Woitte, LC  
B. Ramsey, RRES-DO  
K. Hargis, RRES-DO  
B. Martin, RRES-WD  
J. McInroy, RRES-R  
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# LOS ALAMOS NATIONAL LABORATORY PERFORMANCE MANAGEMENT PLAN FOR ACCELERATING CLEANUP

U.S. Department of Energy  
Los Alamos National Laboratory  
Environmental Management Program

July 24, 2002



## EXECUTIVE SUMMARY

This Performance Management Plan (PMP) for environmental work at the Los Alamos National Laboratory (LANL) sets forth an accelerated plan for completing the Environmental Management (EM) mission at LANL by 2015 – fifteen years sooner than the current end date. It details how new approaches and changed business practices will accomplish the complete removal and disposal of legacy waste by 2010 and closeout of Environmental Restoration (ER) by 2015. It charts a forward path to the EM end-state at LANL of complete removal of legacy wastes, completion of all cleanup corrective actions, and transition to long-term environmental stewardship.

The three primary initiatives described in this PMP are 1) legacy transuranic (TRU) and mixed low level waste, 2) groundwater protection, and 3) environmental restoration.

Managers and staff at the US Department of Energy (DOE) and the University of California (UC) hold a strong desire to accelerate our work. We believe that the initiatives set forth in this PMP are challenging, but achievable, and will yield meaningful benefits. Accelerating EM's completion dates will realize cost savings of approximately \$950 million. The accelerated projects will reduce the highest risks that remain from historic operations, reduce programmatic risk to LANL's ongoing stockpile stewardship mission, and help address high-profile threats such as terrorism and wildfire danger. We further believe that successful implementation of this plan will be a major accomplishment to be shared by the public, stakeholders, regulators, Congress, and the Administration. In fact, many of these parties have expressed strong expectations that environmental work at LANL should be accelerated from the current timeline.

The end-state for EM activities at LANL consists of off-site disposition of mixed and TRU legacy waste (waste generated and packaged prior to October 1998) – including shipment of all legacy TRU waste to the Waste Isolation Pilot Plant – and completion of

**Background.** Activities at LANL have produced byproduct wastes since the 1940s and many of the historic practices for disposing these wastes, although generally accepted at the time, are not in keeping with today's standards. As a result, there exist numerous environmental management challenges at LANL today including

- 9100 cubic meters (~25,000 packages) of transuranic waste in temporary storage and in need of final disposition;
- groundwater contamination from historic discharges that includes radiological and hazardous constituents; and
- hundreds of surface waste sites remaining from the more than 2100 sites spread over 43 square miles that were originally identified for cleanup, including septic tanks and lines, chemical storage areas, wastewater outfalls, landfills, incinerators, firing ranges, surface spills, and electric transformers.

Much has been accomplished already; however, substantial work remains to be done, and past plans for completing waste disposition and cleanup work currently extend to 2030. This PMP accelerates the end date.

all EM corrective actions for groundwater and surface waste sites. All required post-remedy monitoring and maintenance will be transitioned from EM to the site landlord, the National Nuclear Security Administration (NNSA), through the Long-Term Environmental Stewardship (LTES) program.

Acceleration of EM's end-state at LANL from 2030 to 2015 means implementing the reforms and initiatives of the Top-to-Bottom Review and the commitments of the May 2002 letter of intent signed by DOE, the New Mexico Environment Department (NMED), and the Environmental Protection Agency (EPA). This PMP implements those commitments through three key initiatives:

<b>Initiative</b>	<b>Previous Completion Date</b>	<b>Accelerated Completion Date</b>
Legacy Waste Disposition	2030	2010
Groundwater Protection	2018	2007
Environmental Restoration	2030	2015
<b>Total EM Acceleration</b>	<b>2030</b>	<b>2015</b>

This acceleration will be accomplished through earlier investment of funds and through significant reform of business practices. These reforms include increasing performance-based contracting, implementing larger (turnkey) work scopes, streamlining decision-making, increasing project focus, and realigning DOE and UC organizations.

Acceleration does not mean cutting corners or avoiding regulatory processes. During acceleration, sound environmental stewardship practices will be used, and all applicable regulatory processes will be followed including ongoing involvement of the public in decision making. Fundamental to the success of this PMP are the partnerships that have been built among DOE and UC, NMED, EPA, stakeholders, and the public. These parties have worked together in the development of this document, and plans exist for continued partnering as we move through the next steps of finalizing and implementing the PMP.

The primary benefits of this PMP are to reduce risk through accelerated EM work and to reduce costs for completing this work. In addition, there exists a mutual need between DOE-EM and the NNSA that these PMP initiatives succeed. After DOE-EM cleans up waste sites, lands within LANL will become available for other uses by NNSA, and for transfer to the Los Alamos County and San Ildefonso Pueblo as DOE fulfills its Congressionally mandated Land Transfer commitments. Further, by accelerating legacy waste disposition, the programmatic risk to stockpile management becomes greatly reduced, and by accelerating groundwater protection efforts, the quality of water supplies at LANL, Los Alamos County, and surrounding land-owners is assured. Importantly, these PMP actions will enable a clear and timely handoff between DOE-EM and NNSA of post-cleanup responsibilities through LTES.

Another significant benefit of implementing this PMP is that it will substantially resolve issues underlying the Draft Administrative Order and the Determination of Imminent and Substantial Endangerment that DOE and UC received from NMED in May 2002. The Draft Order and the accompanying Determination refer to a need for sustained funding of cleanup projects and to potential impacts to drinking water supplies through the groundwater pathway. This PMP addresses these issues by advancing groundwater protection, reducing the highest-priority risks to the public and the environment, and calling for the appropriate funding to accomplish these goals.

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- A Acronyms and Abbreviations
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- C Letter of Intent

## **1.0 INTRODUCTION**

### **1.1 Purpose**

This Performance Management Plan (PMP) has been written primarily for senior level Department of Energy (DOE) managers who fund and oversee environmental work at Los Alamos National Laboratory (LANL). In addition, this document is also intended for DOE and University of California (UC) managers and staff at Los Alamos, the Administration, regulators, stakeholders, and interested members of the public.

The purpose of this PMP is to provide a management-level synopsis of how LANL's Environmental Management (EM) program will be accelerated from its current completion date of 2030 to the new date of 2015. It describes the strategies and reforms necessary for this acceleration, and thus provides a plan for agreement among the parties who will perform or assist this work. These parties include the DOE, UC, the New Mexico Environment Department (NMED), the Environmental Protection Agency (EPA), stakeholders, and the public.

This PMP implements the recommendations of DOE's Top-to-Bottom Review, which emphasized that risk reduction, not risk management, is key to accelerating closure. It stressed that accelerated closure is urgently needed. The Top-to-Bottom Review was followed by a May 2002 Letter of Intent for LANL signed by DOE, NMED, and EPA (Appendix C). The Letter of Intent contains statements of commitment to accelerate disposition of legacy waste (waste generated and packaged before October 1998), establish groundwater protection measures, and complete Environmental Restoration (ER) work at LANL. The accelerated cleanup initiatives included in this PMP will fulfill these commitments by reducing highest-priority risks through accelerating legacy waste disposition (WD), groundwater protection, and completion of ER.

In addition, this PMP describes how the PMP initiatives integrate with and benefit other LANL activities, including ongoing NNSA mission activities. Further, for those ER sites that will require post-cleanup monitoring and maintenance, this PMP provides a description of the transition of responsibilities from EM to the National Nuclear Security Administration (NNSA) through the Long-Term Environmental Stewardship (LTES) program.

### **1.2 Roadmap to the PMP**

Section 2 of this PMP presents background information and the context for the accelerated cleanup initiatives.

Section 3 presents a vision statement of end states for the EM program at LANL, including the LTES program.

Section 4 contains the strategic initiatives for accelerating disposition of legacy waste, protection of groundwater, and completion of ER.

Section 5 presents specific reforms and management strategies for implementing the PMP initiatives.

Section 6 discusses the regulatory framework that exists at LANL and specific needs to help acceleration.

Section 7 details cost and schedule profiles for the initiatives.

The appendices contain detailed information on government-furnished activities, responsibilities matrix, and the Letter of Intent.

### **1.3 Development of the Accelerated Cleanup Proposal**

#### **Senior Management Steering Committee**

DOE and UC have followed a disciplined process to develop and refine the elements of this PMP and to establish the commitments necessary for implementing accelerated plans. The primary development of this PMP was made by the Senior Management Steering Committee (SMSC) that consists of DOE, NMED, EPA, and contractor managers for DOE sites in New Mexico (LANL and Sandia National Laboratory [SNL] facilities). The SMSC is chartered to provide leadership and guidance to its staff in removing barriers and achieving completion of cleanup objectives.

#### **Letter of Intent**

Appendix C contains the May 2002 Letter of Intent signed by DOE, NMED, and EPA Region VI. This letter, directed to both LANL and SNL, set forth the following key commitments:

- Accelerate risk reduction of groundwater and soil contamination as well as legacy waste;
- Define regulatory endpoints;
- Continue partnerships;
- Shorten review periods and provide timely decisions;
- Streamline internal processes for quality control and quality assurance.

#### **Stakeholder and Public Interactions**

Proposal development also included two focused interactions with the public, government officials, and stakeholders, including a session with the Northern New Mexico Citizens' Advisory Board (NNMCAB). Feedback from these interactions has been incorporated into this PMP, and commitments exist for ongoing inclusion of stakeholders and the public in the development and implementation of PMP initiatives. These plans include posting the PMP on the Internet, making it available in reading rooms, delivering it to the NNMCAB, and sending it by email to interested parties. Comments received during the development of accelerated plans will be included as the PMP is updated.

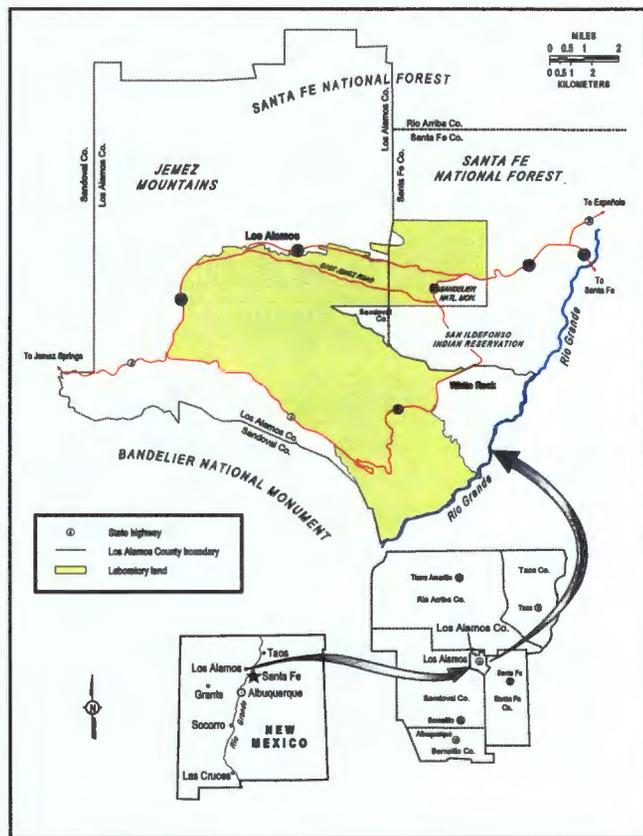
## 2.0 ACCELERATED CLEANUP PROPOSAL CONTEXT

### 2.1 Setting

LANL is a research facility of the DOE/NNSA that is managed by the Regents of the University of California. Research at LANL focuses on high-level science and technology essential to national defense and global security.

Today, LANL's central missions are (1) to ensure the safety and reliability of the nation's nuclear weapons stockpile; (2) to develop the technical means for reducing the global threat from weapons of mass destruction and terrorism; and (3) to solve national problems in energy, environment, infrastructure, and health security.

The 43 square miles of LANL are divided into 47 technical areas that are used for scientific sites, experimental areas, waste disposal locations, roads and utilities, and safety and security buffers. LANL and its subcontractors employ approximately 13,000 people. LANL shares Los Alamos County with two residential communities: Los Alamos townsite and White Rock. Most of the other land surrounding LANL is held by the Bureau of Land Management, the Santa Fe National Forest, Bandelier National Monument, and the Department of Interior in trust for the Pueblos of San Ildefonso, Santa Clara, Cochiti, and Jemez. Santa Fe, the state capital, is 25 miles southeast of Los Alamos; Española is located 20 miles to the east; and Albuquerque, New Mexico's largest city, is 60 miles to the south. In 2000, approximately 264,000 people lived within a 50-mile radius of LANL.



The geography and ecology of Los Alamos are diverse. The terrain of the Pajarito Plateau, where Los Alamos is situated, alternates between mesas and deep canyons. Elevations across Los Alamos County range from 6200 feet to 7800 feet. The primary groundwater aquifer is more than 1000 feet below ground surface in most areas of LANL, with a complex system of subsurface water bodies existing at shallower depths. This varied geographical and geological setting provides a unique set of challenges for the environmental experts at LANL. Detailed descriptions of LANL's operations and its



operating permit (Hazardous Waste Facility Permit) to LANL in 1989, and the EPA issued a corrective action permit for HSWA in 1994 that is administered by NMED.

Much has already been accomplished: retrieval, characterization, and repackaging of legacy wastes and cleanup of major waste sites, including a landfill containing high-explosives, a PCB-contaminated storage area, and plutonium-contaminated sediments where Manhattan-era waste effluents were released. However, substantial work remains to be done, including final disposition of legacy wastes, particularly shipment of legacy TRU wastes from LANL to the Waste Isolation Pilot Plant (WIPP), and conducting corrective actions for groundwater, remaining landfills, and numerous surface waste sites on mesa tops and in canyons spread over LANL's 43 square mile area. Current plans call for completing this work by 2030. This PMP sets forth strategies for using the best available business practices and commensurate funding to accelerate completion to 2015 at a cost savings of \$950 million.

### 3.0 SHARED VISION FOR ACCELERATING CLEANUP AT LANL.

The DOE, NMED, EPA, with input from stakeholders and the public, have developed a shared vision for risk reduction and environmental stewardship of LANL by accelerating the completion of the EM program by seventeen years – from 2030 to 2015.

The shared vision focuses on reducing, first, the greatest risks to the public, workers and the environment from stored legacy wastes and from historically contaminated sites. The Letter of Intent signed by DOE, NMED, and EPA describes the priorities and principles that make up a common strategy for acceleration and completion of EM work at LANL.

The strategy includes accelerating the disposition of legacy TRU waste through characterization and packaging efficiencies and by focusing first on early shipment of the ~5% of waste volume that makes up ~60% of the risk associated with legacy wastes. It includes applying contaminant-control measures, such as permeable reactive barriers in shallow groundwater to protect regional drinking water supplies and completing corrective actions in the public areas outside of LANL's boundaries. These public areas include residential, business, and recreation areas where any historic waste issues tend to become high priority because of the proximity of waste sites to the public. The strategy focuses resources on completing cleanups using an already established aggregate/watershed approach that, with sufficient up-front investment, is the most efficient and cost-effective way of completing work at numerous sites spread over watershed areas.

The risk reduction strategy results in a completion of the EM program at LANL by 2015, with NNSA assuming responsibility for LTES as major milestones are achieved from 2003–2015.

The strategy contains three specific initiatives:

- Accelerated disposition of all legacy TRU and mixed waste by 2010;
- Accelerated groundwater characterization, monitoring, and source control assuring regional aquifer protection by 2007; and
- Accelerated environmental restoration through completion of all corrective actions by 2015.

The Accelerated Legacy Waste Disposition Initiative has three major goals. These are (1) completion of all legacy mixed and TRU WD activities by 2010, (2) shipping 12,000 cubic meters (1500 shipments) of TRU wastes to WIPP, and (3) returning to NNSA in 2010 continued LTES for the LANL Treatment Storage and Disposal facility (Technical Area [TA-54]) for newly generated WD.

The Accelerated Groundwater Protection Initiative has three major goals. They are (1) complete the Hydrogeologic Workplan characterization of the regional groundwater and shallow aquifers by 2005, (2) complete monitoring well construction by 2007, and (3) establish contaminant control at the highest-priority shallow groundwater sites by 2005. Monitoring and maintenance after these dates will transition to NNSA through the LTES program.

The Accelerated Environmental Restoration Initiative has three objectives. They are (1) completion of high-priority remedies in Los Alamos/Pueblo Watershed, including land transfer parcels, by 2008, (2) completion of remedy implementation on material disposal areas by 2008, and (3) completion of all other ER activities at LANL by 2015. Monitoring and maintenance after these dates will transition to NNSA through the LTES program.

#### 4.0 ACCELERATED CLEANUP INITIATIVES AT LANL

The priorities of the Top-to-Bottom Review, and the strategy outlined in the Letter of Intent as discussed in earlier sections were used to develop three accelerated cleanup initiatives for LANL. These initiatives focus on the highest-priority risks and on achieving cost efficiencies. The details of these initiatives are described in the following sections (summarized in Table 4-1, and the locations for key initiative waste elements are shown in Figure 4-1).

**Table 4-1  
Accelerated Cleanup Initiatives at LANL**

Strategic Initiative	Accelerated Strategy	Current LANL Baseline
<b>Accelerated Legacy Waste Disposition</b>	Complete legacy waste disposition by 2010	Complete legacy waste disposition by 2030
	12,000 cubic meters of waste shipped to WIPP	46,000 cubic meters of waste shipped to WIPP
	1500 waste shipments to WIPP	4500 waste shipments to WIPP
<b>Accelerated Groundwater Protection</b>	Complete EM Hydrogeologic Workplan wells by 2005	Complete EM Hydrogeologic Workplan wells by 2005
	Construct EM monitoring wells 2007	Construct EM monitoring wells by 2018
	Construct new measures for control of shallow groundwater contamination by 2005	Construct new measures for control of shallow groundwater contamination (date undefined)
<b>Accelerated Environmental Restoration</b>	Completion of Los Alamos/Pueblo Watershed by 2008	Completion of Los Alamos/Pueblo Watershed by 2021
	Completion of Material Disposal Areas by 2008	Completion of Material Disposal Areas by 2013
	Completion of Mortandad, Pajarito, Sandia, Ancho, Chaquehui, and Frijoles Watersheds by 2015	Completion of Mortandad, Pajarito, Sandia, Ancho, Chaquehui, and Frijoles Watersheds by 2030

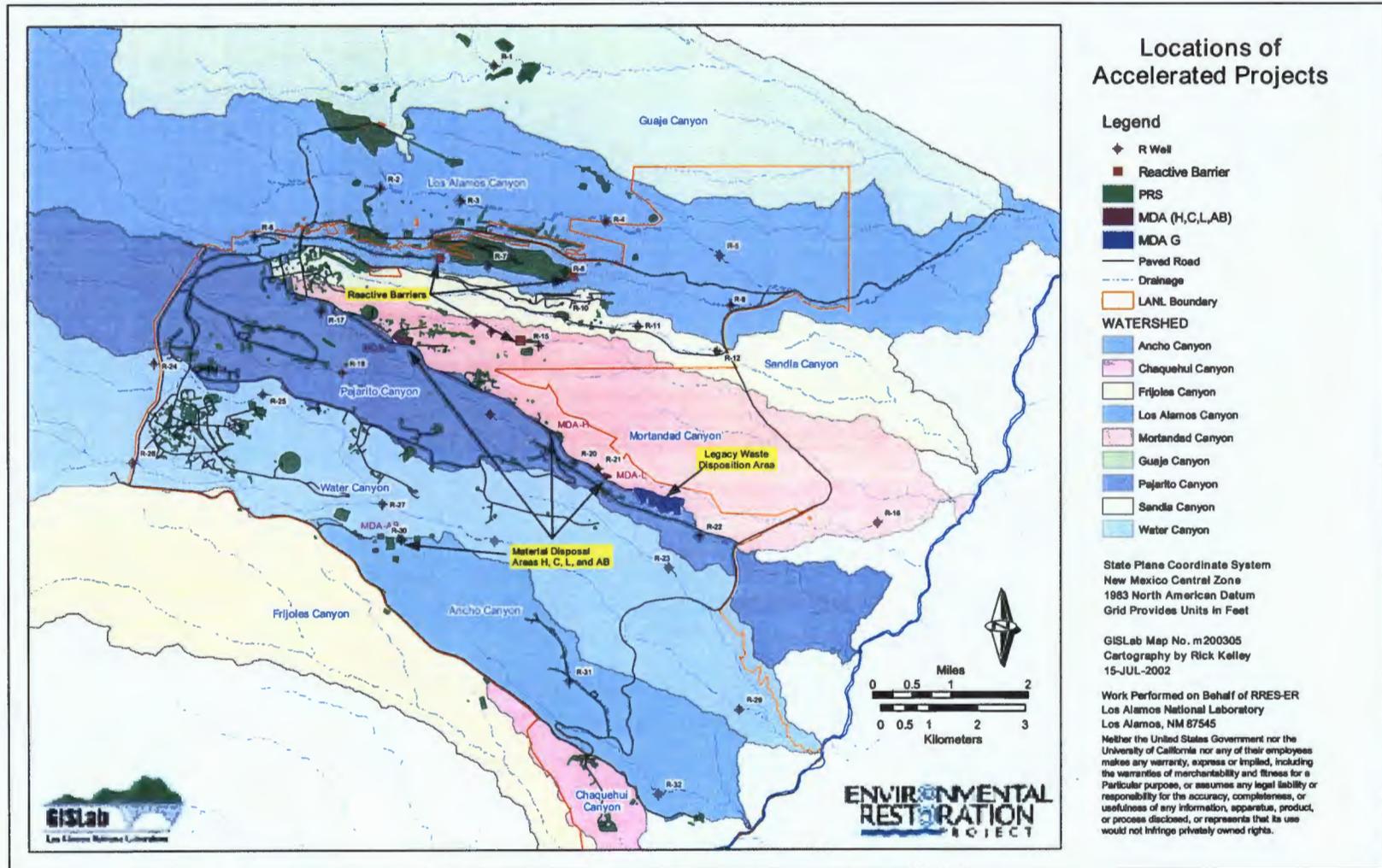


Figure 4-1. LANL Site Map and Locations of Accelerated Cleanup Initiatives

#### 4.1 Legacy TRU and Mixed Low Level Waste Initiative

Two fairly recent events, the Cerro Grande fire and the 9/11 terrorist attack, have heightened awareness that the TRU waste stored at TA-54, Area G, in aboveground storage facilities is vulnerable to release and dispersal of radioactive materials in the event of an emergency. This waste has the potential of significantly impacting the public health and the environment. This realization has led to the conclusion that it would be prudent to accelerate the shipment of TRU waste to WIPP. In addition, Area G is nearing full capacity for waste storage, and when capacity is reached, Area G will not be able to accept additional TRU waste unless waste shipments to WIPP increase substantially. If storage capacity is exceeded, LANL's mission critical operations will be affected.



##### Benefits

- ▶ Early risk reduction through characterization and shipping of 2000 high-activity drums
- ▶ Reduced volume of over-sized TRU waste packages
- ▶ 3000 fewer shipments to WIPP
- ▶ Complete final treatment and disposal of legacy mixed low-level waste

DOE/LANL have proposed a project to accelerate the shipment of all legacy TRU waste in New Mexico to WIPP by the year 2010 instead of the 2030 date in the present baseline plan. LANL has approximately 46,000 55-gallon drum equivalents stored at TA-54, Area G. About two thirds of the waste is stored in aboveground domes and the remainder is under earth cover. Legacy TRU waste from SNL and the Lovelace Respiratory Research Institute (LRRI) are planned to be consolidated at LANL for characterization and shipment to disposal. About 50 cubic meters of contact-handled TRU waste and 20 cubic meters of remote-handled TRU waste is stored at SNL and LRRI.

DOE and LANL have also proposed a subproject, designated the "Quick to WIPP" project with the objective of achieving the early characterization and shipment of approximately 2000 drums of high activity TRU waste, which accounts for about 60% of the potential risk from dispersal of radioactive materials in storage at Area G (see Figure 4-2). The Carlsbad Field Office (CBFO) has teamed with DOE and LANL to utilize the CBFO Central Characterization Project (CCP). Within this initiative, LANL will acquire two additional characterization production lines to augment their current capabilities and to accelerate the shipment of TRU wastes to WIPP. DOE and LANL also partnered in developing and submitting to the NRC a revision (Rev. 19a) to the documentation for the TRUPACT II to change how certain shipping requirements are met for 2000 drums of LANL TRU waste. On July 5, 2002, the NRC approved Rev. 19a which will enable LANL to ship these 2000 high-activity drums with minimal repackaging and to dispose

of these drums in WIPP by the end of fiscal year (FY) 2004. If NRC approves extending Rev. 19a to all of the LANL TRU inventory, worker safety will be greatly enhanced and public risk will be reduced as LANL will dispose of its TRU waste with 3000 fewer shipments to WIPP and shorten the work-off schedule by 20 years.

As a part of this proposal, LANL intends to complete final treatment and disposal of legacy mixed low-level waste. LANL's initial legacy of over 700 cubic meters has been reduced to less than 50 cubic meters through aggressive use of commercial treatment options. This activity is currently two years ahead of schedule and under budget. At this time, we plan to delay completion of this activity to more aggressively pursue disposal of legacy TRU waste.

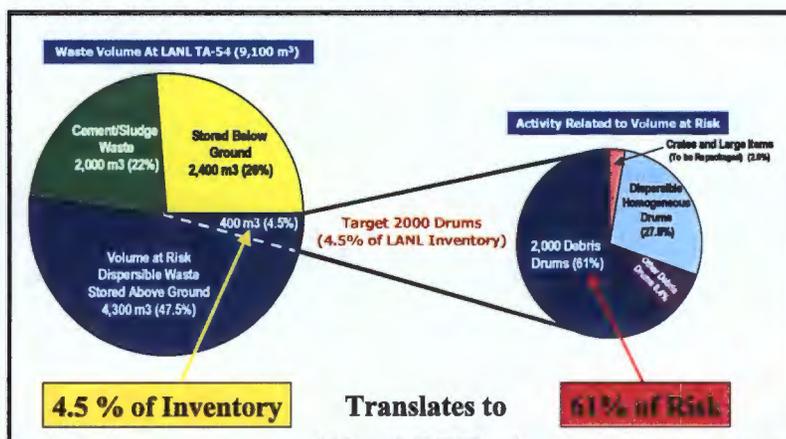


Figure 4-2. Waste Inventories for Disposition



#### 4.1.1 Initiative End-State

TRU waste is currently being stored at LANL in aboveground storage facilities and below ground in pits and trenches. The TRU waste in storage includes both legacy waste, generated and packaged before October 1998, and newly generated waste resulting from on-going activities. New waste is the responsibility of the site landlord – NNSA – and will continue

to be generated at LANL because of current and future missions. Since EM now "owns" no waste facilities at LANL, the transition to NNSA upon completion of the EM mission will be relatively straightforward with respect to legacy waste. Once all legacy waste is disposed of and the facilities cleaned up, the EM waste mission at LANL will be complete.

#### 4.1.2 Strategy

DOE and LANL have developed an integrated, risk-based plan to accelerate characterization and disposal at WIPP for all New Mexico legacy TRU waste. This plan

shortens the time to completion by 20 years and will result in 3000 fewer shipments to WIPP. DOE and LANL are partnering with CBFO, SNL, LRRI, and NMED to accelerate legacy waste disposal in New Mexico. The accelerated plan consists of the following strategy:

- Early risk reduction through characterization and shipping of approximately 2000 high-activity drums that account for 60% of the risk from dispersible radioactivity in TRU waste in storage at TA-54.
- Minimize existing TRU by decontaminating and volume reducing large boxes containing oversized TRU waste.
- Accelerate retrieval of remaining TRU waste emplaced under earth cover.
- Reduce fixed costs by transitioning out of fixed nuclear facilities and into modular characterization units to improve capability and efficiency.
- Employ best business tools to optimize the entire TRU management process: including storage, characterization, loading and shipping.
- Deploy two supplemental characterization 'production lines' under contract to CBFO.
- Complete treatment and disposal of the remaining mixed low-level waste.
- Characterize and ship 100% of legacy waste inventory by 2010.



#### 4.1.3 Milestones

- Complete treatment of Federal Facility Compliance Order Site Treatment Plan mixed low-level waste by 2006.
- Begin operation of Decontamination Volume Reduction System as radiological facility by 2003.
- Begin volume reduction of Large Object TRU wastes.
- Complete the shipment of all legacy wastes to WIPP by 2010.

## 4.1.4 Metrics

### TRU Waste Volumes and Total Shipments

	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	Totals
LANL waste volume (m <sup>3</sup> )	400	600	600	600	600	400	400	400	4000
CCP*(1) waste volume (m <sup>3</sup> )	400	800	800	800	800	800	800		5200
Total Combined volume (m <sup>3</sup> )	800	1400	1400	1400	1400	1200	1200	400	9200
Total number of shipments	95	166	166	166	166	142	142	48	1091

\* CCP = Centralized Characterization Project. The CCP will provide two work characterization "production lines" located at TA-54, managed and funded by CBFO.

#### Benefits

- ▶ Completion of Hydrogeologic Workplan wells on time
- ▶ Installation of permeable reactive barriers to intercept potential contamination associated with high-risk sites
- ▶ Completion of new monitoring wells
- ▶ Definition and transfer of LTES groundwater responsibilities to Landlord

## 4.2 Groundwater Protection Initiative

Environmental management is not complete without ensuring protection of groundwater resources. EM, along with NNSA, cosponsors the development and execution of this initiative at LANL. The primary focus of this initiative is the completion of characterization wells included in the Hydrogeologic Workplan, control and mitigation of shallow groundwater contamination, and the establishment of an enhanced groundwater monitoring system.

### 4.2.1 Initiative End-State

This initiative targets EM responsibilities in protecting groundwater at LANL. LANL's highest priority groundwater protection measures are those that

- Protect drinking water supply wells on the Pajarito Plateau,
  - Protect the quality of groundwater moving from beneath LANL to San Ildefonso, Los Alamos County, and other off-site lands,
  - Protect quality of surface water in springs and the Rio Grande including downstream areas, and
  - Reduce discharges that may impact the quality of the regional aquifer.

EM's responsibilities include characterizing groundwater contamination from historical releases or surface waste sites that may pose a risk through the groundwater pathway. Corrective action is required for sites or contaminated areas that may pose significant risk. Part of corrective action is expected to include control of contaminated plume areas and monitoring for assurance that selected remedies are successful. In addition to EM

groundwater activities, there exist at LANL further regulatory-mandated groundwater requirements addressed by NNSA. Currently, EM and NNSA evenly support groundwater actions at LANL.

#### Benefits

- ▶ Control of shallow groundwater with the highest contamination levels will contribute to any groundwater corrective actions.
- ▶ Accelerating monitoring under this proposal will advance the LTES handoff.
- ▶ Monitoring under this proposal will aide NNSA in its need to demonstrate environmentally benign operations.
- ▶ The contamination control and monitoring proposals will aide DOE and UC in responding to the draft NMED Imminent and Substantial Endangerment Order that cited potential risks through the groundwater pathway as its primary justification.

#### 4.2.2 Strategy

The strategic approach for completing EM's groundwater responsibilities includes (1) complete Hydrogeologic Workplan characterization, (2) control highest priority shallow contamination that may spread and pose a threat to drinking water supplies, and (3) establish groundwater monitoring relative to historic waste releases or surface sites.

#### Complete Hydrogeologic Workplan

Characterization is needed to establish fate and transport rates of contaminants in groundwater and to establish monitoring locations and requirements. Hydrogeologic characterization data are used to support risk-based corrective actions and remedial alternatives for sites posing a potential risk to groundwater resources. This characterization is currently being accomplished through the Hydrogeologic Workplan—a regulatory-required activity mandated by NMED in 1998. The primary purpose of the Hydrogeologic Workplan is to characterize the hydrogeologic setting to design a monitoring network (LANL 1998). The characterization activities that will accelerate groundwater protection measures are

- Completion of hydrogeologic characterization sufficient to design and site monitoring wells, and
- Completion of characterization and analysis to detail fate and transport in support of corrective remedies (expected to be mostly no further action [NFA], or monitored natural attenuation).

The Hydrogeologic Workplan consists of a total of 32 regional aquifer characterization wells, of which Defense Programs and EM are responsible for funding installation of 16 wells each. Eight regional aquifer characterization wells remain in EM's component of the Hydrogeologic Workplan. Completion of all Hydrogeologic Workplan wells will allow the corrective action process for groundwater to proceed. In addition, characterization information is necessary for enhancing monitoring such that there is assurance that environmental restoration has adequately remediated actual and potential sources of groundwater contaminants and all risks have been addressed.

## Control of Groundwater Contamination

Elevated contaminant levels currently exist in shallow (canyon bottom) alluvial systems that could spread to deep groundwater bodies such as the regional aquifer that serves as the primary drinking water supply to LANL and surrounding communities. Preliminary analysis indicates potentially rapid (10–50 year) travel times exist at some LANL locations between surface waters and the deeper regional aquifer. The Accelerated Cleanup proposal addresses the problem of elevated contamination in certain canyon-bottom groundwater locations (specifically in Mortandad and Los Alamos Canyons) through the use of permeable reactive barrier technologies to control the migration of contamination. The reactive barrier technology is being designed to act as a physical barrier within the alluvial groundwater zones within selected canyon bottoms. The barriers consist of materials that chemically and physically react with contaminants of concern to eliminate and/or reduce migration beyond these areas of the canyons. A site-specific permeable reactive barrier design (along with some field work) will be completed for Mortandad Canyon in FY02.

The project design indicates that LANL's steep, confined canyons are ideal for using permeable reactive technologies. However, as these barriers are constructed, they will be evaluated for effectiveness in controlling contaminants, and a range of possible measures will continue to be considered to meet contaminant control objectives.

Benefits of controlling the spread of elevated contamination include

- reduced characterization and analysis costs (reduced effort of “proving” monitored natural attenuation will be sufficient in a highly complex hydrogeologic setting);
- reduced risk and perceived risk, through a proactive measure to address a major regulatory and public concern; and
- stimulating endpoint focus for groundwater by implementing the first steps in a graded approach.

## Monitoring

Groundwater monitoring is a key element of the EM end-state for groundwater at LANL. Monitoring and monitored natural attenuation are expected to be the primary elements of the remedies for most contaminated groundwater locations at LANL. A substantial amount of groundwater monitoring is expected in the LTES program for LANL.

Table 4-1 summarizes the groundwater monitoring requirements that are applicable at LANL.

**Table 4-1  
Summary of Groundwater Monitoring Requirements**

<b>LANL Program</b>	<b>Monitoring Plan</b>	<b>Regulatory Authority</b>
Environmental Restoration (RCRA/HSWA)	<ul style="list-style-type: none"> <li>▪ Sources of groundwater contamination remediated to meet groundwater protection criteria</li> <li>▪ Surface sites with residual contamination in place</li> <li>▪ Alluvial groundwater remedial action sites</li> </ul>	NMED
RCRA units	Monitoring of aggregates in the Hydrogeologic Workplan or demonstrated groundwater monitoring waivers	NMED
Discharge Plans	Monitoring as described in approved Discharge Plans	NMED
Environmental Surveillance	Monitoring to identify and quantify releases to the public from DOE sites required by DOE Order 5400	DOE

Attributes of effective groundwater monitoring at LANL include

- Protection of water supplies, particularly from the seven water supply wells located within LANL;
- Assurance that historic contamination dispersed in groundwater does not pose a risk (demonstrates attenuation);
- Attainment of cleanup objective for surface waste sites; and
- Assurance that LANL operations are meeting environmental stewardship goals.

Ten monitoring wells are proposed to fulfill the expected RCRA/HSWA monitoring obligations relative to historic releases and surface waste sites. These wells will monitor contaminant migration and contaminant levels downgradient of key liquid discharge locations, primarily in Los Alamos, Pueblo, Mortandad, and Water Canyons. Where possible, these wells will have supplementary benefits and may serve as multipurpose monitoring wells relative to material disposal areas (MDAs), RCRA units, and groundwater discharge plans. However, additional wells are expected to be needed to fulfill all LANL groundwater monitoring needs, and the ten wells proposed comprise the EM-required component for monitoring.

#### **4.2.3 Key Milestones**

EM Groundwater will

- Complete Hydrogeologic Workplan characterization by December 2005,
- Begin installation of the first of three reactive barriers by 2002 (complete construction by December 2005), and
- Begin installation of EM monitoring wells by before December 2003 (complete well installation by December 2007).

#### 4.2.4 Metrics

	2003	2004	2005	2006	2007
Wells completed	5	5	4	3	1
Percent Complete	26%	53%	74%	89%	100%
Reactive barriers completed	1	1	1		
Percent Complete	33%	66%	100%		

#### 4.3 Environmental Restoration Initiative

This initiative targets acceleration of LANL's ER project and when implemented will significantly reduce risks associated with LANL's historic waste sites and accelerate the ER completion date from 2030 to 2015. Cost savings for the acceleration of the entire ER project are \$450 million compared to today's life-cycle baseline budget.

There are a wide variety of cleanup sites at Los Alamos, including septic systems, chemical storage areas, material disposal areas and landfills, wastewater outfalls, firing ranges and impact areas, and surface spills and transformers. The DOE and LANL-ER have continued to improve overall performance by incorporating new ideas developed through training, lessons learned, and annual performance evaluations. Performance improvements have lead to a sizable modification of the overall strategy for assessment and remediation of cleanup sites. Instead of addressing cleanup sites individually according to potential risk, ER began assessing groups of cleanup sites according to proximity to each other and location within the boundaries of a given watershed. This approach is termed the watershed-aggregate approach and when implemented fully will lead to a substantial improvement in efficiency and speed for cleanup site closure.

The ER Project is responsible for conducting corrective actions under RCRA at a total of 26 material disposal areas. These are sites where wastes and materials associated with the R&D of nuclear weapons were disposed of in pits, shafts, seepage pits, or sorption beds. This waste is buried at depths up to 90 feet on relatively narrow mesas, and excavation may be technically impracticable and require an unacceptably high level of risk to workers and the surrounding community at this time.

- Benefits**
- ▶ Completion of all remedial actions for townsite cleanup sites
  - ▶ Fully implement watershed/aggregate approach on highest-priority watershed (Los Alamos/Pueblo Canyon)
  - ▶ Reduces EM's footprint of responsibility
  - ▶ Completion of highest-priority MDAs containing TRU waste
  - ▶ Highest-risk sites are completed near residential and business areas
  - ▶ Land is made available for land transfer or reuse by NNSA
  - ▶ Transition to LTES happens sooner

### 4.3.1 Initiative End-State

The end-state for EM's responsibilities at LANL is the ER Project's successful completion of corrective actions for all historical cleanup sites such that they can be approved by the administrative authority for NFA. Public participation and input is integral to the NFA process.

For cleanup sites located within the Los Alamos townsite and on county properties, successful approval of NFA will mean a reduction in DOE's regulated footprint (approximately 12 square miles) and its long-term liability, because these sites generally will have met residential risk levels and are then available for unrestricted land use.

For cleanup sites located on DOE property, successful approval of NFA will mean that a site has been investigated and remediated or stabilized to an approved risk level tied to future land use or need.

After successful cleanup of all historic waste sites, the required ongoing monitoring and maintenance will be conducted through the LTES program under NNSA.

### 4.3.2 Strategy

LANL's approach focuses on addressing groups of cleanup sites within watersheds. Eight major watersheds exist at LANL, all of which drain from LANL lands through and adjacent to Pueblo lands and eventually to the Rio Grande. The DOE, UC, and NMED have prioritized these watersheds and their associated sites and site aggregates. This watershed approach is a systematic, integrated, risk-based process for characterizing cleanup sites that follows EPA guidance. Watersheds at LANL were ranked by priority with the basis for ranking as follows:

- human health and ecological risk,
- regulatory drivers,
- stakeholder issues,
- programmatic investment, and
- LANL mission impact.

**Background:  
Watershed Approach**

The ranking process resulted in the following watershed priorities:

1. Los Alamos/Pueblo
2. Mortandad
3. Water/Cañon de Valle
4. Pajarito
5. Sandia
6. Ancho
7. Chaquehui
8. Frijoles

The ER initiative focuses on three elements: (1) completing all corrective actions in the Los Alamos/Pueblo watershed (highest-risk watershed), (2) accelerate completion of work at high-risk MDAs (containing TRU waste and other contaminants), and (3) complete all corrective actions in the remaining high-priority/risk watersheds.

### Los Alamos/Pueblo Watershed

The Los Alamos/Pueblo watershed contains public (townsite) residential and business areas as well as the nearby TA-21 Manhattan-era plutonium processing area. Accelerating cleanup in the Los Alamos townsite will reduce risks closest to where people live, reduce the footprint of affected lands under EM responsibility by 12 square miles, and accelerate the schedule from the existing ER Project baseline by three years.



Numerous historic waste sites exist within the community of Los Alamos which over the years has expanded and developed over the top of early Manhattan-era waste and operation locations. Many of these sites have been cleaned up or have been determined to require NFA. However, resolution has yet to be attained at numerous sites. These particular sites have associated with them heightened programmatic risk because of their proximity to residential and business areas. Cleanup sites in property

owners' backyards or in business parking lots tend to become high priority and demand expeditious action, even when contaminant levels are low. By completing all sites on Los Alamos County lands not administered by DOE, EM's ongoing liability with respect to risk at these sites will be eliminated. The Accelerated Cleanup proposal is designed to accomplish that goal.

Accelerated cleanup at TA-21 will result in a schedule savings of 13 years and will close out EM responsibility at the highest-priority watershed aggregate and at the high-priority MDAs at TA-21 by 2008.

A total of 154 cleanup sites are associated with the TA-21 site. These sites contribute to the high risk and high priority ranking of the Los Alamos/Pueblo Canyon watershed. They consist of five MDAs (MDAs A, B, T, U, and V), numerous outfalls, subsurface units, surface units, and two geographical areas affected by stack emissions. Of these, approximately 115 cleanup sites remain to be investigated and have the necessary remedial activities applied. Another 39 cleanup sites have been investigated and, if necessary, remediated. These have been proposed to the administrative authority as requiring NFA. Under the Accelerated Cleanup proposal for TA-21, investigation, and where necessary, remediation will be completed at all 154 cleanup sites.

In addition, TA-21 is bounded by Los Alamos Canyon and DP Canyon (a branch of Los Alamos Canyon). The TA-21 surface sites, MDAs, and outfall areas are located upgradient of the surrounding canyon drainage areas. Therefore, expedited cleanup of TA-21 is integral to completing EM responsibilities within the Los Alamos Canyon watershed.

### **Acceleration of High-Risk MDAs**

The ER accelerated strategy calls for accelerating investigations and corrective measures studies (CMSs) at four high-priority MDAs (MDAs H, L, C, and B). The CMS process will be expedited and remedial alternatives will be evaluated. The end-state is that by 2008 final remedies will have been selected for these four MDAs, and the presumptive remedy of covering in



place will have been implemented for all of these MDAs. This initiative is expected to result in a reduction in schedule by 13 years. This schedule reduction may vary if other remedies are selected through the CMS process.

A High Performance Team (HPT) has been piloting MDA H as a precedent-setting MDA for the purpose of identifying key elements that need to be addressed during the CMS process prior to selecting a remedy (see Regulatory Partnering Teams in Section 6.2). The team has made significant progress. The RCRA facility investigation (RFI) and CMS Plan for MDA H has been approved, and the CMS Report with the Statement of Basis for remedy selection will be issued for public comment in the summer of 2002. This Accelerated Cleanup proposal advocates accelerating and expanding the work of the HPT to bring forward characterization and RFI reporting for high-priority MDAs so that all CMI decisions and final remedy actions can be achieved by 2008. The streamlined approach used for MDA H would be adopted for the remaining MDAs.

The ER Project is responsible for conducting corrective actions under RCRA at a total of 26 MDAs. Of the 26 MDAs, ten are considered high priority and are likely to require a CMS process. Four of these are included in this MDA accelerated project. Five additional MDAs are included in the TA-21 accelerated project. The remaining MDA (MDA G) continues to operate and will be addressed at a later date. Containment in place is the likely corrective action end-state for many of these sites, based on the current assumption that they meet the CMS evaluation criteria for capping. However, all corrective action decisions will be made in accordance with regulatory requirements governing the CMS process and the evaluation of alternative remedies and will include public participation as an integral part of the process.

For MDAs where containment in place is the preferred alternative, long-term monitoring and maintenance of the MDA by a future landlord (now NNSA) will be required. A component of the Accelerated Cleanup proposal for MDAs is to address LTES now to define the scope and expectations for LTES. This effort will also enhance the current MDAs HPT's efforts to include stewardship (beyond compliance or post-100 years) into the final remedy-selection process.

### **Completion of Remaining ER Work**

Completion of corrective actions in the Los Alamos/Pueblo watershed first will accelerate all ER Project sites forward by ensuring regulatory approval of the key strategic elements of the watershed approach. Completion of the Los Alamos townsite sites will establish the risk assessment approaches for integrated human health and ecological endpoints and for the investigation of larger areas encompassing combined mesa-top and canyon ecosystems and pathways. In addition, the completion of the Los Alamos townsite sites will identify the appropriate amount and type of environmental data for evaluating contaminant transport and making watershed-level decisions. The strategy applied at TA-21 will provide a methodology for handling complex industrial waste for multiple-site aggregates. This strategy will be applied for the remaining aggregated industrial sites within the ER program. Completion of the remaining 16 MDAs are at various stages of the corrective action process. Efficiencies gained in addressing the high-risk MDAs will be incorporated as these sites move through the corrective action process. The initiative implementing MDA completion will establish methods for reducing, eliminating, and monitoring risk and will establish future landlord agreements for NFA acceptance by the regulatory authority. In addition, finishing the major MDAs completes the most difficult work in two watersheds in addition to the LA/Pueblo watershed.

Finishing the high-priority accelerated initiatives provides a clear regulatory path forward, accelerates cleanup of Mortandad, Water/Cañon de Valle, Pajarito, Sandia, Ancho, Chaquehui, and Frijoles watersheds, and establishes the framework for long-term stewardship.

### 4.3.3 Key Milestones

EM Restoration will

- Complete Los Alamos/Pueblo Watershed field work by 2008,
- Complete corrective action on all high priority Material Disposal Areas by 2008, and
- Completion of all other Watersheds (Project Completion) by 2015.

### 4.3.4 Metrics

Metrics	Fiscal Year												
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Major MDAs Complete		1		1	1	6					1		1
Percent Complete		9%		18%	27%	81%					90%		100%
Watershed Field Work Complete						2	1	1	2		2		
Percent Complete						25%	37%	50%	75%		100%		

## **5.0 MANAGEMENT STRATEGIES**

In order to accelerate and complete WD and environmental restoration activities, significant changes in practices at UC, DOE, and regulator offices must be accomplished. These changes, discussed below address UC/LANL process changes, DOE project management and execution changes, and integration with NNSA since LANL is a site operated for NNSA. Finally, the stakeholder and public involvement process in the acceleration planning is discussed. The regulatory process changes are described in Chapter 6.

### **5.1 UC/LANL Changes to Support Acceleration**

The UC/LANL has already made, and proposes to make, additional, substantial changes in its business practices to enhance progress in both ER and legacy WD. Business processes are being changed to increase efficiency, eliminate redundancy, and apply innovations from lessons learned on ER and WD projects. These changes have been in progress since a major reorganization at LANL in the spring of 2002, which is fundamentally changing the LANL ER approach to undertaking cleanup actions.

#### **5.1.1 Business Practice Changes**

Specific reforms include

- Changing acquisition strategies to align with the watershed/aggregate approach and allow larger tasks/scopes of work to be subcontracted on a turnkey basis.
- Having new subcontracts with incentive clauses that specify unit-priced and fixed-priced requirements that are completely performance based.
- Establishing new increased targets for subcontracting turnkey geotechnical and remediation services.
- Partnering with the Carlsbad Field Office (CBFO) to supplement site capability with needed characterization units to accelerate the certification for shipment of TRU waste.

#### **5.1.2 Organizational Changes to Accelerate EM Program Completion**

In the spring of 2002, LANL made significant organizational changes to improve accountability and productivity. All ER and WD activities were reassigned from LANL R&D directorates to the Operations directorate to ensure accelerated completion of EM programs. One of the primary drivers for these changes was to consolidate all environmental compliance activities within LANL, an NNSA site operating in compliance with RCRA permits. Realignment of LANL infrastructure ensures that EM supports only its proportional share of environmental work and that funded projects

are integrated where appropriate. The following specific changes are underway to support accelerated environmental cleanup and WD:

- ER, WD, as well as all compliance programs are now the mission of one LANL Division, Risk Reduction and Environmental Stewardship (RRES), and LANL has vested the institutional authority for ER and WD in the RRES Division Leader.
- Outreach and communication have been centralized at the RRES Division Office and streamlined using LANL Communication and External Relations as its primary support.
- The ER Project Sample Management Office (SMO) was elevated to the LANL SMO for all environmental programs without increasing staff by consolidating analytical chemistry subcontracting and by using a single process for chain-of-custody.
- Database management and information technology are being streamlined using standardization processes to support all RRES activities and to complete ongoing data automation improvements supporting WIPP shipment “data packages.”
- A senior business acquisition manager now reports to the RRES Division Leader on the acquisition and management of all ER and WD contracts, and procurement for ER and WD was consolidated within a smaller but more experienced business team.

## 5.2 Changed DOE Project Management and Execution

Historically, EM reported at a very detailed level (work-breakdown structure [WBS] Level 9). The new reporting structure for ER established a DOE Federal Project Manager (FPM) and streamlined reporting is implemented based on DOE Order 413.3. This process has been successfully implemented by DOE at LANL for the completion of the Cerro Grande Rehabilitation Program.

A work authorization process will be implemented to formally approve discrete work elements identified within the ER baseline. This process will allow individual or multiple WBS elements to be approved, managed, and controlled by the FPMs, as shown in Figure 5-1.

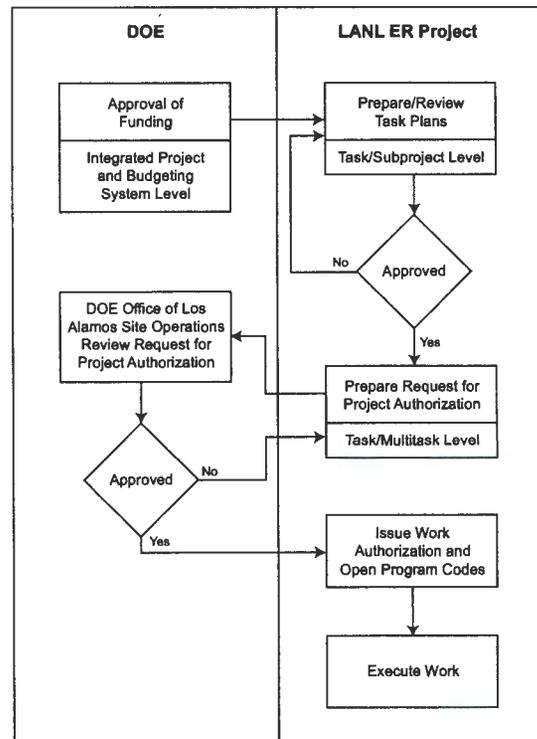


Figure 5-1. Work authorization process

DOE/NNSA has assigned FPMs from NNSA-Office of Los Alamos Site Operations to ER and legacy waste projects. FPMs are responsible for the DOE onsite management related to the ER Project and are the lead DOE point of contact at Los Alamos for the project. Additionally, the FPM maintains close communications and coordination with the LANL Project team to provide the support, guidance, and approval required to assure success of the project. Among other responsibilities, the FPM has project ownership responsibility, serves as primary project advocate, resolves performance issues, and oversees development of the acquisition strategy for project work.

### **5.3 Integration with NNSA**

The LTES strategy/process incorporates existing and emerging guidance from EPA and DOE on risk-based decision-making, streamlined corrective-action programs, integrated environmental management systems, and long-term environmental stewardship. It integrates environmental protection activities into the DOE mandated Laboratory's core national-security mission to formalize the Laboratory's commitment to restore and protect the environment from detriment associated with past, present and future operations.

NNSA is the responsible landlord at LANL and, prior to development of this PMP, has participated in LANL's environmental restoration and TRU WD activities in meaningful ways.

Because the landlord is responsible for maintaining a monitoring and surveillance program for the site, the Office of Los Alamos Site Operations (OLASO) oversees the ES&H programs at LANL. As EM activities are completed and regulatory status moves from corrective action to LTES, funding for these obligatory activities will shift from EM to NNSA. OLASO will continue to be the DOE LTES organizational element.

Prior to 1998, the waste management operations at LANL were developed and managed by EM. In 1998, funding for the characterization, treatment, and disposal of newly generated waste transitioned from EM to NNSA. At that time, the funding for waste facilities was also transferred to NNSA. Currently at LANL, EM and NNSA share the waste facility costs, and NNSA funds the core capabilities for TRU waste characterization.

NNSA is the landlord and responsible Agency for ongoing operations at LANL, and participation in Accelerated Cleanup will benefit NNSA by reducing programmatic risks to LANL missions. In addition, the changes in UC and DOE business practices and organizational structure will allow increased efficiencies and cost savings for NNSA operations at LANL.

#### **5.4 Stakeholder and Public Involvement**

Key stakeholders such as the New Mexico Tribes/Pueblos, county governments, federal and state agencies, community leaders, interest groups, and the public have been regularly involved in LANL legacy waste and environmental restoration activities through the Northern New Mexico Citizen's Advisory Board and through focused meetings on waste management and cleanup decisions. These interactions will continue in the future, and accelerated projects will go through public review and comment processes according to the legal requirements and the outreach practices that have already been established at LANL. The accelerated proposal does not call for shortening public review times or lessening public input opportunities in any way.

One of the keys to public input is the NNM CAB whose charter calls for providing recommendations to DOE on EM work at LANL. The Board has interacted with DOE, NNSA and UC concerning the accelerated proposal primarily its ER Committee, Waste Management Committee, and Environmental Monitoring and Surveillance Committee. Through these mechanisms, the DOE expects to receive ongoing input on accelerated cleanup plans and implementation.

## **6.0 REGULATORY FRAMEWORK**

### **6.1 Regulatory Framework for Legacy Waste**

Disposition of legacy wastes is being conducted under RCRA and under regulations from NRC, the Department of Transportation (DOT) and the DOE. Before TRU waste can be shipped to WIPP for disposal, the waste must be characterized and packaged to meet the requirements of RCRA as reflected in the WIPP waste acceptance criteria. Characterization includes headspace gas sampling and analysis and an assay of the radiological contents of the package. The characterization also includes the radiography of packages to identify any prohibited items (containers with liquids or compressed gas cans or cylinders) in the package that must be removed prior to shipment. Many of the drums may require repackaging because they contain prohibited items; a subset will be repackaged to meet the permit requirements for visual examination, but a large fraction will exceed the wattage limit established for the TRUPACT II shipping container. Together, the repackaging would cause the 9000+ cubic meters of inventory to grow to 46,000 cubic meters shipped. A proposed revision to the shipping requirements was submitted to NRC for 2000 high-activity drums. It proposed to meet the NRC requirements that drive much of this repackaging in a different fashion. On July 5, 2002, the NRC approved this revision. It will greatly reduce the repackaging needed for these 2000 drums. At a later date, we propose to submit a similar revision to the NRC that would apply to the rest of the TRU waste inventory. If approved, the total number of projected shipments will be reduced by two thirds. This is a key element allowing for the dramatic cost reductions and schedule improvements discussed in this proposal.

### **6.2 Regulatory Framework for Environmental Restoration and Groundwater**

Environmental Restoration work, including groundwater work, is conducted primarily under RCRA and its state counterpart, the New Mexico Hazardous Waste Act. The NMED issued an operating permit (Hazardous Waste Facility Permit) to LANL in 1989, and the EPA issued a corrective action permit (HSWA) to LANL in 1994 (administered by NMED).

The HSWA process can be divided into four phases: site assessment, remedial investigations, development of proposed corrective actions, and selecting and performing corrective actions. The "Solid Waste Management Units (SWMU) Report," (LANL 1990) fulfilled phase one, "site assessment." The original SWMU report listed 2124 cleanup sites. These sites include SWMUs regulated originally by EPA, then by NMED when it received RCRA authority in 1994, and areas of concern, regulated by DOE or other applicable authorities such as EPA, which administers regulations pursuant to the Toxic Substances Control Act. Since 1990, the ER Project has planned and conducted remedial investigations and executed cleanups at over a thousand sites.

Agreements between DOE, UC, and NMED for corrective action emphasize

- risk-based approach,
- effective permit modification,
- EPA's watershed management approach, and
- DOE/UC/NMED/EPA team approach.

### Regulatory Partnering Teams

Several management teams already exist consisting of members of the DOE, UC, NMED, and EPA. These teams will be instrumental in implementing the Accelerated Cleanup projects. These management teams, and their hierarchy, are depicted in Figure 6-1. The Senior Management Steering Committee, consisting of high level managers, will oversee continued development and execution of accelerated cleanup at LANL. The Management Coordination Team for LANL consists of the UC and DOE project managers for ER and the Chiefs of the NMED Hazardous Waste Bureau and DOE Oversight Bureau. The Groundwater Core Team consists of senior DOE, UC, and NMED managers who oversee groundwater activities at LANL.

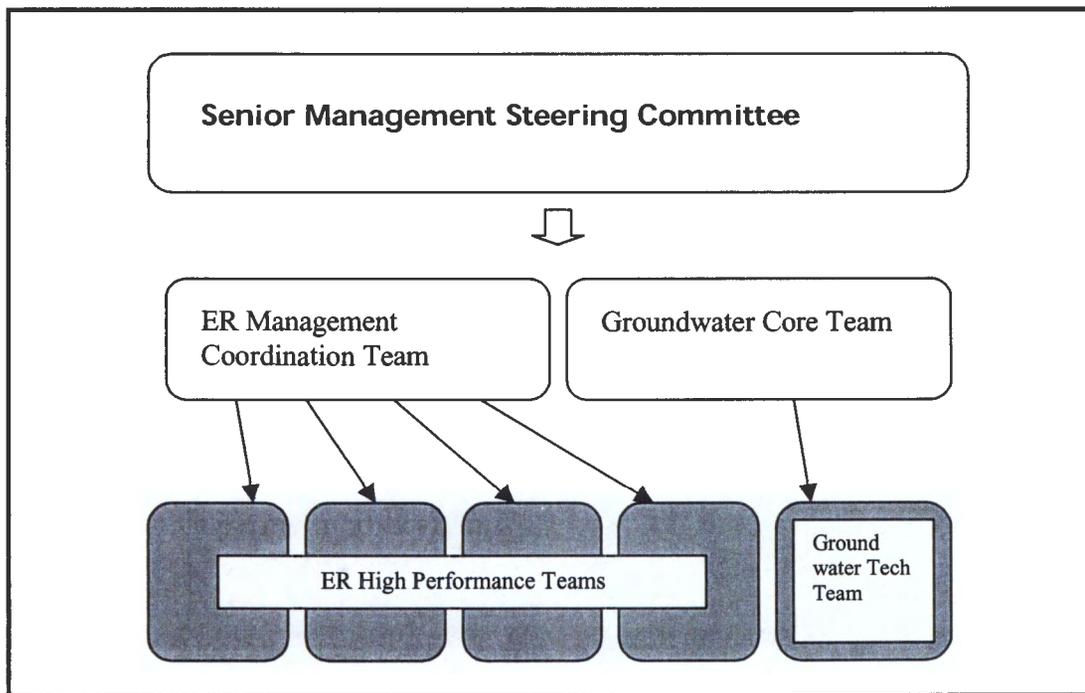


Figure 6-1. Hierarchy of DOE-UC-NMED-EPA Partnering Teams

In 1999, DOE, UC, and NMED jointly developed a High Performance Team (HPT) approach to facilitate and focus decision-making on selected high-priority projects. Each HPT is composed of technical staff representing DOE, UC, and NMED. Team members meet regularly to make decisions as new data become available. HPTs exist for numerous sites including the airport landfill, MDA H, TA-35, and the 260 outfall at TA-16. This team approach has been successful and will be established as the method for advancing the Accelerated Cleanup projects.

### High Performance Teams: The 260 Outfall

Building 16-260 was LANL's conventional high explosives (HE) machining facility during much of the Cold War. It remains a vital NNSA resource for the Weapon's Program, with much of LANL's HE processing continuing within it. From 1951 to 1996, 13 sumps discharged HE-contaminated wastewater through the 16-260 outfall. Nearby soils, springs, seeps, Cañon de Valle, other surface waters, and groundwater were all significantly contaminated with HE from the 260 outfall. This contaminated area was considered one of LANL's highest environmental risk areas.



Using the HPT approach, LANL, NMED, and the DOE have successfully implemented actions at TA-16-260 to reduce risks. Most contamination has been removed using a bias for action approach. Several "firsts" for LANL's cleanup efforts are associated with the 16-260 activities, including (1) the first RCRA facility investigation (RFI) report and corrective measures study (CMS) plan approved by the NMED, (2) the first-ever NMED-approved "contained-out" determination for F-listed waste, and (3) the first NMED-approved nonresidential cleanup criteria for a LANL cleanup project.

### 6.3 Review Times

Achievement of accelerated cleanup project milestones and endpoints requires a commitment by NMED to faster review and approval of regulatory decision documents. DOE/UC and NMED have committed to clarifying agreements for document submittal to help accelerate decision-making. NMED has committed to expanding or augmenting its staff as needed to contribute to the accelerated pace. DOE has committed to support NMED as necessary with sufficient permit funding to sustain the accelerated pace. All parties involved are committed to a decision-making and review processes that include public participation as an integral part.

## 7.0 COST, FUNDING, AND SCHEDULE

This section presents the current estimated life-cycle costs and schedule for completing cleanup and dispositioning legacy TRU waste and compares it with the Accelerated Cleanup life-cycle baseline costs and schedule.

LANL accelerated cleanup initiatives will

- Accelerate ER's completion by 15 years
- Accelerate WD completion by 20 years
- Reduce costs for completion by \$950 million

### 7.1 Comparison of Funding Profiles: Existing Baseline vs Accelerated Cleanup Baseline

The current life-cycle cost for completing cleanup and dispositioning legacy TRU waste at LANL is presented in Figure 7-1. This profile does not reflect the efficiencies that are possible when work is planned and executed according to the reforms proposed in this PMP. The current profile reflects lower annual levels of funding between FY03 and FY10, resulting in reduced efficiency in program execution. The existing profile also fails to reflect the reformed business practices that UC and the DOE have implemented to position LANL to respond effectively and efficiently to this plan. By increasing EM funding for LANL in the short term, the overall life-cycle cost of cleanup and waste disposition will be reduced substantially and will ultimately afford the DOE greater flexibility in responding to emerging federal priorities.

Funding requirements for implementing this PMP are shown in Figure 7-1, including the current LANL baseline. The Accelerated Cleanup baseline is superimposed. A savings of \$950 million can be realized if LANL's Accelerated Cleanup proposal is implemented in its entirety.

Figure 7-1 also shows schedule acceleration with a total EM program acceleration of 15 years from 2030 to 2015. Specifically, the ER schedule is accelerated by 15 years from 2030 to 2015 and the WD schedule is accelerated 20 years from 2030 to 2010.

### 7.2 Accelerated Cleanup Schedule

The critical path for the completion of all EM activities at LANL by 2015 is comprised of three major initiatives:

- Legacy TRU and mixed low-level waste initiative,
- Groundwater protection initiative, and
- Environmental Restoration initiative.

The master schedule for the entire Accelerated Cleanup project will be prepared based on detailed critical path activities within each initiative. A high-level summary schedule is provided in Figure 7-2.

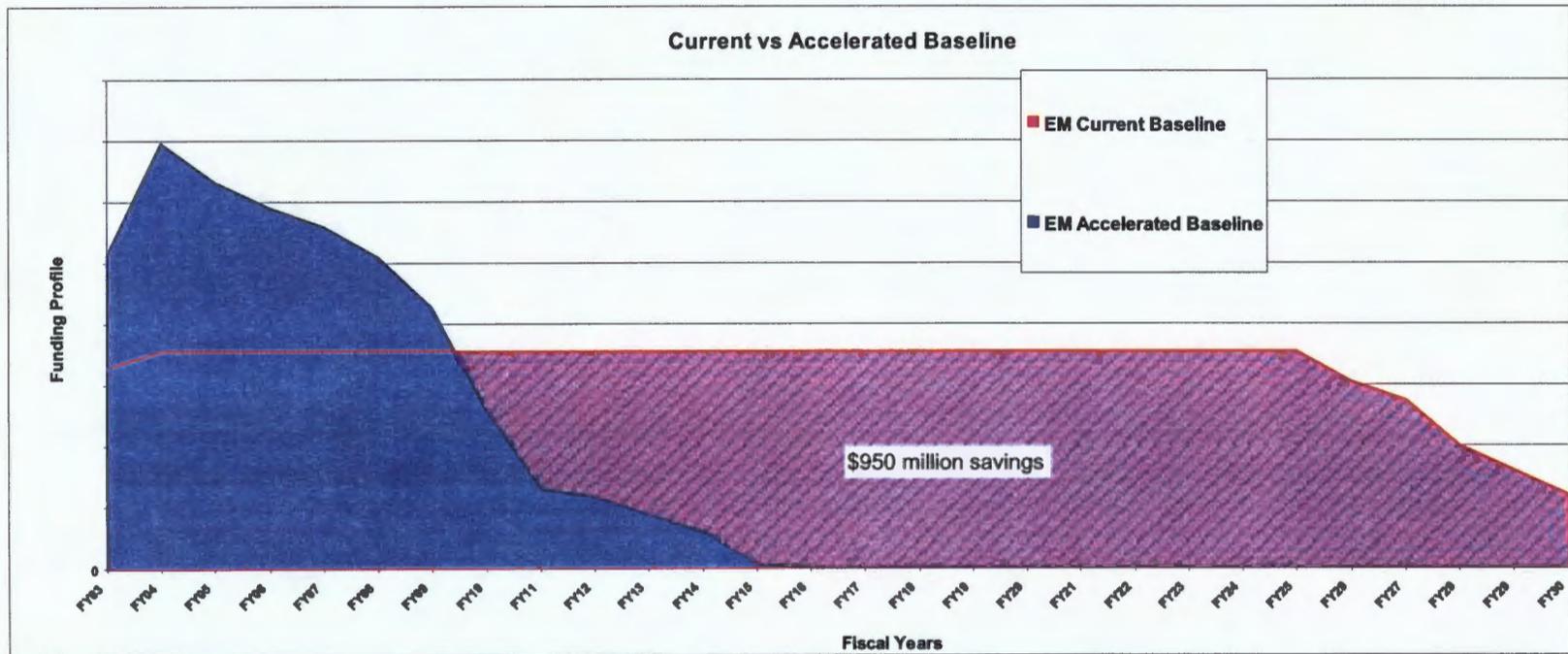


Figure 7-1. Environmental Management Program at LANL: Current Life-Cycle Baseline Versus Accelerated Baseline

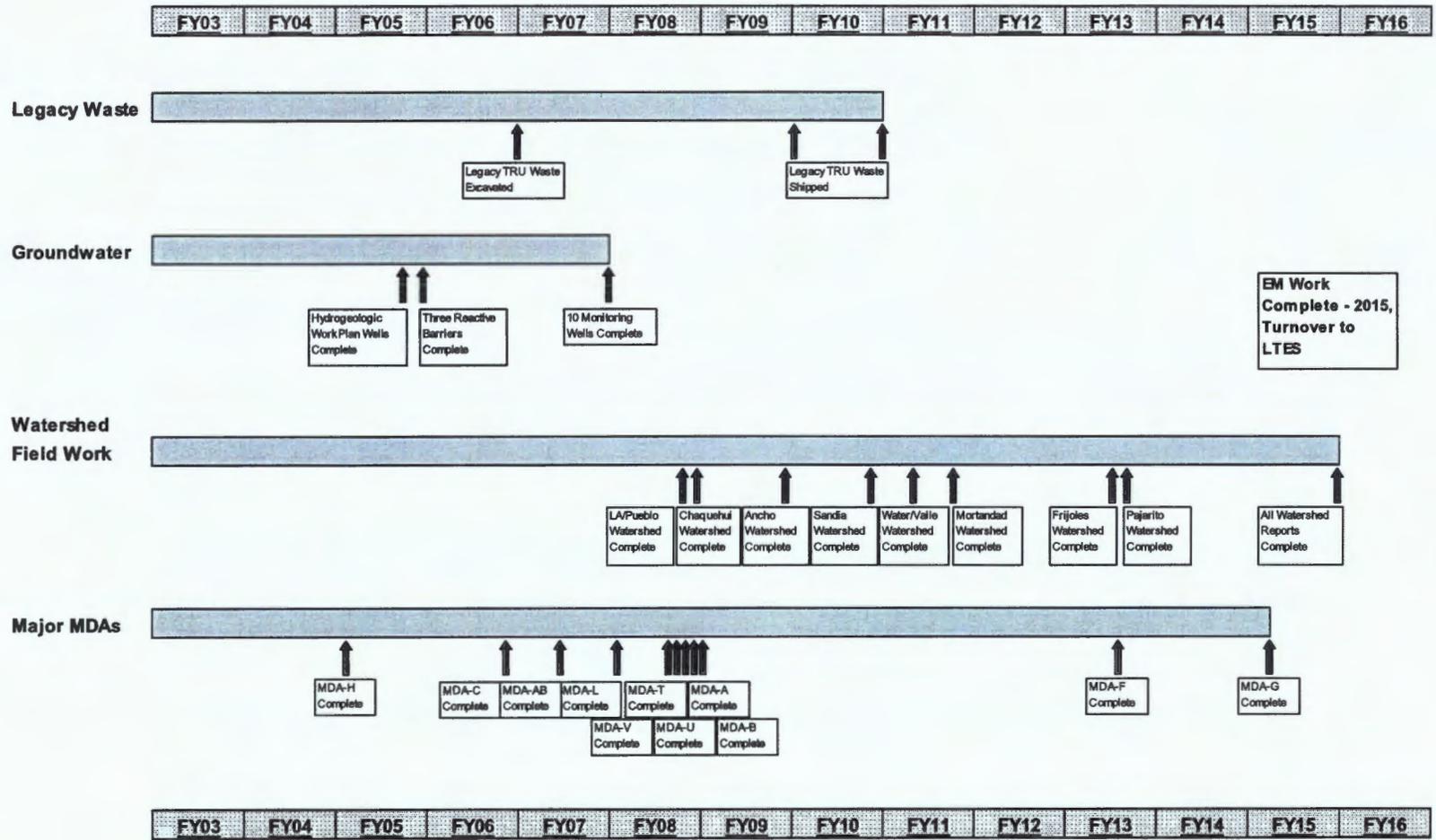


Figure 7-2. Summary Schedule

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