General

DEPARTMENT OF ENERGY
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

APR 17 2006

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NMED Hazardous Waste Bureau

James Bearzi, Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Subject: Response to Request for Information Regarding the Ten-Year Comprehensive Site Plan

Dear Mr. Bearzi:

This letter responds to your letters of January 10, and March 28, 2006, to Messrs. Wilmot and Kuckuck. In response to your correspondence, please find enclosed a redacted copy of the Ten-Year Comprehensive Site Plan (TYCSP), FY 2004-2013, dated September 1, 2003. In addition, as discussed earlier with Darlene Goering of your staff, we have made arrangements for NMED representatives to review updated versions of the TYCSP in a reading room setting.

If you have any comments or questions regarding this letter, please contact me at (505) 667-1968, or Gene Turner of my staff at (505) 667-5794.

Sincerely,

Eugene T. Rodriguez
Acting Assistant Manager
Office of Environmental Stewardship

ES: 2GT-016

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LASO Records Center

1943 - 2003
Los Alamos
NATIONAL LABORATORY
Ideas That Change the World

Ten-Year Comprehensive Site Plan FY04 - FY13

LA-UR-04-7750
September 1, 2003

NNSA

1943 - 2003
Los Alamos
NATIONAL LABORATORY
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Ten-Year Comprehensive Site Plan FY 2004 to FY 2013

LA-UR-04-7750
September 1, 2003

NNSA
National Nuclear Security Administration

Director's Statement

As we celebrate the 60th anniversary of the Los Alamos National Laboratory, we remain proud and honored that, since 1943, the Laboratory has consistently applied state-of-the-art scientific approaches to solving problems of national importance. At the same time, attention to the state of our infrastructure and facilities has not kept pace. We continue to experience deterioration of our infrastructure and facilities that may serve to undermine our long-term ability to fulfill stockpile stewardship objectives.

A Technical Area 3 (TA-3) Revitalization Plan has been developed to upgrade our most-populated area of the Laboratory. This area is also the computational and theoretical core for our national security mission. The Nicholas C. Metropolis Center for Modeling and Simulation, the Non-proliferation and International Security Center (NISC), the National Security Sciences Building (NSSB), and the Security Perimeter Project are a few of the completed, ongoing, or proposed projects that are included in the TA-3 plan. In addition, integrated strategies with Readiness in Technical Base and Facilities (RTBF), the Facilities and Infrastructure Recapitalization Program (FIRP), and Institutional General Plant Projects (IGPP) are being implemented to develop infrastructure, office, and parking projects within the TA-3 area. These projects address deferred maintenance backlogs, reduce facility operations costs, and increase safety, security, and employee retention. Ambassador Brooks' comments during the NSSB groundbreaking ceremony on August 20, 2003 in this regard were appreciated. In particular he noted:

> *"Science up here is impressive, but the people up here are essential. Giving people the facilities so that they can work together; so they can have the kind of interaction with their peers that science and intellectual efforts depend on, is crucially important."*

Integrated Nuclear Planning (INP) activities were initiated in 1998 to address the consolidation of special nuclear materials facilities, reducing security and operational costs. The Chemistry and Metallurgy Research Building (CMR) Replacement Project will allow Los Alamos to consolidate actinide chemistry and material characterization activities at TA-55 near the existing Plutonium Facility. Los Alamos is committed to vacating the existing CMR facility in the 2010-2013 timeframe. Another project within the INP umbrella is the Nuclear Materials Safeguards and Security Upgrades Project, Phase 2 (NMSSUP II), which will provide an effective, robust physical security system to support current and future protection strategies and security requirements at TA-55.

Los Alamos is also committed to vacating the existing TA-18 site in the next decade. This 50+-year-old site has experienced increased nuclear operational and security costs and must be replaced. The entire set of operations at TA-18 must be addressed in the TA-18 Mission Relocation Project. Los Alamos is concerned that current planning only addresses the relocation of a portion of the missions that are executed at this site.

Additional projects at Los Alamos will address needed facility strategic consolidation plans to reduce the overall footprint, address deferred maintenance backlogs, and reduce the average age of facilities, utilities and infrastructure throughout the site.

I believe that there are three distinct areas that must be addressed in order to ensure infrastructure sustainability to meet our mission. Those three areas include:

1. Implementing formal facilities consolidation efforts and cost reduction initiatives to reduce facility footprints. In addition to reducing operating costs, this results in direct improvements in safety, security, and scientific interactions,
2. Addressing unfunded high-priority facility maintenance backlogs before these backlogs become an even higher risk in conducting our national security mission. We are committed to achieving the associated NNSA goals that have been explicitly emphasized in the last year and that are included in a Level 2 Milestone, and
3. Investing in new construction projects, where appropriate and economically feasible, to ensure that the Laboratory can meet programmatic mission needs over the next 20 to 40 years.

Each of the areas identified above requires commitments to achieve positive results. The return on investment can be realized through reduced operating costs (maintenance and energy) and increased technical productivity to achieve mission requirements. In addition, each area addresses safety and security needs and allows Laboratory facilities to be sustainable over the next 20 to 40 years. The Ten Year Comprehensive Site Plan is our annual update of the integrated strategies required to assure a sustainable infrastructure. We appreciate the continued NNSA support of these strategies.

GPNanos

8-29-03

G. Peter Nanos, Director

Los Alamos National Laboratory

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Acronyms

AB	Authorization Basis
AD	Associate Director
ADP	Area Development Plan
ADO	Associate Director for Operations
ARIES	Advanced Recovery and Integrated Extraction System
B	Bioscience Division
BTF	Beryllium Technology Facility
C	Chemistry Division
CAIS	Condition Assessment Information System
CAS	Condition Assessment Survey
CCF	Central Computing Facility
CCS	Computer and Computational Sciences
CCN	Computing, Communications, and Networking Division
CD	Critical Decision
CGRP	Cerro Grande Rehabilitation Project
CINT	Center for Integrated Nanotechnologies
CMR	Chemistry and Metallurgy Research Facility
CMRR	Chemistry and Metallurgy Research Facility Replacement
CSP	Comprehensive Site Plan
CSSR	Center for Stockpile Stewardship Research
CX	Categorical Exclusion
D&D	Decommissioning and Demolition
DAHRT	Dual Axis Radiographic Hydrodynamic Facility
DBT	Design Basis Threat
DNFSB	Defense Nuclear Facility Safety Board
DoD	Department of Defense
DOE	Department of Energy
DOE-LASO	Department of Energy – Los Alamos Site Operations
DP	Defense Programs
DSM	Directorate Space Manager
DSW	Directed Stockpile Work
DX	Dynamic Experimentation Division
EA	Environmental Assessment
EES	Earth and Environmental Sciences Division
EIS	Environmental Impact Statement
EM	Environmental Management
EPA	Environmental Protection Agency
ESA	Engineering Sciences and Applications Division
ES&H	Environment, Safety, and Health
FAaRS	Facility Assessment and Ranking System
FCI	Facility Condition Index
F&I	Facilities and Infrastructure
FIMS	Facility Information Management System

FIRP	Facilities and Infrastructure Recapitalization Program
FM	Facility Manager
FONSI	Finding of No Significant Impact
FWO	Facility and Waste Operations Division
FWO-FP	Facility and Waste Operations Division – Facility Planning
FWO-IP	Facility and Waste Operations Division – Institutional Projects Office
FY	Fiscal Year
FYNSP	Future Years Nuclear Security Plan
FSP	Facility Strategic Planning
GPP	General Plant Project
GSA	General Services Administration
GSF	Gross Square Feet
HE	High Explosives
HSR	Health, Safety, and Radiation Division
ICPP	Integrated Construction Program Plan
IDR	Inspection Deficiency Report
IFMP	Integrated Facility Management Program
IGPP	Institutional General Plant Project
INP	Integrated Nuclear Planning
ISE	Imminent and Substantial Endangerment
ISM	Integrated Safety Management
ISMP	Integrated Space Management Program
KSL	Kellog, Brown, and Root/Shaw Environmental and Infrastructure/Los Alamos Technical Associates
kV	Kilovolt
LANL	Los Alamos National Laboratory
LANSCE	Los Alamos Neutron Science Center Division
LIR	Laboratory Implementing Requirement
LIP	Line Item Project
LPR	Laboratory Performance Requirement
M	Million
M&O	Management and Operations
MDA	Material Disposal Area
LTES	Long-Term Environmental Stewardship
MEL	Master Equipment List
MSL	Materials Science Laboratory
MST	Materials Science and Technology Division
MVA	Million Volt Amperes
MW	Megawatt
NA-10	Deputy Administrator for Defense Programs
NA-11	Defense Programs – Stockpile Stewardship
NA-12	Defense Programs – Stockpile Management
NA-50	Associate Administrator Facilities and Operations
NA-52	Office of Safeguards and Security

NCB	NEPA, Cultural Resources, and Biological
NDEF	Non-destructive Examination Facility
NEPA	National Environmental Policy Act
NIS	Nonproliferation and International Security Division
NISC	Nonproliferation and International Security Center
NMED	New Mexico Environmental Department
NMR	Nonnuclear Reconfiguration Program
NMSSUP	Nuclear Materials Safeguard and Security Upgrade Project
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSSB	National Security Sciences Building
NTS	Nevada Test Site
O&M	Operations and Maintenance
OPC	Other Project Costs
P	Physics Division
PB	Parsons Brinckerhoff
PCB	Polychlorinated biphenyl
PE&D	Preliminary Engineering and Design
PGIU	Power Grid Infrastructure Upgrades
PHERMEX	Pulsed High-Energy Radiographic Machine Emitting X-Rays
PIB	Program Integration Board
PM	Project Management Division
PTLA	Protection Technology Los Alamos
Pu	Plutonium
PY	Prior Year
R&D	Research and Development
RAMROD	Radioactive Materials Research Operations and Demonstration Facility
RCRA	Resource Conservation and Recovery Act
RLW	Radioactive Liquid Waste
RLWTF	Radioactive Liquid Waste Treatment Facility
ROD	Record of Decision
RPV	Replacement Plant Value
RRES	Risk Reduction and Environmental Stewardship Division
RTBF	Readiness in Technical Base and Facilities
RTG	Radioisotope Thermoelectric Generator
S&S	Security and Safeguards Division
S&M	Surveillance and Maintenance
SECON	Security Condition
SET	Senior Executive Team
SMART	Summary Missions/Alternatives/Requirements Table
SMC	Space Management Committee
SNL	Sandia National Laboratory
SNM	Special Nuclear Material

SPCC	Site Planning and Construction Committee
SR	Strategic Research Directorate
SSP	Stockpile Stewardship Program
SSSP	Site Safeguards and Security Plan
SWEIS	Sitewide Environmental Impact Statement
SWSC	Sanitary Wastewater Systems Consolidation
T	Theoretical Division
TA	Technical Area
TCP	Traditional Cultural Property
TEC	Total Estimated Cost
TFCI	Total Facility Condition Index
TR	Threat Reduction
TSFF	Tritium Science Fabrication Facility
TSR	Technical Safety Requirements
TSTA	Tritium Systems Test Assembly
TYCSP	Ten-Year Comprehensive Site Plan
UC	University of California
U.S.	United States
USQ	Un-reviewed Safety Question
VA	Vulnerability Assessment
WBS	Work Breakdown Structure
WEM	Weapons Engineering and Manufacturing Directorate
WETF	Weapons Engineering Tritium Facility
WMD	Weapons of Mass Destruction
WP	Weapons Physics Directorate

EXECUTIVE SUMMARY

This Ten-Year Comprehensive Site Plan (TYCSP) for Los Alamos National Laboratory provides vital input to meet the National Nuclear Security Administration's (NNSA) commitment to stewardship of the reliability, safety and security of the United States nuclear stockpile. The collective TYCSPs from all NNSA sites are the foundation for the complex-wide facilities and infrastructure strategic planning and the cornerstone of the program's initiative to restore, revitalize and rebuild the complex. Los Alamos remains a prominent contributor to this effort through its programs and campaigns in developing unique science, design, engineering, testing, and manufacturing capabilities needed for long-term stewardship of the stockpile. The objective of this TYCSP is to provide state-of-the-art facility and infrastructure supported by advanced scientific and technical tools to meet this Laboratory's specific operations and mission requirements.

The 2013 vision of the Laboratory, as determined by institutional strategic planning efforts, will be accomplished by completing the following activities as described in the TYCSP:

[redacted]

As the Laboratory's planning processes continue to mature, a look at the long-range potential (up to 20 years) is beginning to emerge. Such planning is not a forecast or identification of specific projects, but a rational speculation of likely conclusions as annual updating of the TYCSP continues. The need for a "built environment" that contributes to long-term health, safety, and welfare of the institution in support of its missions, its employees and visitors, and the surrounding environment is becoming increasingly evident.

The TYCSP and the Laboratory's ongoing long-range planning provide linkages to mission and programs, regulatory expectations, and budget constraints. Institutional planning efforts engage the support of facility managers, program and line managers, and subject matter experts (e.g., utilities, condition assessments, budgets, programs, and human resources) from across the Laboratory and provide the foundation and principles for physical development. Laboratory comprehensive site planning is now and will continue to serve as a strategic vehicle for making facility and infrastructure decisions that ensure the vitality and viability of the Laboratory's national security mission.

The Fiscal Year (FY) 2004 TYCSP follows the NNSA's *Ten year Comprehensive Site Plan (TYCSP) Guidance* (dated February 2003). Brief summaries of each chapter follow.

Chapter 1 introduces the TYCSP and presents an overview of the plan's content and the assumptions, current situations and changes from the FY03 TYCSP as affecting the long-range facilities and infrastructure planning process. Various assumptions that the Laboratory used in developing the FY03 TYCSP are updated, and new, current situations are described along with identification of deficiencies and challenges affecting upcoming initiatives. The role of the National Environmental Policy Act (NEPA) is reviewed with updates defined as it affects the planning or modification of new development activities. Finally, changes and processes in the document are summarized along with accomplishments since the prior year TYCSP.

Chapter 2 provides descriptions of the geographical setting in which Los Alamos National Laboratory exists and includes discussions of the Northern New Mexico regional ecosystems and natural/cultural resources available for integration into the Laboratory's development. Also presented here is a description of current land use, including past and future transfers of land. Summary tables and maps illustrate the current and future status of buildings, including new construction projects and excess facilities. An overview of the current Laboratory workforce is also provided.

Chapter 3 focuses on mission needs and program descriptions. The role of the four programmatic directorates devoted to achieving the Laboratory's mission is presented along with their current and anticipated workloads. The Readiness in Technical and Base Facilities (RTBF) program is explained along with Los Alamos's RTBF facility operating budgets for FY03-FY05 and identification of RTBF program campaigns and directed stockpile work supported by each RTBF facility. The chapter also includes a comprehensive table entitled Summary Missions, Alternatives and Requirements Table (SMART) that attempts to capture the forecasted 10-year program mission campaign activities and link the activities to technologies and facilities required to accomplish the missions. Mission essential facilities are identified and their locations shown on a map. Finally, impacts from Non-NNSA programs are described, and a discussion of the role of technology is provided.

Chapter 4 details the overall site plans and recommendations for the next 10 years. New discussions on facility Condition Assessment Survey (CAS) and deferred maintenance reduction are provided in this year's document, including information on the Laboratory's recently completed deferred maintenance baselining effort. Current and future space utilization is described, as well as efforts to D&D excess space. Expanded discussions on sitewide utilities, transportation, and parking provide information on the Laboratory's infrastructure, and an updated security section describes efforts to address emerging threats. Another new element for FY04 is a discussion on sitewide master planning activities[redacted]

Chapter 5 discusses the various construction project funding sources and describes in detail the line item projects the Laboratory is planning over the next 10 years. For each of these projects, information on scope, costs, and benefits are provided.

Various attachments provide supporting information as required by the guidance. Three additional attachments have been included; the first section provides references for Laboratory publications used to develop the TYCSP; the second section describes ongoing consolidation planning efforts by organizations; and the third section provides sitewide maps with greater detail than in those included in the chapters.

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1.1 OVERVIEW

The Los Alamos National Laboratory (LANL) submits herein its third annual Ten-Year Comprehensive Site Plan (TYCSP) in response to February 2003 National Nuclear Security Administration (NNSA) guidance. This plan specifically provides strategic planning for the physical complex and includes direct and indirect NNSA funded facilities and infrastructure activities. It presents results of strategic planning processes employed at the Laboratory in support of NNSA's initiative to restore, revitalize, and rebuild the National Nuclear Security complex. Submission of this plan is one deliverable in the key goal to link physical asset long-range planning and proposed projects with fiscal budget submissions.

Included in this document are the following major topics.

General Site Information presents current and future physical conditions with supporting background data.

Deferred Maintenance Backlog Baselining activities are described as well as efforts supporting the NNSA corporate goals for deferred maintenance reduction.

Facilities & Infrastructure (FI) Cost Projection Spreadsheets provide insight to budget realities and consider all funding sources, including Readiness in Technical Base and Facilities (RTBF), Line Item, Indirect, and Facilities and Infrastructure Recapitalization Program (FIRP). The Laboratory has also included a summary of projects that are Campaign/Directed Stockpile Work (DSW) (non-line item), non-Defense Programs (DP), and Institutional General Plant Projects (IGPP).

Summary Missions and Alternatives/Requirements Table (SMART) organizes mission requirements and needs information in a reader-friendly format.

The development process for this plan integrates institutional planning efforts for mission and programs, workforce, facilities, security, utilities, environment, safety, health, and operations.

1.2 ASSUMPTIONS

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

1.3 Current Situation

Los Alamos is currently celebrating its 60^{th} anniversary as one of the premier national laboratories for meeting today and tomorrow's national security challenges. Since 1943, the Laboratory has consistently applied state-of-the-art scientific approaches to solving problems of national importance. However, attention to the state of infrastructure and facilities has not kept pace, and the Laboratory's physical plant is deteriorating to the point of jeopardizing its long-term ability to fulfill stockpile stewardship objectives.

Los Alamos has the greatest number and the oldest facilities among the three weapons laboratories and the Nevada Test Site. The cost of operations and maintenance, integrated safeguards and security management, environmental compliance, and other operations for these aging facilities is significant and growing. While real progress has been made in recent years to address this issue, serious concerns and challenges remain.

1.3.1 Concerns and Challenges

Aging Obsolete and Inadequate Facilities

The average facility age at Los Alamos is currently 33 years, with over two thirds older than 30. One half of the Laboratory's facilities are in poor or fair condition. A large percentage of the Laboratory's workforce resides in facilities that are in marginal condition and frequently overcrowded which is a problem that has increased dramatically in recent years. The average amount of office space per occupant has dropped from 133 square feet in FY01 to 116 square feet in FY03 (and is projected to drop to 111 square feet in FY04). Sixteen percent are housed in "temporary" structures such as trailers and transportables, many of which are 20 to 30 years old. Over 1,400 employees are currently housed in dispersed, off-site leased space due to lack of adequate onsite facilities. Overall, these situations lead to diminished productivity and morale, present safety and security problems, and hinder recruiting and retaining highly qualified staff.

Deferred Maintenance Backlog

NNSA, along with its sites, has established aggressive corporate goals associated with stabilizing and reducing deferred maintenance. We have completed the deferred maintenance backlog baseline ($546M) and are preparing a plan for stabilization by 2005 and reduction to industry standards by 2009. To achieve these deferred maintenance goals, facility operations must invest in maintenance at greater levels than in the past.

A key component of the Laboratory's strategy to lower maintenance and operating costs and reduce the deferred maintenance backlog is to aggressively reduce its facilities footprint. About 250 structures comprising 1.9 million gross square feet have been identified as currently ready for disposal, and another 313 buildings comprising 2.4 million gross square feet are proposed as future excess facilities. While FIRP is expected to fund much of this work, other sources of funding will be necessary, particularly for process contaminated facilities.

1.3.2 Corrective Actions

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1.4 National Environmental Policy Act

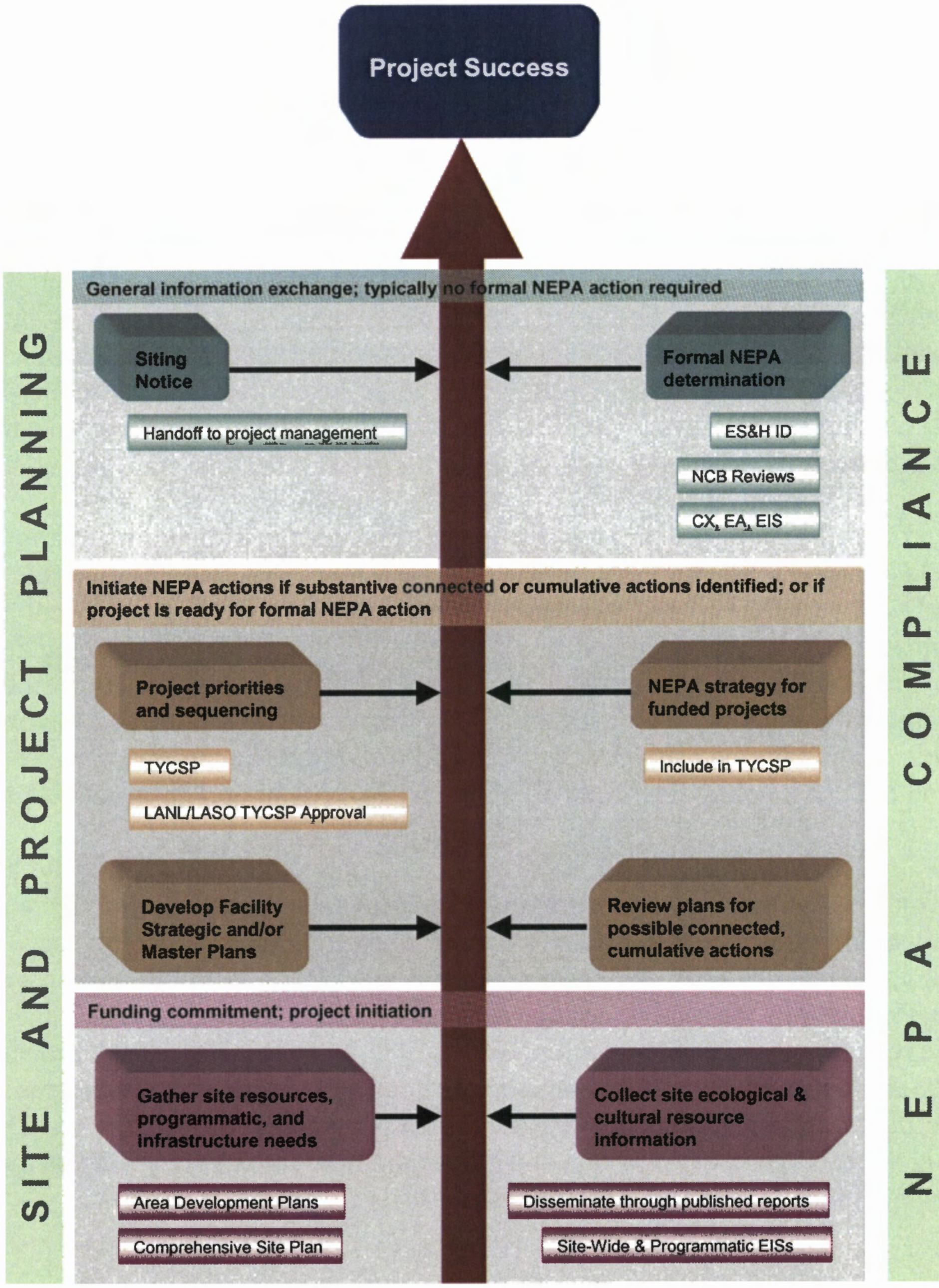
The National Environmental Policy Act (NEPA) requires a process to consider environmental impacts during the planning of new activities or the modification of existing activities. It requires that the responsible Federal agency (NNSA) take a hard look at proposed activities that may potentially result in significant environmental impacts and disclose them to the public.

The Laboratory is committed to compliance with NEPA requirements and coordinates them with other environmental, health, safety, and security requirements, and the comprehensive site-planning program. Proposals developed by program and line organizations must be compliant with NEPA prior to decisions regarding implementation. Failure to ensure complete NEPA compliance could lead to adverse consequences for a project, ranging from delays to possible litigation and could result in negative impacts to the environment.

When proposed Laboratory projects are at a sufficient stage of planning to allow for detailed NEPA analysis, they are subject to review by NNSA to determine the appropriate level of compliance analysis. The review could result in a determination that the proposed activity was sufficiently analyzed in the Site Wide Environmental Impact Statement (SWEIS) or other previous impact analyses (environmental assessment (EA), environmental impact statement (EIS)). NNSA also could determine that the proposed project is qualified to be categorically excluded (CX) from the need to prepare either an EA or an EIS, or it could determine preparation of an EA or an EIS is necessary.

The NEPA determination process is based on a number of criteria such as the potential for a project to have adverse environmental impacts, the type of mission the proposed project would perform, and public interest and concerns. The specifics of the determination process are discussed in greater detail in the Council on Environmental Quality Regulations for implementing NEPA (40 CFR 1500) and the DOE agency specific regulations for implementing NEPA (10 CFR 1021). The NEPA process, depicted in Figure 1-1, should be implemented during the project-planning phase when most of the project specific details are known and completed prior to Critical Decision-2, which is the equivalent of steps one and two of the Integrated Safety Management (ISM) process, plan the work and identify hazards.

Figure 1-1: NEPA compliance and the site and project planning process.



At the Laboratory, the NEPA process is generally initiated when the Laboratory's Ecology Group and /or an authorized reviewer conducts a NEPA, Cultural Resources, and Biological (NCB) review of a proposed project. The Laboratory performs several hundred NEPA reviews each year. A recommendation on the level of NEPA review (CX, EA, or EIS) is submitted to NNSA where a decision regarding the need for and the level of NEPA documentation is made. NEPA is completed and a project can proceed once NNSA notifies the Laboratory that a CX is completed, a Finding of No Significant Impact (FONSI) is signed for an EA, or a Record of Decision (ROD) is published for an EIS.

The TYCSP, in general, represents implementation of the level of operations described in the SWEIS and selected by the ROD. However, a NEPA review should be accomplished when a specific action (site or facility plan/project) is "ripe for decision" and is being considered for funding and implementation to determine whether the SWEIS fully covers the current proposal. Site and facility plans may include projections of the future. To the extent they are not commitments to pursue a specific project or set of projects or are not yet discussed in a TYCSP, such plans typically do not engage NEPA analysis. Once a plan is proposed and considered for implementation, the NNSA must engage in the NEPA compliance process, have a NEPA strategy established, and obtain appropriate NEPA reviews in accordance with regulatory and Laboratory requirements.

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1.5 CHANGES FROM PRIOR YEAR TYCSP

In order to provide plan-to-plan traceability, the summaries below describe the major changes in the document chapters from the prior year. In addition, changes from the prior year's F&I Cost Projection Spreadsheets are denoted in blue on each sheet in Attachment A.

Chapter 2 Site Description

- Text and maps have been updated to reflect the Laboratory's new boundaries following ownership transfer by NNSA of approximately 3 square miles of land.
- Facility status maps have been updated with new proposed construction projects and excess facilities.

Chapter 3 Mission Needs and Program Descriptions

- Mission essential facilities have been identified, and the linkages between the program/mission technical drivers and facilities and infrastructure requirements/needs for those mission essential facilities are discussed. Maps showing the locations of mission essential facilities have also been included.
- A new section, "Role of Technology in the Complex of the Future," has been included per the guidance. Topics discussed include the impact of future applied technology integrating business practices, personnel, and equipment to facilities and infrastructure.

Chapter 4 The Plan

- Additional information that supports the Laboratory's achievement of NNSA's corporate deferred maintenance stabilization and reduction goals for FY05 and FY09 is included. An expanded narrative of the current situation and corrective actions that will achieve the goals is provided, as well as a graphical representation of the Laboratory's projected maintenance reduction.
- Excess Facility Elimination/New Construction reporting is included and depicts the balance/difference between the Laboratory's projected gross square feet of NNSA

excess facilities eliminated in comparison to the gross square feet of NNSA new construction.

- The “Planning Initiatives” section has been modified to included ongoing master planning activities at various technical areas.

- Plant capacity and production readiness information has been modified based on the FY02 Production Readiness Assessment Report.

- An expanded workforce profile section discusses the impact of workforce planning on facilities and infrastructure planning.

Attachment A, F&I Cost Projection Spreadsheets

- Cost Projection Spreadsheets are updated to reflect the most current information and respond to new requirements in the guidance. Changes include the following:
  - Prior Year (PY) actuals are reported,
  - The Summary of NNSA Facilities and Infrastructure Costs (by funding type) Spreadsheet previously required and defined in the March 1, 2002 TYCSP Guidance has been removed,
  - A Proposed Line Item Projects Spreadsheet has been included to capture line items not included in the ICPP, and
  - Rating and scoring of FIRP projects aligns with the refined FIRP project selection criteria.

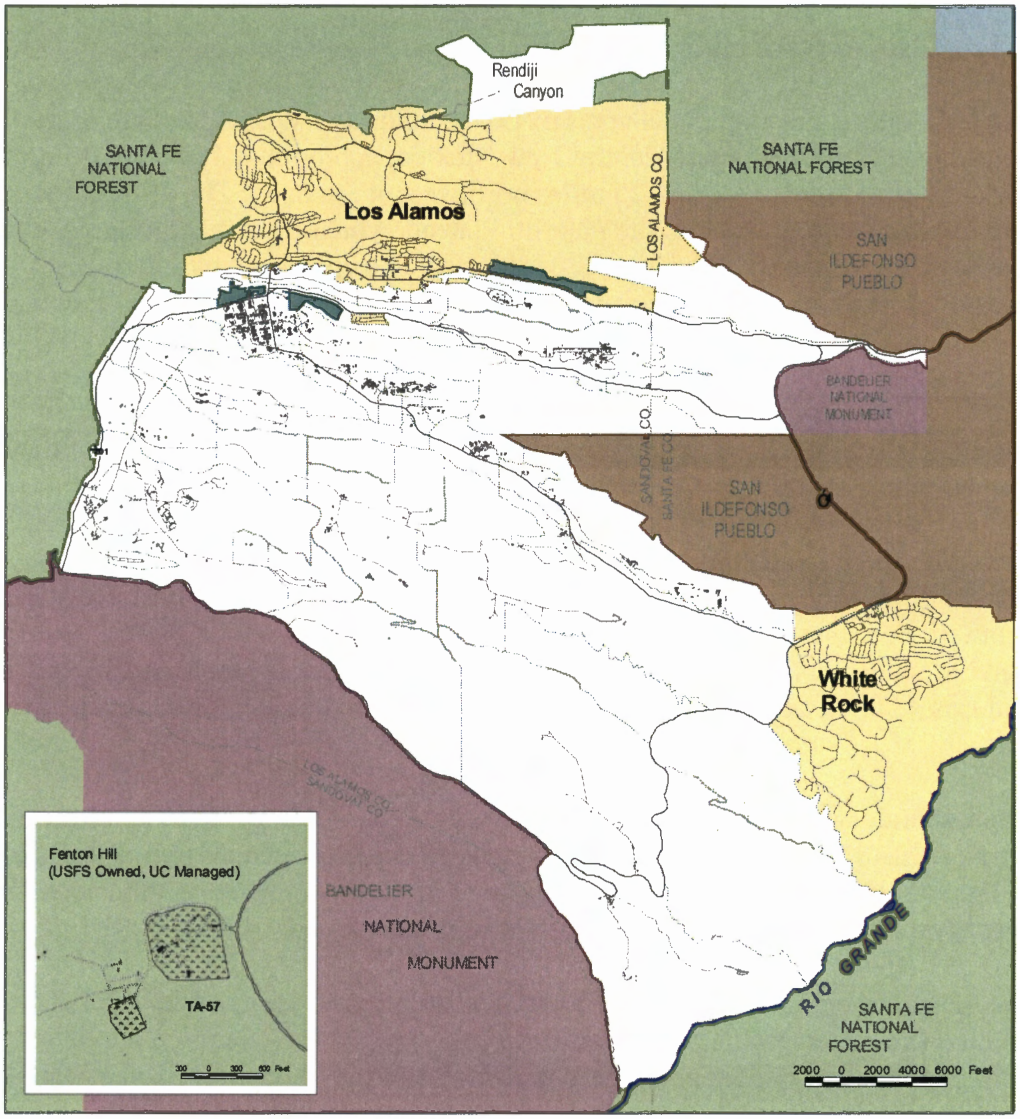
2.1 GEOGRAPHIC SETTING

The Laboratory and residential areas of Los Alamos and White Rock are located in Los Alamos County in north-central New Mexico, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The 40-square mile Laboratory site is situated on the Pajarito Plateau, which consists of a series of finger-like mesas separated by deep east-to-west oriented canyons cut by intermittent streams. Mesa tops range in elevation from approximately 7,800 feet on the flanks of the Jemez Mountains to about 6,200 feet at their eastern termination above White Rock Canyon and the Rio Grande. Plant communities on these mesas range from ponderosa pine forests on the flanks of the Jemez Mountains to piñon-juniper woodlands near the Rio Grande. The climate is moderate with relatively mild winters and summers.

Most Laboratory and community developments are confined to mesa tops. The surrounding land is largely undeveloped, and large tracts of land north, west, and south of the Laboratory are administered by the Santa Fe National Forest, Bureau of Land Management, Bandelier National Monument, General Services Administration, and Los Alamos County. The Pueblo of San Ildefonso borders the Laboratory to the east.

The Laboratory is divided into TAs that are used for building sites, experimental areas, waste disposal locations, etc. However, these uses account for only a small part of the total land area. Development is limited by steep slopes and by the need for security and safety buffers because of the work performed.

The (Department Of Energy (DOE) administers the area occupied by the Laboratory and has the option to completely restrict public access. However, the public is currently allowed limited access to certain areas of the Laboratory, along State Routes 4, 501, and 502.



Land Management / Ownership

- Technical Area Boundary
- County Boundary
- Paved Road
- Unpaved Road
- LANL Facility
- Bandelier National Monument
- Private Land (Private Land Within the DOE Boundary includes: Royal Crest Mobile Home Park and the Ice Skating Rink)
- San Ildefonso
- U.S. Forest Service
- BLM
- DOE Owned (Accounts for Land Transfers of October 2002 and includes Rendija Canyon / Sportsmen Club)
- DOE Owned and Leased*
  - -Airport
  - -Landfill and Concrete Plant
  - -Research Park
  - -ICON Facility Land at TA-46
- US Forest Service Owned / UC Managed (Fenton Hill)

*The intent of this analysis is to identify land and not buildings, therefore, leased office space in the townsite is NOT part of the listed acreage.

2.2 LABORATORY RESOURCES

The following section discusses the regional ecosystem encompassing the Laboratory and resources specifically at the Laboratory. Information is drawn from the SWEIS and supporting documentation.

2.2.1 Regional Ecosystem

Administrative boundaries do not necessarily coincide with ecological boundaries. Laboratory facilities, infrastructure, operations, and impacts (positive, negative, neutral, and undetermined) are immersed in the patterns and processes of a complex regional landscape making up the Pajarito Plateau. Major habitat types and canyon systems are continuous across this plateau, which encompasses jurisdictional boundaries of the Laboratory, Bandelier National Monument, Santa Fe National Forest, Native American Pueblos, and other land management stewards. Seasonal migration routes for elk and deer and foraging or hunting ranges of black bears and mountain lions cross these jurisdictional boundaries.

Canyons

From their narrow, thickly forested beginnings on the flanks of the Jemez Mountains, to their confluence with the Rio Grande, major canyons are associated with the eight major watersheds. The plateau canyons range in depth from about 200 to 600 feet. The steeply sloping, north-facing canyon walls and canyon bottoms are shadier and cooler and have higher levels of humidity and soil moisture than the often nearly vertical, south-facing canyon walls, which are sunnier, hotter, and more arid. These differences in slope, aspect, sunlight, temperature, and moisture cause a dramatic localized shift in major vegetation zones on canyon walls and in canyon bottoms beyond their typical range of elevation. This "canyon-effect" is responsible for fingers of coniferous forest extending down regional canyons.

Watersheds

The regional Laboratory ecosystem has been defined to include eight major watersheds, each of which has significant tributaries. Watersheds draining the Jemez Mountains and Pajarito Plateau are tributaries of the Rio Grande, which is the fifth largest watershed in North America. Approximately 11 miles of the Laboratory's eastern boundary borders on the rim of White Rock Canyon or descends to the Rio Grande. The riverine, lake, and canyon environment of the Rio Grande as it flows through White Rock Canyon makes a major contribution to the biological resources and significantly influences ecological processes of the Laboratory region.

Wetlands

The majority of the wetlands in the Laboratory region are associated with canyon stream channels or are present on mountains or mesas as isolated meadows containing ponds or marshes, often in association with springs or seeps.

A 1990 survey (based on interpretation of aerial photographs) identified a total of 39 acres of wetlands within Laboratory boundaries. A 1996 field survey by Laboratory personnel identified an estimated 50 acres of wetlands within Laboratory boundaries, based on the presence of wetland vegetation (hydrophytes).

Currently, about 13 acres of wetlands within Laboratory boundaries are caused or enhanced by process effluent wastewater from National Pollutant Discharge Elimination Systems (NPDES)-permitted outfalls. In 1999, the effluent from NPDES outfalls, both storm water and process water, was estimated to have contributed 317 million gallons to wetlands within Laboratory boundaries. Effluents are being reduced through a program of outfall reductions. It is expected that some wetlands will shrink and perhaps disappear entirely over time.

Major Vegetation Zones

Although watersheds traverse all or part of the elevational gradient, major vegetation zones are organized into elevation- and aspect-defined bands across this gradient. Increasing temperature and decreasing moisture along the 12-mile-wide and 5,000-foot-elevational gradient from peaks of the Jemez Mountains to the Rio Grande result in the formation of six vegetative zones. The six vegetation zones that characterize this regional ecosystem are montane grasslands, spruce-fir forest, mixed conifer forest (with aspen forest), ponderosa pine forest, piñon-juniper woodland, and juniper savannah.

The montane grassland, spruce-fir, and mixed conifer vegetation zones are located primarily west of the Laboratory with little representation on the Laboratory proper. The vegetation zones and associated ecotones provide habitat, including breeding and foraging territory, and migration routes for a diversity of permanent and seasonal wildlife.

2.2.2 Resources for Integration

The resources included here are those that have high potential to be affected by or effect the Laboratory's operations and facilities. In either case, the potential impacts are discussed. Resources that have a lower potential to be affected by the Laboratory's operations, such as geology, are not included.

Air

The quality of ambient air is defined by federal and state regulations. The Environmental Protection Agency has set National Ambient Air Quality Standards for pollutants of nationwide concern. These pollutants, known as criteria pollutants, are carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, lead, and particulate matter. The area around the Laboratory is classified as an attainment area for all six criteria pollutants.

The State of New Mexico has also established ambient air quality standards. DOE and Laboratory operations meet all state standards.

Water

Water is a limited resource in the semiarid climate of northern New Mexico. Canyon-bottom streams within Laboratory boundaries are mostly dry, and only portions of some streams contain water year round. Flash floods can occur following thunderstorms. Sediments moved by storm water events from upstream locations, hillsides, or mesa tops occur along the bottom of most Laboratory canyons, and flash floods move these sediments from the canyon bottoms into the Rio Grande.

Surface Water

Surface water in the Los Alamos area occurs primarily as short-lived or intermittent reaches of streams. Perennial springs on the flanks of the Jemez Mountains supply base flow into the upper reaches of some canyons, but volume is generally insufficient to maintain surface flows across the Laboratory site before they are depleted by evaporation, transpiration, and infiltration. Runoff from heavy thunderstorms or heavy snowmelt reaches the Rio Grande several times a year in some drainages. Effluents from sanitary sewage, industrial water treatment plants, and cooling-tower blowdown enter some canyons at rates sufficient to maintain surface flows for varying distances. Surface water within Laboratory boundaries is not a source of municipal, industrial, or irrigation water, but is used by wildlife that live within, or migrate through, the region.

Storm water and associated sediment transport are the major mechanisms by which contaminants are transported within and beyond Laboratory boundaries. Therefore, management efforts to reduce contaminant migration in the canyons at the Laboratory have historically focused on these transport mechanisms.

Ground Water

The Laboratory and the surrounding communities use ground water for drinking water supplies. Water levels in wells penetrating into the regional aquifer have declined in response to pumping, typically by several feet each year.

Like surface water, the presence of ground water is variable. The regional aquifer is the only body of ground water in the region sufficiently saturated and permeable to transmit economic quantities of water to wells for public use. All drinking water for Los Alamos County, the Laboratory, and Bandelier National Monument comes from the regional aquifer. Depth to water in the aquifer, from the ground surface, varies from approximately 1,200 feet along the western boundary of the Pajarito Plateau to approximately 600 feet along the eastern edge of the Pajarito Plateau.

Water in the regional aquifer is under artesian conditions under the eastern part of the Pajarito Plateau near the Rio Grande. The source of recharge to the aquifer is presently under investigation. Recent results of a major, multiyear hydrogeologic study have indicated that there is significant ground-water recharge along the flank of the Jemez Mountains, and there may be more ground water recharge from canyon bottom alluvial ground water than previously believed. Laboratory contaminants have been found in perched zones above the regional aquifer and in the regional aquifer as a result of characterization wells. Work continues to increase understanding of the hydrogeologic conditions.

Soils

Several distinct soils have developed in and around the Laboratory as a result of interactions between bedrock, topography, and local climate. Construction activities at the Laboratory can displace these soils, and runoff from parking lots and buildings can cause erosion. In addition, surface contamination can result from open detonations at the firing sites, or from the deposition of contaminants released to the atmosphere from building vents and other operations.

Biological

Though operations at the Laboratory are not expected to result in significant impacts to biological resources, ecological processes, or biodiversity (including threatened and endangered species), operations will continue to release small quantities of contaminants, disrupt natural migration routes, or otherwise disturb local environs.

The lands within and around the Laboratory have diverse, unique biological communities having complex ecological relationships. Plant communities range from urban landscaping to grasslands, wetlands, shrublands, woodlands, and mountain forest, which provide habitat for a wealth of animal life. This richness of animal life includes elk and deer, bears, mountain lions, coyotes, rodents, bats, reptiles, amphibians, invertebrates, and a myriad of resident, seasonal, and migratory bird life. In addition, threatened and endangered species of concern and other sensitive species use Laboratory resources. Because of restricted access to Laboratory lands and management of contiguous Bandelier National Monument for natural biological systems, much of the region provides a refuge for wildlife.

Wildlife

The Laboratory's lands support a diversity of wildlife ranging from state- and federal-listed threatened and endangered species to large and small game populations. A number of regionally protected and sensitive species of concern have been documented on or near the Laboratory's lands. These consist of one federal-listed endangered species, two federal-listed threatened species, and 18 species of concern (species that may be of concern to the United States (U.S.) Fish and Wildlife Service but do not receive protection under the Endangered Species Act). Operations at the Laboratory may impact these species by removal of key habitat, disturbing these species during breeding seasons, altering hunting and foraging areas, etc. Conversely, these species may impact operations by requiring certain areas to remain undisturbed and restricting the locations for new facilities.

Forest

There are three forest types that occupy the majority of Laboratory acreage: piñon-juniper woodlands, ponderosa pine, and spruce fir forests. Each of these forest types has its own characteristics; however, they all three show effects of fire suppression over the last hundred years coupled with restrictions in grazing by domestic livestock. The most obvious effects have been an increase in overall tree stand densities, continuity, and fuel loading with a concomitant decrease in understory cover. The heavily forested areas have dense stands of unhealthy trees with excessive amounts of standing and fallen dead tree material.

In the last 50 years, this region has seen five major wildfires: the Water Canyon Fire in 1954, the La Mesa Fire in 1977, the Dome Fire in 1996, the Oso Fire in 1998, and the Cerro Grande Fire in 2000. In each case, fire occurred during the late spring or early summer fire season when fire danger was high or extreme. Weather conditions were hot and dry, fuel moisture content was low, and fuel loads were high. Even after these five fires, overall conditions across the Pajarito Plateau are still conducive to wildfire, and as fuel loads regenerate in the burned areas, the probability of the next fire event increases.

Cultural and Historical

Cultural resources are any prehistoric or historic sites, buildings, structures, districts, or other places or objects (including biota of importance) considered to be important to a culture, subculture, or community for scientific, traditional, or religious purposes, or for any other reason. They combine to form the human legacy for a particular place. The cultural resources present within the Laboratory region are complex because of great cultural diversity in the inhabitants of this region. As structure and physical environment of the Jemez Mountains and Pajarito Plateau changed over time, cultures changed in response, as reflected in settlement patterns and technology that evolved over time.

The cultural resources present within Laboratory boundaries and the region have been classified into three categories: prehistoric, historic, and traditional cultural properties (TCPs). These three categories of cultural resources are protected variously under state and federal laws, regulations, and executive orders.

Archeological surveys have been conducted of approximately 90% of the land within Laboratory boundaries (with 85% of the area surveyed receiving 100% coverage) to identify cultural resources. The majority of these surveys emphasized prehistoric American Indian cultural resources. Information on prehistoric cultural resources is maintained in the Laboratory cultural resources database, which is a listing of the cultural resources identified through surveys and excavations recorded over the last decade. The database is organized primarily by site type and records 1,295 prehistoric sites. Of the 1,295 prehistoric sites in the Laboratory database, 1,192 have been assessed for potential nomination to the National Register of Historic Places (NRHP). Of these, 770 sites are eligible, 322 sites are potentially eligible, and 100 sites are ineligible. The remaining 103 sites, which have not been assessed for NRHP eligibility, are assumed to be eligible until a determination can be made.

Historic cultural resources include all material remains and any other physical alteration of the landscape that has occurred since the arrival of Europeans in the region. The historic resources present with Laboratory boundaries and on the Pajarito Plateau can be attributed to three phases: Spanish Colonial, Early U.S. Territorial/Statehood, and the Nuclear Energy Period.

A TCP is a significant place or object associated with historical and cultural practices or beliefs of a living community that is rooted in that community's history and is important in maintaining the continuing cultural identity of the community. TCPs are essential in preserving cultural identify through social, spiritual, political, and economic uses.

An area may have TCP significance depending on a variety of factors, i.e., the site is remembered in prayers or tribal stories, traditional ritual knowledge of the site is passed on to other members of the community, or traditional customs continue to be practiced by members of a community. TCPs that are considered culturally important by traditional communities include shrines, trails, springs, rivers, acequias, plant and mineral gathering areas (also referred to as ethnobotanical sites), traditional hunting areas, ancestral villages and gravesites, and petroglyphs. However, TCPs are not limited to ethnic minority groups. Americans of every ethnic origin have properties to which they ascribe traditional cultural value.

Within the Laboratory's boundaries, there are ancestral villages, shrines, petroglyphs, sacred springs, trails, and traditional use areas that could be identified by Pueblo and Athabascan communities as TCPs. DOE and the Laboratory have a program in place to manage on-site cultural resources for compliance with the Native American Graves Protection and Repatriation Act and American Indian Religious Freedom Act. When an undertaking is proposed, DOE and the Laboratory arrange site visits by tribal representatives from San Ildefonso, Santa Clara, Jemez, and Cochiti Pueblos to solicit their concerns and comply with applicable requirements and agreements. Provisions for coordination among these four Pueblos and DOE is contained in formal agreements called accords that were entered into in 1992 for the purpose of improving communication and cooperation among federal and tribal governments. According to the DOE compliance procedure, American Indian tribes may request permission for visits to sacred sites within Laboratory boundaries for ceremonies.

Because of the very well-defined changes in the function of the Laboratory, the Nuclear Energy Period is broken into three periods: World War II/Early Nuclear Weapon Development, Early Cold War, and Late Cold War. The World War II or Manhattan Project era (1943-1946) and the Early Cold War (1947-1963) are two periods of particular historic significance for Laboratory structures. Of the 570 buildings at the Laboratory that are eligible for listing on the National Register of Historic Places or will require eligibility evaluations, 501 were built between 1943 and 1963. There are some buildings and structures built after 1963 that have historic significance because of their relationship to the exceptional events or historic figures of the two periods.

In light of the two periods of historic significance, the TYCSP plays a significant role in the determination of future potential impacts to historic properties. The Guidance for the TYCSP (A Supplement to the FY 2003 Budget Call) requires DP sites to identify excess "facilities and land that no longer support mission(s), program(s) and/or workload." Buildings and structures with high maintenance backlogs and low replacement values are classified as being in poor condition and considered for decontamination and decommissioning and eventual demolition (D&D). Buildings not on the "excess list" will be retained for the long-term mission of the Laboratory.

Of the 501 buildings built between 1943 and 1963, 289 (58%) are currently identified as excess, to be removed over the next 10 years. Given the proposed removal of a disproportionately high number of early historic properties at the Laboratory, an overall plan for the consideration of the historic significance of these properties and opportunities for their preservation and/or interpretation is in development.

2.2.3 Established Natural Areas

DOE (and its predecessor organization) recognized the diversity of natural resources at the Laboratory and provided particular protection to portions of the Laboratory by taking specific actions.

National Environmental Research Park

In November 1976, the U.S. Energy Research and Development Administration, precursor to DOE, designated four installations as National Environmental Research Parks, one of which was the Laboratory. The National Environmental Research Park facilitates self-supported environmental research on the interactions between human-altered systems and adjacent natural systems and is available to individuals and organizations both within and outside the Laboratory, under approved arrangement with the park coordinator.

White Rock Canyon Reserve

The White Rock Canyon Reserve was dedicated by DOE on October 30, 1999. It contains approximately 1,000 acres on the southeastern portion of the Laboratory along the Rio Grande. The objective of the Reserve is to conserve, protect, and enhance the site's biological and cultural resources. Bandelier National Monument will co-manage it together with NNSA with input from the University of California (UC)/LANL, other state and federal agencies, nearby Pueblos, and the local community. A comprehensive resources management plan for the Reserve will be completed by 2005.

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2.3 LAND

The Laboratory occupies an area of approximately 25,383 acres (10,280 hectares), or approximately 40 square miles (104 square kilometers), of DOE land (excluding Rendija Canyon) of which the majority lies within Los Alamos County. The remaining portion of Laboratory acreage lies within Santa Fe County, which also borders portions of Laboratory boundaries along the east and southeast. In this western portion of Santa Fe County, development is very limited, occurring primarily on American Indian lands within the Rio Grande Valley. A small isolated portion of Sandoval County borders the Laboratory on the east and is composed entirely of undeveloped lands belonging to the Pueblo of San Ildefonso. Additionally, a small portion of Sandoval County borders the Laboratory on its southwest boundary, with the remainder of the county being located (noncontiguously) to the south, west, and north. In the Laboratory area, Sandoval County is generally undeveloped, being primarily U.S. Forest Service and U.S. National Park Service lands.

The total land area within DOE land ownership or management is broken down by whomever manages the land as shown in Table 2-1. The DOE Managed column includes the Rendija Canyon/Sportsmen Club.

Table 2-1: Area totals by land management type.

Type	Area in Square Miles*	Area in Acres*
DOE Managed	1	918
Leased	0.4	197
Private (within LANL Boundary)	0.1	27
UC Managed	40	25,383

*Amounts are rounded off.

The Laboratory is divided into 49 active and separate TAs with location and spacing that reflect the site's historical development patterns, regional topography, and functional relationships (see map on following page). There are over 80 miles of asphalt roads and parking areas, and unpaved roads are estimated to include up to an additional 200 acres (81 hectares).

Although at a cursory glance there appears to be sufficient land for further expansion at the Laboratory, the majority of it is very difficult to develop given significant physical and operations constraints. For example, over 25% of the Laboratory's acreage consists of slopes that exceed 20%. Adding to the scarcity of developable land is the type of work that the Laboratory performs. Security and safety buffers for defense-related work often require large reservations of land for these programs to continue without adversely affecting surrounding areas. These types of constraints severely limit developable land at the Laboratory.

Technical Area Boundaries

- Technical Area Boundary
- County Line
- Ownership Boundary
- Primary Road
- Local Road

4000 0 4000 8000 Feet

2.3.1 Land Use Planning and Management

Land-use planning and management is a process based on the Laboratory-wide Comprehensive Site Plan (CSP) from which more detailed area development plans and master plans are developed. The CSP is a technical document presenting land-use issues, capabilities, and site opportunities and limitations upon which future land use decisions are made. Detailed background information regarding the site is included, such as geographic description, topography, soils, geological, cultural resources, natural resources, facilities, and transportation. The CSP is updated and revised periodically depending on significant changes in the Laboratory's mission, site conditions, or public policy.

The existing land-use map depicts the current status of land use at the Laboratory. The future land-use map depicts major land-use changes proposed for various locations where growth is anticipated. Proposed construction projects are evaluated against this land-use map and follow a formal siting process that, if projects are significant, may involve siting approval from the Laboratory's Site Planning and Construction Committee (SPCC). Most site issues are resolved through the ESH-ID process that involves both planning and NEPA review. Generally, major land use changes involve ongoing efforts to consolidate Nuclear Materials Research and Development (R&D) areas and the expansion of Experimental Science. In addition, the overall site was reduced by the recent transfer of "Reserve" land to Los Alamos County and San Ildefonso Pueblo.

Table 2-2: Site-wide land use.

Existing Land Use		Future Land Use	
Land Use Category	**Acreage**	**Land Use Category**	**Acreage**
Service/Support	184	Service/Support	71
Experimental Science	705	Experimental Science	1,906
High-Explosives R&D	1,297	High-Explosives R&D	1,318
High-Explosives Testing	7,209	High-Explosives Testing	10,856
Nuclear Materials R&D	131	Nuclear Materials R&D	141
Physical/Technical Support	452	Physical/Technical Support	388
Public/Corporate Interface	31	Public/Corporate Interface	65
Theoretical/Computational Science	7	Theoretical/Computational Science	23
Waste Management	196	Waste Management	245
Reserve	15,355	Reserve	8,967
Total	**25,590**	**Total**	**24,005**

The following 10 land-use categories describe the activities at the Laboratory and are shown on the following maps.

Service/Support—Nonprogrammatic technical expertise, support, and services for Laboratory management and employees.

Experimental Science—Applied research and development activities tied to major programs.

High-Explosives R&D—Research and development of new explosive materials. This land is isolated for security and safety.

High-Explosives Testing—Large, isolated, exclusive-use areas required to maintain safety and environmental compliance during testing of newly developed explosive materials and new uses for existing materials. This land also includes exclusion/buffer areas.

Nuclear Materials R&D—Isolated, secured areas for conducting research and development involving nuclear materials. This land use includes security and radiation hazard buffer zones. It does not include waste disposal sites.

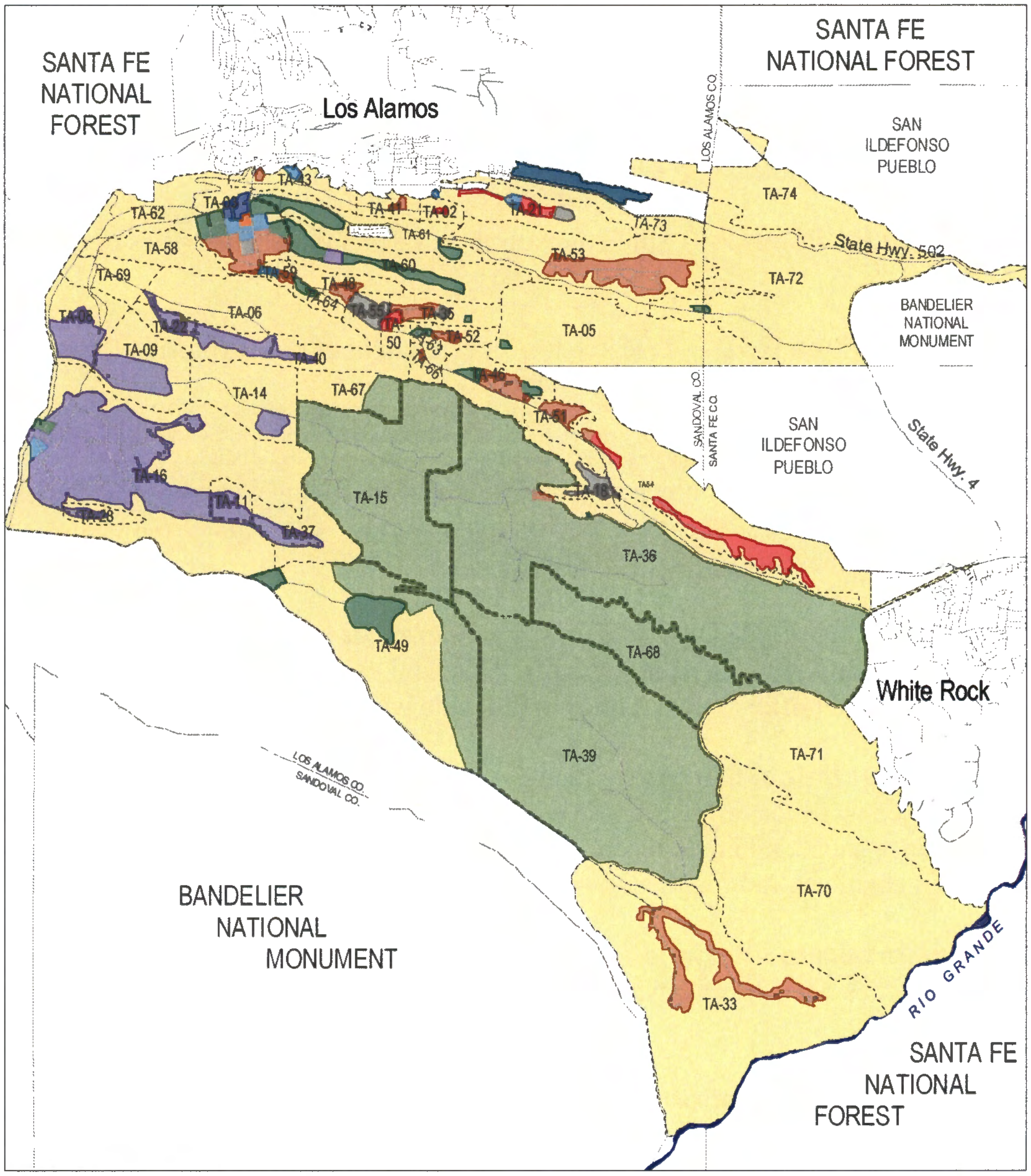
Physical/Technical Support—Includes roads, parking lots, and associated maintenance facilities; infrastructure such as communications and utilities; facility maintenance shops; and maintenance equipment storage. This land use is generally free from chemical, radiological, or explosives hazards.

Public/Corporate Interface—Provides link with the general public and other outside entities conducting business at the Laboratory, including technology transfer activities.

Theoretical/Computational Science—Interdisciplinary activities involving mathematical and computational research and related support activities.

Waste Management—Provides for activities related to the handling, treatment, and disposal of all generated waste products, including solid, liquid, and hazardous materials (chemical, radiological, and explosive).

Reserve—Areas that are not otherwise included in one of the previous categories. It may include environmental core and buffer areas, vacant land, and proposed land transfer areas.



Existing Land Use

[redacted]

Future Land Use

Experimental Science
High Explosive R&D
High Explosive Testing
Nuclear Materials R&D
Physical/Technical Support
Public/Corporate Interface
Reserve
Service / Support
Theoretical/ Computational Science
Waste Management
Future DOE Boundary

7000 0 7000 Feet

2.3.2 Transfers of Land

Under the Atomic Energy Community Act of 1955, the federal government provided support for a period of time to towns that were strongly affected by their proximity to nuclear weapons complex sites. The intent of the act was to assist the towns in developing self-governance and self-sufficiency by, among other actions, transferring land.

During the 1990s, DOE's Los Alamos Site Operations Office (DOE-LASO), the Laboratory, and representatives of Los Alamos County began discussions regarding the potential transfer of government properties to assist the County in becoming economically self-sufficient. In October 1996, Congress passed legislation terminating the annual assistance payment to Los Alamos County by mid-1997, with a lump-sum termination payment of $22.5 million. Also, transfer of municipal functions and installations (water supply system, fire stations, and lease of the airport) began in 1997.

On November 26, 1997, Congress passed Public Law 105-119. Section 632 of the law directs the Secretary of Energy to convey land parcels to Los Alamos County or designee of the County. The legislation also calls for the transfer to the Secretary of the Interior, in trust for the San Ildefonso Pueblo, parcels of land under the administrative control of the Secretary of Energy at Los Alamos National Laboratory.

The tracts will be conveyed or transferred in accordance with the provisions of Public Law 105-119, the tract receipt agreement was between the County of Los Alamos and San Ildefonso Pueblo. The ROD was supported by 1999 EIS for conveyance and transfer of certain DOE land tracts located at the Laboratory.

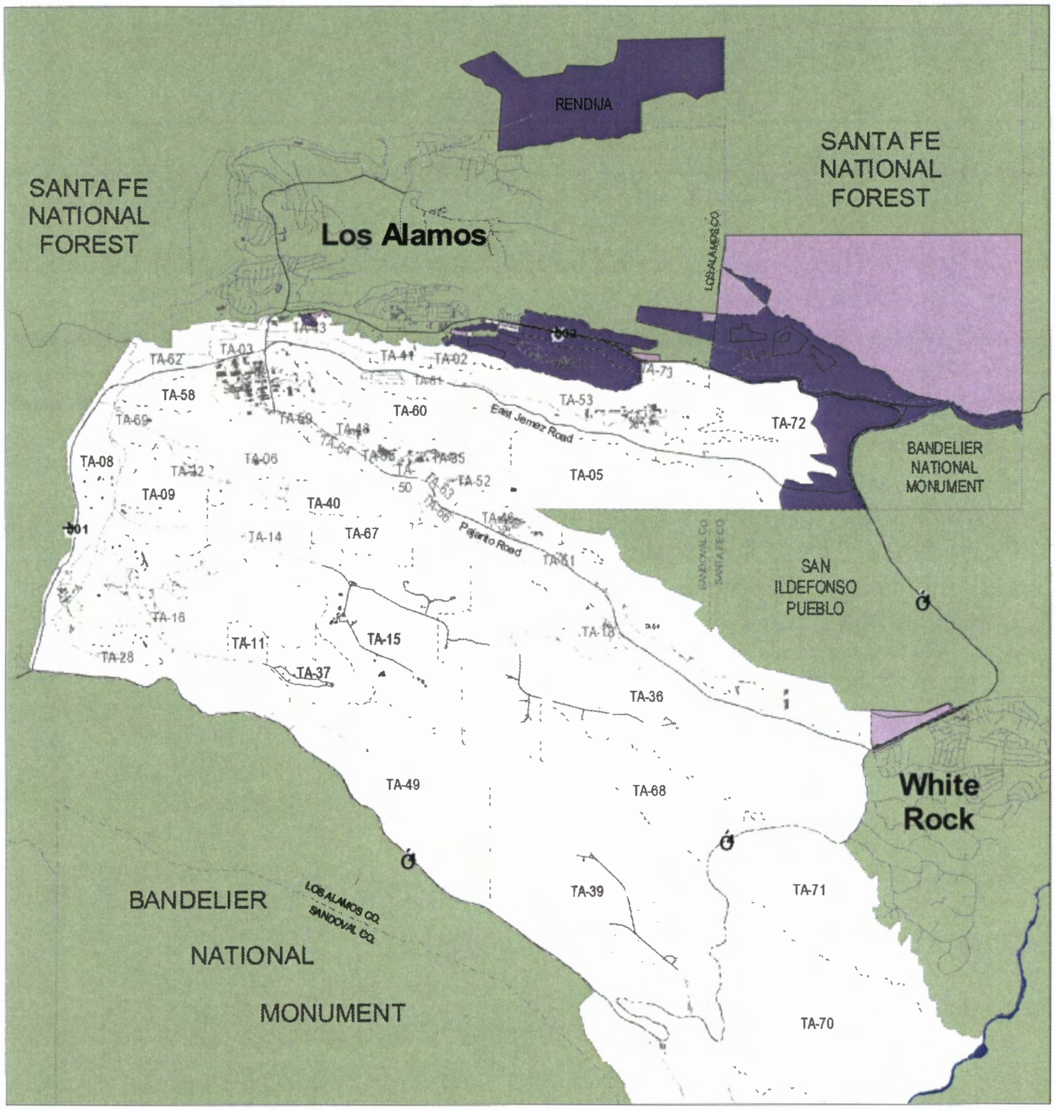
The tracts must meet the suitability criteria established by the Act before they can be transferred or conveyed. That is, a parcel of land is suitable for transfer if not required for the national security mission before the end of November 2007; if it can be restored or remediated by November 2007; and if it is suitable for historic, cultural, or environmental preservation, economic diversification, or community self-sufficiency.

On October 30, 2002, eight parcels totaling 104 acres were deeded to Los Alamos County. These parcels are located in the Los Alamos townsite and White Rock community. Two parcels totaling 2,105 acres, primarily from TA-74, were transferred to San Ildefonso Pueblo.

Six tracts of land remain for potential transfer to Los Alamos County or to the Department of the Interior for San Ildefonso Pueblo. The six tracts total approximately 1,850 acres.

Potential Land Transfer Tracts

- TA-21 tract, 244 acres; located on the eastern end of the same mesa on which the central business district of Los Alamos is located.
- DP Road tract, 50 acres; located between the western boundary of TA-21 and the major commercial districts of the Los Alamos townsite.
- DOE Office of Los Alamos Site Operations tract, 13 acres; located within the Los Alamos townsite between Los Alamos Canyon and Trinity Drive.
- Airport tract, 198 acres; located east of the Los Alamos townsite, close to the East Gate Business Park.
- Rendija Canyon tract, 909 acres; located north of and below Los Alamos townsite's Barranca Mesa residential subdivision.
- White Rock Y tract, 435 acres; a complex area that incorporates the alignments and intersections of State Routes 502 and 4 and the easternmost part of Jemez Road.



Land Transfer

LEGEND

Technical Area Boundaries

Parcels Transferred in 2002

Parcels Pending Transfer

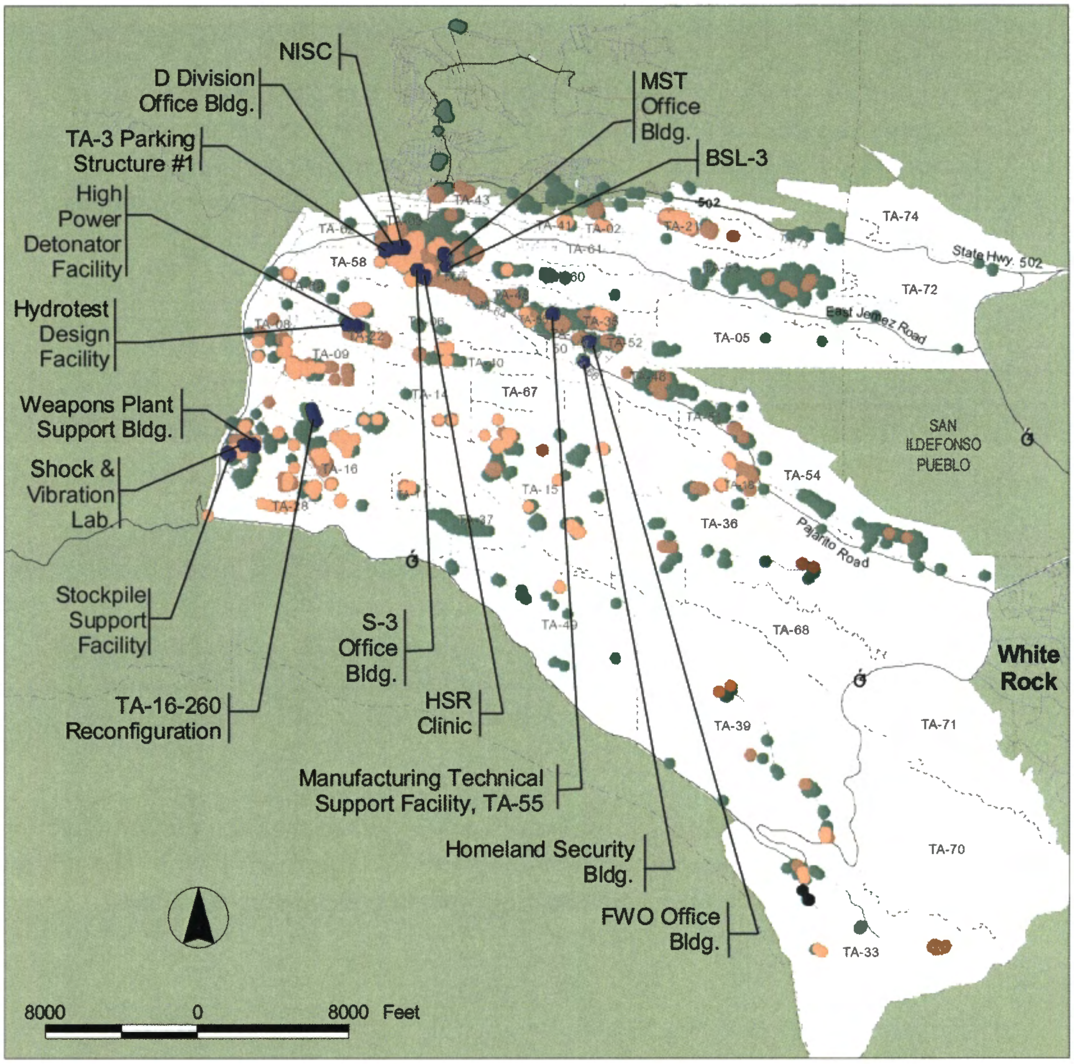
8000 0 8000 Feet

2.4 BUILDINGS

In 1943, development of the Laboratory began with the construction of a little more than 93,000 gross square feet of space. As of July 2003, the Laboratory had over eight million gross square feet of space. The estimated replacement plant value (RPV) of these buildings is roughly $5.6 billion. The Laboratory also leases approximately 290,000 square feet within Los Alamos County at an annual cost of over $6 million (M) An additional 300,000 square feet in TA-03 came on line in early 2002 with completion of the Metropolis Center, and another 163,000 square feet became available in early 2003 when the NISC project was completed. Meanwhile, about two million gross square feet of space are planned for demolition and another two million gross square feet are proposed for excessing in the next 10 years (see Attachment E-1).

The map on page 2-24 shows current active (operating) facilities, spare and excess facilities, facilities currently active but *proposed* for excess by 2012, and the location of selected new construction projects that will achieve beneficial occupancy by FY04. Many of these facilities will start construction in the near term. The table on page 2-25 summarizes the gross square footage (GSF) and funding type for these new projects. Maps with greater detail may be found in Attachment I. Funding profiles may be found in Attachment A.

The map on page 2-26 shows the active, excess, and selected planned construction projects that will achieve beneficial occupancy from FY05 through FY13. The table on page 2-25 summarizes the GSF and funding types for these new projects.



Facility Status, 2004, Overview with Currently Funded Construction

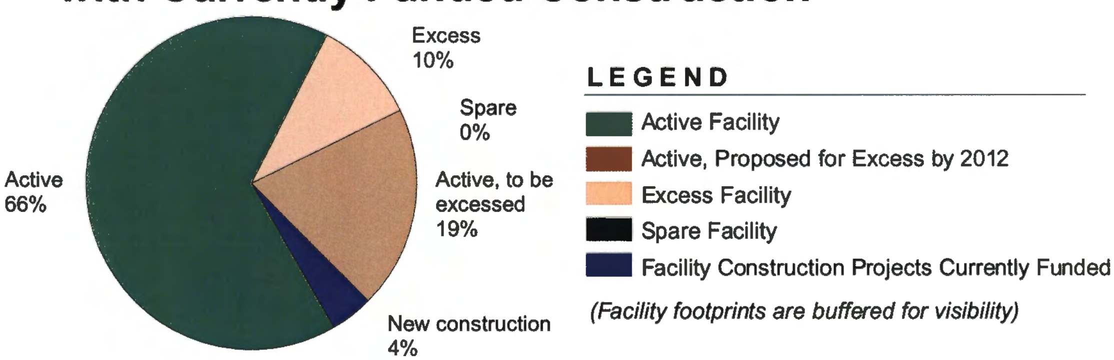


Table 2-3: Planned construction projects achieving beneficial occupancy through FY04.

TA	Project Initiated	Beneficial Occupancy	Funding Type	GSF
	FY00 Funded			
TA-3	Nonproliferation and International Security Center (NISC)	FY03	LI	163,400
	FY02 Funded			
TA-3	HSR Clinic	FY03	GPP	19,000
	Materials Science and Technology (MST) Division Office Building	FY03	GPP	20,000
	Security (S)-3 Office Building	FY03	GPP	20,800
	Decision Analysis (D) Division Office Building	FY03	GPP	18,000
	Biosafety Level (BSL)-3	FY03	GPP	3,300
TA-55	Manufacturing Technical Support Facility	FY03	GPP	18,000
TA-16	Weapons Plant Support Building	FY03	GPP	23,000
TA-22	High Power Detonator Facility	FY03	GPP	TBD
	FY03 Funded			
TA-63	FWO Office Building	FY04	GPP	19,400
TA-3	Parking Structure #1	FY04	IGPP	35,000
TA-22	Hydrotest Design Facility	FY04	GPP	17,400
TA-16	Stockpile Support Facility	FY04	GPP	18,000
	Shock and Vibration Lab	FY04	GPP	3,700
	TA-16-260 Reconfiguration	FY04	GPP	4,000
TA-66	Homeland Security Building	FY04	GPP	18,000

[redacted]

Facility Status, 2013, Overview with Proposed Future Construction

[redacted]

LEGEND

- Active Facility
- Excess Facility
- Spare Facility
- Technical Areas with Future Facility Construction Projects

(Facility footprints are buffered for visibility)

Table 2-4: Planned construction projects achieving beneficial occupancy from FY05-FY12.

TA	Project Initiated	Beneficial Occupancy	Funding Type	GSF
FY02 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY03 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY04 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY05 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY06 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY07 Funded				
[redacted]	[redacted]	[redacted]		
FY08 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY09 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY10 Funded				
	[redacted]			
FY11 Funded				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
FY12 Funded				
	[redacted]			
FY13 Funded				
	[redacted]			

2.5 WORKFORCE

The Laboratory's affiliated workforce includes employees of the prime contractor, UC, and its subcontractors, of which the major employers are the Support Services Subcontractor—Kellogg, Brown, and Root/Shaw Environmental and Infrastructure/Los Alamos Technical Associates (KSL) and Protection Technology Los Alamos (PTLA). The Laboratory employs both technical and nontechnical subcontractors, as well as consultants from around the world on a temporary basis. Students from high school to graduate level are also employed in a variety of positions, and their numbers increase greatly during the summer months. Table 2-5 presents the breakdown of personnel by employer as of June 2003.

Table 2-5: Los Alamos National Laboratory workforce as of June 2003.

Employer	Personnel	Percent of Workforce
UC Employees	8,707	57%
UC Students	1,595	10%
Guests/Affiliates	1,601	10%
KSL	1,517	10%
PTLA	606	4%
Supplemental Labor	1,402	9%
TOTAL	15,428	100%

3.1 CURRENT MISSIONS, PROGRAMS, AND WORKLOAD

Los Alamos National Laboratory is a multi-program scientific laboratory within the NNSA, a semi-autonomous entity within DOE. The Laboratory has been managed and operated for the NNSA by UC for 60 years.

The Laboratory developed a new vision in 2003: *The trusted, competitive scientific solution for today's and tomorrow's national security challenges*. The Laboratory's primary mission is as follows:

> Ensure the safety and reliability of the U.S. nuclear deterrent; reduce the threat of weapons of mass destruction, proliferation and terrorism; and solve national problems in defense, energy, environment and infrastructure.

The Laboratory is committed to supporting the NNSA, its principal customer, by being a unified and customer-focused lab with outstanding performance in all areas.

The Laboratory's core mission is nuclear stockpile stewardship, with certification responsibility for a substantial majority of the nation's active nuclear weapons stockpile. Complementary to nuclear stewardship is the Laboratory's mission to detect, monitor, and defeat nuclear, biological, chemical, and cyber threats. Four programmatic directorates are devoted to achieving the Laboratory's programmatic missions: Weapons Engineering and Manufacturing, Weapons Physics, Threat Reduction, and Strategic Research.

The map on page 3-9 shows the programmatic associations for all facilities at the Laboratory. Maps with greater detail may be found in Attachment I.

3.1.1 Weapons Engineering and Manufacturing Directorate

The Weapons Engineering and Manufacturing (WEM) Directorate is a multidisciplinary, integrated organization that sustains and advances engineering and manufacturing technologies required to support the stewardship of the nation's nuclear weapon stockpile. WEM is responsible for maintaining the certification basis for weapon systems in the enduring stockpile and for developing the design, engineering, testing, and manufacturing capabilities needed for stewardship of the stockpile.

The WEM Directorate supports the Laboratory mission by ensuring the safety and reliability of the U.S. nuclear weapons stockpile by reestablishing the nation's capability to manufacture weapon components and by applying the best engineering, design, development, and diagnostic tools available to maintenance and refurbishment of the stockpile.

Funding for the WEM Directorate comes from NNSA to conduct DSW and execute campaigns in support of stockpile stewardship and stockpile maintenance. DSW includes assessment, surveillance, maintenance, manufacturing, and the scientific and engineering development capabilities necessary for the refurbishment and certification of the weapon systems. Campaigns are tri-laboratory efforts to develop critical enabling capabilities with milestones and end dates to support confident certification of or manufacturing activities for the enduring stockpile.

The following table summarizes the goals and strategies of the WEM Directorate in meeting the Laboratory's programmatic responsibilities.

Table 3-1: Weapons Engineering and Manufacturing mission goals and strategies.

Weapons Engineering and Manufacturing Directorate		
Goals	**Strategies**	**SMART Linkage**
[redacted]	[redacted]	
[redacted]		
[redacted]		[redacted]
[redacted]		

3.1.2 Weapons Physics Directorate

The Weapons Physics (WP) Directorate is a multidisciplinary, integrated organization that sustains, advances, and applies science and technology to support sustainable stewardship of the nation's nuclear weapons stockpile.

WP has responsibilities within the Stockpile Stewardship Program to conduct several NNSA campaigns and contribute to key areas of DSW. WP is responsibile for the Primary Certification Campaign, the Dynamic Materials Properties Campaign, the Advanced Radiography Campaign, the Secondary Certification and Nuclear Systems Margins Campaign, the Advanced Simulation and Computing Campaign, and the High Energy Density Physics Campaign. In addition, WP has key responsibility under DSW for Assessment and Certification, Baselining, Archiving, and Support Research and Development.

WP also manages a number of major facilities including the Dual-Axis Radiographic Hydrodynamic (DARHT) facility, LANSCE, and the Metropolis Center.

The WP Directorate supports the Laboratory's mission by ensuring confidence in the safety, reliability, and performance of the nuclear weapons in the nation's stockpile. This stewardship mission requires a science-based approach supported by a broad range of science and technology capabilities at the Laboratory. Decisions are based on sound technical and scientific understanding and expert judgment developed through theoretical studies, state-of-the-art computational simulations, and coordinated experimental activities.

The following table summarizes the goals and strategies of the WP Directorate in meeting the Laboratory's programmatic responsibilities.

Table 3-2: Weapons Physics mission goals and strategies.

Weapons Physics Directorate		
Goals	**Strategies**	**SMART Linkage**
[redacted]	[redacted]	
	[redacted]	
[redacted]		[redacted]
	[redacted]	
	[redacted]	

3.1.3 Threat Reduction Directorate

The Threat Reduction (TR) Directorate supports the Laboratory's mission through the following work:

- Preventing, detecting, assessing, and responding to threats of the proliferation and/or use of weapons of mass destruction by nations or subnational groups,
- Enabling U.S. arms-control initiatives, and
- Enabling innovative, nonnuclear responses to unconventional and military threats to help secure the nation's infrastructure.

The directorate's work includes programs to counter nuclear, biological, and chemical terrorism; programs to encourage cooperative threat reduction; activities to promote national and international nuclear safeguards and security; efforts toward threat monitoring and analysis; and related research. These programs contribute to dissuading and deterring possible threats, particularly threats from weapons of mass destruction (WMD). Research and development on behalf of the Department of Defense (DoD) and other agencies is aimed at defeating enemies. These activities range from developing technologies to detect and defeat terrorists to inventing cutting-edge science to support and equip conventional military forces. TR conducts research on methods to defeat or respond to attacks on the U.S. homeland from any source employing any type of weapon.

In early September 2002, the Laboratory created of a new internal organization focused on counter-terrorism and homeland security. The newly created Homeland Security organization, under the TR Directorate, will engage the Laboratory's broad capabilities in these areas. It provides a single point of contact for all external organizations that seek the assistance and involvement of Los Alamos' technical experts. The new organization will serve as the primary point of contact for external customers, such as the Department of Homeland Security, seeking to tap the Laboratory's expertise in homeland security science and technology. The organization's emphasis will be in the key areas of nuclear and radiological science and technology, critical infrastructure protection, and chemical and biological science and technology.

The following table summarizes the goals and strategies of the TR Directorate in meeting the Laboratory's programmatic responsibilities.

Table 3-3: Threat Reduction mission goals and strategies.

Threat Reduction Directorate		
Goals	**Strategies**	**SMART Linkage**
[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	
[redacted]	[redacted]	

3.1.4 Strategic Research Directorate

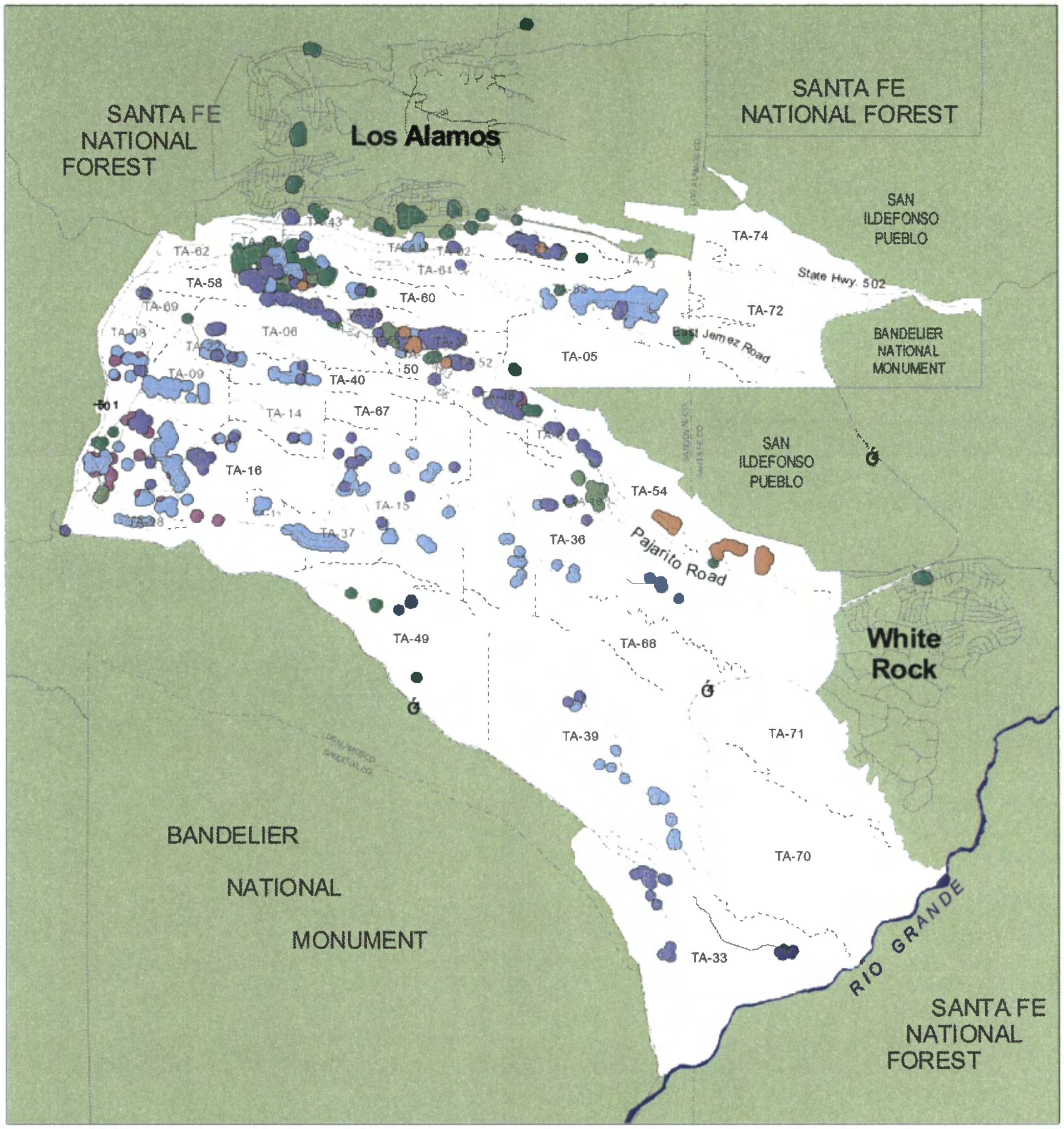
The Strategic Research (SR) Directorate's objective is to advance knowledge across the broad range of scientific disciplines necessary to accomplish the Laboratory's core missions of ensuring the safety and reliability of the United States nuclear weapons stockpile; reducing threats to U.S. security with a focus on WMD; and providing technical solutions to national security problems in energy, environment, infrastructure, and health.

SR provides the multidisciplinary science and technology needed to seek solutions to complex problems of national and global significance. In doing so, SR shares and supports the goals of WEM, WP, and TR Directorates and seeks collaborative partnerships with individuals and organizations in these directorates. SR serves as the nucleus for new programs and directions at the Laboratory and is the champion for excellence in basic and applied research.

The table below summarizes the goals and strategies of the SR Directorate in meeting the Laboratory's programmatic responsibilities.

Table 3-4: Strategic Research mission goals and objectives.

Strategic Research Directorate		
Goals	Strategies	SMART Linkage
[redacted]	[redacted]	[redacted]



Programmatic Associations, Overview

(see Appendix for detailed maps)

LEGEND *(Facility footprints are buffered for visibility)*

- NA-11: Stockpile Stewardship
- NA-12: Stockpile Management
- DP-GEN: General
- DP-LL: Infrastructure & Defense Programs Landlord
- EM: Environmental Management
- Non-DP or Institutional Science Base
- Other
- Technical Area Boundary

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3.2 READINESS IN TECHNICAL BASE AND FACILITIES (RTBF)

The RTBF mission is to ensure that the right facilities and infrastructure are in place to manufacture and certify the 21st century nuclear weapons stockpile and that the Laboratory is implementing the technologies and methods necessary to make construction, operation, and maintenance of DP facilities safe, secure, and cost effective. The RTBF program provides the physical and operations infrastructure required to conduct the scientific, technical, and manufacturing activities of the Stockpile Stewardship Program (SSP). The RTBF program will maintain facilities and technologies in an appropriate condition so that they are not limiting factors in the accomplishment of the NNSA/DP missions. Table 3-2 shows the FY03-05 RTBF budget summary.

In order to attain the RTBF program goals, cost-effective investments in the infrastructure, workforce, facilities, and technologies must be made through effective program management of activities. The Laboratory must continue to deliver and maintain safe and secure facilities that provide the means to perform and deliver the requisite levels of science and technology associated with maintaining the safety and reliability of the nuclear weapons stockpile. The Laboratory must also provide the balance of the physical and intellectual infrastructure underpinnings necessary to support the goals and mission of DP.

The majority of the RTBF direct funds support facility "warm standby" operations for the major DP experimental and manufacturing facilities. The "warm standby" condition is defined as the state of readiness for programmatic operations. This includes the safety, security, and compliance envelope required for all facilities. With over 8 million square feet (including non-RTBF facilities) of facility space, the job of maintaining safety, security, and compliance at the Laboratory is a significant challenge considering the age of the structures.

RTBF has been in place since FY00. The creation of RTBF allows the Laboratory to embark on a set of improvements focusing on facilities management techniques. These improvements include the following:

[redacted]

The RTBF funds also support urgent maintenance, major upgrades, and other DP facility maintenance not funded within the warm standby definition. Other activities within the RTBF funding include the following:

- Material Recycle and Recovery that is targeted at reducing the special nuclear material (SNM) holdings at the Laboratory,
- Surveillance and maintenance (S&M) of excess facilities awaiting D&D, and
- Waste management.

With the initiation of FYNSP, there was recognition of the realities of rising costs associated with operating the RTBF facilities, and consequently a 6% annual increase was noted as appropriate. Unfortunately, FYNSP has not been able to include such annual increases. Costs in operating facilities have continually increased at a greater rate than the budget.

In addition, NNSA, along with the sites, have established corporate goals associated with deferred maintenance reductions. In order to succeed in these deferred maintenance goals, RTBF facility operations must invest in maintenance at greater levels than in the past. As we aggressively work to baseline both the required maintenance requirements for each facility, as well as the deferred maintenance backlog, there will be RTBF scope implications.

Compliance issues relating to such things as groundwater monitoring, Price Anderson, Appendix O implementation, and the Defense Nuclear Facility Safety Board (DNFSB) have forced escalating level of investments resulting in reductions in other areas. One reduction area with significant impact is RTBF construction, which in FY2004 only includes funding for completion of a safety related project commenced in FY2003. [redacted]

Table 3-6 identifies the campaigns and directed stockpile work supported by each of the RTBF facilities.

Table 3-5: FY03-FY05 operating budget for facilities.

RTBF Operations of Facilities $M	Headquarters Organization	FY03 Implementation Plan DP	FY03 Implementation Plan Non-DP	FY03 Implementation Plan Total Facility	FY04 Implementation Plan DP	FY04 Implementation Plan Non-DP	FY04 Implementation Plan Total Facility	FY04 FYNSP DP	FY04 FYNSP Non-DP	FY04 FYNSP Total Facility
Direct Funded Facilities										
Engineering Facilities	NA11	16.4	3.8	20.2	16.7	3.9	20.6	18.3	4.3	22.6
Tritium Facilities	NA12	11.9	-	11.9	11.7	-	11.7	12.6	-	12.6
LANSCE	NA11	45.2	18.4	63.6	48.7	21.2	69.9	53.7	23.6	77.3
DX Facilities	NA11	34.9	4.7	39.6	36.5	2.4	38.9	46.0	2.5	48.5
Materials Science/Laser Facilities	NA12	5.4	-	5.4	5.2	-	5.2	5.7	-	5.7
Waste Management Facilities	NA11	26.6	12.0	38.6	27.8	12.5	40.3	30.0	13.5	43.5
Nuclear Facilities	NA12	90.3	9.9	100.2	90.0	9.8	99.8	96.4	10.5	106.9
Total Direct Funded Facilities		**230.7**	**48.8**	**279.5**	**236.6**	**49.8**	**286.4**	**262.7**	**54.4**	**317.1**
Other Direct Funded Facilities / Balance of Plant										
NA11 Other Direct Funded Facilities	NA11	45.0	-	45.0	44.7	-	44.7	31.9	-	31.9
Balance of Plant	NA12	25.3	-	25.3	27.7	-	27.7	24.3	-	24.3
Total Other Direct Funded Facilities & Balance of Plant		**70.3**	**-**	**70.3**	**72.4**	**-**	**72.4**	**56.2**	**-**	**56.2**
TOTAL FACILITY COSTS IN RTBF		**301.0**	**48.8**	**349.8**	**309.0**	**49.8**	**358.8**	**318.9**	**54.4**	**373.3**

Campaigns Operations of Facilities $M	Headquarters Organization	FY03 Implementation Plan DP	FY03 Implementation Plan Non-DP	FY03 Implementation Plan Total Facility	FY04 Implementation Plan DP	FY04 Implementation Plan Non-DP	FY04 Implementation Plan Total Facility	FY05 FYNSP DP	FY05 FYNSP Non-DP	FY05 FYNSP Total Facility
Campaign 10 – ICF										
Trident	NA11	2.0	-	2.0	2.2	-	2.2	2.2	-	2.2
Target Fabrication Facility	NA11	4.0	1.1	5.1	4.8	1.3	6.1	4.9	1.4	6.3
Subtotal		**6.0**	**1.1**	**7.1**	**7.0**	**1.3**	**8.3**	**7.1**	**1.4**	**8.5**
Campaign 11 – ASCI										
CCF	NA11	4.0	1.1	5.1	4.6	1.2	5.7	4.8	1.2	6.0
LDCC	NA11	2.0	1.6	3.6	2.3	1.7	4.0	2.4	1.8	4.2
Nicholas Metropolis Center (SCC)	NA11	10.6	0.4	11.0	12.0	0.4	12.4	12.5	0.5	13.0
Subtotal		**16.6**	**3.2**	**19.8**	**18.9**	**3.3**	**22.2**	**19.7**	**3.5**	**23.2**
TOTAL FACILITY COSTS IN CAMPAIGNS		**22.6**	**4.3**	**26.9**	**25.9**	**4.6**	**30.5**	**26.8**	**4.9**	**31.7**

Indirect Funded General Purpose Facilities $M	Total Facility
FMU 1 – Facilities East	13.2
FMU 2 – Facilities West	11.7
FMU 3 – Diversified Facilities	12.5
FMU 4 – LANSCE	3.8
FMU 5 – DX/ESA	2.5
FMU 6 – WFM	0.4
FMU 8 – Utilities	7.9
TOTAL INDIRECT FACILITIES	**52.1**

Non-DP facilities are funded through a space recharge on a full cost recovery basis.

The Laboratory has proposed a change to the indirect cost structure whereby indirect facilities will be funded through a labor based taxing structure.

Table 3-6: RTBF facilities supporting Campaigns and DSW.

		RTBF Facility/Activity								
		Dynamic Experiment Facilities	Engineering Facilities	LANSCE	Waste Management Facilities	Materials Science Facilities: Beryllium Technology Facility	NMT Facilities: CMR	NMT Facilities: TA-55	TA-18	Tritium Facilities (WETF, TSFF)
		NA-11	NA-11	NA-11	NA-11	NA-12	NA-12	NA-12	NA-12	NA-12
CAMPAIGNS	1. Primary Certification	✓	✓	✓	✓	✓	✓	✓		
	2. Dynamic Materials Properties	✓	✓	✓	✓	✓	✓	✓		
	3. Advanced Radiography	✓	✓	✓	✓		✓	✓		
	4. Secondary Certification and Nuclear Systems Margins	✓		✓	✓					
	5. Enhanced Surety	✓	✓		✓	✓	✓	✓	✓	
	6. Weapon Systems Engineering Certification	✓	✓	✓	✓	✓				✓
	7. Nuclear Survivability		✓		✓				✓	
	8. Enhanced Surveillance	✓	✓	✓	✓	✓	✓	✓		✓
	9. ADAPT	✓	✓		✓	✓	✓	✓		✓
	10. High Energy Density Physics	✓	✓		✓					✓
	11. Advanced Simulation and Computing									
	12. Pit Manufacturing	✓	✓		✓	✓	✓	✓		
	13. Stockpile Readiness									
	14. High Explosives Manufacturing and Weapon Assembly / Disassembly									
	15. Nonnuclear Readiness	✓	✓		✓	✓				✓
	16. Material Readiness									
	17. Tritium Readiness				✓					✓
Directed Stockpile Work (DSW)	Stockpile Research and Development	✓	✓	✓	✓	✓	✓	✓		✓
	Stockpile Maintenance	✓	✓	✓	✓	✓	✓	✓		✓
	Stockpile Evaluation	✓	✓	✓	✓		✓	✓		
	Dismantlement / Disposal	✓	✓		✓		✓	✓		
	Field Engineering, Training, and Manuals (FETM)									
	Production Support	✓	✓		✓	✓				✓

3.3 SUMMARY OF MISSIONS, ALTERNATIVES, AND REQUIREMENTS

The table on the following pages (Table 3-7) relates program missions to facility alternatives and requirements. Additionally, the table links the facility requirements to the programs and activities that are integral parts of the Laboratory's current and future missions. The table is referred to as the Summary Mission Alternatives and Requirements Table (SMART).

The SMART attempts to capture the forecasted 10-year program mission campaign activities and link the activities to technologies and facilities required to accomplish the missions. Related high-priority projects are referenced when appropriate to link mission/campaign requirements with needed facilities. In many cases, the SMART shows projects that have yet to be defined or receive funding that would address the mission/campaign requirement. The columns included in the SMART are defined as follows:

- **Current Mission Requirements** are the primary missions assigned by NNSA to be performed at the Laboratory.
- **Current Functions/Capabilities** are activities, processes, and technologies needed to support the mission requirements.
- **Current Facilities** are facilities and infrastructure needed to perform the primary missions. Included are any facility or infrastructure where the majority of the structure or utility, or its predominant use, is to support scientific research, production, or testing under the SSP.
- **Current Issues/Concerns** are issues and concerns about facilities and/or infrastructure used to support the missions. These issues and concerns have been identified by either users of the particular facility and/or infrastructure or by the Laboratory's institutional needs.
- **Future Mission Requirements** are anticipated mission requirements that have been identified by the Laboratory's programmatic offices in conjunction with appropriate NNSA program offices.
- **Future Functions/Capabilities** are activities, processes, and technologies needed to support the future mission requirements.
- **Alternatives/Options** identify methods to address the identified facility issues and concerns.
- **Facility Strategies** include either modifications/upgrades to existing facilities or the construction of new space to implement one or all of the alternatives/options that have been proposed.

- **Related Projects** are particular facility or infrastructure improvements that are underway or planned, which by their use, proximity, or function will impact or support the described project.

The Laboratory recently formed a Program Integration Board (PIB) that developed a comprehensive, multiyear program plan for its Nuclear Weapons Program to enhance project management and encourage accountability. This plan's hierarchy consists of *Five-Year Program Element Plans, Five-Year Project Plans,* and activity worksheets. These commitments mesh into the overall *Nuclear Weapons Integrated Baseline,* which in turn rolls up to the Laboratory-wide baseline.

All *Five-Year Program Element Plans* contain details of their requirements, milestones, and deliverables; scope, schedule, and costs; people and facilities requirements; interdependencies and risks; and previous baseline approvals. *Five-Year Program Element Plans* are built from the *Five-Year Product* and *Project Plans* that compose the program element. The SMART will be updated in the future to better align with current programmatic planning efforts and the Nuclear Weapons Integrated Baseline.

Weapons Engineering & Manufacturing

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Manufacturing									
<10 pits/year	Fabrication and assembly of plutonium components	Plutonium facility (TA-55)	Glovebox atmosphere, transportation over roads open to the public, and SNM storage	[redacted]					
	Analytical and actinide chemistry and materials characterization	CMR (TA-03-29), TA-55, TA-48-01	Nuclear material operations in CMR will continue through 2010. Replacement facilities will then be required.						
	Limited highly enriched uranium (HEU) and beryllium processing and manufacturing	CMR, Sigma Complex, TA-03-39, -03-141	None						
	Nonnuclear pit component fabrication and joint test assembly (JTA) support. Materials characterization and process development. Material could include depleted uranium.	Sigma Complex, TA-03-39, Beryllium Technology Facility (BTF) (TA-03-141)	Fully qualified cability to perform WR machining exists. BTF requires special handling capabilities.						
1 neutron tube target loader (NTTL), <1000 targets/yr		Weapons Engineering Tritium Facility (WETF) at TA-16 & TA-21 support	TA-21 is being closed and land transferred.	[redacted]					
Detonator production capable of <3000/yr	Manufacture of detonators	High explosive facilities		[redacted]					

D Directed Stockpile Work
R RTBF
Campaigns
1. Primary Certification
2. Dynamic Materials Properties
3. Advanced Radiography O&M
4. Secondary Certification & Nuclear Systems Margins
5. Enhanced Surety
6. Weapons Systems Engineering Certification
7. Nuclear Survivability (Certification in Hostile Environments)
8. Enhanced Surveillance
9. Advanced Design and Production Technologies (ADPT)
10. High Energy Density Physics
11. Advanced Simulation and Computing O&M
12. Pit Manufacturing and Certification (Readiness)
13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Weapons Engineering & Manufacturing

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Manufacturing (cont.)									
Fabrication of JTAs and other nonnuclear pit components	Manufacturing	Administrative support facilities at TA-03, TA-08, TA-16, and TA-55		[redacted]					
Support of manufacturing processes	Static nuclear radiography and nondestructive examinations (NDEs)	Radiography capabilities	Capabilities must exist at TA-08, -16, and -55	[redacted]					
	Machine shop support	Main shops (TA-03)							
Surveillance									
20 per year	Disassembly of pits and recovery of SNM	Plutonium facility (TA-55)	Disposition of contaminated HEU	[redacted]					
	Analytical and actinide chemistry and materials characterization	CMR (TA-03), TA-55, TA-48-01	Nuclear material operations in CMR will continue through 2010. Replacement facilities will then be required.						
	Nonnuclear component surveillance	Sigma (TA-03)	Nuclear material operations in CMR will continue through 2010. Replacement facilities will then be required.						
	Limited NTTL surveillance	WETF (TA-16) and TA-21 support	TA-21 is being closed.						
20 per year	Limited weapons surveillance (valves), polymer aging, weapons component aging	Engineering facilities		[redacted]					
Two-dimensional hydrodynamic calculation support	Pulse-power drives inertial confinement fusion (ICF) experiment	Pulsed-power facilities		[redacted]					

D Directed Stockpile Work
R RTBF
Campaigns
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5. Enhanced Surety
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10. High Energy Density Physics
11. Advanced Simulation and Computing O&M
12. Pit Manufacturing and Certification (Readiness)
13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Weapons Engineering & Manufacturing

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Surveillance (cont.)									
Surveillance of 10-12 detonator sets/yr	Perform surveillance on detonators 800 MeV neutron source	High explosive facilities and accelerator facilities		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Nonnuclear component surveillance	Administrative support facilities at TA-03, -08, -16							
Surveillance of 100 Radioisotope Thermoelectric Generators (RTGs)/yr	Recover Pu-238	Facilities at TA-55		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Analytical chemistry & materials characterization	CMR (TA-03)	By 2010, nuclear weapon missions are to be out of CMR						
Two-dimensional radiography, 5-10 experiments/yr	Weapons component radiography & nondestructive analysis	Radiographic facilities		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	800 MeV Neutron source	Accelerator facilities							
Limited weapons certification /surveillance and sub-critical experiment support (<1/month)	Visual examination and measurements	Engineering facilities		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

D Directed Stockpile Work
R RTBF
Campaigns
1. Primary Certification
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4. Secondary Certification & Nuclear Systems Margins
5. Enhanced Surety
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7. Nuclear Survivability (Certification in Hostile Environments)
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11. Advanced Simulation and Computing O&M
12. Pit Manufacturing and Certification (Readiness)
13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Weapons Engineering & Manufacturing

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Certification									
Annual weapons certification to the nation	In progress: pit manufacturing process certification	Plutonium facility (TA-55)		[redacted]					
	In progress: analytical chemistry and materials characterization process certification	CMR (TA-03-29)	By 2010 nuclear weapon missions are to be out of CMR						
	In progress: nonnuclear manufacturing process certification	Sigma (TA-03-66)							
	Limited NTTL certification	WETF (TA-16) & TA-21 support	TA-21 is being closed						
	Weapons certification facility infrastructure	Administrative support facilities							
Certification of 1000 detonators/yr		High-explosive facilities		[redacted]					
		Supercomputing facilities							
Nuclear Materials									
Pit and plutonium/uranium storage	Constrained pit and plutonium/enriched uranium storage	Plutonium facility (TA-55) and TA-18	Adequate space for future	[redacted]					
Plutonium / uranium storage	Constrained plutonium/enriched uranium storage	CMR (TA-03-29)		[redacted]					

D Directed Stockpile Work
R RTBF
Campaigns
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10. High Energy Density Physics
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12. Pit Manufacturing and Certification (Readiness)
13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Weapons Engineering & Manufacturing

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
				Nuclear Materials (cont.)					
Depleted uranium storage	Constrained/depleted uranium storage	Sigma (TA-03)	Depleted uranium will be used in a host of activities related to stockpile certification and management. Adequate storage space must be identified.	[redacted]					
Tritium storage and handling	Suboptimized tritium storage and handling	WETF and TA-21 support	TA-21 is being closed.	[redacted]					
Weapons Physics									
				Basic/Applied Research and Technology Development					
Maintain core competencies in design, test, and manufacture of nuclear weapons	Pit manufacturing process development	Plutonium facility (TA-55), Sigma Complex (TA-03-66), Machining and inspection (TA-03, TA-16)		[redacted]					
	Analytical chemistry and materials characterization process development	CMR (TA-03-29)		[redacted]					
	Non-nuclear materials and manufacturing process development	Sigma (TA-03-66)		[redacted]					
	Tritium process development	WETF & TA-21 support	TA-21 is being closed.	[redacted]					
	Criticality experiments	TA-18		[redacted]					

D Directed Stockpile Work
R RTBF
Campaigns
1. Primary Certification
2. Dynamic Materials Properties
3. Advanced Radiography O&M
4. Secondary Certification & Nuclear Systems Margins
5. Enhanced Surety
6. Weapons Systems Engineering Certification
7. Nuclear Survivability (Certification in Hostile Environments)
8. Enhanced Surveillance
9. Advanced Design and Production Technologies (ADPT)
10. High Energy Density Physics
11. Advanced Simulation and Computing O&M
12. Pit Manufacturing and Certification (Readiness)
13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Weapons Physics

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Basic/Applied Research and Technology Development (cont.)									
Maintain core competencies in design, test, and manufacture of nuclear weapons	Engineering science	Engineering facilities		[redacted]					
	Stockpile explosives evaluation and R&D	Stockpile explosives evaluation and R&D							
	Stockpile weapons code development	Supercomputing facilities							
	Administrative, facility and infrastructure support	Administrative support facilities							
	Machine shop support	Main shops (TA-03)							
	Actinide science and Seaborg Institute	Plutonium facility (TA-55) and CMR (TA-03-29)							
	Materials science	Sigma (TA-03-66)							
	Tritium science	WETF (TA-16) & TA-21 support	TA-21 closing						
	Criticality experiments	TA-18	IAEA interactions and training						

D Directed Stockpile Work
R RTBF
Campaigns
1. Primary Certification
2. Dynamic Materials Properties
3. Advanced Radiography O&M
4. Secondary Certification & Nuclear Systems Margins
5. Enhanced Surety
6. Weapons Systems Engineering Certification
7. Nuclear Survivability (Certification in Hostile Environments)
8. Enhanced Surveillance
9. Advanced Design and Production Technologies (ADPT)
10. High Energy Density Physics
11. Advanced Simulation and Computing O&M
12. Pit Manufacturing and Certification (Readiness)
13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Weapons Physics

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Basic/Applied Research and Technology Development (cont.)									
Maintain core competencies in design, test, and manufacture of nuclear weapons	International Atomic Energy Agency (IAEA) interactions	Nonproliferation and arms control facilities, international technology and security facilities		[redacted]					
	Turbulence experimental testbed								
	High-speed time measurement for nuclear diagnostics.	High-frequency laboratory TA-03-40	Aging facility						
	Stockpile explosives evaluation	LANSCE							
	Actinide science	LANSCE							
	Materials science	LANSCE							
Computer Science									
Maintain core competencies in design, test, and manufacture of nuclear weapons	Computer science	Computing facilities		[redacted]					
High Energy Density Hydrodynamics									
Fundamental understanding of weapons physics	Supplied basic data on ignition and thermonuclear (TN) burn and rad-hydro of secondaries	Trident, ATLAS	ATLAS is being moved to NTS	[redacted]					
		LANSCE							

D Directed Stockpile Work
R RTBF
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6. Weapons Systems Engineering Certification
7. Nuclear Survivability (Certification in Hostile Environments)
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10. High Energy Density Physics
11. Advanced Simulation and Computing O&M
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13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Threat Reduction

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Advanced Hydrodynamic Testing									
Hydrotesting of simulated nuclear weapons components	Hydrotesting is the most important diagnostic for nuclear weapons performance short of nuclear testing.	PHERMEX	Scheduled for closure	[redacted]					
	Two-dimensional radiography, 5-10 experiments/yr	DARHT facilities		[redacted]					
	Two-dimensional hydrodynamic testing and calculation support	LANSCE		[redacted]					
	Flyer plates, pin shots, etc.	Multiple specialized firing sites for experiments of various types	Maintaining integrity of buffer zones is an issue. Protection of wildlife and environment	[redacted]					
	Low and intermediate energy x-ray source and detector management.		Inadequate facilities.	[redacted]					
Nuclear Weapons Simulation and Computing									
Improve data representation of 3-D simulation codes	Develop and deploy tera-scale technology for visualization and large scale simulations.	Laboratory Data Communication Center (LDCC)		[redacted]					
1-5 TeraOp regime	Computing	Supercomputing facilities		[redacted]					

D Directed Stockpile Work
R RTBF
Campaigns
1. Primary Certification
2. Dynamic Materials Properties
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4. Secondary Certification & Nuclear Systems Margins
5. Enhanced Surety
6. Weapons Systems Engineering Certification
7. Nuclear Survivability (Certification in Hostile Environments)
8. Enhanced Surveillance
9. Advanced Design and Production Technologies (ADPT)
10. High Energy Density Physics
11. Advanced Simulation and Computing O&M
12. Pit Manufacturing and Certification (Readiness)
13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Table 3-7
Summary Missions, Alternatives, and Requirements Table (SMART)

Threat Reduction									
Current Requirements	**Current Functions/Capabilities**	**Current Facilities**	**Current Issues/Concerns**	**Forecasted Requirements**	**Forecasted Functions/Capabilities**	**Alternatives/Options**	**Facility Strategies**	**Related Projects**	**Technological Linkages**
Inertial Confinement Fusion and Radiation Physics (ICF&RP)									
Fundamental understanding of weapons physics	Supplies basic data on ignition and TN burn	Pulsed-power facilities, ATLAS	ATLAS is being moved to NTS.	[redacted]					
Nonproliferation and International Security									
Provide technology to prevent global proliferation of nuclear, chemical, and biological weapons and materials	Detector development, JTOT	Nonproliferation & arms control facilities		[redacted]					
	Analytical chemistry and characterization	CMR (TA-03-29)	Current state of the facility						
	Nuclear nonproliferation training	Sigma (TA-03-66), TA-18							
	Critical experiments, JTOT activities	Critical experiments (TA-18)							
	Detector development and international security	International technology and security facilities							
	Nuclear threat reduction	Nonproliferation and arms control facilities; International technology and security facilities							
	Nonproliferation surveillance								
	Nuclear, chemical, and biological surveillance								
Materials Disposition									
	The Laboratory has the nation's only mixed oxide fuel production capability.	Advanced Recovery and Integrated Extraction System (ARIES) glovebox line at TA-55	Increases in stockpiles of surplus fissile materials due to U.S.D211 and Russian arms control implementation. There is no nationally designated site and strategy for disposition.	[redacted]					

D Directed Stockpile Work
R RTBF
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4. Secondary Certification & Nuclear Systems Margins
5. Enhanced Surety
6. Weapons Systems Engineering Certification
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13. Secondary Readiness
14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
15. Nonnuclear Readiness
16. Materials Readiness
17. Tritium Readiness

Strategic Research

Current Requirements	Current Functions/Capabilities	Current Facilities	Current Issues/Concerns	Forecasted Requirements	Forecasted Functions/Capabilities	Alternatives/Options	Facility Strategies	Related Projects	Technological Linkages
Office of Science									
Neutrino, heavy-ion, and neutron experiments	Construction of a large detector system	High-bay labs, light labs	Space changes	[redacted]					
Fusion energy science	Basic research in plasma physics	Field Reversed Theta Pinch Compact Plasma Generator (FRX-C)		[redacted]					
Health and Environmental Research (Bioscience)									
Develop new brain-imaging capabilities	Functional magnetic resonance imaging	TA-03-218	Aging building	[redacted]					
	Magnetoencepholography (MEG)	TA-03-40	Aging building with high electrical noise and lack of space	[redacted]					
	Optical imaging	TA-03-40	Aging building	[redacted]					

D Directed Stockpile Work
R RTBF
Campaigns
1. Primary Certification
2. Dynamic Materials Properties
3. Advanced Radiography O&M
4. Secondary Certification & Nuclear Systems Margins
5. Enhanced Surety
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14. HE / Manufacturing & Weapon Assembly / Disassembly Readiness
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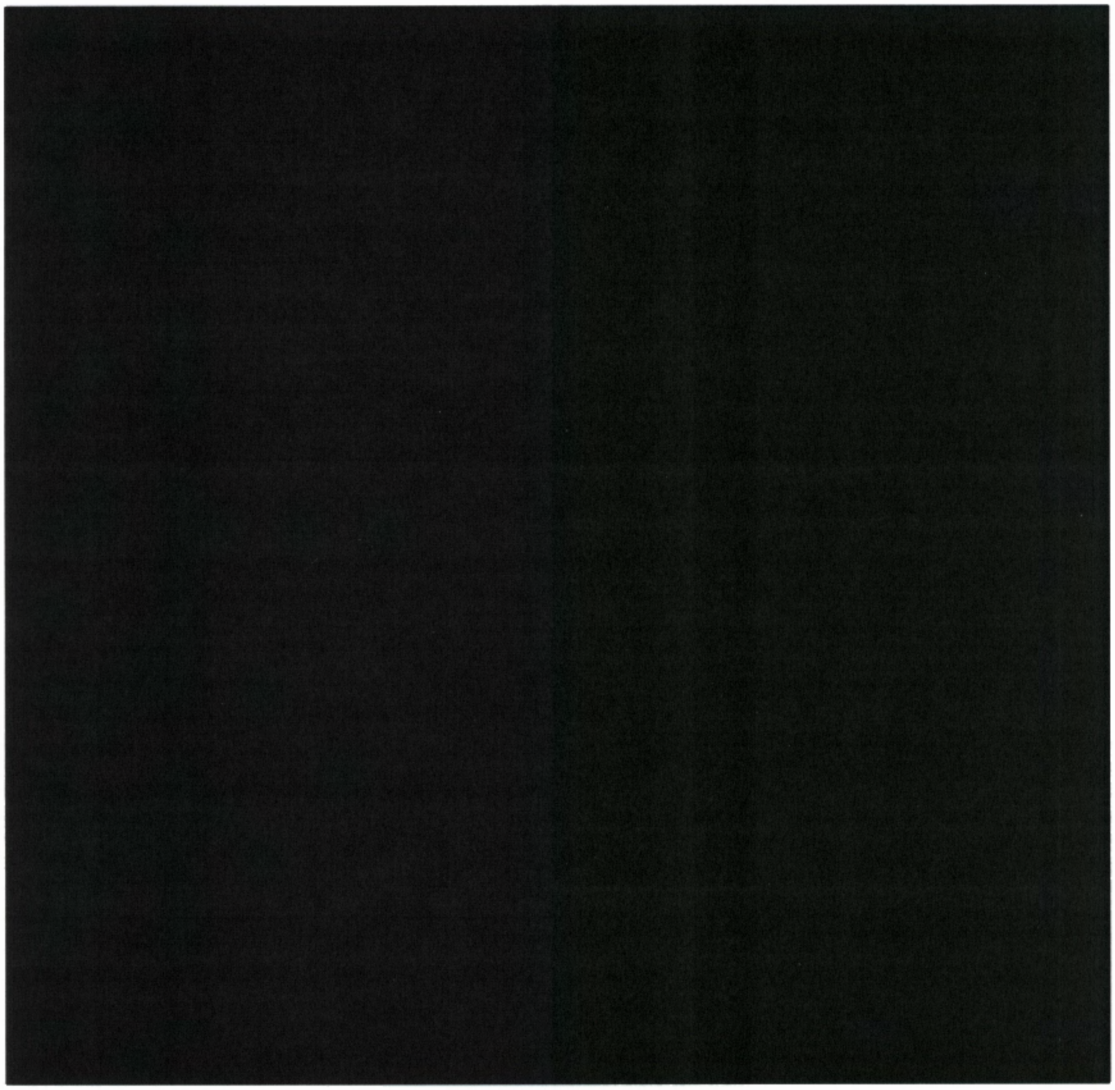
16. Materials Readiness
17. Tritium Readiness

3.4 MISSION ESSENTIAL FACILITIES AND INFRASTRUCTURE

By identifying mission essential facilities and infrastructure, NNSA Headquarters will be able to prioritize maintenance, restoration, and recapitalization activities towards meeting the Deferred Maintenance Reduction commitment. The mission essential facilities and infrastructure will be assigned priority in RTBF and FIRP funding decisions. A definition of mission essential was developed at the Deferred Maintenance Reduction Summit II on December 3-4, 2002 and agreed to by NNSA Headquarters, the sites, and Management and Operations (M&O) contractors.

> **NNSA Definition of Mission Essential**: Those facilities and infrastructure that are necessary to perform the primary NNSA missions assigned to the Site. This would encompass any facility or infrastructure where the majority of the structure or utility, or its predominant use, is to support scientific research, production, or testing to conduct the Stockpile Stewardship Program.

The Laboratory has determined the set of NNSA Mission Essential Facilities and Infrastructure to include all facilities that are direct funded within the DP budget. Each of these facilities has a direct link to specific mission components with a NNSA/DP program sponsor. All NNSA facilities not included in this category, while still important to NNSA missions as a whole, are indirect funded. Table 3-8 shows the mission essential facilities broken out by individual mission component. Overall, there are 485 mission essential facilities totaling approximately 3,600,000 GSF. More information on the mission essential facilities may be found in Attachment G, and a map of their locations is on the following page.



Mission Essential Facilities

LEGEND

- Waste Facilities
- TA-18 Facilities
- NMT Facilities
- LANSCE Facilities
- Tritium Facilities
- Dynamic Experimentation Facilities
- Beryllium Technology Facility
- Engineering Facilities
- ASCI Facilities
- ICF Facilities

(Facility footprints are buffered for visibility)

8000 0 8000 Feet

Table 3-8: Mission essential facilities by mission component.

[redacted]

[redacted]

All of the Laboratory's facilities are being evaluated for the projected longevity of mission need. *Enduring* facilities are those facilities with mission needs extending beyond 10 years while *proposed excess* facilities have a mission need of less than 10 years or are temporary structures in "poor" or "failing" condition. Consequently, investment in the reduction of deferred maintenance will be prioritized with the length of mission need as a factor. As appropriate, facilities with a defined "end of mission need" will be identified for exclusion from the NNSA corporate goals for FY05 (stabilize deferred maintenance) and for FY09 (reduce deferred maintenance to within industry standards).

Table 3-9: Summary of square footage and deferred maintenance.

[redacted]

[redacted]

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3.5 FACILITIES AND INFRASTRUCTURE IMPACTS FROM NON-NNSA PROGRAMS

3.5.1 Non-DP Program Contributions

While the Laboratory is primarily an NNSA site, non-NNSA programs do provide financial support for facility operations. This support enables a financial synergy that is beneficial for all programs where they coexist. Refer to Table 3-2 for non-RTBF investment (including non-NNSA) to facility operations. In addition, non-DP programs contribute to institutional initiatives in direct proportion to the magnitude of the program. One such institutional area is the payment of utility costs, which includes a level of utility reinvestment as noted in the F&I Cost Projection Spreadsheet. Without the inclusion of non-NNSA programs, a higher level of NNSA investment would be required to sustain the facilities and infrastructure.

In addition to facility operations investments, there is also planned construction investment from sources other than what is included in the ICPP, RTBF, and FIRP. Refer to the Non-RTBF/FIRP Cost Projection Spreadsheet in Attachment A, which also includes some non-NNSA construction investment.

One activity from non-NNSA programs will impact the site's future NNSA facility and infrastructure activities. Long Term Environmental Stewardship (LTES) activities associated with the Risk Reduction and Environmental Stewardship (RRES) Division's Remediation Group will become an NNSA responsibility in FY16, upon completion of the Laboratory's Environmental Restoration program. The scope of the LTES activities include (1) project management, (2) regulatory compliance and stakeholder involvement, (3) vadose zone and groundwater monitoring for material disposal areas (MDA), (4) monitoring of groundwater wells, (5) management of data bases and information management systems, and (6) required reporting to regulatory agencies. The LTES activities will commence upon the completion of all response actions, disposal of waste from response actions, and decontamination and decommissioning of facilities under the jurisdiction of DOE's Office of Environmental Management. FY16 costs are estimated to be approximately $1.7M.

3.5.2 Potential Environmental Management (EM) Responsibilities

During the early 1990s, several facilities were transferred from DP to EM for surveillance and maintenance followed by decommissioning. All of these buildings were subsequently removed. In recent years, candidate facilities have been discussed but none have been transferred from DP to EM. Facilities that are candidates for transfer contain process contamination. Consequently, they pose a certain level of institutional risk until they are removed. If DP or other programs ultimately transfer facilities to Environmental Management (EM), it is critical that performance expectations be established and carried out to avoid prolonged risk at this NNSA site.

3.6 ROLE OF TECHNOLOGY IN THE COMPLEX OF THE FUTURE

Prior to 1992, confidence in the certification of weapons was established through nuclear testing, where scientific understanding was simply a byproduct of demonstration. As such, there was no overarching certification methodology, and the Laboratory had an overly simplistic view about what was known and what could be delivered. This caused the Laboratory to "overcommit" itself; there was no planning for weapons work, additional work was readily accepted, and the scientific effort was not integrated. In response to the overcommitment, the Laboratory often delayed milestones and continuously "re-baselined" the work. Resources were used to meet near-term deliverables, investments were deferred, and facilities were allowed to decay.

Today, in the current era of science-base stockpile stewardship, the enormous complexity of certification is finally emerging. The Laboratory has realized that past practices will not enable it to meet the requirements of the future and is starting to develop the requisite project/program management skills and tools to assess and manage certification commitments. More focus is being paid to deliverables and milestones through the following actions:

- Allocating resources to priorities,
- Holding people accountable for program and project milestones,
- Reducing scope/options and assuming more risk to meet milestones,
- Retaining scope and moving milestones out,
- Focusing the workforce on the priorities,
- Developing a formal baseline to manage the program, and
- Improving business practices.

The key commitment for the Laboratory's new integrated weapons program is *building and maintaining an effective U.S. deterrent*. The following graphic provides a summary description of the capability requirements involved in this commitment. Specific facilities and infrastructure projects to support this capability are described in this TYCSP and are summarized in the SMART.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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4.1 PLANNING PROCESS

The FY04 TYCSP focuses on physical assets that support the Laboratory's missions and operations. It is one element of Laboratory strategic planning that includes NNSA and Laboratory requirements (in specific areas) and takes input from other plans to define facilities needed to accomplish the Laboratory's mission. Figure 4-1 diagrams the relationship of the TYCSP to other plans. Laboratory strategic planning processes evaluate four levels that build upon each other to achieve scientific and operational excellence. These levels are represented as *mission objectives, permit to operate, operational plans, and supporting plans*.

The *mission objectives* level defines the Laboratory's scope of work. It is developed through a top down strategic planning process, which includes development by the Laboratory Senior Executive Team of annual strategic goals in each program area.

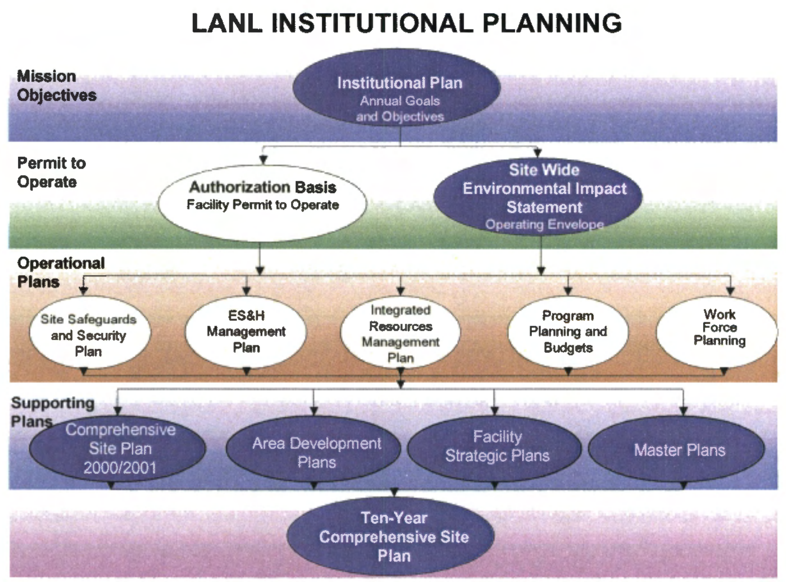


Figure 4-1: TYCSP relationship to other plans.

Environmental protection, health and safety, and technical limits are defined at the *permit to operate* level. The SWEIS and supporting plans that address individual projects (e.g., environmental assessments) and site-wide management plans (e.g., Integrated Resource Management Plan) define operating envelopes. Health and safety of personnel and the public and technical requirements for the operation of specific facilities are evaluated in the Authorization Basis (AB) process. These plans provide key operating limits that may affect facility planning.

The *operational plans* depicted in Figure 4-1 are site-wide in nature. They are interrelated in that each plan relies on information from and provides information to the other plans. Operational plans provide guidance and information from which facility investment plans are drawn or refined and included in the TYCSP process. The Environmental, Safety, and Health (ES&H) Management Plan identifies vulnerabilities that should be addressed in site and facility plans. The Site Safeguards and Security Plan provides vulnerability analyses results that support Safeguards and Security management and planning actions for the protection of DOE assets. Program plans and budgets provide insights into prioritization and growth sectors. The workforce plan includes critical skills requirements and broad estimates of changes in the workforce population based on budget projections that in turn drive space requirements to house the population.

Supporting plans further define and assist Laboratory implementation of operational plans and mission programs. They generally present physical development recommendations and proposals from site-wide to site-specific levels. Only supporting plans that address facility investment are depicted for this TYCSP.

The TYCSP is also aligned with Laboratory Performance Requirements (LPRs) and Laboratory Implementing Requirements (LIRs) that provide Laboratory expectations for operations.

TYCSP Planning

Planning for the TYCSP includes a thorough review of the various Operational and Supporting Plans (Figure 4-1) to gather relevant information and to assure consistency with the Laboratory's stated expectations. These plans provide goals and assumptions (see summary below) that this TYCSP must maintain.

Goals

Comprehensive Site Plan

- Identify vision, principles, and strategies for physical systems

Area Development Plans

- Recommend best land-use for specific geographical areas

Facility Strategic Planning

- Identify more cost efficient approaches to perform future missions
- Propose structures (new or modified), land-use, and site selection to meet organizational strategic needs

Master Planning

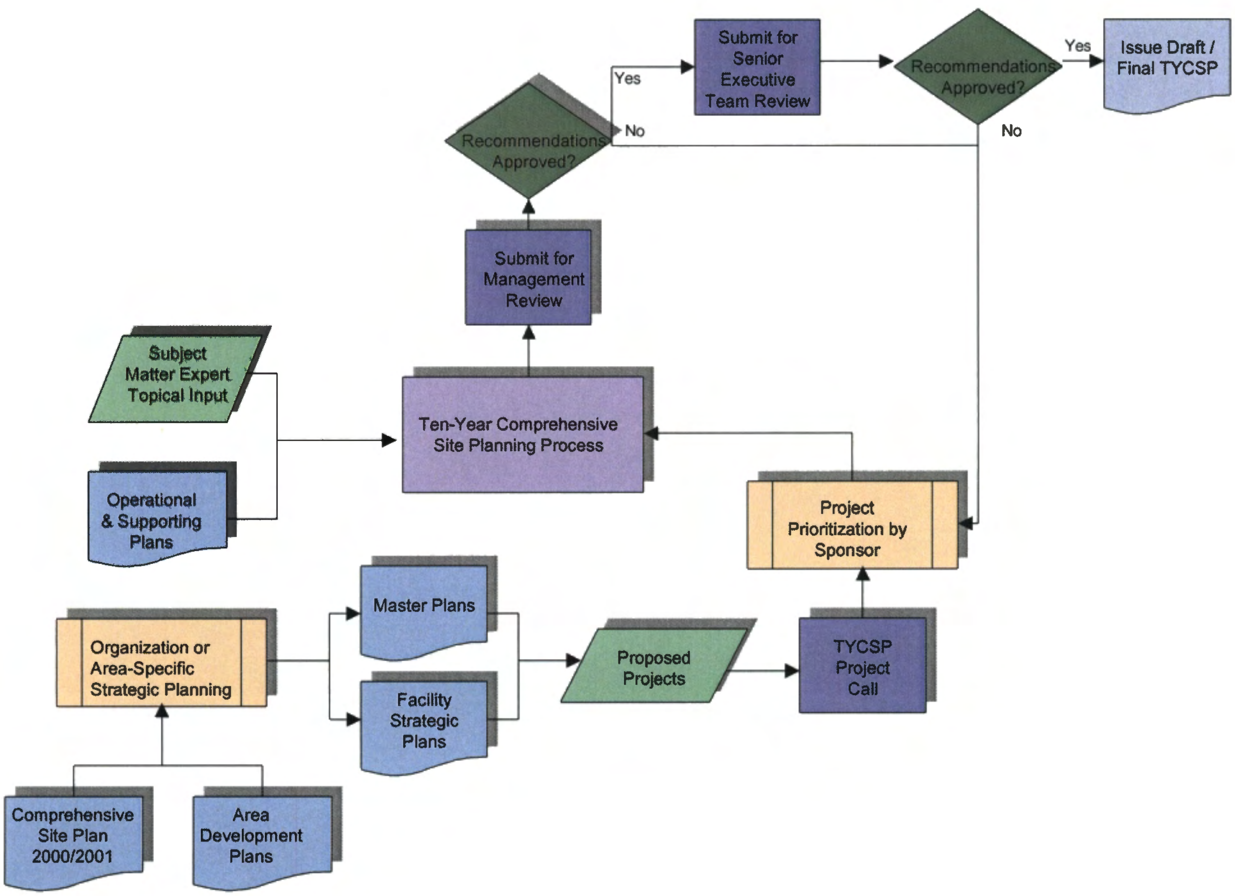
- Propose structures (new or modified), land-use, and site selection to support area development.

Assumptions

[redacted]

The TYCSP development process is collaborative and engages organizational owners of various Laboratory operational plans, Laboratory facility managers, line managers, and subject matter experts from various disciplines across the Laboratory (e.g., utilities, condition assessments, budgets, programs, and human resources). The DOE/Facility Information Management System (FIMS) data is reviewed and analyzed and provides the basis for evaluation of facilities. Figure 4-2 represents the planning process specific to the TYCSP.

Figure 4-2: The TYCSP planning process.



The project lists (Attachment A) are initiated by an institutional call and are proposed by the Laboratory's operating organizations. Submissions provide definition, estimated cost, and prioritization within the requesting organization. The call includes all categories of funding (Line-item, GPP, IGPP, and Expense) and all sources of funds (NNSA and non-NNSA). Proposed projects are grouped for review and prioritization.

Individual organizations are encouraged to formally and strategically plan for facility needs. The Laboratory's CSPs and Area Development Plans (ADP), which define key planning assumptions and directions, are critical inputs to an organization's planning process. Consistency with institutional plans is also provided in the Laboratory's site selection process.

Management of the planning process is the responsibility of the SPCC, chaired by the Operations Directorate (ADO). ADO prepares a proposed institutionally prioritized project list within each of the potential funding sources for review by the SPCC. The SPCC recommends approval to the Laboratory Senior Executive Team (SET), the final approval entity for individual projects and their prioritization.

Planning Process Improvements

Continuous process improvement is required for the Laboratory to operate and maintain a safe, secure, compliant, and appropriately sized complex of facilities and infrastructure that meets current and future NNSA mission, program and workload requirements and is within fiscal constraints. Several initiatives are currently underway that directly contribute to improving the quality of site and facility planning.

Facility Revitalization

The Facility Revitalization effort will establish an aggressive program to enhance and optimize safe, secure, and efficient facility management. Facility management activities are valued, supported, and managed as an important business function. While Laboratory divisions have direct oversight and influence over daily operation and maintenance, facilities must be operated, maintained, and managed to ensure long-term viability for institutional and programmatic missions. In addition to the larger effort of improving the Laboratory's facility management function, two key goals directly affect site and facility planning – (1) establishing the base-line data for facility maintenance (deferred, corrective, and preventive) and (2) facility modernization (facility strategic planning).

Institutional Infrastructure Planning

Comprehensive transportation and utilities planning is being pursued. The utility planning initiative will evaluate the ability of the existing systems and will recommend necessary changes to meet projected utility loads for the next ten years. The transportation planning initiative will address issues in security, safety, workforce size, and shifts in population locations. The process will also involve evaluation of impacts and benefits to the surrounding communities including the northern Pueblos, the Española valley, and the County of Los Alamos.

4.1.1 Facilities and Infrastructure Overview

More than half of Laboratory facilities are currently greater than 30 years old, including nuclear and non-nuclear facilities. Over the next 10 years, facilities aged 30 or more years old will increase to 7 million GSF. Without implementing the proposed demolition and replacement of aging facilities, the Laboratory's ability to carry out the stockpile stewardship mission is seriously threatened. A dedicated revitalization effort is crucial for the long-term viability of this Laboratory.

[redacted]

The Laboratory is forecast and summarized by the types of facility disposition expected by GSF in the future. Figure 4-3 represents the disposition of today's facilities based on an evaluation of mission need. [redacted]

An important element in ensuring that facilities can meet mission requirements is adequate maintenance. NNSA has recognized that many sites throughout the complex, including Los Alamos, have not performed all maintenance activities in a timely manner. This has resulted in a *deferred maintenance backlog*, which directly impacts facility condition and performance. The first step in NNSA's initiative to restore, revitalize, and rebuild the complex is to reduce deferred maintenance, thus ensuring that existing facilities can meet current and future mission requirements. NNSA has established complex-wide corporate goals for deferred maintenance reduction, and the Laboratory has committed to achieving these goals.

NNSA Corporate Goals for Deferred Maintenance Reduction

- By the end of FY 2005 NNSA will stabilize its deferred maintenance
- By the end of FY 2009 NNSA will:
  (1) Aggressively reduce deferred maintenance to within industry standards
  (2) Return facility conditions, for our mission essential facilities and infrastructure, to an assessment level of good to excellent (deferred maintenance divided by the replacement plant value is equal to or less than 5%)
  (3) Have institutionalized responsible and accountable facility management processes, including budgetary ones, so that the condition of NNSA facilities and infrastructure is maintained equal to or better than industry standards

In two following sections, 4.1.2—Condition Assessment Survey and 4.1.5—Maintenance and Deferred Maintenance Reduction, the Laboratory's efforts to identify the current maintenance backlog, determine the overall condition of facilities, and steps to achieve the corporate goals are described.

4.1.2 Condition Assessment Survey (CAS)

Condition Assessment Process

The Laboratory relies on the DOE Condition Assessment Survey (CAS)/ Condition Assessment Information System (CAIS) process to assess the condition of physical facilities and supporting infrastructure. The program is deficiency based where inspections and associated interviews with Facility Management staff and cognizant system engineers focuses on deficient systems, re-capitalization needs (replace in kind), and modernization requirements. The program fully supports the mission(s) of each facility asset and supporting infrastructure at the site. Deficiencies are aggregated into project-level definitions and reported to the FIRP Program Manager and responsible Facility Managers (FMs) for validation prior to submittal for funding.

Field assessments are prioritized according to two schedules for execution. The first priority schedule focuses on mission essential structures, systems, and components and recognizes geographical constraints and efficiencies. The second schedule reflects the “balance of plant” assets and identifies readily accessible assets to inspect should first priority assets be unavailable. Upon completion of inspections of the mission essential assets, the balance of plant inspection schedule becomes primary. This approach allows the Laboratory to maximize the contracted Parsons Brinckerhoff (PB) inspection staff’s productive inspection and interview time of the assigned resources.

Field assessment of all fixed assets is conducted on a three-year cycle. Trained inspectors in the primary disciplines (mechanical, electrical, architectural and civil/structural) conduct the work. The inspections are non-intrusive and capture the evident deficiencies associated with the asset work breakdown structure (WBS) as defined in the CAS training materials. Approved Hazard Control Plans related to the execution of field assessments authorize each inspector to work in a safe and secure manner. Inspections are coordinated with ADO through the responsible FM and their planning staff.

CAS Inspectors conduct interviews with the responsible FM, recognized System Engineer, and other facility management staff to collect facility and system condition data that otherwise would not be evident to the inspector. The “corporate knowledge” regarding the maintenance, re-capitalization and modernization needs is tapped through the interview process. Then, the information is formatted and entered into the CAIS2000 database in the structure, system and component categories.

The Laboratory’s condition assessment process has developed more refined interfaces with other elements of facility management tools and processes during FY03. Currently, the new Integrated Facility Management Program (IFMP) defines the linkages necessary to incorporate the CAS process and the CAIS database as an integral tool for planning, budgeting and execution, and maintenance reporting. The linkages provide a "closed" environment to ensure that deferred maintenance is managed as part of the normal execution of the maintenance program.

Data Management

CAS data resides in the DOE CAIS2000 database. Both Laboratory and contract CAS inspectors have access to data as it is implemented into the database. The CAS Program Administrator acts as the database administrator with professional support from Facility and Waste Operations Division (FWO's) Integrated Information Management Group. Each database user has a profile that defines their level of access to the data and system capabilities. All CAIS data is backed up nightly to ensure that the worst-case credible loss of data is limited to the data entered over one eight-hour day. Field notes and interview documentation are assembled into hard-copy records for each building and/or asset and are maintained as record files and source documentation.

CAS inspection data follows a procedure that ensures all of the data is reviewed, corrected, and validated prior to entry into the CAIS database. Inspectors perform a peer review during each inspection. After draft entry into the CAIS database, the CAS Program Administrator reviews the inspection data using queries and report reviews developed at the Laboratory. FMs and their staff review the reports for accuracy and completeness. Data is then committed to the CAIS database as final, validated inspection data.

Replacement plant values (RPVs) are also reviewed to determine their validity. Comparisons between escalated values for the assets, derived from the R.S. Means escalation factors based on initial acquisition dates and costs, and DOE FIMS model costs yield a disparity in a number of asset types and usage categories. Correction factors (see Table 4-1) align the RPV values in FIMS and CAIS with the results of the analysis, and the factors are applied to the RPV values in the FIMS database. As a basis for the analysis, engineered replacement values for projects currently in the design process are used as a "reality check" for the calculated RPVs.

Table 4-1: Corrective factor results by FIMS usage code.

Building Types	Descriptions	Loader*	Low Range	High Range
Category II Nuclear	Hazard Category "02" in FIMS	3.684	2.145	6.325
Modulars	Building Type "T" in FIMS and Haz Cat not "02"	1.749	1.298	2.356
Offices	Building Type "B", Haz Cat not "02" and Use Code 100 series	1.749	0.789	3.876
Support	Building Type "B", Haz Cat not "02" and Use Code 200 series	1.655	0.882	3.104
Storage	Building Type "B", Haz Cat not "02" and Use Code 400 and 800 series	1.825	0.886	3.757
Process	Building Type "B", Haz Cat not "02" and Use Code 500 series	3.371	1.716	5.419
Services	Building Type "B", Haz Cat not "02" and Use Code 600 series	3.120	1.023	9.517
Labs	Building Type "B", Haz Cat not "02" and Use Code 700 series	0.921	0.432	1.964

*Loader is the corrective factor utilized to adjust RPV and deferred maintenance costs.

The samples are selected from the FIMS database and include all active Laboratory buildings constructed within the past ten years because older cost estimates are unreliable when escalation factors become large. RPVs calculated with the FIMS model process are compared to the RPVs calculated via escalation from original date and cost of construction. Where known estimates for replacement of Laboratory facilities are available, comparisons use all three values for RPV. From this data analysis, RPV correction factors were developed to better reflect current dollar replacement values by usage category for assets. The same process was applied to the major property types.

To develop the FY04 TYCSP, all adjusted RPVs have been uploaded due to the unique building level factors required to correct the values. This is a change from prior year philosophy for FIMS-calculated RPV values to be utilized with only the site factor contained in FIMS as the value adjustment. Additionally, the factors escalate the deferred maintenance values contained in FIMS based on the same analysis.

Condition assessment data is reported primarily to FMs for managing the deferred maintenance backlog and the reduction plan. Custom reports are crafted to meet the needs of FMs and FWO personnel responsible for input to this planning document. Reports and data extracts from the FIMS database provide feedback to DOE for tracking deferred maintenance by asset. The Laboratory is planning a web-based tool for access to a basic set of reports and CAIS2000 data downloads to better facilitate management of the backlog.

The CAIS database is the basis for defining projects that will be funded by FIRP for management and reduction of deferred maintenance in accordance with NNSA corporate goals. Maintenance project requests must be identified in the CAIS database to be considered valid. As part of the project approval process, facility-related projects utilize CAIS data to identify deferred maintenance that may be associated with project execution.

Projects are identified in the CAS database in one of two lists. The first lists individual record entries where the cost of execution to correct the deficiency indicates that aggregation with other line items may make the total cost prohibitive. The second lists an aggregation of identified needs/deficiencies into a project that makes sound engineering sense and the total identified cost for the project is reasonable. No fixed definition for the level of cost per project has been defined; however, the current approach is to keep total project cost at or below the GPP funding threshold where possible.

FIMS

FIMS is the Laboratory's database of record for real property assets including buildings, trailers, and other structures and facilities. The CAIS2000 database is updated periodically to synchronize the asset list between DOE and the Laboratory, which ensures that inspections and reportable maintenance data are accurately reflected. The Laboratory maintains an internal database that mirrors the FIMS elements and augments content to better serve the site's needs and to ensure that timely updates are entered when physical changes occur. FIMS data is utilized directly for updating the CAIS database, and FMs may view the FIMS data directly through the Laboratory's web. Deferred maintenance and actual maintenance cost data are analyzed through the use of FIMS as a historical data source for trending over multiple fiscal years.

Maintenance Budget Formulation

CAS data is used to develop annual maintenance work plans and budgets. Deferred maintenance requirements have been identified by optimum year for corrective actions using a technique with discrete budget WBS elements. Budget formulation is a "bottoms-up" process based on each asset's master equipment list. Deferred maintenance corrective costs, derived from the CAIS database, are reflected in each building-level budget request. Building-level budgets are rolled up to an FM level and reflect maintenance needs for a group of assets assigned to an FM. Finally, FM budget requests comprise the division level budget that accounts for maintenance and deferred maintenance investment requirements for all buildings, trailers, and other structures and facilities (OSFs). The budget strategy is based on the prioritized needs of the plant, realizing that the authorized funding for any given fiscal year may not fully fund all the needs.

Life Cycle Analysis

CAS data is used to compare facility life cycle costs in order to determine effective investment strategies and minimize maintenance expenditures. The costs of corrective activities (to reduce deferred maintenance) and operations and routine maintenance are compared to replacement options to determine the most appropriate financial investment strategy to optimize DOE assets. The analysis is applied when decisions regarding space consolidation, renovation or mission support capability costs are required. The cost analysis process for cost comparisons relies on BLCC5 software developed for DOE. Additional analysis with spreadsheets and other tools are also employed. Whitestone Research software, currently under evaluation, may provide the Laboratory with a more suitable and robust analysis tool for life cycle cost modeling and cost comparison.

Table 4-2: Year-to-date CAS summary.

FMU	Deferred Maintenance Cost	Modernization Cost	RPV	Facility Condition Index (FCI)	Total Facility Condition Index (TFCI)
N/A	$59,866,587	[redacted]	$1,317,971,288	4.8%	9.5%
1	$40,393,366		$289,859,628	13.7%	22.8%
2	$31,997,315		$265,930,853	13.7%	18.6%
3	$87,274,399		$450,646,995	20.6%	28.5%
4	$61,501,827		$197,566,708	31.3%	46.4%
5	$65,233,230		$464,178,989	15.0%	20.4%
6	$38,796,101		$109,483,393	34.8%	45.5%
6D	$20,115,198		$77,440,763	25.6%	32.2%
7	$37,115,164		$721,106,682	5.3%	6.1%
8	$39,280,830		$67,155,385	57.4%	113.8%
9	$82,706,239		$1,643,278,381	4.9%	9.7%
Total	**$564,280,256**		**$5,604,619,065**	**10.3%**	**16.2%**

The CAIS RPV is the replacement cost of all structures, systems, and components as derived from the R.S. Means cost tables within the CAIS database. It is not comprehensive in definition of the systems for all buildings and is utilized for comparison across sites for similar asset model types. The Facility Condition Index (FCI) is derived as a ratio of deferred maintenance to RPV, which the Total Facility Condition Index (TFCI) is derived as a ratio of the sum deferred maintenance and modernization costs divided by the RPV.

The data reveal that the overall facility condition index for Laboratory assets (excluding utilities) as of July 30, 2003 is "ADEQUATE." These scores result from baselining all the structures, systems and components for all assets listed in the FIMS database. CAIS is the database of record for the current condition of Laboratory assets. However, data in

Attachment F reflect the validated condition of assets utilizing the DOE FIMS database as the database of record for the asset inventory.

Status of Survey Baseline

The field assessment and interview baselining has been completed for all buildings and temporary structures. The baseline process for utility systems and other OSF assets continues due to the difficulty of assessing the condition of buried utilities and other systems where access constraints prevent ready inspections. The PB contract assessment efforts were completed in June of FY03. Training has been provided for Facility Management, Core FWO personnel and KSL contractor personnel in order to expand the assessment capability and sustain the CAS effort without having to rely on contracting for inspection services. The net result of internal capability enhancements should provide more accurate and timely CAS information. Also, tracking adherence to the deferred maintenance reduction goals will improve for the same reasons.

Current and Future Facility Condition

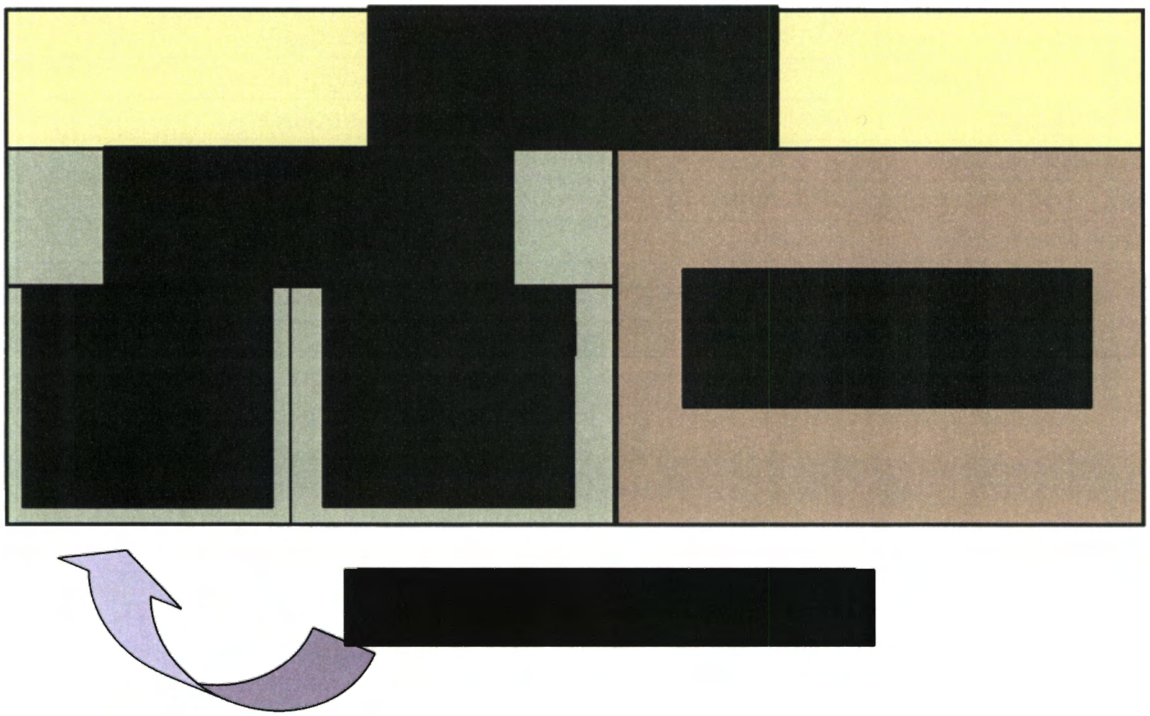
The Laboratory's facilities fall into three different categories: Enduring Mission Essential, Proposed Excess Mission Essential, and Balance of Plant. Table 4-3 below summarizes the current condition of facilities in these three categories. Figure 4-4 provides more information on the number of facilities, square footage, and deferred maintenance for each category. While empirical data supporting the condition score is accurate as an estimate, other factors influence the final management decision regarding an asset's ability to support the current or future missions. The CMR building provides an example of the additional influences affecting condition scoring. While the CAS condition is in the "adequate" to "poor" range, the building fails to meet the current seismic requirements for long-term occupation and operation.

The following table provides a summary of the facility condition index score in each major category and represents an aggregate condition of the assets contained in each category.

Table 4-3: Summary of FCI by facility category.

Category	Summary FCI
Enduring Mission Essential	Fair (FCI = 10.13)
Proposed Excess Mission Essential	Adequate (FCI = 7.07)
Balance of Plant	Fair (FCI = 12.96)

Figure 4-4: Breakdown of GSF and structures with estimated deferred maintenance.



Mission essential assets proposed for excess vary in condition and suitability for re-use. They are operated in a safe and secure manner and meet the mission needs but are targeted for space consolidation and footprint reduction. These actions will gain efficiencies of operation and realize economies of scale improvements and cost avoidance/reduction in deferred maintenance and operations costs.

Suitability for NNSA Mission

Many of the current mission essential assets are not defined as "enduring mission essential" as described below. Approximately one million square feet of mission essential assets have been identified as inadequate and are to be decommissioned or are defined to be excess facilities within ten years. Those assets, while currently supporting the NNSA mission, are now or will be deteriorated to the point of minimal availability and usefulness to mission during the next 10 years.

Table 4-4: Primary utilities and current condition.

System	Current Condition
Water Distribution	Adequate
Electrical Distribution (High Voltage)	Adequate
Sanitary Sewer System	Adequate
Gas Distribution	Adequate
Roads and Grounds	TBD
Steam and Condensate Distribution	TBD
Los Alamos Bridge	Fail

Future Condition

The Laboratory is committed to the NNSA deferred maintenance reduction goals to stabilize deferred maintenance growth by FY05 and reduce the FCI to a score of good to excellent for mission essential assets and achieve an aggregate facility condition index for the balance of plant of adequate by FY09. The FCI is derived by dividing each asset's deferred maintenance mortgage cost by the replacement plant value, and as such, is deferred maintenance expressed as a percent of RPV. The Laboratory anticipates challenges that will influence the ability to achieve the desired end state conditions of the facility assets. Anticipating the required end state for many of the assets in the inventory is influenced by the changing mission requirements assigned to the assets of interest. The Laboratory reserves the responsibility to make these assignments and clearly recognizes the need to meet mission goals in the most cost effective manner. The changing mission influences affect categorization of assets, desired or defined end state condition needs over time, and the associated maintenance needs. While asset management targets move, dedication to properly manage best use and stewardship of assets is reflected in current facility management programs and processes.

The clear goal of cost effective management of the Laboratory's facilities and infrastructure drives the CAS program and related programs and processes. The interface between CAS and other facility management programs is defined in the IFMP. The program requirements drive the Laboratory to achieve the corporate goals for future condition of the asset inventory and provide structure and accountability for facility and infrastructure management. Appendix F describes the desired future condition of assets based on the current knowledge of available or projected funding and resources.

Acquisition of Sufficient Funding

The Laboratory has developed budget and needs funding models based on Whitestone Research data that provide guidance on the appropriate level of funding required for maintaining functional assets. The Laboratory believes that the current approved funding level for maintenance cannot sustain the plant. [redacted] Acquiring sufficient funding impacts the Laboratory's ability to do science since a large portion of maintenance dollars are derived from a tax on total Laboratory funding. FIRP is closing the funding gap, but additional maintenance allocations are required to reduce the overall deferred maintenance to an acceptable level, sustain the entire plant, and keep deferred maintenance at acceptable levels.

4.1.3 Utilization

Space Management Process

Laboratory space management encompasses all real property owned and/or leased by UC on behalf of DOE. The Integrated Space Management Program (ISMP) manages the Laboratory's space as an asset and ensures maximum support for its scientific mission. The ISMP establishes requirements that are implemented for managing space, administering space allocations, managing the occupancy and vacancy of space, managing space changes, excessing space, and reporting space utilization.

The Associate Director for Operations (ADO) exercises overall space management responsibility on behalf of the Laboratory and is the institutional owner of all space. ADO utilizes a Space Management Committee (SMC) that represents each directorate. Directorate Space Managers (DSMs) manage the space within their directorate and assist ADO in meeting the overall space management goals and objectives at the institutional level via participation in the SMC. Facilities & Waste Operations – Facility Planning (FWO-FP) works in a staff capacity to ADO and the DSMs in assuring the orderly execution of the business of the SMC. Additionally, FWO-FP ensures required refinement and implementation of the ISMP, monitors space management actions across the Laboratory, serves as the Laboratory point of contact for institutional space management issues, and works to integrate institutional space issues across directorates.

The ADO directs an annual review of space allocation and utilization for each directorate, and the review process results in the establishment of a target space allocation for each directorate. This target space allocation is based on Laboratory space standards, best practices in space management, budget and programmatic objectives, and other criteria established by ADO. Each directorate develops a plan for meeting the space target within the first quarter following the review.

Once space is allocated by the ADO, each AD is responsible for the ongoing management of their space allocation. All space activities, including assignments and/or reassignments, changes in space use, adding new space, excessing space, and siting structures are managed by the directorate and coordinated with FWO-FP.

Summary Results of Space Studies

Table 4-5 summarizes facility utilization by total square footage. Data were obtained from the Laboratory's space database.

Table 4-5: Summary of existing space (data as of June 2003).

Building Type	Occupiable Square Feet	% of Total Occupiable Square Feet	Number of Personnel*	% of Total Personnel
Permanent	4,461,424	80%	12,056	74%
Trailer	122,055	2%	804	5%
Transportable	268,899	5%	1,824	11%
Commercial/Leased	290,538	5%	1,498	9%
Other	470,615	8%	13	<1%
TOTAL	5,613,531	100%	16,195	100%

**Personnel figure includes staff, contractors, students, post-docs, collaborators, and badged visitors.*

Table 4-6 summarizes office space per person at the Laboratory with actual data from 2001 through present and a five-year projection based on identified facility changes and expected population growth. The Laboratory tries to economically utilize office space consistent with General Services Administration (GSA) standards. The GSA standard for the Laboratory is recognized as 135 square feet per person. Office space utilization has consistently decreased below the standard of 135 square feet per person for the past two years and will continue to drop in the next few years as population is expected to grow more quickly than office facilities.

Table 4-6: Summary of office space per officed person.

	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Primary Office Space (in K)	1546.6	1607.4	1506.0	1447.3	[redacted]	[redacted]	[redacted]
Officed Population (in K)	11.6	12.5	13.0	13.0			
Office SF/Population	133.3	128.6	115.8	111.3			

Table 4-7 summarizes total space per person again with actual data from 2001 to present and a five-year projection based on identified facility changes and expected population growth.

Table 4-7: Summary of total space utilization.

	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Total GSF (in K)	8,688.8	9201.5	9371.0	9253.8	[redacted]	[redacted]	[redacted]
Total Population (in K)	14.7	15.1	15.4	15.4	[redacted]	[redacted]	[redacted]
GSF/Population	591.1	609.4	608.5	600.9	[redacted]	[redacted]	[redacted]

Space Needs

In the coming years the Laboratory will be working to relocate staff currently housed in leased space to on-site space. Since nearly all of leased space is used for office facilities, the office needs at the Laboratory site will greatly increase (accommodations for over 1,400 staff). Couple this effort with the congressional mandate to remove facilities at the same rate of new construction, and we have a tremendous space management challenge for the next few years. The approach being explored is to reduce non-office and inefficient office space – focusing on increased utilization and/or replacement of inefficient facilities.

One of the key strategies aimed at eliminating inefficient structures is the construction of quality GPP office buildings. In addition to a positive impact on operating costs, workers will be provided an improved work environment and organizations will yield higher efficiencies through the co-location of functions. Most of the buildings vacated will be temporary trailers and transportables which, in addition to previously mentioned efficiency and maintenance issues, are vulnerable to fire. However, some staff is expected to be moved from permanent structures.

[redacted]

As previously noted, Table 4-8 has a focus on eliminating deficient structures with quality GPP office buildings. Due to expanded workforce requirements, programs (non-RTBF/FIRP) are also investing in the construction of new facilities.

Table 4-8: Vulnerable office building replacements.

Project	Beneficial Occupancy	GSF
Chemistry Division Office Building	FY03	22,000
Weapons Engineering Office Building	FY03	22,000
TSE Office Building	FY03	24,100
HSR Clinic	FY03	19,000
MST Division Office Building	FY03	20,000
S-3 Office Building	FY03	20,800
D Division Office Building	FY03	18,000
FWO Office Building	FY04	19,400
Total		**165,300**

4.1.4 Excess Facilities Elimination/Disposition and New Construction

The quantity of excess facilities has been escalating at the Laboratory for a number of years. Fundamentally, this situation exists because a significant portion of facilities were constructed in the 1950s for a Cold War mission driver. With the evolution of building codes, ES&H requirements, and safety standards, the adaptation of many of these facilities is often not economically feasible to meet today's mission needs. Although the institution seeks other adaptive uses, ultimately D&D often becomes the most effective solution.

During the early 1990s, some buildings were transferred from DP to EM for demolition, which was accomplished. However, in spite of a number of submittals of candidate buildings, no further buildings were transferred to EM. In 1998, several buildings were proposed for removal under a proposed DOE funding initiative that never actually received any funding.

In 1999, DP-10, through RTBF, provided $2M in funding, which was split between S&M of excess facilities and the D&D of 27 small structures. With the same level of funding in FY00, a few more structures were removed, including two contaminated bag houses in the core of TA-03. After the Cerro Grande Fire in May 2000, the Laboratory requested and received approximately $20M to remove debris from damaged and destroyed buildings, in addition to the removal of excess buildings in flood or fire risk areas. The DP-10 RTBF funding for D&D and S&M had budget increases to $3.8M in FY01, with $3M in FY02.The FY01 funding accomplished the demolition of the Sherwood complex in the core of TA-3, one of the highest-profile D&D projects in recent memory. In FY02, Beginning in FY03, RTBF will only fund surveillance and maintenance with FIRP funding D&D. To date in FY03, approximately 140,000 GSF of excess space has been demolished.

The progression of D&D activities since 1999 is significant in that it is a start in establishing not only a level of success, but also in establishing expectations for further removal of excess structures. Consequently, the Laboratory is working to access any possible funding source to remove buildings with no further use. Planned funding sources are as follows:

- FIRP has emerged as the most aggressive long-term sponsor in removal of obsolete facilities at the Laboratory.
- Cerro Grande Rehabilitation Project (CGRP). As noted, this funding is dedicated to additional removal of "at risk" buildings but will end in FY03.
- Individual Project funded. Examples include removal of the TA-53 cooling towers in FY02; Nonproliferation and International Security Center funded removal of several

structures being vacated in FY03; and the SM-43 (315,000 square feet) demolition in FY06.

- F&I Initiative. Discrete projects that can be removed within the FY.
- Transfer of Process Contaminated Buildings from DP to EM. Discussions have occurred regarding a potential transfer of process-contaminated buildings with an ultimate goal of removal. At this time the Laboratory is not aware of ultimate commitments within DOE regarding schedules.

Supporting Information:

- In general, buildings are being excessed because of consolidation plans, which require smaller footprints to carry out the current and anticipated mission requirements. Refer to the condition assessment tables for the timeframe in which facilities will no longer be needed within each mission grouping.
- Annual S&M costs required for pending disposition are not collected on individual structures. Currently, DP-10 budgeted S&M is approximately $1.2M per year.
- In most cases, disposition means are through actual demolition with recycling of materials where appropriate. Some trailers and transportables are sold or excessed with the contractors responsible for removal from the Laboratory site. The Laboratory contracts with a number of companies for the majority of all D&D work. No unacceptable impacts to DP activities will occur as a result of implemented disposition.
- Specific D&D plans (including cost, scope, and schedules) for each structure are typically developed in the preceding FY.

[redacted]

- A variety of waste types are anticipated in most structures. Asbestos is considered routine considering the age of each structure. In addition, known contamination and special considerations (such as radiological or historical) are noted in the table.

[redacted]

4.1.5 Maintenance and Deferred Maintenance Reduction

The Laboratory recently completed the baseline inspection and interview process to identify the deferred maintenance mortgage, which as of July 31, 2003 was $564M (see Attachment F). Comparison of FY02 to FY03 reported deferred maintenance indicates a large increase in the amount of deferred maintenance. This increase is based on the baseline condition assessment project executed in FY03 and reflects the Laboratory's effort to identify deferred maintenance and is not indicative of a growth trend. A 4% annual growth rate is assumed, and the FY03 data reported herein is perceived to be an accurate and complete accounting.

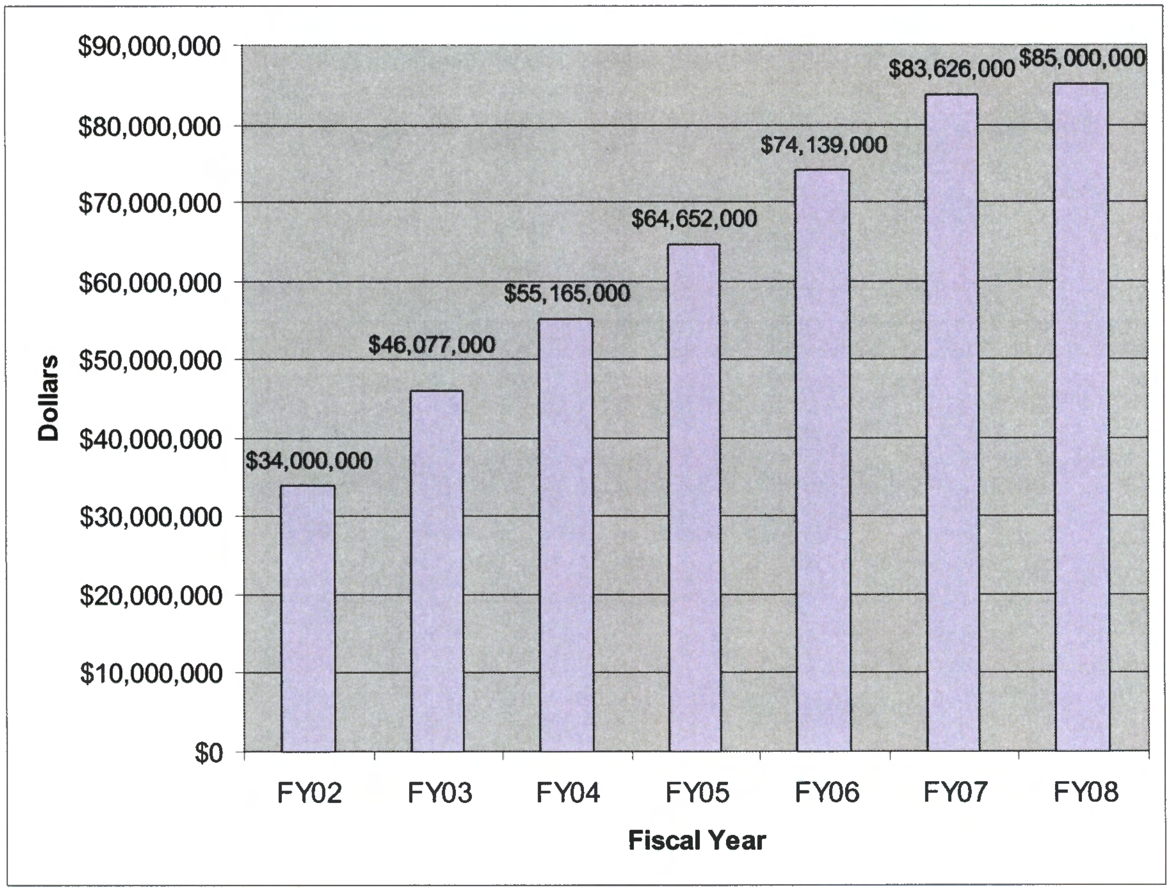
Projections for deferred maintenance reduction are based on the growth rate noted above, and the assumption that funding profiles for FIRP and RTBF funding will keep pace with inflation. In the case of RTBF funding, the reduction in total amounts authorized to spend in FY03 had a negative effect on the Laboratory's ability to meet the corporate goals for deferred maintenance reduction and limits confidence that once the reduction goals are met that the condition of the plant can be maintained over time.

Meeting the Corporate Goals

The following graphics show projections for the deferred maintenance in accordance with the corporate goals. The model assumes escalation of the RTBF funding for direct funded facilities and includes the projected levels of FIRP funding [redacted] Additionally, deferred maintenance is identified as a budget line in each building-level budget formulation sheet. The current effect of the deferred maintenance buy-down funded from sources other than FIRP is not known at this time, as the Laboratory has just completed the baseline condition assessment. During FY04, the effect will be better understood and factored into the models for the reduction plan. The following graphs depict the plan for reduction of deferred maintenance based on the stated assumptions.

[redacted] Reducing the deferred maintenance backlog to meet the goals requires FIRP funding as described in Figure 4-5.

Figure 4-5: FIRP funding profile required for deferred maintenance reduction.



FIRP funding levels with regard to current deferred maintenance identified appear to be adequate, as modeled, to address the reduction goals of NNSA. Assuming a continued maintenance funding gap inducing a 4% increase in deferred maintenance, and an identified deferred maintenance level of $570M, and the total identified FIRP allocation through FY08 of approximately $350M, the Laboratory can reach the NNSA goals. [redacted] This assumption is predicated on the required expense maintenance funding from other sources increasing to meet inflation. If the deferred maintenance growth rate increases, internal maintenance funding does not keep pace with inflation and plant needs, or the authorized funding is decreased, the aggregate goals will not be met by the end of FY08.

The following charts describe the deferred maintenance buy-down model based on the assumed FIRP funding above and required growth of the maintenance budge as described.

Figure 4-6: Enduring mission essential deferred maintenance reduction model.

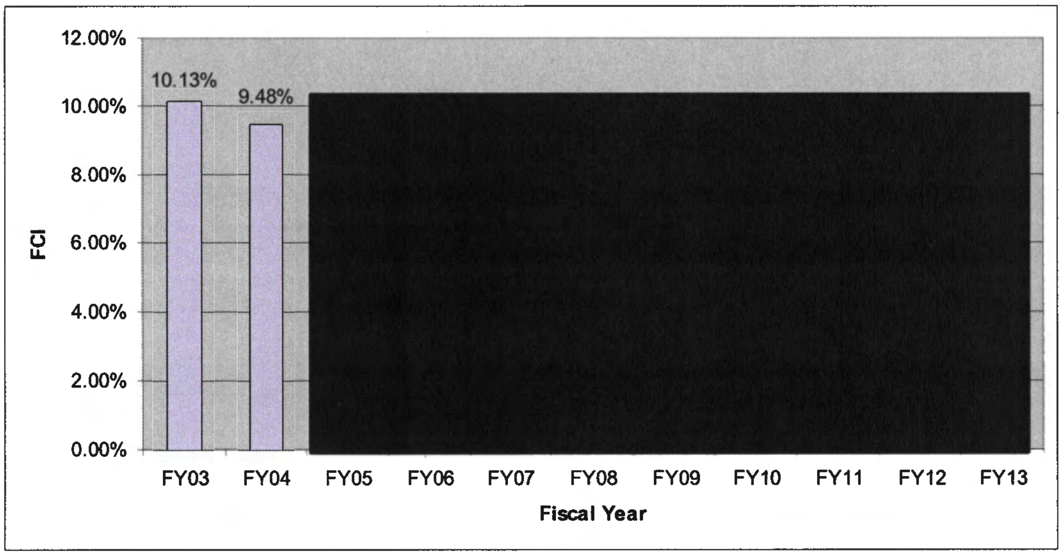


Figure 4-7: Proposed excess mission essential deferred maintenance reduction model.

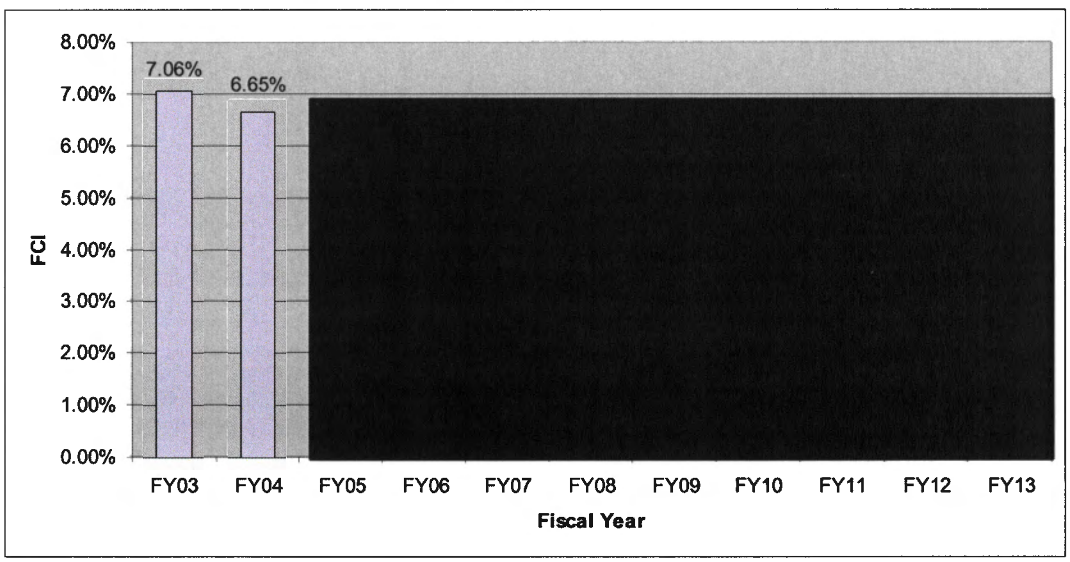
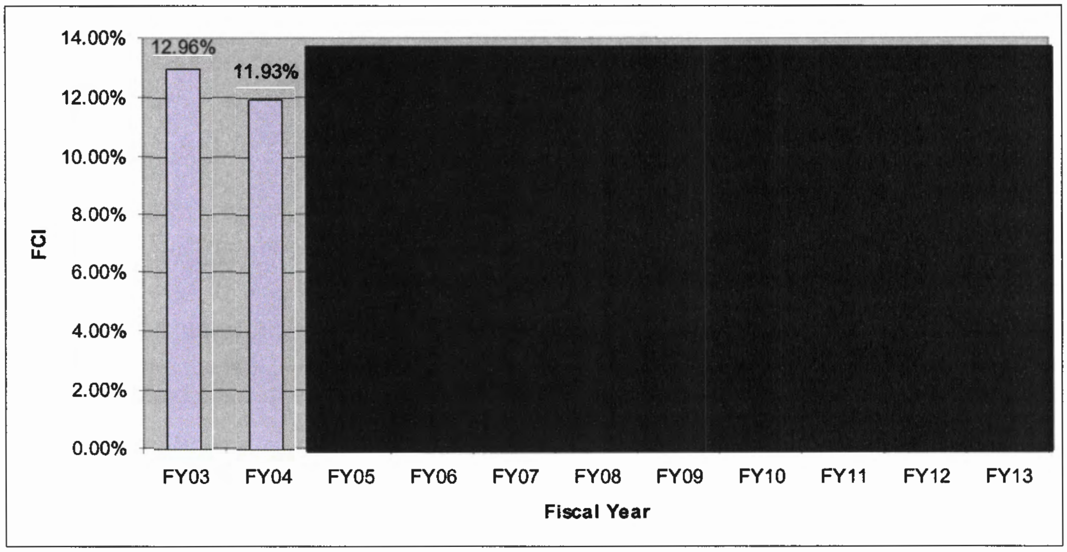
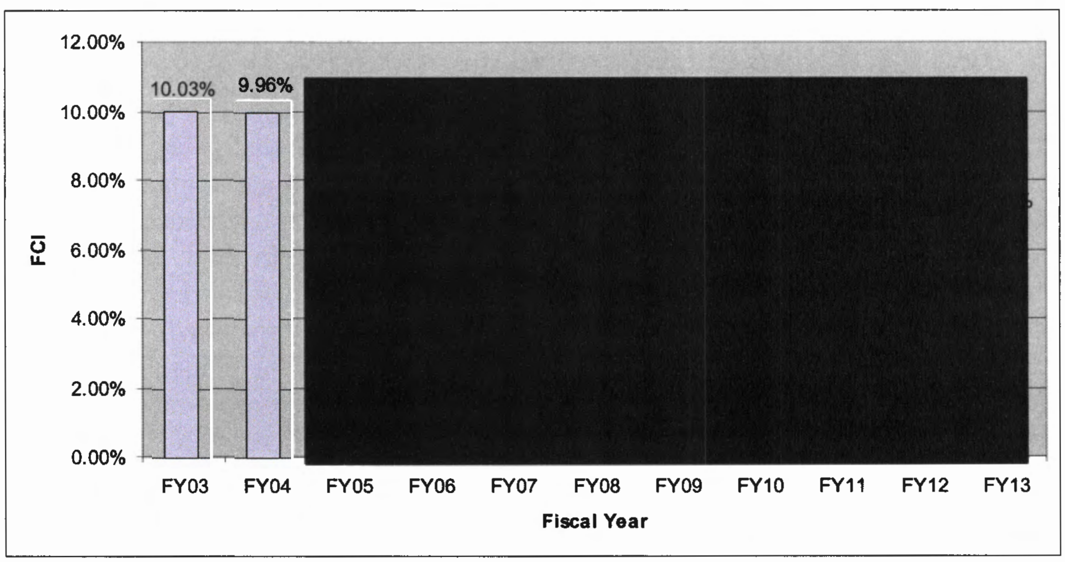


Figure 4-8: Balance of plant deferred maintenance reduction model (includes utilities and OSFs.



The following chart represents the FCI for assets in total (all three facility categories) with the needs/funding gap factored in. The chart depicts the FCI for all assets currently identified in FIMS.

Figure 4-9: Aggregate FCI.



Maintenance Needs versus Maintenance Funding Levels

The Laboratory must increase the maintenance budget [redacted] to meet the corporate goals and satisfy maintenance needs. This translates into an estimated [redacted] increment for the FY04 maintenance budget and for each year through FY08. Thereafter, an estimated [redacted] increment above inflation will be required, reflecting a [redacted] per year increase in the maintenance budget. The needs for maintenance as a function of RPV traditionally are utilized to indicate targets for appropriate levels of maintenance to sustain an asset, or group of assets, over their useful engineered life-cycle.

Whitestone Research (and others) would indicate that the levels of required maintenance range from 2% to 4% of the RPV for a typical asset. The Laboratory's current calculated RPV is $5.6B. At an estimated 2% of RPV maintenance investment (based on the age profile of the asset base), The Laboratory is expected to invest $112M in maintenance in FY04 based on the Whitestone model. The anticipated FY04 maintenance budget is $96M utilizing the above models, with FIRP closing the $14M "gap." The Laboratory spent $90M on maintenance in FY03 indicating an investment to RPV ratio of approximately 1.7%, appropriate, perhaps for a new asset base, but inadequate for the aged facility inventory.

This ratio indicates an under-funding scenario that will leave the Laboratory with a funding gap of approximately $2M/year, contributing to a growth of deferred maintenance. With the addition of FIRP funding, the gap is closed and provision is created to invest FIRP funding allocations toward reducing deferred maintenance. The assumptions in the graphical plan (above) model the current financial environment. An annual maintenance work planning process is being developed to help allocate maintenance and facility-related investments with the goal of maximizing efficient use of authorized funding from all sources.

In addition to RTBF, which funds maintenance of the mission essential facilities, the Laboratory taxes itself internally to fund maintenance of the balance of plant. The funding structure targets science as the mission of the Laboratory and consequently directs funding as necessary to execute its mission. Maintenance funding, as a tax, limits the funds available to execute the primary mission of the Laboratory and was historically allocated based on minimum impact to the primary science mission. The Laboratory has embarked on a path to clearly identify the maintenance needs of the plant and is now better able to identify the funding necessary to sustain the asset base for facilities and infrastructure. Historically, funding requests from the budget process were based on historical spending profiles and current escalation factors. Utilizing this methodology, the growth of the budget is limited to the increase of the cost of money. The historical level of budget requests and consequent funding authorization did not consider the true needs of the plant.

Proactive Steps to Reducing Deferred Maintenance

Deferred maintenance reduction budget requests are included in the annual maintenance work plan. The prioritized requests will be funded at the FM, Division, and Institutional levels as funding becomes available. Deferred maintenance reduction project funding requests are submitted to the FWO Institutional Projects Office (FWO-IP) for consideration for FIRP funding. The level of funding requested is based on the "optimum year" for correction of deficiencies or identified needs within an asset. The optimum year is determined via a prioritization process that evaluates likelihood of failure of a structure, system or component, and consequence to the program/process in the event of failure. The deferred maintenance reduction and re-capitalization needs, at a building level, are included in the annual work plan for each building when the optimum year for corrective action is less than, or equal to the budget year. This approach provides visibility to all potential funding streams to procure funding. Prioritization provides a method to remove corrective activities from the execution plan when funding or programmatic needs dictate.

Reduction in deferred maintenance is an important aspect of facility management. FWO Division has assumed responsibility for management of deferred maintenance reduction project management through the FWO-IP Office. FWO-IP applies rigor in project management and program execution to assure that allocated resources are focused on projects that stabilize or reduce deferred maintenance across the Laboratory. Funding requests for deferred maintenance reduction projects are identified, developed and focused through the CAS Program with execution oversight from the Program Office. Projects are planned in advance of need for corrective activity and the authorization for project funding is coordinated through a single entity within the Laboratory. There is a dedicated staff to insure the proper level of effort and rigor is applied to the program.

FWO is undertaking other reengineering efforts to ensure proper facility management and maintenance. A new budget formulation process is being designed to identify the true facility management needs in order to better manage the needs versus authorized funding gap. Work management processes are being crafted to realize efficiencies. Accounting functions are being changed to provide visibility and transparency in actual expenditures and feed a process of continuous improvement in maintenance work management. Process performance measurement indicators that drive corrective behavior are being crafted and implemented. Other reengineering elements include the following:

- Integrating the CAS program into the maintenance management, work control processes and real property management requirements,
- Prioritizing maintenance activity to include deferred maintenance in the annual work planning process,

- Restructuring the FM organization to centralize, standardize, and integrate maintenance processes to address deferred maintenance and general plant management,
- Adapting the Lawrence Livermore National Laboratory Facility Asset and Ranking System (FAaRS) as a prioritization tool to direct maintenance effort to mission essential facilities and sensible candidates for re-use or mission adaptability,
- Developing financial models for maintenance needs based on Whitestone Research models and piloting Whitestone software to validate maintenance and capital reinvestment, and
- Developing and implementing a budget process based on the facility master equipment list (MEL) to ensure inclusion of deferred maintenance reduction elements in the annual budget submittal.

Measuring Progress and Laboratory Objectives

The corporate goals for deferred maintenance reduction were established by NNSA and agreed to by each NNSA site. The Laboratory has identified its own set of objectives for meeting the corporate goals.

- **FY04 Objective 1:** Towards stabilizing deferred maintenance growth, the Laboratory will increase the maintenance budgets by 6% in FY04.

- **FY04 Objective 2:** Through the application of FIRP funds, execute $ 22M of reported deferred maintenance deficiencies identified in the CAIS2000 database.

The Laboratory will utilize the work management system to plan and execute work and capture expenditures targeted toward deferred maintenance reduction. The work management cost data will be correlated to the CAIS2000 database to identify and report deferred maintenance status. The budget formulation process for FY04 provides a discrete line and associated budget codes to identify indirect funded and some direct funded deferred maintenance projects and track execution at a building level. Direct funded FIRP projects that meet or exceed GPP level funding requirements are identified through the Infrastructure Programs Office within FWO-IP. Projects that affect reduction in deferred maintenance will be tracked through the FWO-IP project Office. Deferred maintenance buy-down as a result of project execution will be captured in the LANL CAIS2000 database and reported as required.

Facility Management Processes for Effective Maintenance—Cost/Optimized Availability Approach

The Laboratory is developing and beta testing a performance measurement model that provides real-time input for analysis and corrective actions. The process is currently targeted at workflow management to mine resources and efficiencies from existing budgets and human resources. The measurement capability of the system is not limited to work flow management, and will be expanded to other areas as it is proven and implemented Lab-wide. The goal is to have the system robust in all areas of maintenance and work management to provide information that helps manage the facilities for optimized availability.

The system, known as the Inspection Deficiency Report (IDR) system is modeled after a similar system in use by the United States Navy for shore-side ship maintenance. The measurement data regarding workflow stagnation is provided by all personnel involved in the planning, scheduling, procurement, staging and execution of facility-related maintenance work.

The preventive and predictive maintenance plan is developed directly from the facility MEL. All FMs are actively engaged in reviewing and updating the MEL. The MEL forms the basis for the PM/PdM (fixed cost) budget for each fiscal year. The MEL is recognized as the core of the maintenance program and is being analyzed with respect to the corrective maintenance (variable costs) expenditures to target opportunities to optimize the maintenance program. Where PM/CM ratios deviate from the industry norm of 70% / 30%, analysis and iterative continuous improvement corrective action is taking place. The goals of the IDR system approach, much like the Navy's ship maintenance approach, is to optimize asset availability by managing the high-cost level of effort inherent in corrective maintenance, and redirect the resources to preventive and predictive maintenance. Reductions in cost (cost savings in any given year) will be reinvested for deferred maintenance reduction.

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4.1.6 Utilities

The ownership and distribution of utility services are split between DOE and Los Alamos County. Utility systems at the Laboratory include electrical service, natural gas, steam, water, sanitary wastewater, telecommunications and data networks, and refuse. Electrical service includes a Public Service Company of New Mexico 115 kilovolt (kV) line from Albuquerque, a DOE owned 115 kV power transmission line from the Norton substation, and a steam/power plant at TA-3 used on an as-needed basis. Distribution power consists of approximately 34 miles of 13.2 kV distribution lines connecting to the input side of low-voltage transformers at Laboratory facilities. The natural gas system includes a DOE-owned high-pressure main and distribution system throughout Los Alamos County and pressure-reducing stations at Laboratory buildings. Steam systems include generation and distribution at TA-3 and TA-21. The water system includes supply wells, water chlorination, pumping stations, storage tanks, and distribution systems. Sanitary wastewater systems include septic tanks and a centralized sanitary wastewater collection system and treatment plant. Refuse collection and disposal is handled by the Support Services Subcontractor and combined with refuse from Los Alamos County in a landfill managed by Los Alamos County on land leased from DOE.

Table 4-9: Utility system lengths.

		Approximate Length (feet)
Electrical System	Primary Overhead	213,900
	Primary Underground	130,500
	Noncategorized Primary	291,000
	115 kV Transmission	117,300
	Total Electrical	752,700
Sanitary Sewer System	Drain	100
	Effluent	18,700
	Force Mains	57,900
	Gravity	667,800
	Total Sanitary Sewer	744,500
Water System	Distribution	476,600
	Drain	2,400
	Nonpotable	62,100
	Service	88,000
	Transmission	237,200
	Total Water	866,300
Natural Gas System	Distribution	307,100
	Service	167,700
	Total Natural Gas	474,800

General Utility Issues

Utility issues at the Laboratory are both site-wide and utility-specific. The general site-wide utility issues are discussed below followed by individual system issues. The Laboratory's major utility systems are aging. Deterioration of these systems could cause service disruptions and create safety hazards. Modernizing of the Laboratory's utility infrastructure is therefore important. Table 4-10 shows when underground piping was installed at the Laboratory and illustrates the aging utility infrastructure.

Table 4-10: Percentage of underground utility piping installation by decade.

Utility	1940s	1950s	1960s	1970s	1980s	1990s
Sanitary Sewer	N/A	22%	11%	6%	17%	44%
Natural Gas	N/A	46%	36%	10%	7%	1%
Steam	N/A	86%	0%	4%	10%	0%
Water	38%	26%	12%	5%	16%	3%

The major utility systems were not installed within designated utility corridors, but were installed via the shortest route possible and on an as-needed basis. The result is a maze of utility lines. This causes high development costs for new facility construction when utilities must be relocated. By locating utilities in corridors planned to accommodate future expansion and by planning developments accordingly, the Laboratory will be able to grow efficiently and to better achieve its mission.

The existing layout and size of the Laboratory has resulted in the decentralization of utility systems and service. This decentralization has resulted in reduced efficiency and increased costs. Focusing growth in development areas serviced by major utility corridors and providing infrastructure in areas projected to grow would facilitate cost efficient and effective development and maintenance of the utility system.

The incremental nature of development at the Laboratory along with programmatic changes has resulted in the piecemeal retrofitting of utilities to accommodate expansion. This has been excessively expensive, energy inefficient, and has resulted in utility downtime. Planning and constructing looped utility systems to accommodate needs projected for the expansion of any development site would eliminate the costly and inefficient retrofitting of systems.

The Laboratory in conjunction with DOE has identified a need to be more competitive and to improve utility business operations more like the standards in the utility industry. Areas targeted in this effort are to improve each utility system's reliability, to improve energy management and conservation, to increase water conservation, and to transfer gas and water transmission facilities that are more efficiently operated and maintained by a public utility company. Making improvements in these areas will result in overall cost savings and reduced utility rates. Performance measures for reliability and energy savings are in place.

Electrical Power

The Laboratory is supplied with electrical power through a partnership arrangement with Los Alamos County, known as the Los Alamos Power Pool, which was established in 1985. The capacity rating of the Pool resources, less losses, is 105 megawatts (MW) and 83 MW (summer and winter seasons, respectively). The transmission import capacity is contractually limited to 105 MW and 83 MW (summer and winter seasons, respectively). Power delivered to the Pool is limited by the two existing regional 115 kV transmission lines.

Onsite electric generating capacity for the Pool is limited to the existing TA-3 steam/power plant, which has an operating capacity of 12 MW in the summer and 15 MW in the winter.

There are approximately 140 miles of transmission and primary electrical distribution lines at the Laboratory. Although the Laboratory's electrical power system is in generally good operating condition, there are specific concerns that will require attention.

- Switchgear and circuit breakers in several locations are old and obsolete for the current system and need to be replaced.
- Step-down transformers, which supply all the electric power to the Laboratory's main technical area (TA-3) and the Los Alamos townsite, are old and do not provide adequate redundancy. At TA-3, the 50-year old transformers (30 MW capability each) serve a 50 MW-plus load. Since a single transformer cannot address the entire load, there is no redundancy.
- The two existing 115 kV transmission lines that carry all the bulk electric power for the Laboratory and Los Alamos County terminate on a common bus and therefore lack true redundancy.

- The program to monitor usage, power quality, and log events does not cover all applicable buildings and needs to be expanded.

Portions of the 13.8 kV aerial distribution lines are not adequate to carry the anticipated loads in 2011. Replacing existing conductors with heavier conductors and adding new circuits to support them are required to accommodate these future loads. This replacement work has been done for some recent projects (DARHT, Weapons Engineering Tritium Facility (WETF), the Metropolis Center, and NISC) and will continue for new projects.

Electrical Power Projects

[redacted]

Sanitary Waste Disposal System

Sanitary liquid wastes are delivered by dedicated pipelines to the sanitary wastewater systems consolidation (SWSC) plant at TA-46. The plant has a design capacity of 600,000 gallons per day. Some septic tank pumpings are delivered periodically to the plant for treatment via tanker truck. After treatment, the liquid is currently recycled to the TA-3 power plant for use in cooling towers or is discharged to Sandia Canyon under an NPDES permit and groundwater discharge plan. The solids are dried in beds at the SWSC plant and are applied as fertilizer as authorized by the existing NPDES permit.

The sanitary wastewater collection system is in poor to satisfactory operating condition, with many miles of aged and obsolete underground piping that needs to be replaced or upgraded. There are areas of the Laboratory that are served by pumping stations instead of gravity sewers. Replacement of these stations with the lower maintenance and operating cost gravity sewers will increase capacity and upgrade the system. The treatment plant is in excellent operating condition and will adequately accommodate future demand.

Sanitary Waste Projects

[redacted]

Radioactive Liquid Waste (RLW)

There are three treatment facilities for handling the Laboratory's RLW—at TA-21, TA-53, and TA-50, and a collection system that consists of 22,000 feet of piping. Both the TA-21 and TA-50 treatment facilities (RLWTFs) are over 35 years old and in poor condition. The TA-50 facility is undersized for handling its current load of waste generated by approximately 1,800 points at the Laboratory. Other concerns are separated treatment operations and inadequate storage capacity, which could be overwhelmed by a surge of RLW. The piping in the collection system is in good condition, however flow meters at generator facilities do not function well and it is difficult to sample RLW for compliance with acceptance criteria.

RLW Projects

[redacted]

Central Steam System

The Laboratory has two primary sources of steam, the power plant in TA-3 and the TA-21 distributed steam plant, with capabilities of 360,000 pounds per hour and 36,000 pounds per hour, respectively. The power and generation plants have the capacity to deliver three times the current demand, and this will accommodate future development in the TA-3 area. Steam distribution is primarily underground in over 20 miles of aging steel piping. Approximately 86% of all the steam underground piping was installed in the 1950s. The return condensate system has several problems as follows:

- Steam system return lines are made of various materials, only some of which have cathodic protection, and deterioration is rapid in certain areas,
- A condensate return rate of 50% is currently achieved and should be increased to improve central plant performance, and
- There are sections of the steam system that have had a high leak rate and high repair requirements that need replacement.

Central Steam Projects

[redacted]

Water Supply System

Before September 8, 1998, DOE supplied all potable water for the Laboratory, Bandelier National Monument, and Los Alamos County. This water was obtained from DOE's groundwater right to withdraw 5,541.3 acre-feet/year or about 1,806 million gallons of water per year from the main aquifer and 1,200 acre-feet/year from the San Juan/Chama Transmountain Diversion Project. On September 5, 2001, DOE conveyed 70% of the entire groundwater right and 100% of the right to San Juan Chama water to the County. The County is currently performing an engineering feasibility study of utilization of San Juan Chama waters.

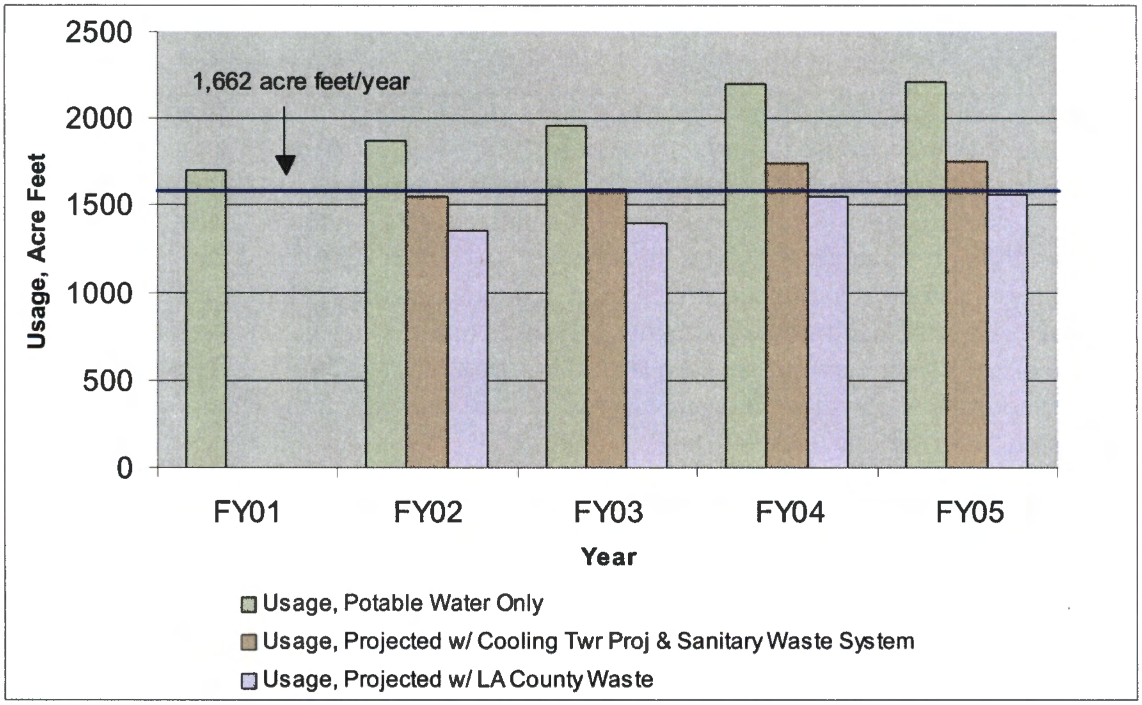
The Laboratory has a target water consumption of 1,662 acre-feet/year. Water demand based on projected growth may require water beyond recent usage levels. In accordance with the LANL Site-Wide Water Conservation Plan key recommendation, an Interim Water Conservation Committee has been established and an Acting Water Conservation Officer appointed.

In order to address the concerns over future water availability, the Laboratory has initiated a project to increase the TA-3 and TA-53 cooling towers' cycles of concentration from two to six and is investigating the following water saving opportunities:

[redacted]

Figure 4-10 illustrates the anticipated effects of water conservation on total water usage.

Figure 4-10: Effects of water conservation on total water usage.



Potable water is obtained from deep wells located in three well fields. This water is pumped into production lines, and booster pump stations lift this water to reservoir storage tanks for distribution. The well fields can easily provide forecasted water demands for the next 10 years. The Laboratory water system is in generally good condition with the following two areas of concern:

- The water pressure in lower-elevation areas often exceeds the pressure rating for the distribution pipe, and

- Some fire hydrants are connected to undersized lines that need to be replaced.

Water Supply System Projects

[redacted]

Natural Gas

Approximately 80% of the natural gas used is for heating (both steam and hot air), and the remainder is used for electrical production. The electrical generation is used to fill the difference between peak loads, electric transmission curtailments, plant testing, and the electric contractual import rights. In general, the natural gas system is old, with approximately 80% having been installed in the 1950s and 1960s. An aggressive cathodic protection installation and maintenance system was deployed about 1988, and this improved the integrity and condition of the system. However, there is one current area of concern with the natural gas system. The three-inch gas pipe serving TA-55 is too small to carry peak load capacity in the event of loss of the six-inch main serving TA-55.

Natural Gas Projects

[redacted]

Utility Planning

The Laboratory has a Mitigation Action Plan for its utility systems that addresses in part specific measures for electrical power. The SWEIS Mitigation Action Plan 2001 Annual Report is valid for the next two years and includes: 10 year bulk electrical forecast to DOE; secure additional electrical services; yearly update of load shedding procedure; power consumption plan for fixed consumption level; options survey by DOE and the Laboratory; and utility procurement plan by DOE.

Planning for Each Utility

[redacted]

The Laboratory has undertaken a Utilities Condition Assessment Plan to assess the existing and future condition of the Laboratory's water, gas, wastewater, electric, and steam outside distribution, collection, and transmission systems.

This plan will include the consolidation, analysis, and trending of preventative and corrective maintenance observations provided by system engineers and supervisors. Information will be used to plan short and long-range projects to improve all utility systems. Factors to be considered are the future utility system capabilities, potential threats to existing services such as the end-of-operating life issues, maintenance history, and alternative solutions to ensure adequate utility delivery systems.

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4.2 PRODUCTION READINESS / PLANT CAPACITY

The *FY 2002 Production Readiness Assessment Site Manager's Report (U)* addresses facility and infrastructure readiness/plant capacity issues and the activities that are underway or planned to alleviate deficiencies. These issues are summarized below, with facilities grouped separately as "nuclear" and "non-nuclear" facilities.

4.2.1 Directed Stockpile Work Management

Los Alamos DSW production is funded by NA-12 and is integrated with design agencies at Lawrence Livermore National Laboratory and Sandia National Laboratory (SNL). Production projects also interface with other weapons complex sites by supplying products or receiving components for use in manufacturing weapons parts and systems. Facilities, equipment, personnel, and infrastructure resources are integral in producing the parts used to certify the safety and reliability of the stockpile. Activities that compete with production for these resources include nuclear and non-nuclear parts for aboveground tests and sub-critical experiments, surveillance of parts returned from the stockpile, fabrication of mock pits, and process and product development. The Laboratory's Associate Director for Weapons, Engineering and Manufacturing (ADWEM) manages allocation of funding for Stockpile Stewardship and Management programs. The ADWEM line organizations manage the allocation of facility, equipment, and personnel resources to support the various program projects.

4.2.2 DSW Facilities

Many facilities are required for production and surveillance activities that support the DSW mission. Table 4-11 lists the key facilities that support pit production and surveillance, detonator component production and surveillance, neutron tube target loading, mock pit fabrication, detonator packaging, and other surveillance/manufacturing infrastructure activities. This table also contains facilities that support operation of production facilities.

Table 4-11: Key facilities supporting DSW mission needs.

DSW Project	Key Facilities
Production	
Pit Production	• TA-55 Plutonium Facility • TA-3 CMR Building • TA-3 Sigma Complex • TA-3 Main Shops • TA-64-1 Central Guard Facility • TA-50 Liquid Waste Treatment Facility • TA-54 Solid Waste Management Facility • TA-8 Radiography Buildings
Detonator Production	TA-22 Detonator Production and Test Facilities
Neutron Tube Target Loading	• TA-21-209 Tritium Science Technology Building • TA-16-450 Weapons Engineering Tritium Facility
Mock Pit Production	• TA-3 Sigma Complex • TA-3 Main Shops
Beryllium Manufacturing	• TA-3-141 Beryllium Technology Facility • TA-3 Main Shops
Detonator Packaging and Transportation	TA-22 Packaging Buildings
Manufacturing Infrastructure	• TA-16-200 Secure Computing • TA-16 Office Buildings
Surveillance	
Pit Surveillance	• TA-55 Plutonium Facility • TA-3 CMR Building • TA-3 Main Shops • TA-64-1 Central Guard Facility • TA-50 Liquid Waste Treatment Facility • TA-54 Solid Waste Management Facility • TA-8 Radiography Facility • NTS
Actuator Surveillance	• TA-22 Detonator Production and Test Facilities • TA-16
Valve Surveillance	• TA-16-209 Inspection Facility • TA-16
Detonator Surveillance	• TA-22 Detonator Production and Test Facilities
Other Surveillance	• TA-55 Plutonium Facility

Descriptions of mission assignment and facility improvements needed are summarized in the following sections. The information is grouped into separated sections for nuclear facilities, non-nuclear facilities, and manufacturing infrastructure. This grouping parallels the Laboratory's facility management organization, where non-reactor nuclear facilities are managed separately from other facilities. None of these facilities are exclusively dedicated to DSW work; therefore their management and facility priorities reflect multiple demands on staff, equipment, and physical plant. A description of the institutional planning process and long-range plans for these and related Laboratory facilities are available in the Laboratory's *Comprehensive Site Plan 2001*, LA-UR-01-1838.

Nuclear Facilities

This section presents the Laboratory's nuclear facilities in Table 4-12, and the list is comprised of those facilities that primarily support pit production, pit surveillance, and neutron tube target loading activities.

Table 4-12: Nuclear facility status for DSW missions.

Facility Status	Function(s)	Issues	Activities Underway to Address Issues
TA-55 Plutonium Facility			
Facility currently meeting DSW needs. Modifications are required to meet future capacity demands for production and storage.	• Pit manufacturing foundry, machining, joining, welding, assembly, inspection, and testing • In-process pit NDT • Pit process and product development • Pit surveillance disassembly, inspection and evaluation • Fabrication of pit certification program parts and components • Recovery of stored legacy plutonium material • Vault storage of pit and RTG items, shelf-life units, materials awaiting processing, 'in-process' materials/items, scrap materials and finished product • Process control analytical chemistry	• Facility >20 years old and in need of plant support system upgrades • Constrained production capacity due to: 1. Limited process and inspection equipment 2. Limited floor space for production 3. Inadequate vault storage capacity for stockpile and surplus 4. Equipment shared with other functions	[redacted]

Table 4-12 Continued

Facility Status	Function(s)	Issues	Activities Underway to Address Issues
TA-3 CMR Building			
Facility is marginal in ability to reliably support future missions	Analytical chemistry and material characterization support for TA-55	Facility 50 years old; in need of replacement	[redacted]
TA-21-209 Tritium Science and Technology Building TA-16-450 Weapons Engineering Tritium Facility (WETF)			
Facility addition and equipment will come on line to support future DSW mission needs after 2001	Neutron tube target loading currently at TA-21-209 must relocate to TA-16 WETF	• One currently operational loader not capable of supporting future schedule • Building 16-450 at WETF will be operational to allow installation of one loader, relocation of a loader from TA-21-209, and installation of a third loader in FY03	[redacted]
TA-50 Radioactive Liquid Waste Treatment Facility			
Facility is currently supporting DSW missions	Final treatment of liquid radioactive and industrial wastes from TA-55, CMR, TA-21, TA-16, Sigma, and Main Shops	40 year old facility in need of plant and treatment process improvements	[redacted]
TA-54 Solid Waste Management Facility			
Facility is currently able to support DSW missions	Management of solid radioactive waste generated at TA-55, CMR, TA-21-209, and TA-16 nuclear facilities and TA-3 Sigma and Main Shops.	Transfer of TRU waste stored at TA-54 to WIPP proceeding	N/A

The overall production mission for neutron tubes and neutron generators is an SNL mission. Los Alamos has the portion of the production mission involving tritium loading of the targets used in every neutron tube produced at Sandia. Current requirements on the secondary schedule for neutron tube targets are being met using one loader. Future production requirements will require two or more loaders, and a facility is being reconfigured and upgraded to house the production equipment. Scheduled completion in 2003 will permit loading operations to be moved from existing facilities to the upgraded WETF building (TA-16-450).

Non-nuclear Facilities

In 1993, the Non-nuclear Reconfiguration Program (NNR) began transferring activities from Rocky Flats, Mound and Pinellas to other sites in the weapons complex. As a result of the NNR changes, Los Alamos became responsibile for fabricating weapons detonators and beryllium parts, making mock pits for joint test assemblies, surveillance of detonators removed from stockpile systems, and loading tube targets needed for neutron generators fabricated at SNL.

The non-nuclear facilities presented in Table 4-13 support pit and mock pit production, beryllium parts production, detonator production and surveillance, actuator surveillance, and valve surveillance.

Beryllium operations have been conducted at Los Alamos for over 40 years. Consequently, NNSA directed Los Alamos to capture the beryllium technologies that existed at the Rocky Flats plant after it closed. To enable Los Alamos to produce beryllium components for the nuclear weapons stockpile in a single facility, a building (TA-3-141) was refurbished and designated as the Beryllium Technology Facility (BTF). Los Alamos completed the Readiness Assessment for the BTF in FY 2001 and completed fabrication of the first parts in April 2001.

Table 4-13: Non-nuclear facility status for DSW missions.

Facility Status	Function	Issues	Activities Underway to Address Issues
TA-3-66 Sigma Building			
Facility is marginal in ability to support future DSW missions	• Mock pit fabrication • Welding/ joining development	• >45 year old facility needs plant upgrades for continued operations • Additional process equipment needed	No projects planned or funded to upgrade facility
TA-3-141 Beryllium Technology Facility (BTF)			
New facility is on-line and machining beryllium parts	• Supports pit and mock pit production • Beryllium part fabrication • Beryllium material supply • Coating of beryllium parts	Facility does not currently house the entire suite of capabilities necessary for the entire Be life cycle	[redacted]
TA-8 Radiography Buildings			
Facility is currently meeting DSW support needs	• Nondestructive testing of pit parts, pit assemblies, and other DSW products • Certification support for non-DSW components	• Capacity issue for remote site • Requires transport and significant security • Working on capability at TA-55	[redacted]
TA-22 Detonator Production and Test Facilities			
Current production rate utilizes full production capability and floor space of primary building	• Detonator production • Detonator inspection and testing • Actuator and detonator surveillance and testing	Expanded facilities and additional production and test equipment needed for increasing DSW requirements in addition to buying detonators	[redacted]

Table 4-13 Continued

Facility Status	Function	Issues	Activities Underway to Address Issues
TA-3-39/102 Main Shops			
Facility is marginal in long term ability to support DSW missions	• Supports pit and mock pit production • Depleted uranium machining and inspection	• >45 year old facility needs plant upgrades • Additional equipment needed to meet production schedules	[redacted]
TA-22 Packaging Buildings			
Facilities can support DSW missions	Detonator and related item transportation container storage, inspection and management	N/A	
TA-16-209 Inspection Facility			
Facility can support DSW missions	Valve surveillance	No notable issues at 16-209	
TA-64-1 Central Guard Facility			
Facility is able to support DSW missions	• Central alarm station for security systems • Houses security operations staff and systems	Alarm system in need of upgrade	

Currently, beryllium items are the only components on the directive schedule. [redacted] In addition, the BTF will need to produce beryllide components that will require extensive R&D, new equipment, and additional space. Other programs that require the BTF are fabrication of mock pits and components for hydrodynamic tests and subcritical experiments.

Responsibility for detonator manufacturing was transferred to LANL from Mound between 1993 and 1998. The production mission was constrained to existing facilities that were designed for R&D activities. Since the mission assignment to Los Alamos, both the required production quantities for each detonator system and the number of detonator types being fabricated simultaneously have increased significantly; the surveillance program competes for resources in the inspection and test firing stations.

Manufacturing Infrastructure

The Laboratory's facilities needed for the manufacturing infrastructure activities supporting DSW are listed below.

Table 4-14: Manufacturing infrastructure facility status for DSW missions.

Facility Status	Function(s)	Issues
TA-41-1 Storage		
Facility has been phased out of DSW support missions	Provides bonded storage and receiving of classified parts and materials	• Facility is aging and remote from supported DSW operations • Risk of flash floods following the Cerro Grande fire caused permanent personnel relocation to TA-16; functions are being transferred to TA-16 although some material is still stored here
TA-16 Office Buildings and Secure Computing		
Facility can support DSW missions	Houses ERP/IFS system personnel and work stations	No notable issues

One important aspect of the Laboratory's infrastructure development is covered under the Non-nuclear Readiness campaign for streamlining business practices. This task creates a supply chain assurance for engineering materials by developing business conventions and quality assurance standards for acquisition of commercial off-the-shelf components. The critical areas addressed include: leveraging best industry practices and solutions; reliability assessment and component qualification for WR use; component modeling to aid selection; and assessment of component performance under process conditions.

4.3 ES&H REGULATORY ISSUES

The Laboratory's ES&H management processes are designed to enhance ES&H performance, preparation of tactical and strategic plans, achievement of Operational Excellence Goals, business efficiency, Appendix F of the UC/DOE Prime Contract performance expectations, and most importantly, the Laboratory's commitment to the DOE policy of attaining "daily excellence in the protection of the worker, the public, and the environment." Issues and funding presented below were developed in response to the FY05 Unified Budget Call that included the NNSA ES&H Management Process requirement for FY03-FY09.

Compliance issues relate to non-compliances with NNSA directives, and federal or state laws and regulations. Commitments are issues relating to non-NNSA "regulators" such as the DNFSB or the Environmental Protection Agency (EPA).

Table 4-15 ES&H activities and issues.

Compliance Issues	Funding
Quality Assurance Improvement	Funded
Appendix F Safety Analyses	Funded
Hydrogeologic Work Plan	Funded
New Mexico Environmental Department (NMED) Corrective Action Order	To be determined
Commitments	**Funding**
Ozone Depleting Equipment 2005	Funded
DNFSB Recommendation 2000-2	Funded

Resource adjustments throughout each fiscal year are managed through the Laboratory's continuously improving ES&H management processes, which require managers to thoroughly define project/program scope, identify ES&H hazards, establish ES&H resource requirements, monitor progress, and relay data to responsible management and funding organizations.

4.3.1 Compliance Issues

Currently, two compliance activities (Hydrogeologic Work Plan and New Mexico Environment Department (NMED) Corrective Action Order) and one commitment (DNFSB Recommendation 2002-2) are under funded in future years. In addition, key issues that can affect facilities (Quality Assurance, Ozone Depleting Equipment, and AB) are noted below.

Hydrogeologic Work Plan

The Laboratory's Hydrogeologic Work Plan describes activities necessary to characterize the hydrogeologic setting and enhance the Laboratory's groundwater monitoring program. The original plan scope included installation of up to 32 regional aquifer wells over seven years (FY99 through FY05) with joint funding by DOE EM and DP. In 2002, NMED initially issued a finding of Imminent and Substantial Endangerment (ISE) with an accompanying Corrective Action Order, which was withdrawn and reissued as an Order on Consent. Requirements of the Order on Consent, which is currently being negotiated, replace and move beyond the requirements of the Hydrogeologic Workplan. The plan will be considered complete upon closure of the following activities:

- Six wells (R-2, R-4, R-6, R-11, R-26, and R-29) installed in calendar year 2003,
- Fact sheets and completion reports for these wells provided to NMED within 30 days and 120 days, respectively, after the completion of the wells, and
- Submission of the hydrogeologic setting report provided to NMED by the end of calendar year (CY) 2004.

With implementation of these activities, NMED has tentatively agreed that all requirements for site-wide hydrogeologic characterization included in the RCRA permit, the Hazardous & Solid Waste Amendments (HSWA) module, the Corrective Action Order, and the two 1995 NMED letters will be fulfilled. Thus, the Hydrogeologic Work Plan will have been completed with the installation of 23 of the 32 planned wells. The remaining nine wells will be included in consent order.

In addition, negotiations on the consent order include:

- Requirements for 2003 and 2004, such as preparation of Investigation Work Plans to specify future Resource Conservation and Recovery Act (RCRA) groundwater investigation activities, and

- An "Interim Facility-Wide Water Monitoring Plan" to include RCRA-related monitoring activities for wells installed in 2003 and other existing wells.

With implementation of these activities, NMED should agree that all requirements for site-wide hydrogeologic characterization included in the RCRA permit, the HSWA module, the Corrective Action Order, and the two 1995 NMED letters will be fulfilled.

The following table represents the funding profile for completion of the planned monitoring wells during the FY03-FY06 timeframe.

Table 4-16: Funding for monitoring wells through FY06 ($K).

Funding Source	FY03	FY04	FY05	FY06
RTBF/Operations of Facilities	6,900	10,000	[redacted]	[redacted]
ER	6,000	6,000		
TOTAL	**12,900**	**16,000**		

The negotiated order on consent will contain requirements for installation of additional site specific characterization/monitoring wells in order to complete the corrective action process. Many of these wells will be installed to determine the nature and extent of groundwater contamination. The order will set forth a schedule for installation of these wells, which will be funded by DOE EM, over the next 10 plus years. The order will also contain a requirement for a comprehensive groundwater monitoring program with a quarterly reporting requirement that will be ongoing for the foreseeable future.

In addition, the Laboratory's Performance Management Plan for Accelerating Cleanup sets forth a plan completing the EM mission by 2015. 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 will be down gradient 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, RCRA units and groundwater discharge plans. However, additional wells are expected to be needed to fulfill all groundwater monitoring needs and the ten wells proposed comprise the EM required component for monitoring.

NMED Corrective Action Order

On May 2, 2002, NMED issued a determination to the Laboratory alleging that radioactive, hazardous, and solid wastes have been released and "may present an imminent and substantial endangerment to human health or the environment" (ISE Determination). NMED also released for public comment a Draft Order requiring corrective action based on the ISE Determination. Both NNSA/DOE and UC took strong exception to these two actions and provided comprehensive legal and technical comments to NMED.

On November 26, 2002, NMED issued a Final Order alleging an ISE. On December 26, 2002, NNSA/DOE and UC filed protective lawsuits appealing and challenging the order, and negotiations began in January 2003. Extensive requirements contained in the order include the following:

- Monitoring and sampling of all Laboratory canyons,
- Groundwater monitoring wells,
- TA-54 (Solid Waste Site) investigation,
- Investigation and cleanup of solid waste management units,
- Cleanup of soil, ground water, and surface water,
- Procedural methods for sampling and analysis, and
- Compliance schedule.

The costs associated with these compliance activities are being evaluated and funding is to be determined.

Quality Assurance

The final Code of Federal Regulation Rule for nuclear safety management (10 CFR 830) establishes new requirements for the Laboratory's nuclear and radiological facilities. The Laboratory identified and self-reported weaknesses in implementation of the CFR and DOE O 414.1A in a Price Anderson Amendment Act Noncompliance Report (NTS-ALO-LA-LANL-LANL-2000-0014). Actions to address weaknesses were initiated in early CY03 including forming a new Performance Surety Division with responsibility for leading improvements in quality management; preparing an Institutional Quality Management Implementation Plan approved for implementation; issuing new institutional quality requirements; forming a new Quality Steering Group; and strengthening procurement processes.

Appendix F Safety Analyses

Appendix F of the UC-NNSA Contract provides specific expectations for improvement in the Laboratory's authorization basis processes. The expectations center on development and implementation of Safety AB documentation for both nuclear and non-nuclear facilities and bringing consistency and quality to implementation of Technical Safety Requirements (TSRs) and the Unreviewed Safety Question (USQ) process. A single institutional Safety Basis Office, within the Performance Surety Division, has institutional responsibility for the Laboratory's AB program while line organizations have AB responsibility for individual facilities.

Key commitments of the AB program and current status include the following:

- By April 2003, all nuclear facilities were compliant with 10CFR830, Nuclear Safety Management Rule, subpart B, Safety Basis development. LIRs for Facility Hazard Categorization (300-00-05) and Nuclear Facility Safety Authorization (300-00-06) were met for nuclear facilities,
- Non-nuclear facilities met requirements of LIRs for Facility Hazard Categorization (300-00-05), and Non-nuclear AB (300-00-07). Non-nuclear Hazard Category A & B facilities are required to provide a Facility Safety Analysis in accordance with the LIR 300-00-06, and
- USQ and TSR programs continue to be standardized and improved providing key elements in reducing TSR violations to the minimum.

DNFSB Recommendation 2000-2

DNFSB recommendation 2000-2, addressed the reliability of vital safety systems. As an on going effort, additional funds will be required as new safety systems are added. Commitments related to development of the Laboratory's systems engineering program and institutionalization of safety system assessments are being addressed through the Integrated Facilities Management Program. Failure to adequately fund this item in future years could result in increased risks in nuclear facility operations.

Elimination of Ozone Depleting Equipment (ODE)

A working group to provide direction and assistance towards the elimination of ODE, consistent with the EPA and DOE's 2005 goals for phasing out CFCs. From their efforts, significant progress has been made towards the goal, with only one major replacement project remaining at LANSCE. The EPA goal requires elimination of pre-1984 chillers larger than 150 tons and using Class 1 Ozone Depleting Substances.

Not replacing these chillers would potentially result in failure to meet the EPA and DOE improvement goals.

4.3.2 Improvements

Core improvements are required to raise or maintain levels of compliance and risk management. Table 4-16 lists the activities, projects, and programs that strive for continuous improvement in ES&H. Descriptions of the most visible improvements are provided.

Table 4-17: Activities for ES&H improvement.

Core / Improvements	Priority	Funding
Rad Liquid Waste Treatment Replace/Upgrade	High	Funded
Industrial Hygiene & Safety Program Improvements	High	Funded
RCRA Improvements	High	Funded
Firing Site Hazards Analysis	High	Funded
Chemical Management	High	Funded
Perchlorate Ventilation Analysis	High	Funded
Conduct of Operations Improvements	High	Funded
Self Assessment Improvements	High	Funded
Wildfire Prevention	High	Funded
Potential Environ Pathways (Tanks Spill Prevention)	Medium	Funded
Fire Protection Improvements	High	Under funded
Electrical Infrastructure Upgrades	High	Under funded
Traffic Safety Improvements	High	Under funded
Configuration Management	High	Under funded
Unlisted Electrical Equipment Evaluation	High	Funded
Pressure Systems Evaluation	High	Funded
[redacted]	[redacted]	[redacted]
PCB Elimination	Medium	Under funded
[redacted]	[redacted]	[redacted]

Radioactive Liquid Waste Treatment Facility Upgrade

The Laboratory's existing RLWTF, commissioned in 1963, treats low-level radioactive liquid waste and is vital to supporting the Laboratory's mission needs. When constructed, this facility met all applicable codes and standards for design, construction, and environmental regulatory requirements. With the advent of new codes and regulations, the facility currently requires several upgrades, [redacted] While discharges meet today's applicable limits, regulations may continue to be lowered in the future.

Firing Site Hazard Assessments

For many years, open-air explosives testing and research involving beryllium, uranium, and other materials occurred on the southwest portion of the Laboratory. Recently, health standards for beryllium have become more stringent and subject to public attention. Laboratory studies are underway to evaluate risks to workers, the public, and the environment associated with the outdoor explosives tests.

Perchlorate Ventilation Assessments

Historically, perchlorates were used in several Laboratory facilities resulting in potential contamination of ventilation systems. Over the past several years, the most highly contaminated ventilation systems, TA-48 and the CMR facility, have been removed. The extent of perchlorate contamination within ventilation systems and associated risks at several other Laboratory facilities needs to be evaluated.

Traffic Safety Improvements

Traffic safety throughout the Laboratory is a continuing concern due to roads and traffic devices that do not meet all applicable codes or are not ideally designed. As a result, traffic congestion and safety problems are increasing, and in recent years, there have been several serious traffic accidents. The Laboratory Traffic Safety Committee and Los Alamos County have completed engineering studies and implemented improvements for the Laboratory's public roads. In addition, long-range site planning processes have identified new roads and other improvements to reduce congestion and enhance traffic safety.

Area G Permitting

Area G is the Laboratory's Solid Radioactive Disposal Site, which has operated as a shallow landfill disposal unit since the 1960s. Prior to the mid 1980s, the site was also used for limited disposal of hazardous materials, making a small part of the site subject to closure requirements of the RCRA. At present, the Laboratory is obtaining a new RCRA Permit and is interacting with NMED regarding the permitting status of this site.

County Landfill Closure

Historically, the Laboratory has used the Los Alamos County Landfill for disposal of sanitary wastes under agreement between the County and NNSA. The County's current landfill is anticipated to reach full capacity and close in 2004. Both the County and NNSA are evaluating options for disposal of their respective sanitary waste streams.

PCB Elimination

The Toxic Substances Control Act (TSCA) regulates use, storage, and disposal of equipment containing polychlorinated biphenyls (PCBs). While allowing limited continued use of PCB equipment, the TSCA removes from commerce all PCB contaminated equipment. The Laboratory adopted a goal of being PCB free and has stepped up its efforts to reduce its inventory. Although the inventory of PCB items was further reduced to about 422 items in 2002, additional significant reductions are expected in 2003 pending adequate funding.

4.4 WORKFORCE PROFILE

The Laboratory workforce comprises employees of UC (8,707), KSL (1,517), PTLA (606), supplemental contract labor (1,402), student assignments (1,595), and guests/affiliates (1,601). The workforce, as of June 2003, includes approximately 15,400 people. These statistics include a temporary influx of summer students and guests that join the Laboratory for short-term assignments or special programs and crafts workers that support seasonal site and construction activities. It is estimated that the temporary summer staff represents some 350 people included in Figure 4-11. The career workforce (excludes guest/affiliates, PTLA, and KSL) comprises approximately 11,700 of the 15,400-member workforce.

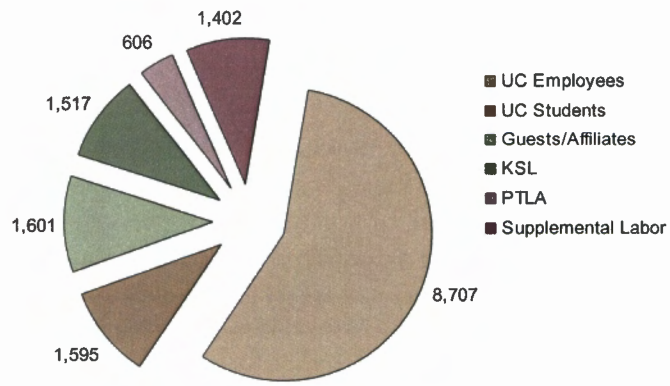

Figure 4-11: Total Los Alamos employees, June 2003.

Figures 4-12 and 4-13 further characterize the career workforce as of June 2002 in terms of ethnicity and levels of education.

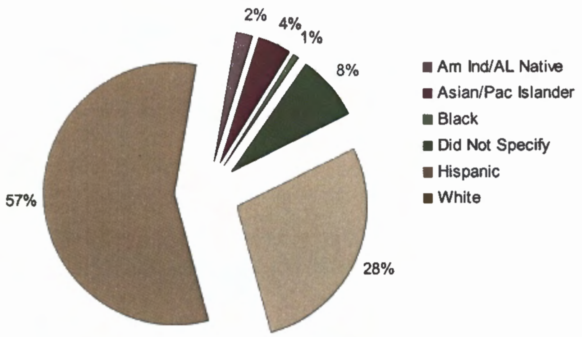

Figure 4-12: Career workforce ethnicity.

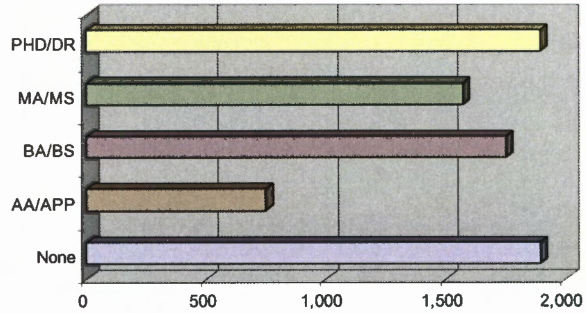

Figure 4-13: Regular UC employees by highest degree.

Optimizing performance of human resources is fundamental to mission success. The Laboratory fosters excellence in a workforce that is richly diverse in people and capabilities by taking a planned approach to attracting, acquiring, aligning, developing, and retaining talented people. By encouraging a positive, supportive, and creative atmosphere, and by providing facilities that enhance information exchange and include modern capabilities, NNSA, DOE, and other missions are enabled.

Table 4-17 provides current workforce numbers by Directorate. The projected increases for FY03 are based on projected hires and terminations for the rest of the fiscal year. An estimate of potential workforce changes is provided for the out years (FY04-FY07). Critical skills are a subset of the total workforce and defined as positions assigned 25% or more to the stockpile stewardship mission. A critical skill position is required to maintain the nuclear deterrent capability indefinitely or is required to support a specific tangible aspect of stockpile stewardship. In addition, a critical skill position must meet at least one of the following additional attributes.

- **Extended Time to Acquire**—skill and related proficiency can only be acquired after some extended period of explicit on-the-job training/experience (2 to 3 years or more)
- **Complexity of Skill**—skill is related to a scientific, technical or engineering discipline required by the mission, or to the management of a technical aspect of the mission
- **Uniqueness of Skill**—skill is unique to the mission of the nuclear weapons complex
- **Difficult to recruit and retain** — candidates for the critical skill position are difficult to recruit or employees with the critical skill are difficult to retain.

Table 4-18: Current and projected workforce levels by directorate.

	FY02	Current (June 2003)	FY03*	FY04**	FY05**	FY06***	FY07***
Institutional Science Base and Support Divisions							
Work Force	3,591	3,980	3,806	3,850	[redacted]	[redacted]	[redacted]
Critical Skills	123	278	106	106	[redacted]	[redacted]	[redacted]
Strategic Research							
Work Force	1,817	1,850	1,926	1,948	[redacted]	[redacted]	[redacted]
Critical Skills	231	252	286	287	[redacted]	[redacted]	[redacted]
Threat Reduction							
Work Force	1,426	1,474	1,512	1,529	[redacted]	[redacted]	[redacted]
Critical Skills	107	132	118	118	[redacted]	[redacted]	[redacted]
Weapons Engineering & Manufacturing							
Work Force	1,888	1,843	2,001	2,024	[redacted]	[redacted]	[redacted]
Critical Skills	620	603	911	916	[redacted]	[redacted]	[redacted]
Weapons Physics							
Work Force	2,445	2,567	2,592	2,621	[redacted]	[redacted]	[redacted]
Critical Skills	471	573	591	593	[redacted]	[redacted]	[redacted]
Total							
Work Force ‡	11,167	11,714	11,837	11,972	[redacted]	[redacted]	[redacted]
Critical Skills ****	1,552	1,838	2,010	2,020	[redacted]	[redacted]	[redacted]
Net Increase							
Work Force		547	670	135	[redacted]	[redacted]	[redacted]
Critical Skills		286	458	10	[redacted]	[redacted]	[redacted]

***FY03 projections are based on projected hires and terminations for the rest of the fiscal year.**

****Projections an increase per DOE Budget Formulation Guidance for FY04 and FY05**

*****Projections assume slow growth (FY06-0.5%; FY07-0.5%) as conservative estimate.**

****** FY02 are EOY actuals, Current represents Q203 figures and FY04 - FY07 represent projected needs**

‡ Excludes KSL, PTLA, Affiliates, and Guests.

As of June 2003, there has been a net increase of 547 in the Laboratory workforce since the start of FY03. This represents 82% of the total expected increase of 670.

From the beginning of FY03 through FY07, the Laboratory will experience a moderate [redacted] increase in the number of personnel. Primarily increasing mission and program requirements drive the impact. In the same time period the Laboratory will see a [redacted] increase in resources that specifically address the "Commission on Maintaining United States Nuclear Weapons Expertise" (Chiles Report). PTLA, in response to increased security requirements is anticipated to increase by approximately 100. The support services subcontractor, KSL, will likely remain constant. Projected increases call for facilities to support a career workforce of approximately 15,000 people.

In addition to the impact and need for hiring critical skills positions, the Laboratory is facing an aging population and will see increases in retirements over the next five to ten years. Figure 4-14 illustrates the age distribution of the UC Regular work force and the years of service within each age category. The data indicates approximately 20% of the workforce is now eligible for retirement using the sum of age and years of service as a benchmark. Historical data shows that retirements increase significantly when the sum reaches 75 or more. A second benchmark includes employees with 20 or more years of service, which indicates approximately 30% of the workforce is considering retirement.

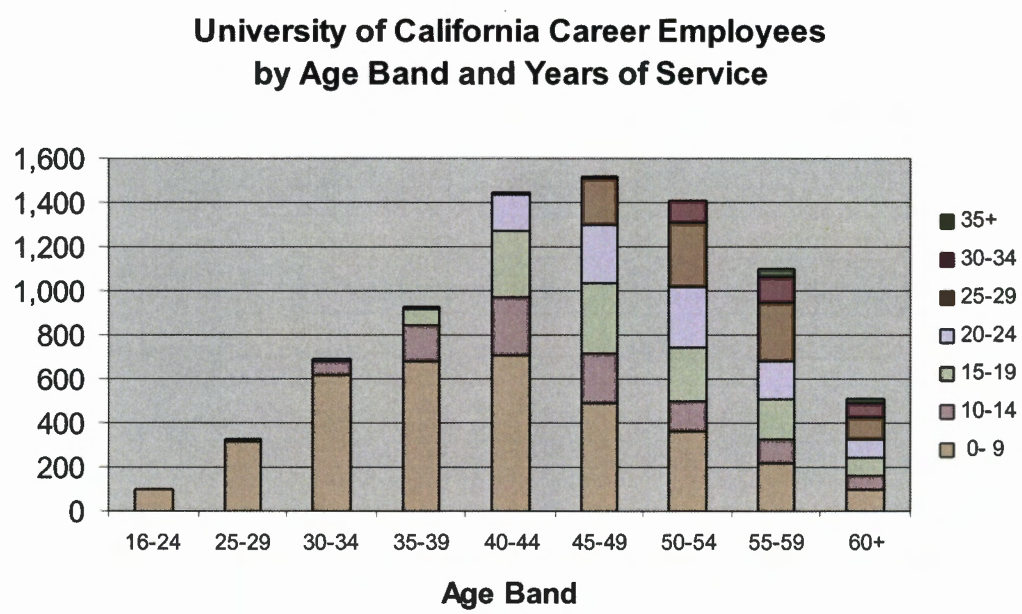

Figure 4-14: Age distribution and years of service for UC regular population.

Recruitment of entry-level resources (five or less years from a bachelor's degree) is a key Laboratory goal. Since the beginning of FY01, efforts in hiring early career technical staff members (TSMs) has increased the number of UC Regular TSMs under the age of 35 by 120. Presently there are 38% more UC Regular TSMs under the age of 35 than there was at the end of FY00.

Providing quality facilities with state-of-the-art capabilities is a significant factor in the Laboratory's recruiting efforts. Projected attrition, including retirements, is approximately 4.5%, more than double the rate as compared to FY94 or FY95. The diversity of the Laboratory's workforce will also impact facilities planning. Increasingly the Americans with Disabilities Act must be taken beyond compliance by applying common sense solutions.

Initiatives and projects presented in this section are developed with and by the operating divisions that will hire and support the growing workforce. Many organizations are proposing changes to the site footprint that will, in some cases, reduce the footprint while absorbing the increased staff through state-of-the-art facilities and equipment that is designed and constructed for specific functions and needs.

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4.5 SECURITY

4.5.1 Assets

The Laboratory's security is complicated by the size of the site, scope of work, and diversity of its holdings. With over 150 security areas, Category I / II nuclear facilities, 6.5 million classified records, 2,000 classified computers, and many metric tons of nuclear material distributed over approximately 40 square miles of rugged terrain, the safeguards and security program at the Laboratory is one of the most complex, geographically diverse, and operationally challenging programs in the world. This operational environment demands a security program capable of dealing with ever-changing and ever-escalating threats. The Laboratory continually strives to develop and maintain a multi-layered security program that supports the roles of both security and science as integral components of the Laboratory's mission.

4.5.2 Protection Strategies

The Laboratory has taken aggressive action to improve its protection strategies for asset holdings. Major protection strategies include the following:

- Pajarito Road was closed to non-Laboratory traffic, which increased protection for nuclear facilities,
- A line item project is being developed to control vehicle access to the site (Security Perimeter Project),
- Vehicle screening posts were created to address post 9/11 security challenges,
- A program using dogs to screen incoming vehicles for explosives is being implemented,
- A line item construction project is underway to replace the aging alarm system (NMSSUP Phase I),
- A line item construction project is in development to upgrade the physical security system at TA-55 (NMSSUP Phase II),
- A perimeter alarm system upgrade/enhancement to improve detection capability was completed,
- New video capture equipment was installed to increase detection capability,
- Alarm video switching equipment was installed for more reliable assessment, and
- Alarm encryption equipment was installed for more secure assessment.

Denial Strategy Implementation Plan (DSIP)

The purpose of the DSIP Project is to ensure that the Laboratory develops and implements a strategy for protecting assets at TA-55 in response to the DOE performance objectives set forth on October 3, 2001. Currently an Interim Denial Protection Strategy is in place as agreed to with NNSA/LASO. The TA-55 Vulnerability Assessment (VA) will be updated annually in order to meet the Site Safeguards and Security Plan (SSSP) and new Design Basis Threat (DBT) requirements. Funding will be requested as needed to address resource requirements. NMSSUP Phase II is being pursued to help provide engineered solution(s) that will increase confidence in the strategy and potentially reduce annual operating costs.

4.5.3 Integration

Protection Program Management Team

The Security and Safeguards (S&S) Division has developed a management level working group that provides direction and establishes Laboratory S&S policy. This team ensures that appropriate levels of protection are in place against the approved DOE DBT and that a graded approach is applied to security planning and resources. The Protection Program Management Team (PPMT) provides a forum for S&S mission prioritization, stakeholder cooperation, and risk management. S&S policy and funding options are evaluated by the PPMT so determinations are made with the appropriate levels of input. The PPMT also ensures that the Laboratory's SSSP documents provide the protection measures and strategies necessary to ensure acceptable levels of protection for DOE assets. These protection actions cover SNM and classified matter, as well as government and contractor employees, the public, and the environment against loss, destruction, harm, or compromise. PPMT membership includes the LASO manager and S&S director, the S-Division leader, and S Division groups.

4.5.4 Special Security Projects to Address New Threats

The Laboratory continues to initiate security and safeguard projects to further enhance security at the Laboratory as well as address new threats. Following is a brief description of some these projects. A more complete description of many of these projects is included in the SSSP and other specialized site security plans.

Security Perimeter/By-Pass Roads

This project is designed to support institutional security objectives by closing selected roads to the public depending upon the security posture in place at a particular time. New roads and access control stations will upgrade the physical protection around critical assets. Access to these roads by Laboratory badge holders will be maintained, and traffic by non-DOE badge holders in the TA-3 area will be eliminated as required. In addition, access control stations will be constructed to screen vehicles entering the laboratory.

Relocation of the Distribution/Receiving/Transportation Complex

[redacted]

Bio-Safety Laboratory

The Laboratory is constructing a stand-alone state-of-the-art bio-safety laboratory. This one-story, approximately 3,200 square foot facility will accommodate research to enhance public health capabilities and reduce the threat from terrorism using biological weapons. Key design on this facility will include single-pass, non-circulating HVAC system and HEPA filtration.

Chemistry and Metallurgy Research Replacement (CMRR)

The Chemistry and Metallurgy Research Facility Replacement Project (CMRR) is a long-term project that will relocate and consolidate mission critical analytical chemistry, material characterization, and actinide research and development capabilities. The project will ensure continuous national security mission support beyond 2010 at the Laboratory.

TA-18 Relocation Project

The Los Alamos Critical Experiments Facility (LACEF) project will provide for the movement of all Category I/II/III/IV nuclear operations, personnel, materials and infrastructure from the existing site to NTS Nevada for CAT I/II and to another location in Los Alamos for CAT III/IV (except for SHEBA, which will be at a site not yet determined). DOE/NNSA has received considerable scrutiny regarding the security at TA-18.

NMSSUP Phase II

This project will address the security system at TA-55, the Laboratory's key nuclear facility that houses and processes Category I quantities of SNM. Phase II includes the upgrade or replacement of the existing exterior intrusion detection and assessment system and installation of interior intrusion detection, assessment, delay, access control, and security communications equipment for TA-55. Access control facilities for the Protected Area and Material Access Area will be replaced or upgraded. These systems will be integrated with the Argus security control system that has been installed under NMSSUP Phase I. The NMSSUP Phase II project is currently nearing CD-0.

4.5.5 End State of Security Efforts

Considerable effort has been put into safeguards and security at the Laboratory over the past few years. Much of that effort has been successful, but there is still more work ahead.

The SSSP document also address what the "End State" of all of the suggested security enhancements should be and provides a definitive goal and a positive direction in which to direct Laboratory security efforts. It will be of critical importance in the future, as security resources are appropriated to meet the ever-changing needs of the Laboratory.

Many of the projects discussed in the SSSP have been designed to address new requirements from the DOE/NNSA and to aid the Laboratory mission by ensuring that the projects are performed securely in the most cost-effective manner possible. These projects will ensure that the Laboratory is able to accomplish its mission for the nation.

4.6 TRANSPORTATION AND PARKING

The Laboratory's remote location, topography, and development pattern create unique transportation problems. Its location on a series of mesa tops separated by deep canyons and the dispersed arrangement of facilities combine to make access between Laboratory facilities difficult and circuitous. Development of roads and parking has been incremental, often guided by short-term needs. The incremental growth has neglected pedestrian, bicycle, and transit improvements. Maintenance of the transportation infrastructure has generally been inadequate to keep up with needs.

The Laboratory has determined the following transportation strategies for guiding both short and long-range site planning.

Strategies for Transportation

[redacted]

Construction activities in the northwest sector of TA-3 prior to FY03 eliminated over 800 parking spaces. While new lots replaced some of the lost spaces, they were built in other areas of TA-3, away from where population increases are occurring. Three parking structures are currently planned for the northern sector of TA-3. One funded as part of the new National Security Sciences Building will be constructed to the east of the Otowi Building in the FY05-FY06 timeframe. The second parking structure, funded as an IGPP and located just to the west of building TA-3-31, is under construction with completion anticipated in February 2004. This project will result in 200 net parking spaces. [redacted] Two other surface parking areas near the TA-3 Wellness Center and in the area of the former asphalt batch plant site along East Jemez Road are currently planned for a gain of about 380 parking spaces. Discussions with the Los Alamos Research Park, just to the north of TA-3, resulted in the lease of some additional parking spaces.

In May 2003, the New Mexico State Transportation Department established a regional park and ride system to provide commuter bus service between the cities of Santa Fe, Española, and Los Alamos. The total impact on parking demand, particularly in the TA-3 area, has not been determined, though most of the estimated 3,400 riders are destined for TA-3. The Support Services Subcontractor is providing on-site transportation from the bus center location at Diamond Drive and East Jemez Road to other Laboratory locations as required. The commuter bus service was initially funded for only 18 months during construction work along Highway 84/285. However, a permanent regional transit authority may be formed eventually to maintain the service.

Increased population at TA-55 is also causing parking shortages in that area, and two new surface lots are planned to improve the situation. [redacted]

The Site-Wide Future Transportation Map on the following page shows projects that are underway or *proposed* that support the Laboratory's transportation strategies for the next 10 years.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Future Transportation

New Construction
New Long Range Proposed
Road Improvements
Improve Long Range Proposed
Road Elimination

Guard Station
1 Reference Number

8000 0 8000 Feet

4.7 CURRENT PLANNING INITIATIVES

The Laboratory has continued to produce ADPs and master plans for various Laboratory areas during the past year. Areas studied and planned include TA-21, TA-33, TA-53, TA-3, parts of the Pajarito Road Corridor, and several other smaller areas (TAs 63, 66, 52, 54 and 58). The plans consisted of either an area development plan or a localized master plan. Within the area development plans, master plans were produced for TA- 46 and TA-48. The level of planning performed varied based on current needs within these different areas. Summaries of some of the more involved urban planning efforts undertaken recently are presented below. Although physical planning documents were produced, planning is an interactive, ongoing process, and the documents will be updated as necessary.

4.7.1 TA-33 Master Plan

[redacted]

[redacted]

4.7.2 LANSCE Area Development Plan

[redacted]

[redacted]

[redacted]

4.7.3 Pajarito East ADP

[redacted]

4.7.4 TA-46 Master Plan

[redacted]

4.7.5 TA-3 Master Plan

[redacted]

TA-3 Master Plan

[redacted]

[redacted]

4.7.6 Los Alamos Science Complex

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Figure 4-15: Los Alamos Science Complex Phase I.

[redacted]

4.7.7 TA-21 Reuse Planning

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

4.7.8 Integrated Nuclear Planning (INP)

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

4.7.9 Nuclear Facilities Consolidation

Within ADO, efforts continue that will fundamentally change the state of the Laboratory's nuclear facilities. In FY02-03, the SET, specifically the ADO, recognized the following with regard to nuclear facilities:

- A significant cost premium is associated with operating a nuclear facility due to such activities as AB development and implementation, Quality Assurance, Price Anderson liabilities, and security,
- Many of the Laboratory's nuclear facilities are large, aging facilities that do not meet current design codes,
- Some nuclear facilities have overlapping missions while others are undergoing changes in missions,
- Improvements in the organizational structure and operating processes and procedures are needed across all nuclear facilities in order to achieve higher operating efficiencies and cost reductions, and
- The Nuclear Safety Management Rule (10 CFR 830 - promulgated in January 2001) requires development of detailed AB documentation and implementing TSRs for all nuclear facilities. It has a deadline of April 2003.

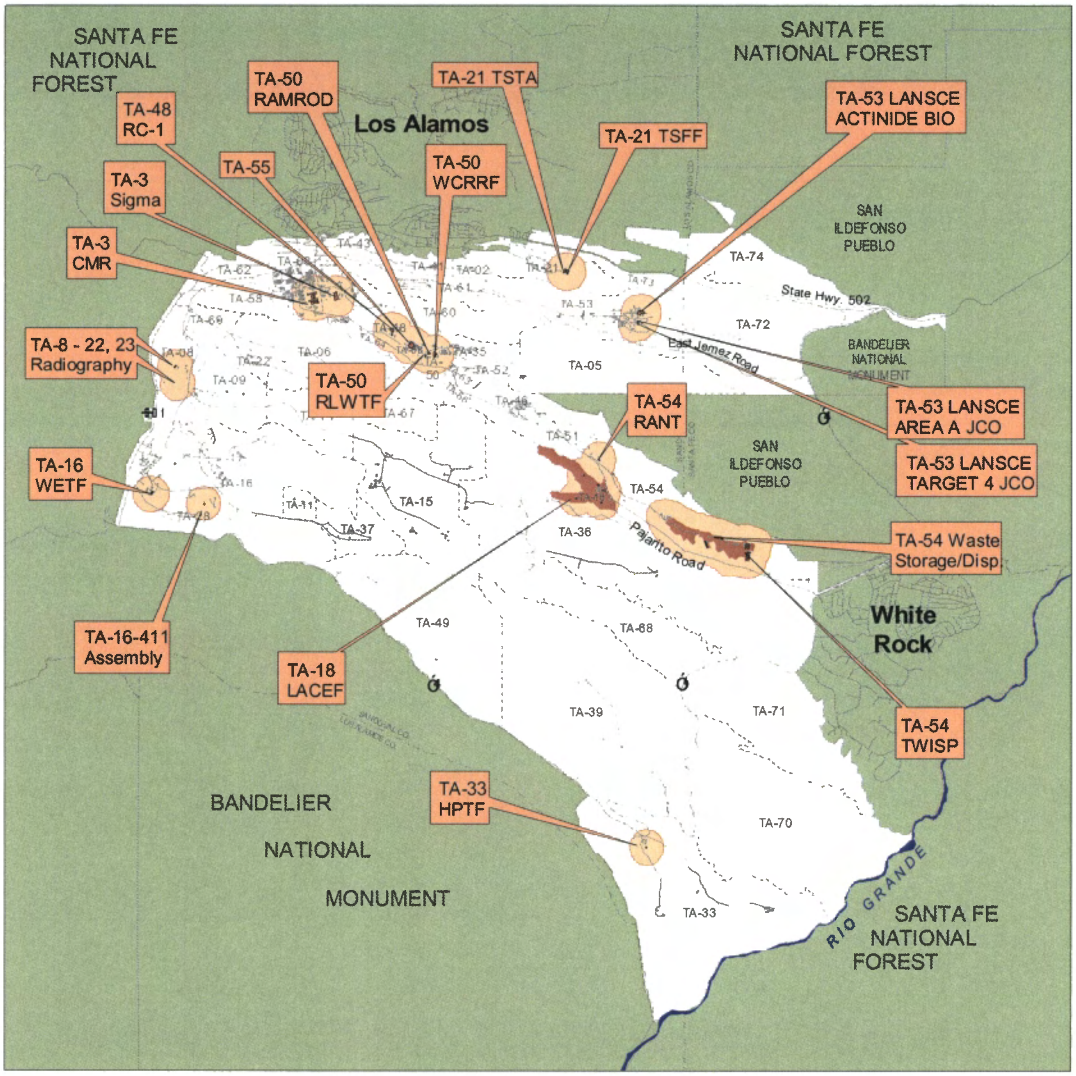
Historically, the Laboratory has maintained approximately 20 nuclear facilities. The following map is a snapshot of the nuclear facilities that were in existence as of April 2000[1], representing over 1.8 million square feet of nuclear space. The orange color denotes the facilities that did not comply with 10CFR830 safety basis requirements as those requirements were still in draft final stage at the time. With few exceptions, each nuclear facility had an AB, however, many were prepared under older DOE orders while a few were more recent and have since been declared 10CFR830 compliant.

The ADO and Laboratory divisions have undertaken the following initiatives to significantly change the nuclear facility footprint:

[redacted]

[1] DOE/LANL List of Los Alamos National Laboratory Nuclear Facilities, PS-OAB-101, Revision 0, April 2000.

[redacted]



Nuclear Facility Consolidation

Begin Phase 1 - April 2000

LEGEND January 2001 total square feet = 1,779,190

- Compliant Facility 10CFR830
- Compliant Nuclear Facility (500-ft. buffer for visibility)
- Non-Compliant Facility
- Non-Compliant Nuclear Facilites Land Mass
- Nuclear Facility (1000-ft.buffer for visibility)

9000 0 9000 Feet

The next map depicts the Laboratory's nuclear facilities that could be in place by 2011. This final transition places nuclear capabilities at locations or sites that have specific capabilities. [redacted] While these plans are not firm, they represent a realistic vision. In addition, any new nuclear facility proposed in the future will fit within the functional capabilities outlined and depicted in the following map.

In FY03 significant progress was made towards implementing the above described plan. All AB submittals required by 10 CFR 830 were met prior to the April 2003 deadline. The TA-48, Tritium Systems Test Assembly (TSTA), and Radioactive Materials Research Operations and Demonstration (RAMROD) facilities were all removed from the nuclear facilities listing. Another project, Transuranic Waste Inspection Project (TWISP), was completed earlier, and any residual activities will be addressed in the TA-54 DSA. [redacted] Also in FY03, a limited cost study by D Division, concluded that as much as $41M could be saved on an annual basis if the entire consolidation plan is completed by 2011.

These numbers could change as future planning by DOE and the Laboratory continues and as Laboratory missions and plans evolve. Due to the synergism of the initiatives, the Laboratory should be able to achieve an improved nuclear end state within the horizon of this TYCSP such as:

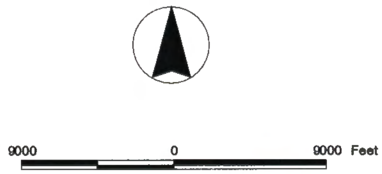
- A smaller nuclear footprint,
- Modern, code-compliant facilities,
- More cost-effective, efficient operations, and
- The ability to meet future mission needs with greater assurance, in a quality manner, and in accordance with integrated safety management (ISM) principles.

[redacted]

Nuclear Facility Consolidation
End of Phase VI - 2011 (TYCSP Horizon)

LEGEND January 2011 total sq. ft. = 706,055

- Compliant Facility 10CFR830
- Compliant Nuclear Facility (500-ft. buffer for visibility)
- Non-Compliant Facility
- Non-Compliant Nuclear Facilites Land Mass
- Nuclear Facility (1000-ft.buffer for visibility)



4.7.10 Nuclear Materials Storage

The safe, secure storage of SNM is essential to accomplish the Laboratory's missions. There are numerous programmatic initiatives and associated funding sources that utilize SNM, including:

- Pit Manufacturing – NA-11 sponsorship,
- ARIES – NA-26,
- Special Recovery Line (SRL) – NA-12,
- DNFSB Recommendations 94-1/00-1, 97-1 – NA-12,
- Certification – NA-11,
- DYNEX – NA-11,
- Surveillance – NA-11,
- Tritium Activities – NA-12,
- Pu238 Activities – NA-12/NE,
- Criticality Experiments – NNSA/others,
- Emergency Response – multiple, and
- 94-1 R&D – EM.

This wide variety of programs and funding sources requires a strategic plan for nuclear materials management and storage. A classified report, "Strategic Nuclear Materials Storage Plan for Los Alamos National Laboratory" (LA-CP-02-218), provides a detailed look at planned programmatic activities at the Laboratory and the impacts on SNM storage.

There are currently two Security Category I nuclear storage sites at Los Alamos, TA-55 and TA-18, and numerous Security Category III/IV storage locations across the Laboratory. For planning purposes, Category I sites are of the most interest. In the present configuration, the TA-55 vault is designed for plutonium storage with a much smaller inventory of enriched uranium. The inventory in the vaults at TA-18 is primarily enriched uranium with a small amount of plutonium.

The major programs that will contribute to the continuing growth of the nuclear materials inventory at the Laboratory are: ARIES, SRL, surveillance, and, possibly, Pu238. The current configuration and capacity of the TA-55 vault is inadequate to meet the projected storage requirements. Specific needs are for increased capacity for both large item storage, including pits, and 3013-type containers. The projected growth in inventory is primarily in 3013-type containers, but there is a steady increase in the requirement for large storage locations.

[redacted]

Storage needs at TA-18 depend on the decisions of what portions of the mission will be relocated and to what site(s) these missions will be moved. The most current DOE guidance is to move the critical assemblies and associated materials to the Design Assembly Facility (DAF) at the Nevada Test Site (NTS). This would still leave a Category I quantity of SNM at the Laboratory. Most of this material is in the "Scarce and Unique" category and will require continuing storage, either at the Laboratory or elsewhere. The remaining material is associated with the Category III/IV activities such as the SHEBA assembly.

The Category III/IV quantities of material do not pose a storage concern, although siting the operations using these materials will require storage appropriate to the amount and form of the material. The remainder of the material will still constitute a Category I quantity. As such, it must be stored in facilities that meet certain safety and security requirements. [redacted]

4.7.11 Radiography

Several programs utilize high-energy (greater than 2 MVp) x-rays to examine nuclear assemblies and components. The Pit Manufacturing Program (PMP) and the Pit Surveillance Program (PSP) perform radiography, ultrasonic, and dye-penetrant inspections on assembled pits to examine structural and material properties. The components are transported from TA-55 to TA-8, examined, and returned to TA-55 the same day. The items are under continuous guard during this operation.

The response to recent attacks and threats to security have significantly increased demands on the Laboratory's protective force resources. If adequate protective force resources are not available to safeguard assemblies during radiographic examinations, then PMP and PSP milestones will be adversely affected. The attacks and threats to security have also prompted the revision of threat scenarios for nuclear materials, which will require additional physical barriers, equipment, and personnel resources to defend. Protection of nuclear assemblies during transportation and examination at TA-8 may no longer be practical after the response plans for the revised threat scenarios are implemented. [redacted] Until revised threat response plans are formulated and implemented, a limited number of assemblies can be x-rayed at TA-8.

[redacted]

4.7.12 Los Alamos County Sanitary Landfill Site Screening Activities

The Los Alamos County sanitary landfill is currently under interim regulatory status with the New Mexico Environment Department. In lieu of bringing the landfill up to modern permit standards, the County filed a Closure Plan with the state with a closure date of June 30, 2004.

In response to a County request, LANL and DOE agreed to consider a new County-operated municipal landfill on DOE property. A site screening study was published that describes the screening process and the ten sites considered by a County, LANL, and DOE team (LA-UR-03-1349). An environmental assessment of two potential sites plus other options is currently being written. The two sites in the EA are the TA-61 "Borrow Pit" on East Jemez Road across from the entrance to LANSCE and the TA-60 East Sigma Mesa Shelf site located just off the east end of Sigma Mesa on Eniwetok Road.

New managers of the County's Public Works Department and Solid Waste Division have requested a delay in the publication of the EA to allow a careful review of the EA, solid waste options, and the two sites. **The County has requested of NNSA that the EA be placed on hold for six to nine months so that both sites analyzed in the EA can be further studied.**

5.1 OVERVIEW OF SITE PROJECT PRIORITIZATION AND COST PROFILE

This TYCSP includes the following three facility and infrastructure spreadsheets required by the guidance:

- Line items supporting DP (reported under RTBF, DSW, and Campaigns),
- RTBF/Operations of Facilities (excluding line items), and
- Facilities and Infrastructure Recapitalization Program (FIRP) (including line items).

In addition, a spreadsheet to report projects not included above has been added. These are projects that are Campaign/DSW (non-line item); non-DP; and Institutional IGPPs.

Table 5-1 provides an overview of all project funding sources and associated purposes.

Table 5-1: Construction project funding sources.

F&I Cost Projection Spreadsheets			Non-RTBF/FIRP Additional Spreadsheet			Third Party Financing
DP Line Items	RTBF (no line items)	FIRP	Campaign/DSW Funded (no line items)	Non-DP	IGPP	
Consistent with ICPP direction from NNSA	Projects for RTBF facilities achieving warm standby benefits but excluding any project needed to increase program capability or capacity	Projects that improve long-term physical conditions and mission availability as well as address the landlord infrastructure responsibilities of NNSA's nuclear weapons complex	Projects supporting DP facilities not funded by RTBF and as needed to increase program capacity and capabilities in any DP facilities	Non-DP projects supported by specific programs	Institutionally funded for institutional benefits	Being pursued, no projects currently funded. See section 4.7.6 for proposed projects

The **DP line items** are consistent with the May 5, 2003 direction provided in the Integrated Construction Program Plan (ICPP).

For **FIRP** funded recapitalization projects, the Facilities and Infrastructure Recapitalization Rating Matrix determines project prioritization. Each project was rated in each category of Health & Safety, Environmental & Waste Management, Safeguards & Security, and Mission & Investment. Per the guidance, the higher score of the individual categories was used. In the case of projects with the same score, ranking was based on the category with Safety being the highest and Mission and Investment being the lowest. In the case of projects with the same score in the same category, ranking was based on secondary category scores.

Regarding **RTBF**, the Office of Infrastructure, Facilities, and Construction (IFC) relies on the Stockpile Complex Modeling and Analysis Group (D-2) for prioritization. D-2 has developed a methodology for creating quantitative measures of costs, benefits, and risks for prioritizing projects in a systematic and auditable manner.

[redacted]

Note that the prioritization process is highly interactive. The concerned parties (decision makers, project managers, etc.) are involved at every step. Although a prioritized list of projects is the final result of the process, other useful results include the identification of the main determinants of project differentials and analyses of the sensitivity of the results to model inputs.

The IFC Office issues a call for proposals annually in order to continue to validate the list of projects included in the spreadsheets. The proposals have recently been limited to the top three proposals of each division. Proposals are aligned with potential funding sources identified in Table 5-1 for prioritization. Typically, the number of projects far exceeds available funding. Projects not funded in a given fiscal year are shifted to subsequent years. They are then revalidated against new proposals received after subsequent calls for proposals.

Challenges associated with all funding sources include execution as planned, recognizing projects cannot begin until funding is received. In years when funding is delayed due to continuing resolutions or other issues, projects are at risk of higher than planned uncosted and/or uncommitted balances. This is especially critical for projects implementing best-value, design-build procurement approaches. Projects using design-bid-build acquisition strategies often plan design in one year followed by construction in the next to reduce the risk of uncosted balances.

As noted above, proposals are aligned with potential funding sources. It is critical that the clarity of the purpose of each funding source is maintained in order to best serve the missions of the funding sponsors.

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5.2 LINE ITEM HIGHLIGHTED PROJECTS

This section presents a review of 15 selected line item projects. Together these projects represent a substantial investment by NNSA and are absolutely vital to maintain and provide the capabilities to meet present and future NNSA missions. These projects are currently in the planning stages, and the bulk is sponsored by DP and NNSA Facilities and Operations.

A summary is provided in Table 5-2 while Figure 5-2 provides an integrated cost and schedule summary.

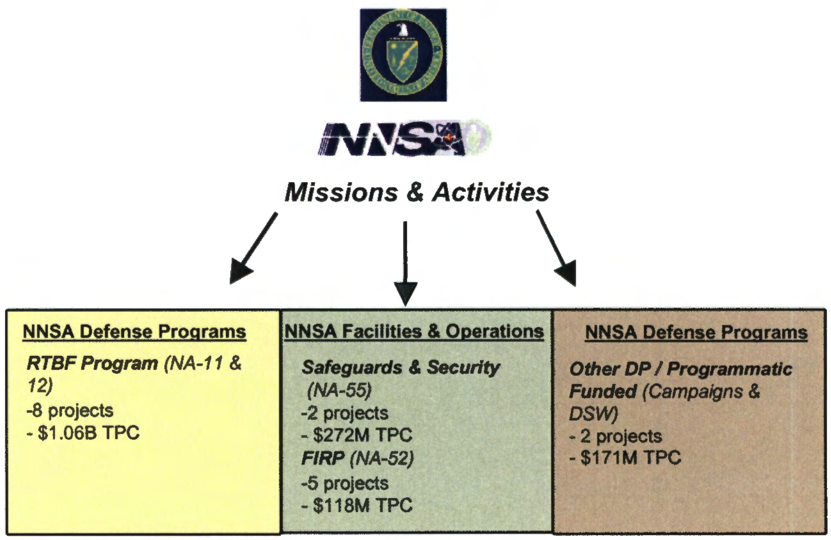


Figure 5-1: These 17 projects, worth over $1.5B, are aligned with NNSA/DOE priorities and programs to maintain and improve the Laboratory's capability.

These projects provide the following fundamental benefits that will be realized over the next 10 to 15 years:

- Improving security to protect vital assets against increased threats,
- Providing better worker and public safety and protection of the environment,
- Revitalizing and replacing old, unreliable infrastructure, thus reducing operational and programmatic costs through facility consolidation,
- Reducing and eliminating the deferred maintenance backlog, and
- Improving technical capabilities to satisfy new programs and perform work more efficiently and safely.

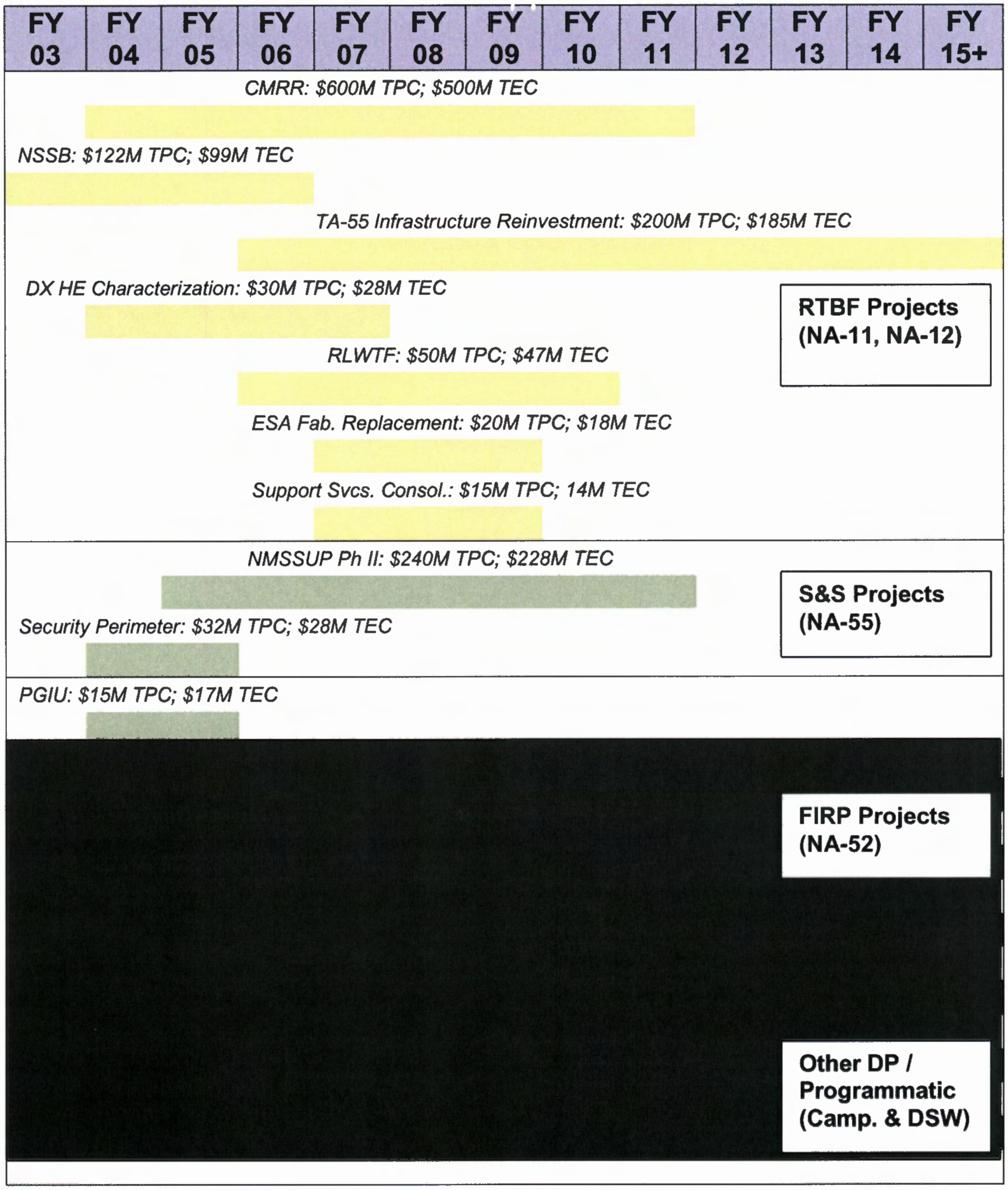
NNSA and the Laboratory are working closely to develop each project to ensure that the scope, estimated costs, and schedules are integrated with NNSA programmatic drivers and deliverables. This is accomplished through the INP process and the ICPP. Each project is also closely coordinated with NNSA organizational elements, through their corresponding overarching programs, including RTBF, Safeguards and Security (S&S), and FIRP.

Although safety, security, and capability improvements are always an emphasis and goal of the line item program, more efficient use of operating and programmatic funds is an important objective. Due to aging (and in many instances unreliable) infrastructure and facility systems, an inordinate proportion of resources and management attention to maintain and operate them is necessary. This situation diverts funds and attention from programmatic activities, the core Laboratory mission. These facility and infrastructure investments, when complete, will result in a more balanced resource allocation and management focus.

Table 5-2: Features and benefits of selected line item projects.

Project	Feature / Description	Benefits: *Improved Security*	*Better Worker & Public Safety*	*Revitalize Infrastructure & Reduce Ops Cost*	*Reduce Deferred Maintenance*	*Improve Technical Capability*
RTBF						
CMR Replacement	New state-of-the-art actinide chemistry and research facility sited at TA-55 to replace existing and aging CMR. TA-55 location will make nuclear operations more efficient and consolidated.	X	X	X	X	X
National Security Sciences Building	Provides new, modern facility to replace aging SM-43. Will house weapons design, theoretical/computation and management.	X	X	X	X	X
TA-55 Reinvestment Project	Will replace aging mechanical, electrical, and other systems to extend facility lifetime by at least 30-40 years and enable cost effective operations.		X	X	X	
[redacted]						
Radioactive Liquid Waste Treatment Facility Upgrade	Upgrades process capabilities to improve capacity, compliance, and waste minimization.		X	X	X	X
ESA Fabrication Facility Replacement	Relocate and replace machining capabilities at TA-3 with new, modern, consolidated facilities at S-Site, in close proximity to other ESA operations.		X	X	X	X
Support Services Consolidation	Consolidate site maintenance and construction staff and shops to one location, freeing up space in Laboratory core for mission related activities.	X		X	X	
S&S						
NMSSUP Phase II	Replaces and improves physical security features at TA-55 to respond to new threat scenarios. Fully integrated with Phase I (controls and data backbone).	X	X	X	X	
Security Perimeter	Establishes physical separation and access controls between public areas and Laboratory core area through vehicle entry/exit control and road realignment.	X	X	X		
FIRP						
Power Grid Infrastructure Project	Construct a third power line to serve the site. Provides a redundant source of power, eliminates single point failures. Reduces lost time and costs due to outages; improve reliability and maintenance.		X	X	X	
[redacted]						
Pajarito Road Corridor Utilities	Upgrades or replaces various utility systems serving "nuclear corridor;" reduces maintenance backlog.		X	X	X	
[redacted]						
Other DP / Programmatic						
[redacted]						

Figure 5-2: Integrated cost and schedule summary. (Note: Amounts are <u>rounded to the nearest $1M</u>; high cost ranges shown.)



5.2.1 Readiness in Technical Base and Facilities (RTBF) Projects

RTBF projects are sponsored through the Deputy Administrator for Defense Programs, NA-10, and specifically through NA-11 and NA-12. The RTBF mission is to ensure that the prescribed facilities and infrastructure are in place to manufacture and certify the 21st century nuclear weapons stockpile, and each of these projects supports that requirement.

Chemistry, Metallurgy, and Research Replacement Project

The capabilities needed to execute the NNSA mission activities require facilities to handle actinide and other radioactive materials in a safe and secure manner. Of primary importance are the capabilities located within the CMR Building and the Plutonium Facility (located at TA-3 and -55, respectively). These facilities process, characterize, and store SNM. Most of the Laboratory's mission support functions require analytical chemistry, material characterization, and actinide research and development support capabilities and capacities that currently exist within the CMR Building and are not available elsewhere. Other unique capabilities are located at the Plutonium Facility. Work is sometimes moved between the CMR Building and the Plutonium Facility in order to use the full suite of capabilities these two facilities provide.

Mission critical CMR capabilities support NNSA's stockpile stewardship and management strategic objectives; these capabilities are necessary to support the current and future directed stockpile work and campaign activities conducted at the Laboratory. The 50-year old CMR Building has many systems and structural components in need of upgrades, refurbishment, or replacement. Recent studies identified a seismic fault trace located beneath the CMR Building, which greatly enhances the level of structural upgrades needed at the CMR Building to meet current structural seismic code requirements for a Hazard Category 2 nuclear facility. Performing the needed repairs, upgrades, and systems retrofitting for long-term use of the CMR Building would be extremely difficult and cost prohibitive. Over the long-term, NNSA cannot continue to maintain the critical support capabilities in the CMR Building at an acceptable level of risk to public and worker health and safety without severe operational restrictions.

NNSA needs the physical means for accommodating the continuation of the CMR Building's functional, mission-critical CMR capabilities beyond 2010 in a safe, secure, and environmentally sound manner. At the same time, NNSA should also take advantage of consolidating like activities for the purpose of operational efficiency. It is also prudent to provide extra space for future anticipated capabilities or activities requirements.

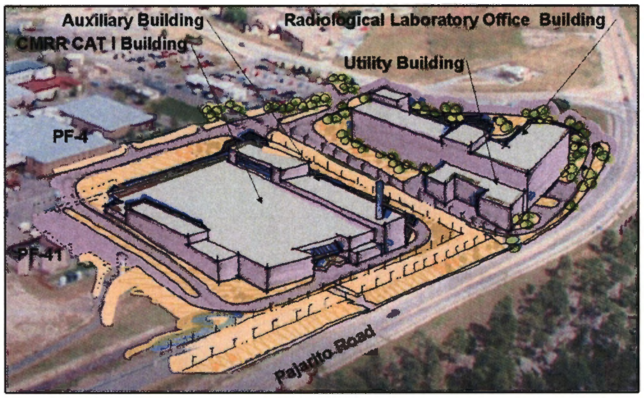


Figure 5-3: Proposed CMRR.

The CMR Replacement Project will construct a new facility at TA-55 (preferred option) comprised of two or three buildings to house the existing CMR Building capabilities. One new building will provide space for administrative offices and support activities; the other building(s) will provide secure laboratory spaces for research and analytical support activities. Construction of the laboratory building(s) above ground-level will be considered, and tunnels may be constructed to connect the buildings. At a minimum, the buildings would be designed to operate for the next 50 years. Reasonable alternatives include construction of a new CMR facility at a location near TA-55 and within an undeveloped "greenfield" area. Another alternative is continued use of portions of the CMR Building but with minimal necessary structural and systems upgrades and repairs for office and light laboratory purposes together with the construction of new nuclear laboratory facilities at the two previously identified locations.

CMRR replaces an obsolete facility and provides:
- State-of-the-art actinide chemistry Pu R&D capabilities
- Flexible configuration
- Greatly improved safety and environmental protections through engineered features
- Operational reliability
- Support to pit programs

Quick Facts and Status:
- Cat I & Cat II SNM Facilities
- Cold Lab & Offices
- TEC = $500M
- TPC = $600M
- Start Design: 2Q FY04
- Start Construction: 2Q FY07
- Move-in: 4Q FY12
- Conceptual Design in progress; CD-1 March '04

National Security Sciences Building (NSSB)

The highest priority of the SSP is to ensure the operational readiness of the nuclear weapons stockpile. The NSSB Project will support this by replacing the 45-year-old SM-43 Administration Building with a new facility fully compliant with current safety requirements. The NSSB Project will provide modern, safe, productive facilities for theoretical and applied physics, computational science, program management and general management, all of which contribute to ensuring stockpile readiness. Functional, safety, and security obsolescence of the existing SM-43 building is the impetus for the NSSB, and the project scope also includes a new facility for DOE-LASO.

The NSSB Project will continue the development of the theoretical-computational core in TA-3 that was started in FY99 with the Metropolis Center and NISC projects. The project includes construction of approximately 275,000 square feet of office space to house approximately 700, including Central Records Management operations. A parking structure for 400 vehicles is included, as is a 600-seat auditorium. The SM-43 building (315,000 square feet) will be decommissioned and demolished as part of the project.

The NSSB Project solves the following problems:

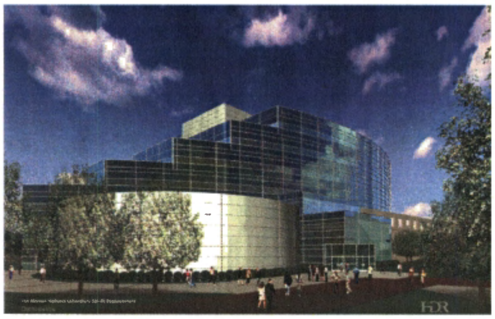


Figure 5-4: NSSB will be located in the TA-3 core.

- **Improves Occupant Safety:** SM-43 has the highest level of occupancy of any Laboratory facility and does not meet current DOE, Uniform Building Code seismic, or NFPA requirements. In an earthquake, it is anticipated that SM-43 would experience extensive failures and could collapse. The NSSB will be structurally safe and code compliant.
- **Increases System Reliability:** SM-43 systems are near failure, unreliable due to age, and can no longer satisfy occupancy demands. System failures are disrupting programmatic work. NSSB will provide consistent reliability and availability.
- **Reduces Cost of Operations:** SM-43 cannot be operated indefinitely without significant upgrade investments. Further investment to SM-43 is impractical and estimated to exceed $100M. NSSB is the most cost effective solution.
- **Tightens Security:** Security concerns and requirements have changed dramatically in the last 45 years and changes cannot be economically implemented in SM-43. NSSB will be designed to satisfy today's (and future) physical and cyber security needs.

NSSB will provide a modern facility that:
- Improves safety
- Increases reliability
- Reduces operations costs
- Tightens security
- Improves productivity

Quick Facts and Status:
- 275,000-sf
- Houses 700 (~9% of total staff)
- TEC = $99M
- TPC = $123M
- Start Design: 3Q FY03
- Start Construction: 1Q FY04
- Move-in: 2Q FY06
- Status: Design/Build contract awarded 6/03

- **Enhances the Work Environment:** NSSB will dramatically improve the "human factor." Current working conditions have negative impacts on current staff and the Laboratory's ability to retain existing personnel and recruit new staff. NSSB will provide an attractive, appealing, and functional work environment.

TA-55 Infrastructure Reinvestment Project

The TA-55 Reinvestment Project will revitalize aging and obsolete facility and safety systems to ensure continuing support of NNSA's Stockpile Stewardship Mission, including the following critical activities conducted at TA-55:

Figure 5-5: TA-55 infrastructure will be revitalized to increase reliability and cost effective operations.

- Manufacturing plutonium components,
- Surveillance and disassembly weapons components,
- Actinide materials science and processing research and development,
- Plutonium recovery from pit production and surveillance,
- War reserve plutonium metal recovery and production,
- Vault storage of nuclear materials, and
- Waste processing.

TA-55 Reinvestment enables:
- Safer, more cost effective TA-55 operations
- Reliable and available systems for pit and Pu programs
- Reduced deferred maintenance backlog
- Asset lifetime extension of 30 to 40 years+

Quick Facts and Status:
- Focus on facility infrastructure systems
- Accomplish project without prolonged disruptions to programs and activities
- TEC = $185M (high range)
- TPC = $200M (high range)
- Start Design: FY06
- Start Construction: FY07
- Complete: FY15
- Status: CD-0 package in development, submit June '04

TA-55 is the premiere nuclear and plutonium facility in the nation and was constructed in the mid-1970s. It consists of a high security Category I SNM laboratory and processing facility as well as various support structures and systems. It is the most modern and well-equipped nuclear facility at the Laboratory; however, it is aging and critical systems are beginning to require excessive maintenance. As a result, the facility is experiencing increased operating costs and reduced system availability. An investment over the near term to upgrade electrical, mechanical, safety, facility controls, and other selected systems will enable continued operation to satisfy mission objectives and programmatic milestones cost effectively for the next 30 to 40 years.

The goal of this project is to enable TA-55 to meet present and future nuclear component manufacturing, research and development, and related requirements for the stockpile while simultaneously meeting all safety and security requirements. This project will ensure that the right TA-55 facility infrastructure systems are in place to manufacture and certify the nuclear weapons stockpile safely and effectively and perform nuclear R&D. The scope of this project will be coordinated through the INP process and close coordination with NA-12.

DX HE Characterization Project

The DX HE Characterization Consolidation Project will replace materials characterization and analytical chemistry capabilities in support of the SSP. This project is necessary to maintain and improve the HE characterization, analytical, and experimental capabilities at Los Alamos. Existing facilities are obsolete, unreliable, and are increasingly expensive to operate, causing disruptions to programmatic work. This project will make operations more efficient and reliable through provision of a modern facility. Objectives are to reduce operating costs; improve working conditions for personnel; enhance safety and environmental compliance efficiency by replacing many administrative controls with engineered features. Further, functions currently occupying 25 facilities will be consolidated to a single facility, thus making management and maintenance more efficient and reducing operating costs.

DX HE Characterization Benefits:
- Reduced operating costs
- Consolidate footprint
- Improved safety, environmental protection, regulatory compliance
- Improved working conditions
- Eliminate programmatic disruptions due to facility failures

Quick Facts and Status:
- Economic analysis indicates 3 to 4-year payback
- About 45,000 gsf
- TEC = $28M
- TPC = $30M
- Start Design: FY04
- Start Construction: FY05
- Complete: FY08
- Status: CD-0 package in development, submit Fall '03

HE characterization, analysis, and testing are a pivotal functions the Laboratory provides to the SSP. Weapons systems undergo changes as a function of age, handling, or maintenance, which in turn may affect the performance or safety of the weapons. To assure safety and reliability, a great deal of the experimental effort is focused on HE components. To satisfy the mission requirement, the Laboratory must have reliable and functional capabilities to conduct HE analysis.

Radioactive Liquid Waste Treatment Facility (RLWTF) Upgrade

This project will improve the RLWTF at TA-50 by improving process capability to meet projected regulatory requirements for discharge. The RLWTF is over 35 years old and many process and facility systems (e.g., electrical, mechanical, HVAC) are at the end of their design life and require upgrades and/or replacement. Design alternatives include eliminating clarification processes and increasing utilization of filtration and reverse osmosis. Another improvement will include on site evaporation capability. These features will make treatment processes more efficient. Effluent discharge standards are becoming more restrictive and the upgrades need to take this into account to the extent feasible. Further, the project will allow for future flexibility and adaptability to future changes in regulatory requirements through the use of modular process treatment equipment and piping configuration.

RLWTF Project Benefits:
- Enhanced treatment capabilities to meet increased demands and compliance requirements
- Future flexibility
- Improved safety, environmental protection, regulatory compliance

Quick Facts and Status:
- Integrate new processes in coordination with existing facility and operations
- TEC = $47M (high range)
- TPC = $50M (high range)
- Start Design: FY06
- Start Construction: FY07
- Complete: FY09
- Status: CD-0 package in development, submit Fall '03

ESA Fabrication Facility (Shops) Replacement

This project will consolidate metals fabrication, radiological and salt component machining and inspections capabilities, and advanced manufacturing technology development and related support personnel into a single 50,000 square foot facility. The new facility will replace the current weapons functions provided by two facilities, TA-3-39 and TA-3-102.

ESA Shops Replacement Quick Facts and Status:
- Replace existing, oversized shop facilities at TA-3 with more efficient capability
- TEC = $18M
- TPC = $20M
- Start Design: FY06
- Start Construction: FY07
- Complete: FY08
- Status: CD-0 package in development, submit Winter 2004

While extremely busy during the Cold War, these facilities have much more capacity than is needed. Built in the mid 1950s, these oversized, inefficient, antiquated facilities do not provide the necessary support to the Laboratory and have become a financial burden to ESA. They lack auxiliary systems necessary to support anticipated program needs and their current locations create logistical problems for the effective interaction of ESA projects. The functions to be reconfigured by the new facility include the following:

- **Cold Machining Operations:** This includes machining and fabrication, test and inspection, and advanced manufacturing capabilities required for weapons. Some of these capabilities require a temperature-controlled environment.
- **Hot Machining Operations:** This part of the facility will retain the existing hazardous radiological machining. The levels of machining operations will be the same as those currently conducted in TA-3-102. Equipment used is similar to that found in the cold machining portion of the facility, but will be designed with the necessary environmental controls to facilitate handling of radiological materials.
- **Support Offices:** This portion of the facility will house personnel involved in the machining operations and advanced manufacturing and inspection.

[redacted]

Support Services Consolidation

This project will consolidate various technical and support facilities utilized by the site support services contractor. Currently, these facilities are spread throughout the Laboratory, making coordination and interaction with contractor staff inefficient, difficult and costly.

Support Services Consolidation Quick Facts and Status:

- Replace existing, oversized shop facilities at TA-3 with more efficient capability
- TEC = $14M
- TPC = $15M
- Start Design: FY07
- Start Construction: FY08
- Complete: FY09
- Status: CD-0 package to be started in FY04.

5.2.2 Safeguards and Security Projects

These projects are sponsored by NA-52, the Office of Safeguards and Security, within NA-50, Associate Administrator, Facilities and Operations.

Nuclear Materials Safeguards and Security Project (NMSSUP), Phase II

The overall objective of the NMSSUP is to upgrade and replace the existing physical security system to address the new protection strategy requirements and deteriorating physical security infrastructure. Planning for NMSSUP was initiated with a DOE security assessment in 1996. The assessment found that extensive upgrades were necessary to meet new threats. Phase I installed the data and communications backbone for the security system to the central and secondary alarm stations. Phase II will address the security system at TA-55, the Laboratory's key nuclear facility that houses and processes Category I quantities of SNM. TA-55 is particularly important as it is the proposed site for consolidation of nuclear missions for the laboratory, including the CMRR Project.

Figure 5-6: Physical security systems, including the deteriorated PIDAS above, require upgrades/replacement, to counteract age and defend against new threats.

NMSSUP Phase II provides:
- Improved security for TA-55 in the wake of September 11th
- State-of-the-art, reliable, integrated security system that can be upgraded as technology changes
- Replaces worn and aged systems
- Increases operations efficiencies and reduces operations costs

Quick Facts and Status:
- PIDAS and physical security modifications
- Interior and exterior systems
- TEC = $228M (high range)
- TPC = $240M (high range)
- Start Design: 2Q FY05
- Start Construction: 2Q FY07
- Complete: FY11
- Status: CD-1 decision pending

Phase II includes the upgrade or replacement of the existing exterior intrusion detection and assessment system and installation of interior intrusion detection, assessment, delay, access control and security communications equipment for TA-55. Access control facilities for the Protected Area and Material Access Area will be replaced or upgraded. These systems will be integrated with the Argus security control system that has been installed under NMSSUP Phase I.

The vulnerabilities and corresponding design concept for Phase II has been and will continue to be thoroughly evaluated in the context of stricter security requirements since the September 11th events. When complete, Phase II will significantly improve the security posture at TA-55 while making operations more cost effective. The maintenance backlog on aging systems will be reduced and/or eliminated through replacement with new systems.

Security Perimeter Project

The Security Perimeter Project :
- Protects LANL core area
- Projected to be complete in 3-yrs
- All vehicles entering LANL TA-3 screened
- Staffed access control stations
- Graded closure and access based on SECON levels

Quick Facts and Status:
- Selected road realignments and modifications
- TEC = $28M
- TPC = $32M
- Start Design: 1Q FY05
- Start Construction: 2Q FY05
- Complete: 2Q FY06
- Status: CD-0 package submitted Spring '03, CD-1 pending

As a result of the events of September 11th, the nature of terrorist threats has changed significantly in terms of the potential magnitude of the attack as well as terrorist motivations, targets, and methods. The most recent attacks appeared to be intent on maximizing disruption, destruction and casualties, and include the willingness to conduct suicide attacks. In recognition of this increased threat, the Laboratory and NNSA security and management have determined that there is a critical need to upgrade the physical protection around critical assets at the core of the site.

This project provides the Laboratory the ability to isolate the core area of the site from unscreened vehicle access in order to protect vital national security assets, government property, and human life from possible terrorist activity. This project will provide the capability to enact a graded closure of the core area of the site depending on the NNSA Security Condition (SECON) levels in effect at the time. During elevated threat conditions, all but emergency and designated government vehicles may be prevented from entering the core area of the site. Staffed access control stations with vehicle queuing approaches, necessary utilities, and security equipment will be required to screen vehicles and provide the capability of closing off vehicle access if required.

This project includes a new main road section on the north end of the TA-3 area of the Laboratory, the installation of three access control stations at key locations, selected road closures, and selected road modifications within the Laboratory site. Consultation with Los Alamos Commerce and Development Corporation is underway to assure adequate access to the Research Park and to utilize some of the land in the Research Park for the north road extension.

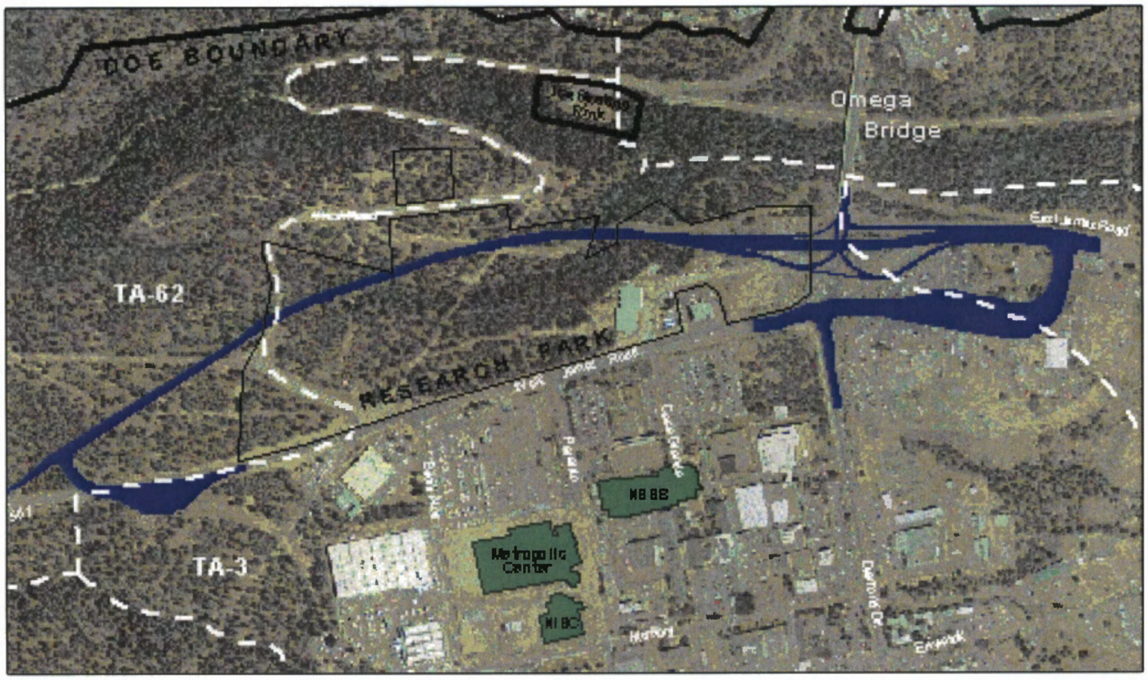


Figure 5-7: The Security Perimeter Project separates TA-3 from unrestricted public access.

5.2.3 Facilities and Infrastructure Recapitalization Program (FIRP) Projects

FIRP applies new, increased, direct appropriations to address maintenance and infrastructure activities that will significantly improve the long-term physical and infrastructure conditions and mission availability. FIRP projects are vital to mission accomplishment, yet they are not tied to a specific Campaign or weapons program. Because of their crosscutting nature, they have not previously achieved priority within strictly programmatic budget reviews. The following FIRP projects highlight long-term needs and priorities.

Power Grid Infrastructure Upgrades (PGIU) Project

The PGIU Project will provide improvements to the electrical infrastructure, which is currently prone to single point failures due to a lack of redundancy. This project has been part of the NNSA planning strategy for several years. It will construct a new 115 kV transmission line approximately 10 miles long across DOE administered property. It will originate at a new Southern Technical Area (STA) Substation and proceed northwesterly through the central portion of the site to the West Technical Area (WTA) Substation. The project will reduce deferred maintenance items associated with the Eastern Technical Area (ETA) Substation. The ETA equipment has not received critical maintenance and repairs due to the inability to de-energize the ETA. With this project, the existing Norton and Reeves lines, as well as the new line, can be individually de-energized to perform critical maintenance, without impact to the Laboratory.

Figure 5-7: The PGIU Project will eliminate single point failure modes, as shown above.

PGIU Project provides reliable power to the site:
- Eliminates single point failures that isolate LANL from the grid
- Improves and eases routine maintenance; reduces deferred maintenance backlog
- Reduces programmatic costs associated with power outages

Quick Facts and Status:
- TEC = $15M
- TPC = $16.5M
- Design & Const: 1Q FY05
- Complete: 1Q FY06
- Status: CD-0 package submitted June '03, CD-1 pending

Completion of this project will eliminate single point failures that isolate the Laboratory from electrical power entirely. NNSA's DP guidance explicitly states that reliable facilities capable of supporting mission demands, while meeting security, health, safety, environmental, and operating requirements, are essential to mission success. The existing electrical transmission facilities are considered marginal because they are susceptible to a total loss of service (through single point failures) under certain conditions and do not meet industry standards. The current transmission line configuration and insufficient reliability pose continued increased operational risk to NNSA and the Laboratory. This situation developed partly out of funding constraints and prioritization issues over the past 30 years.

[redacted]

[redacted]

[redacted]

[redacted]

Pajarito Road Corridor Utilities Project

This $24M TEC and $26M TPC project will upgrade the power distribution system and other vital utilities to the nuclear core sites, including TA-55. The existing electrical and utilities infrastructure to the nuclear core and TA-55 is over 25 years old. As activities at the site have increased substantially, and with the addition of CMRR, the nuclear sites will require substantially more power. This upgrade will provide the necessary utility capacity.

5.2.4 Other DP / Programmatic Funded Projects

Two projects not included in the current ICPP but under consideration by Laboratory management include a Radiography Facility at TA-55 and the final cornerstone of the TA-3 revitalization, the Center for Stockpile Stewardship Research (CSSR).

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5.3 FACILITIES AND INFRASTRUCTURE COST PROJECTION SPREADSHEETS

The Laboratory accomplishes critical infrastructure development, renovations, and upgrades through line item (LIP), general plant (GPP), capital equipment, and expense-funded projects. The following tables were developed in accordance with DOE guidance and format requirements and line organization and program office input. These spreadsheets reflect the prioritized project list and capture all facility and infrastructure-related projects in order of funding type, then by general priority within the funding types. Funding profiles are shown for FY02 through FY13. Footnotes provide clarification where necessary at the end of the list.

The Laboratory is also including a spreadsheet for non-RTBF/FIRP projects. While not required, this spreadsheet allows for a complete view of infrastructure investment. Because it includes multi-program funding sources, the projects are not prioritized.

Primary categories of projects and costs provided are as follows:

- Existing and proposed line item construction,
- Other Project Costs (OPC) for existing and proposed line item construction,
- Preliminary Engineering and Design (PE&D) for proposed line item construction,
- Capital equipment,
- Expense,
- GPP,
- Institutional,
- Maintenance,
- Standby,
- D&D, and
- Facility management and site planning costs.

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NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Line Item Projects for LANL
($000s)

Priority (1)	Project Name (2)	Project Number (3)	Program Sponsor	NEPA Status (20)	Deferred Maintenance Reduction (X)	GSF Added or Eliminated (+/-) (X)	Funding Type (4)	Total (5)	Prior Years Funding (6)	FY 2002 Actual Cost (7)	FY 2003 ¹ (8)	FY 2004 ² (9)	FY 2005 ² (10)	FY 2006 FYNSP (11)	FY 2007 FYNSP (12)	FY 2008 FYNSP (13)	FY 2009 (14)	FY 2010 (15)	FY 2011 (16)	FY 2012 (17)	FY 2013 (17)
A. Readiness in Technical Base and Facilities (RTBF) Line Items																					
F	CMR Upgrades **(32)**	LANL-92-001	NA12	EA-FONSI			OPC	**20,247**	20,247	1,158											
							PE&D	**-**	-												
							LI	**106,020**	106,020	7,286											
							Total (TPC)	**126,267**	**126,267**	**8,444**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
F	Nicholas C. Metropolis Center (formerly Strategic Computing Facility) **(33)**	00-D-105	NA11	EA-FONSI			OPC	**6,782**	6,782	767											
							PE&D	**-**	-												
							LI	**84,740**	84,740												
							Total (TPC)	**91,522**	**91,522**	**767**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
F	CMR Replacement Project **(37)**	04-D-125	NA12	EIS-PREP			OPC	**93,800**	13,586	4,028	5,496	5,299	5,000	6,419	7,000	7,000	16,000	18,000	10,000		
							PE&D	**14,500**			6,325	4,500	3,675								
							LI	**485,500**				20,500	75,000	110,000	100,000	100,000	80,000				
							Total (TPC)	**593,800**	**13,586**	**4,028**	**11,821**	**30,299**	**83,675**	**116,419**	**107,000**	**107,000**	**96,000**	**18,000**	**10,000**	**-**	**-**
1	National Security Sciences Building (formerly SM-43 Replacement)	03-D-102	NA11	EA-FONSI			OPC	**24,180**	2,285	661	800	221	845	12,251	7,778						
							PE&D	**-**	-		-	-	-								
							LI	**99,000**			11,650	50,000	37,350								
							Total (TPC)	**123,180**	**2,285**	**661**	**12,450**	**50,221**	**38,195**	**12,251**	**7,778**	**-**	**-**	**-**	**-**	**-**	**-**
2	DX High Explosives Characterization Consolidation **(40)**	LANL-05-016	NA11	EA-PREP			OPC	**1,000**				250	750								
							PE&D	**2,000**					2,000								
							LI	**26,000**						13,000	13,000						
							Total (TPC)	**29,000**	**-**	**-**	**-**	**250**	**2,750**	**13,000**	**13,000**	**-**	**-**	**-**	**-**	**-**	**-**
3	ESA Fabrication Facility Replacement(replaces LANSCE High Voltage Distribution Replacement which moved to FIRP)	LANL-06-005	NA11	EA-TBD			OPC	**1,800**				250	750	200	200	200	200				
							PE&D	**3,000**						3,000							
							LI	**15,000**							8,000	7,000					
							Total (TPC)	**19,800**	**-**	**-**	**-**	**250**	**750**	**3,200**	**8,200**	**7,200**	**200**	**-**	**-**	**-**	**-**
4	TA-55 Infrastructure Reinvestment **(39)**	LANL-06-015	NA12	CX-TBD			OPC	**9,100**			300	1,000	1,000	500	500	300	300	300	300	300	300
							PE&D	**10,000**					-	5,000	5,000						
							LI	**95,000**							-	12,000	12,000	12,000	12,000	12,000	12,000
							Total (TPC)	**114,100**	**-**	**-**	**300**	**1,000**	**1,000**	**5,500**	**5,500**	**12,300**	**12,300**	**12,300**	**12,300**	**12,300**	**12,300**
5	Radioactive Liquid Waste Treatment Facility Upgrade **(41)**	LANL-06-021	NA11	EA-TBD			OPC	**3,250**			250	1,000	500	200	200	200	500	400			
							PE&D	**3,000**						3,000							
							LI	**44,000**							17,000	15,000	12,000				
							Total (TPC)	**50,250**	**-**	**-**	**250**	**1,000**	**500**	**3,200**	**17,200**	**15,200**	**12,500**	**400**	**-**	**-**	**-**
6	Support Services Consolidation **(43)**	LANL-07-019	NA11	EA-TBD			OPC	**1,200**				-	-	600	200	200	100	100			
							PE&D	**-**													
							LI	**14,000**							-	5,000	9,000				
							Total (TPC)	**15,200**	**-**	**-**	**-**	**-**	**-**	**600**	**200**	**5,200**	**9,100**	**100**	**-**	**-**	**-**
7	Pajarito Road Corridor Utilities(replaces part of Infrastructure Revitalization)	LANL-07-023	FIRP	EA-TBD			OPC	**1,200**					-	400	400	100	100	100	100		
							PE&D	**1,000**							1,000						
							LI	**24,000**								9,000	15,000	-	-	-	
							Total (TPC)	**26,200**	**-**	**-**	**-**	**-**	**-**	**400**	**1,400**	**9,100**	**15,100**	**100**	**100**	**-**	**-**
-	TA-18 Mission Relocation Project **(18)**	01-D-103	NA11	EIS-ROD			OPC	**-**			-	-	-	-	-	-	-	-			
							PE&D	**-**			-		-								
							LI	**-**				-	-	-	-						
							Total (TPC)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Line Item Projects for LANL
($000s)

Priority (1)	Project Name (2)	Project Number (3)	Program Sponsor	NEPA Status (20)	Deferred Maintenance Reduction (X)	GSF Added or Eliminated (+/-) (X)	Funding Type (4)	Total (5)	Prior Years Funding (6)	FY 2002 Actual Cost (7)	FY 2003 ¹ (8)	FY 2004 ² (9)	FY 2005 ³ (10)	FY 2006 FYNSP (11)	FY 2007 FYNSP (12)	FY 2008 FYNSP (13)	FY 2009 (14)	FY 2010 (15)	FY 2011 (16)	FY 2012 (17)	FY 2013 (17)
B. Facilities and Infrastructure Recapitalization Program (FIRP) Line Items																					
1	Power Grid Infrastructure Upgrade**(36)**	LANL-06-020	FIRP	EA-FONSI			OPC	1,500			1,000	250	125	125							
							PE&D	-													
							LI	15,000					10,000	5,000							
							Total (TPC)	16,500	-	-	1,000	250	10,125	5,125	-	-	-	-	-	-	-
[redacted]																					
C. Safeguards & Security (S&S) Line Items																					
F	NMSSUP Phase 1**(44)**	99-D-132	FS	CX			OPC	12,808	9,491	897	2,226	807	284	-							
							PE&D	-													
							LI	60,884	48,543	24,333	8,641	3,700									
							Total (TPC)	73,692	58,034	25,230	10,867	4,507	284	-	-	-	-	-	-	-	-
1	NMSSUP Phase 2**(46)**	05-D-014	FS	CX			OPC	12,000			1,900	5,900	1,700	300	200	200	200	200	1,400		
							PE&D	45,000					10,000	35,000							
							LI	183,000						-	45,000	50,000	44,000	44,000			
							Total (TPC)	240,000	-	-	1,900	5,900	11,700	35,300	45,200	50,200	44,200	44,200	1,400	-	-
2	Security Perimeter Project (formerly Bypass Roads) **(46)**	LANL-05-017	FS	EA-FONSI			OPC	4,024		2,500	200	300	517	507							
							PE&D	-													
							LI	28,000				-	13,000	15,000							
							Total (TPC)	32,024	-	2,500	200	300	13,517	15,507	-	-	-	-	-	-	-
D. Other Defense Programs Line Items (for example, Campaigns/Directed Stockpile Work (DSW))																					
F	APT / Triple A Project	LANL-98-002	NA	EIS-TBD			OPC	345,824	345,824												
							PE&D	-	-												
							LI	159,079	159,079	65											
							Total (TPC)	504,903	504,903	65	-	-	-	-	-	-	-	-	-	-	-
F	DARHT (Phase 1 & 2)	LANL-98-003	NA11	EIS-ROD			OPC	10,107	9,849	740	258										
							PE&D	-	-												
							LI	259,481	259,481	16,017											
							Total (TPC)	269,588	269,330	16,757	258	-	-	-	-	-	-	-	-	-	-
E. Nuclear Nonproliferation (NN) Line Items																					
F	Nonproliferation and International Security Center	LANL-00-008	NN	EA-FONSI			OPC	4,343	3,322	206	1,013	8									
							PE&D	-													
							LI	58,769	58,769	30,556											
							Total (TPC)	63,112	62,091	30,762	1,013	8	-	-	-	-	-	-	-	-	-
TOTAL (All NNSA Costs For Site Line Items)		[redacted]						2,389,138	1,128,018	89,214	40,059	93,985	162,496	210,502	205,478	206,200	189,400	75,100	23,800	12,300	12,300

NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Proposed Line Item Projects for LANL
($000s)

Priority (1)	Project Name (2)	Project Number (3)	Program Sponsor	NEPA Status (20)	Funding Type (4)	Total (5)	Prior Years Funding (6)	FY 2002 Actual (7)	FY 2003 [1] (8)	FY 2004 [2] (9)	FY 2005 [3] (10)	FY 2006 FYNSP (11)	FY 2007 FYNSP (12)	FY 2008 FYNSP (13)	FY 2009 (14)	FY 2010 (15)	FY 2011 (16)	FY 2012 (17)	FY 2013 (17)

A. Readiness in Technical Base and Facilities (RTBF) Line Items

[redacted]

B. Facilities and Infrastructure Recapitalization Program (FIRP) Line Items

[redacted]

C. Safeguards & Security (S&S) Line Items

[redacted]

D. Other Defense Programs Line Items (for example, Campaigns/Directed Stockpile Work (DSW))

[redacted]

E. Nuclear Nonproliferation (NN) Line Items

[redacted]

NNSA Facilities and Infrastructure Cost Projection Spreadsheet
RTBF/Operations of Facilities for LANL
($000s)

Priority (1)	Project Name (2)	Project Number (3)	Program Sponsor	NEPA Status (20)	Funding Type (4)	Total	Prior Years	FY 2002 Actual Cost (7)	FY 2003 [1] (8)	FY 2004 [2] (9)	FY 2005 [3] (10)	FY 2006 FYNSP (11)	FY 2007 FYNSP (12)	FY 2008 FYNSP (13)	FY 2009 (14)	FY 2010 (15)	FY 2011 (16)	FY 2012 (17)	FY 2013 (18)

[redacted]

Unfunded Projects

[redacted]

NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Facilities and Infrastructure Recapitalization Program (FIRP) for LANL
($000s)

Priority (1)	Project Name (2)	Project Number (4)	Program Sponsor	NEPA Status (20)	Funding Type (3)	Total	Prior Years	FY 2002 Actual Cost (7)	FY 2003 [1] (8)	FY 2004 [2] (9)	FY 2005 [3] (10)	FY 2006 FYNSP (11)	FY 2007 FYNSP (12)	FY 2008 FYNSP (13)	FY 2009 (14)	FY 2010 (15)	FY 2011 (16)	FY 2012 (17)	FY 2013 (18)
[redacted]																			

NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Facilities and Infrastructure Recapitalization Program (FIRP) for LANL
($000s)

[illegible] Priority (1)	Project Name (2)	Project Number (4)	Program Sponsor	NEPA Status (20)	Funding Type (3)	Total	Prior Years	FY 2002 Actual Cost (7)	FY 2003 [1] (8)	FY 2004 [2] (9)	FY 2005 [3] (10)	FY 2006 FYNSP (11)	FY 2007 FYNSP (12)	FY 2008 FYNSP (13)	FY 2009 (14)	FY 2010 (15)	FY 2011 (16)	FY 2012 (17)	FY 2013 (18)
[redacted]																			

NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Facilities and Infrastructure Recapitalization Program (FIRP) for LANL
($000s)

FIRP Priority (1)	Project Name (2)	Project Number (4)	Program Sponsor	NEPA Status (20)	Funding Type (3)	Total	Prior Years	FY 2002 Actual Cost (7)	FY 2003 [1] (8)	FY 2004 [2] (9)	FY 2005 [3] (10)	FY 2006 FYNSP (11)	FY 2007 FYNSP (12)	FY 2008 FYNSP (13)	FY 2009 (14)	FY 2010 (15)	FY 2011 (16)	FY 2012 (17)	FY 2013 (18)
[redacted]																			

LANL Non- RTBF Non- FIRP F&I Cost Projections

Prioritized Infrastructure Project List

(This list includes existing and proposed new construction, OPC for existing and new construction, Capital Equipment, Expense, GPP, Maintenance, Standby, D&D, and Facilities Management/Site Planning costs. The intent is to capture all non-NNSA facility and infrastructure related requirements in priority order.)

[illegible] (4)	[illegible]	[illegible] (4)	Description (2)	Project Identification No. (3)	Program Sponsor	Linkage (10)	NEPA Status (31)	Total (5)	Prior Years Funding (6)	FY 2002 Funded (7)	FY 2003 Target (8)	FY 2004 (8)	FY05 (10)	FY06 (11)	FY07 [illegible]	FY08 [illegible]	FY09 [illegible]	FY10 [illegible]	FY11 [illegible]	FY12 [illegible]	FY13 [illegible]
[redacted]																					

LANL Non- RTBF Non- FIRP F&I Cost Projections

Prioritized Infrastructure Project List

(This list includes existing and proposed new construction, OPC for existing and new construction, Capital Equipment, Expense, GPP, Maintenance, Standby, D&D, and Facilities Management/Site Planning costs. The intent is to capture all non-NNSA facility and infrastructure related requirements in priority order.)

Fund (4)	[illegible]	Priority (1)	Description (2)	Project Identification No. (3)	Program Sponsor	Linkage (19)	NEPA Status (31)	Total (5)	Prior Years Funding (6)	FY 2002 Funded (7)	FY 2003 Target (8)	FY 2004 (9)	FY 05 (10)	FY 06 (11)	FY 07 (12)	FY 08 (13)	FY 09 (14)	FY 10 (15)	FY 11 [illegible]	FY 12 [illegible]	FY 13 [illegible]
[redacted]																					

LANL Non- RTBF Non- FIRP F&I Cost Projections

Prioritized Infrastructure Project List

(This list includes existing and proposed new construction, OPC for existing and new construction, Capital Equipment, Expense, GPP, Maintenance, Standby, D&D, and Facilities Management/Site Planning costs. The intent is to capture all non-NNSA facility and infrastructure related requirements in priority order.)

[illegible] (4)	[illegible]	Priority (1)	Description (2)	Project Identification No. (3)	Program Sponsor	Linkage (10)	NEPA Status (11)	Total (5)	Prior Years Funding (6)	FY 2002 Funded (7)	FY 2003 Target (6)	FY 2004 (8)	FY05 (10)	FY06 (11)	FY07 (12)	FY08 (13)	FY09 (14)	FY10 (15)	FY11 (16)	FY12 (17)	FY13 (17)
[redacted]																					

NNSA Facilities and Infrastructure Cost Projection Spreadsheets
Notes

Column (1) Priority. Each of the funding types (Line Item, RTBF/Operations of Facilities, and FIRP) is prioritized in sequential order (from 1 to xyz) for site facilities and infrastructure projects/activities. For funded projects an "F" is shown in the priority column.
Column (2) Official Project Name.
Column (3) Project Number/Project Identification Number.
Column (4) Funding Type. The type of funding associated with each activity/project, as applicable using the following abbreviations:

LI = Existing Capital Funded Line Item Project
OPC = Other Project Costs
PE&D = Project Engineering & Design
E = Expense
GPP = General Plant Project
GPE = General Purpose Equipment
IGPP = Institutional General Plant Projects
M = Direct Maintenance

Column (5) Total. On the Line Item Spreadsheets, the total (cumulative) cost associated with each existing and proposed line item project for each funding type listed. Under"Total", is the Total Project Cost (TPC) associated with each"Proposed Line Item" and "Existing Line Item" project. TPC is the sum of the LI and PE&D plus the OPC.
Column (6) Prior Years Funding. On the Line Item Spreadsheet, the actual prior years funding associated with the project (sum of the prior years funded through FY 2001 actual) for each funding type listed.
Column (7) FY 2002 Actual and Appropriation. The FY 2002 cost and appropriation associated with the project.
Column (8) FY 2003. Data for FY 2003 is consistent with the Guidance Site Funding Profile for LANL.
Column (9) FY 2004. Data for FY 2004 is consistent with the Guidance Site Funding Profile for LANL.
Columns (10) – (13) FY 2005 – FY 2008 FYNSP. The site's Future Years Nuclear Security Program (FYNSP) constrained case for Fiscal Years 2005– 2008.
Columns (14) – (18) FY 2008 – FY 2013. Provides a requirements based case that is constrained by a 2% annual inflation- based assumption or, in the case of Line Items, the Integrated Construction Program Plan's out-year projections.

Footnotes

(18) Latest ICPP listed this project with the associated budget in the NV grouping.

[redacted]

(20) Levels of NEPA Status are EIS-ROD - an EIS was drafted and Record of Decision issued; EIS Draft - an EIS was drafted and issued for public comment; EIS PREP - an EIS has been determined to be needed and is currently being prepared; EIS-TBD - a determination for need of EIS is not yet complete but an EIS is anticipated; SWEIS - the project is in the Site Wide Environmental Impact Statementl; EA-FONSI - an environmental assessment was completed with a Finding Of No Significant Impact; EA-PREP - an environmental assessment is in progress; EA-TBD - an environmental assessment has not been conducted but is anticipated; CX - the proposed activity has been determined to be categorically excluded from requiring further NEPA analysis; CX-TBD - the planned activity is anticipated to be within categorical exclusion.

[redacted]

(32) Project completed $15M under the budget.
(33) Project completed $13M under the budget.

[redacted]

(36) The funding profile shown reflects current project scope and estimate of CD-0 request.
(37) FY03 PED funding reflects RTBF reprogramming actions to be recast to project in FY05. Reduced FY05 construction funding by PED.

[redacted]

(39) Moved to FY06 new start due to project complexity and added $1M OPC for FY05 CDR development.
(40) Increased estimated cost over ICPP reflects further preconceptual development and added scope needed to meet programmatic requirements and DX Division consolidation needs, particularly in light of reduced GPP funding availibility.
(41) Increase over $20M ICPP budget profile reflects high range of current preconceptual cost estimate. Scope of this alternative includes TRU waste treatment and zero liquid discharge capabilities in response to anticipated regulatory requirements. The final scope will be determined through the project development process.

[redacted]

(43) Project start and funding profile adjusted to reflect current planning and to balance ICPP funding levels.
(44) Revised only to match ICPP and current financal data.

[redacted]

(46) Revised to reflect current discussions with NNSA on FY05 security projects funding.

[redacted]

Attachment B
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Attachment C
Summary of Current Condition and Future Condition

This table is based on FYNSP/fiscal constraints and reflects the best business judgment of the Laboratory based on life-cycle analyses. In general, the expectation is that mission essential facilities and infrastructure are moving toward the good/ excellent categories and deferred maintenance is addressed with a goal of near term stabilization.
"Future" is defined as the condition as of FY13.

Condition Categories

- **Excellent** – Deferred maintenance is < 2% of replacement plant value.
- **Good** – Deferred maintenance is 2 < 5% of replacement plant value.
- **Adequate** – Deferred maintenance is required at a cost 5 < 10% of replacement plant value.
- **Fair** – Deferred maintenance is required at a cost 10 < 25% of replacement plant value.
- **Poor** – Major deferred maintenance required at a cost 25 < 60% of replacement plant value.
- **Fail** – Replacement is required because deferred maintenance cost is ≥60% of replacement plant value.
- **None** – Additional category to capture those facilities for which there is no condition currently listed in FIMS.

Use Categories

The facility use categories of Administrative (Office), Storage, Industrial/Production/Process, Research & Development, and Service Buildings (does not include service structures) are consistent with FIMS.

"Other" includes the following: Post Office, Hospital, Prison, School, Other Institutional Uses, Housing, Trust Buildings, Transportation Systems, Catchall for General Services Administration (GSA) and Other Known Assets, Service Structures, Communication Type Systems, or Distribution Systems.

Use Category	Summary of Current Facility Condition Total Square Footage = 8,675,489					
	Excellent	Good	Adequate	Fair	Poor	Fail
Administrative	4.2%	1.8%	3.3%	10.3%	8.6%	3.5%
Industrial / Production / Process	9.2%	3.8%	3.2%	1.5%	2.8%	3.7%
Research & Development	0.5%	0.8%	0.7%	1.5%	1.4%	0.6%
Service Buildings	3.8%	3.1%	3.4%	3.8%	1.4%	0.5%
Storage	9.0%	1.5%	1.8%	3.1%	2.8%	3.8%
Other	0.2%	0%	0.1%	0.2%	0.2%	0.0%
TOTAL	26.9%	11%	12.6%	20.3%	17.1%	12.2%

Use Category	Summary of Future Facility Condition Total Square Footage = 9,489,439					
	Excellent	Good	Adequate	Fair	Poor	Fail
Administrative	[redacted]					
Storage						
Industrial / Production / Process						
Research & Development						
Service						
Other						
TOTAL						

Attachment D
Summary Facility Utilization

The table below summarizes facility utilization by total square footage. Data were obtained from the Laboratory's FIMS database and through interviews with Laboratory division management. Also included are those excess facilities that are currently tracked in FIMS. The Laboratory, in concurrence with DOE-Albuquerque, does not track a certain subset of buildings, e.g. sheds, transportainers, fabric structures, etc. in FIMS. However, these buildings go through the Laboratory's excess space process, but their gross square footage is not included here.

- **Active Facilities** – Operating (facility required for current and ongoing needs)
- **Spare Facilities** – Operational Standby (future programmatic use other than cleanup expected)
- **Excess Facilities** – Includes Shutdown Pending Deactivation and Decontamination (D&D), Shutdown Pending Transfer, D&D in progress, and Deactivation. Excludes facilities that are Operating Pending D&D.
- **Other** – Operating under an Outgrant, Transfer to Another Federal Facility, Operating Pending D&D. Excludes Sale and Demolished facilities.

Use Category	**Facility Utilization Based on Percentage of Total Square Footage Total Square Footage = 8,675,489**			
	Active	Spare	Excess	Other
Administrative	25%	0%	0%	0%
Storage	9%	0%	0%	0%
Industrial / Production / Process	7%	0%	1%	0%
Research & Development	38%	0%	2%	0%
Service Buildings	10%	0%	0%	0%
Other	8%	0%	0%	0%
TOTAL	97%	0%	3%	0%

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Attachment E-1
Excess Facilities Disposition Plan Spreadsheet

The Excess Facilities Disposition Plan spreadsheet is intended to capture all current excess facilities and those that will become excess in the current TYCSP reporting period. For ease of use, the spreadsheet has been divided into sections to segregate the excess facilities by funding source. Only those facilities proposed for funding by FIRP in FY 2003 are prioritized and ranked on this spreadsheet. If the required information for each facility is available, it has been provided on the spreadsheet. For a number of facilities, the "Year Ready to Start Deactivation and Decontamination," the "Yearly S&M Costs," and "Expected NEPA Category and ES&H" have yet to be determined. These facilities are still being evaluated and more complete information will be provided in future TYCSPs as it is developed.

An additional column, "Historical Significance," has been added to the spreadsheet. For those facilities with a "Yes" in this column, there are two possible conditions. Either the facility is eligible for the National Register of Historic Places under one of the four eligibility criteria, or it has not yet been evaluated and is therefore considered eligible (and protected under the National Historic Preservation Act) until an eligibility assessment can be completed. In this way all buildings that are either eligible or possibly eligible are flagged. A "No" means the structure has been assessed and is not historically significant, and a "To be demolished" means all compliance work is done and the building can be demolished.

The second part of the attachment contains facilities that are *proposed* to be excessed, grouped by mission. Facility managers and division management have identified these facilities as possibly being excess to mission needs within either the next five years or five to 10 years. As these facilities are only *proposed* for excess, much of the information required for the Excess Facilities Disposition spreadsheet are not yet available. As these facilities move through the excessing process and more information becomes available, it will be provided in future TYCSPs.

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Attachment E-1
NNSA Excess Facilities Disposition Plan

Funding Source	Facility Identification Number	Facility Name	Priority Score (FY 2004 and FY2005 FIRP Only)	Priority Rank (FY 2004 and FY 2005 FIRP Only)	Gross SF	Year Ready To Start D&D	Planned Demolition Year	Total Estimated Cost (TEC) to Demolition (FY 2004 and FY 2005 FIRP Only)	Deferred Maintenance Reduction (FIRP Only)	Yearly S&M Costs	Candidate for Transfer?	Contaminated Facility?	Notes	Historical Significance
[redacted]														

Attachment E-1
NNSA Excess Facilities Disposition Plan

Funding Source	Facility Identification Number	Facility Name	Priority Score (FY 2004 and FY2005 FIRP Only)	Priority Rank (FY 2004 and FY 2005 FIRP Only)	Gross SF	Year Ready To Start D&D	Planned Demolition Year	Total Estimated Cost (TEC) to Demolition (FY 2004 and FY 2005 FIRP Only)	Deferred Maintenance Reduction (FIRP Only)	Yearly S&M Costs	Candidate for Transfer?	Contaminated Facility?	Notes	Historical Significance
[redacted]														

Attachment E-1
NNSA Excess Facilities Disposition Plan

Funding Source	Facility Identification Number	Facility Name	Priority Score (FY 2004 and FY2005 FIRP Only)	Priority Rank (FY 2004 and FY 2005 FIRP Only)	Gross SF	Year Ready To Start D&D	Planned Demolition Year	Total Estimated Cost (TEC) to Demolition (FY 2004 and FY 2005 FIRP Only)	Deferred Maintenance Reduction (FIRP Only)	Yearly S&M Costs	Candidate for Transfer?	Contaminated Facility?	Notes	Historical Significance
[redacted]														

Funding Source	Facility Identification Number	Facility Name	Priority Score (FY 2004 and FY2005 FIRP Only)	Priority Rank (FY 2004 and FY 2005 FIRP Only)	Gross SF	Year Ready To Start D&D	Planned Demolition Year	Total Estimated Cost (TEC) to Demolition (FY 2004 and FY 2005 FIRP Only)	Deferred Maintenance Reduction (FIRP Only)	Yearly S&M Costs	Candidate for Transfer?	Contaminated Facility?	Notes	Historical Significance
[redacted]														

Funding Source	Facility Identification Number	Facility Name	Priority Score (FY 2004 and FY2005 FIRP Only)	Priority Rank (FY 2004 and FY 2005 FIRP Only)	Gross SF	Year Ready To Start D&D	Planned Demolition Year	Total Estimated Cost (TEC) to Demolition (FY 2004 and FY 2005 FIRP Only)	Deferred Maintenance Reduction (FIRP Only)	Yearly S&M Costs	Candidate for Transfer?	Contaminated Facility?	Notes	Historical Significance
[redacted]														

Funding Source	Facility Identification Number	Facility Name	Priority Score (FY 2004 and FY2005 FIRP Only)	Priority Rank (FY 2004 and FY 2005 FIRP Only)	Gross SF	Year Ready To Start D&D	Planned Demolition Year	Total Estimated Cost (TEC) to Demolition (FY 2004 and FY 2005 FIRP Only)	Deferred Maintenance Reduction (FIRP Only)	Yearly S&M Costs	Candidate for Transfer?	Contaminated Facility?	Notes	Historical Significance
[redacted]														

Attachment E-1
NNSA Excess Facilities Disposition Plan

Funding Source	Facility Identification Number	Facility Name	Priority Score (FY 2004 and FY2005 FIRP Only)	Priority Rank (FY 2004 and FY 2005 FIRP Only)	Gross SF	Year Ready To Start D&D	Planned Demolition Year	Total Estimated Cost (TEC) to Demolition (FY 2004 and FY 2005 FIRP Only)	Deferred Maintenance Reduction (FIRP Only)	Yearly S&M Costs	Candidate for Transfer?	Contaminated Facility?	Notes	Historical Significance
[redacted]														

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use
[redacted]							

Attachment E-1
Proposed Future Excess Facilities

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use
[redacted]							

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use
[redacted]							

Attachment E-1
Proposed Future Excess Facilities

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use
[redacted]							

Attachment E-1
Proposed Future Excess Facilities

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use

[redacted]

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use

[redacted]

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use

[redacted]

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use
[redacted]							

Facility Number	Name	Mission	Year Built	Gross SF	Current Facility Condition Code	Future/Proposed Facility Disposition	Current Use
[redacted]							

Attachment E-2
NNSA New Construction Spreadsheet (Space Added)

The New Construction spreadsheet (Attachment E-2) captures the gross square footage of NNSA proposed construction at the Laboratory, along with the year of beneficial occupancy, for Line Item, GPP, IGPP and other projects from FY02-FY13. New facilities are counted only when they are completed and occupied (year of beneficial occupancy). Construction projects started prior to FY03 will not be counted against the new Congressional requirement.

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Funding Source	Project Number	Facility Name	Funding Type	New Facilities (GSF)	Year of Beneficial Occupancy
FIRP	LANL-03-081	TA-16-260 Reconfiguration	GPP	4,000	FY04
FIRP	LANL-03-063	Beryllium Tech Facility - Cartridge Filter House Install	GPP	3,100	FY04
FIRP	LANL-03-104	Hydrotest Design Facility	GPP	17,400	FY04
FIRP	LANL-03-111	Shock & Vibration Laboratory	GPP	3,700	FY04
FIRP	LANL-03-079	FWO Office Building	GPP	19,400	FY04
NON	LANL-03-114	Stockpile Support Building	GPP	18,000	FY04
NON	LANL-03-131	Homeland Security Building	GPP	18,000	FY04
FY04 New Construction Total GSF				83,600	

[redacted]

Funding Source	Project Number	Facility Name	Funding Type	New Facilities (GSF)	Year of Beneficial Occupancy
[redacted]					

Funding Source	Project Number	Facility Name	Funding Type	New Facilities (GSF)	Year of Beneficial Occupancy
[redacted]					

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Attachment E-3
NNSA Excess Facility Elimination and New Construction Chart

Attachment E-3 is a chart of the Laboratory's gross square footage of NNSA Excess Facility Elimination and New Construction. The data will help to support the Departmental requirement for all sites to balance increases in the gross square footage of building space added with an offset in space due to elimination.

Overall, the Laboratory will demolish more space than it will construct over the next 10 years. The spikes in FY06 are due to the NSSB achieving beneficial occupancy and the old Administration Building (SM-43) coming down. Another spike in FY11 is due to the CMRR project coming online, however, the D&D of the existing CMR will occur just outside the window of the plan.

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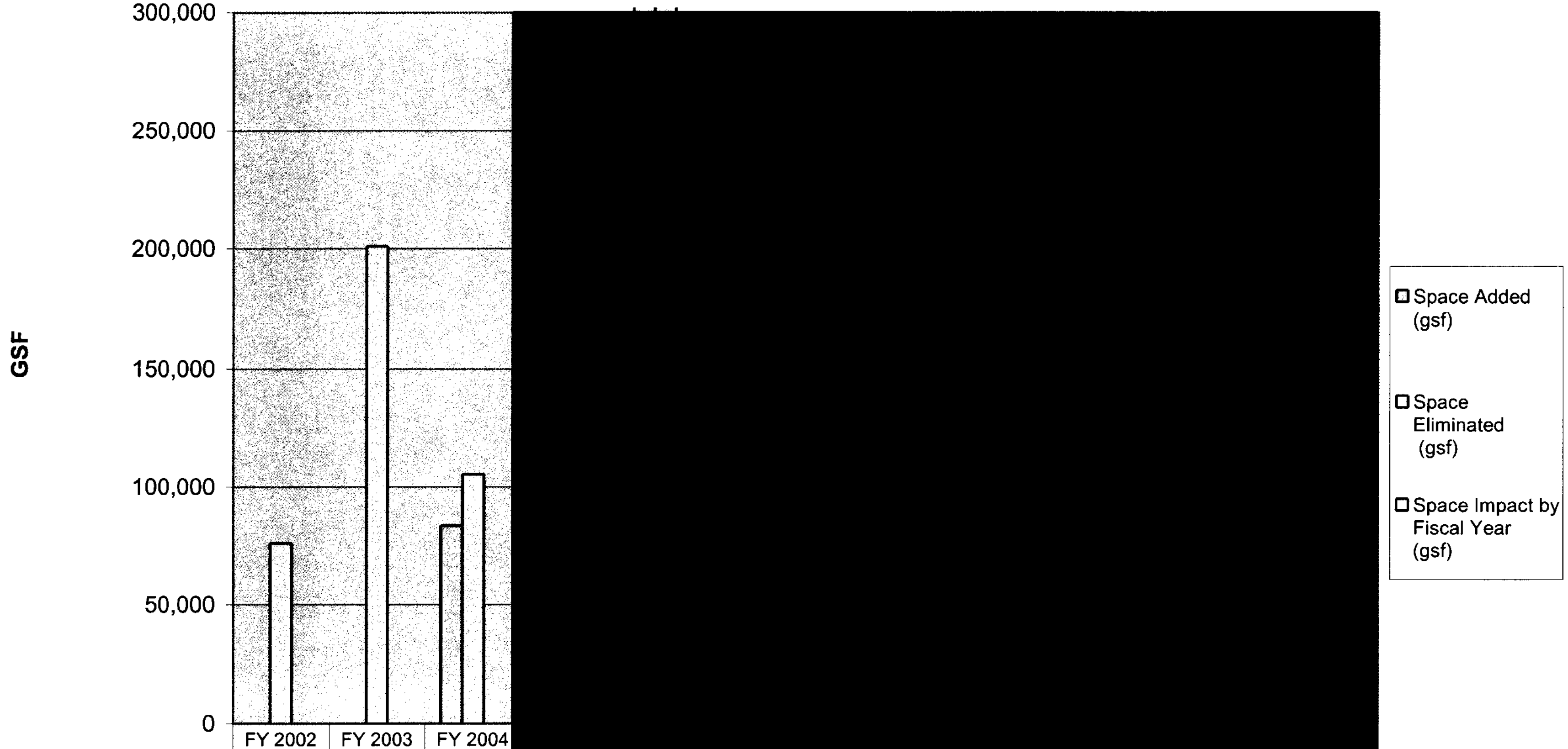
ATTACHMENT E-3
LANL NNSA Excess Facility Elimination and New Construction



[redacted]

	FY 2002	FY 2003	FY 2004	[redacted]
Space Added (gsf)	0	0	83,600	[redacted]
Space Eliminated (gsf)	76,116	200,900	105,500	[redacted]
Space Impact by Fiscal Year (gsf)	-76116	-200900	-21900	[redacted]

Attachment F
Deferred Maintenance Baseline (FY03) and Projected Deferred Maintenance Reduction

A primary indicator of the overall health of a facility is the amount of maintenance that has been deferred. Reducing deferred maintenance associated with NNSA's facilities and infrastructure is a visible and measurable improvement to the nuclear weapons complex. NNSA committed to Congress in testimony that deferred maintenance will be stabilized by FY05 and reduced to within industry standards for mission essential facilities and infrastructure by FY09. These commitments are NNSA's demonstration of accountability for the significant resources the OMB and Congress are providing.

The NNSA Headquarters Federal and contractor facility leadership have established corporate goals for Deferred Maintenance Reduction and have reached agreement on a corporate definition for mission essential facilities and infrastructure, which is a key component of the NNSA's goal to: *Return facility conditions for our mission essential facilities and infrastructure, to an assessment level of good to excellent (deferred maintenance/replacement plant value less than 5 percent).*

The Laboratory's data reported in the Attachment F, Deferred Maintenance Baseline and Projected Deferred Maintenance Reduction Spreadsheet will be used to report the baseline of NNSA maintenance requirements and assess actual and planned progress towards reducing deferred maintenance. There is an emphasis on the reduction of deferred maintenance for mission-essential facilities. A NNSA corporate roll-up of data reported in this spreadsheet will be used to trend and analyze progress towards the achievement of NNSA's commitments to Deferred Maintenance Reduction.

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Attachment F
LANL NNSA Deferred Maintenance Baseline (FY 2003) and Projected Deferred Maintenance Reduction

Category of Maintenance	FY 2001 (Actual)	FY 2002 (Actual)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1. **NNSA ANNUAL ACTUAL AND REQUIRED [1] MAINTENANCE**	$ 91,608,900	$ 86,530,763	$ 95,898,572	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2. **MAINTENANCE TOTAL**	$ 91,608,900	$ 86,530,763	$ 95,898,572	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A. Direct	$ 55,255,702	$ 46,023,375	$ 50,634,446	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
B. Indirect	$ 35,841,167	$ 39,635,936	$ 45,264,126	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
3. **NNSA DEFERRED MAINTENANCE TOTAL (Excludes Programmatic Real Property or Equipment) [2]**	$ 207,373,872	$ 317,381,407	$ 564,242,663	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A. Deferred Maintenance for Mission-Essential Facilities and Infrastructure ONLY	N/A	N/A	$ 267,109,666	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
B. Deferred Maintenance for Facilities and Infrastructure Other Than Mission-Essential Facilities and Infrastructure	N/A	N/A	$ 297,132,997	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
4. **NNSA DEFERRED MAINTENANCE REDUCTION TOTAL**	$ (11,608,185)	$ (110,007,535)	$ (246,861,256)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A. Reduction in Deferred Maintenance for Mission-Essential Facilities and Infrastructure	N/A	N/A	$ (116,862,889)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1. Reduction attributed to FIRP ONLY		See Note 3 below	$ 13,704,600	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
B. Reduction in Deferred Maintenance for Facilities and Infrastructure Other Than Mission-Essential Facilities and Infrastructure	N/A	N/A	$ (129,998,367)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1. Reduction attributed to FIRP ONLY	N/A	N/A	$ 8,525,400	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
5. **REPLACEMENT PLANT VALUE (RPV) FOR NNSA FACILITIES & INFRASTRUCTURE**	$ 3,587,654,332	$ 3,091,307,294	$ 5,623,221,106	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A. RPV for NNSA Mission-Essential Facilities and Infrastructure ONLY	N/A	N/A	$ 3,232,754,556	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
B. RPV for Other Than NNSA Mission-Essential Facilities and Infrastructure	N/A	N/A	$ 2,390,466,550	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Assumptions:
1. Values are in real dollars vice FY02 dollars for budgeting and planning purposes.
2. RPVs take into account planned new buildings and the cuurent demolition plan for old buildings
3. Future FIRP funding will continue as an extrapolation of FY02 and FY03 FIRP funding.
4. FIRP distribution breakout is: 40% Deferred Maintenance buydown, FIRP Demolition at $9.8M FY02 dollars, remainder for facility replacement.
5. Funding deferred maintenance buydown efficiencies are: direct buydown at 80%, demolition at 100%, maintenance at 100%, facility replacement at 5%.
6. GPP funding will be constant at $9.6M FY03 dollars.
7. Maintenance reinvestment at $2M FY02 dollars.
8. Deferred maintenance estimate for FY03 will be new baseline by removing predicted reduction to estimate FY02. Due to current CAS baseline project.

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Attachment F-1
Deferred Maintenance Baseline (FY03) and Projected Deferred Maintenance Projections Chart

Attachment F-1 is a chart of the Laboratory's total NNSA deferred maintenance and the NNSA deferred maintenance for mission essential facilities and infrastructure. The data demonstrate the Laboratory's planned progress towards meeting the NNSA corporate goals for FY05 (stabilize deferred maintenance) and for FY09 (reduce deferred maintenance to within industry standards). FY03 is the baseline from which progress and results will be assessed.

NNSA Deferred Maintenance Total is the Laboratory's total NNSA Deferred Maintenance for FYs 2001-2009. The data are reported in the Attachment F spreadsheet on the third row. The NNSA Deferred Maintenance Total excludes Programmatic Real Property or Equipment.

NNSA Deferred Maintenance for Mission Essential Facilities and Infrastructure is the Laboratory's total deferred maintenance for the mission essential facilities and infrastructure listed in Attachment G. The data are reported in the Attachment F spreadsheet on the fourth row.

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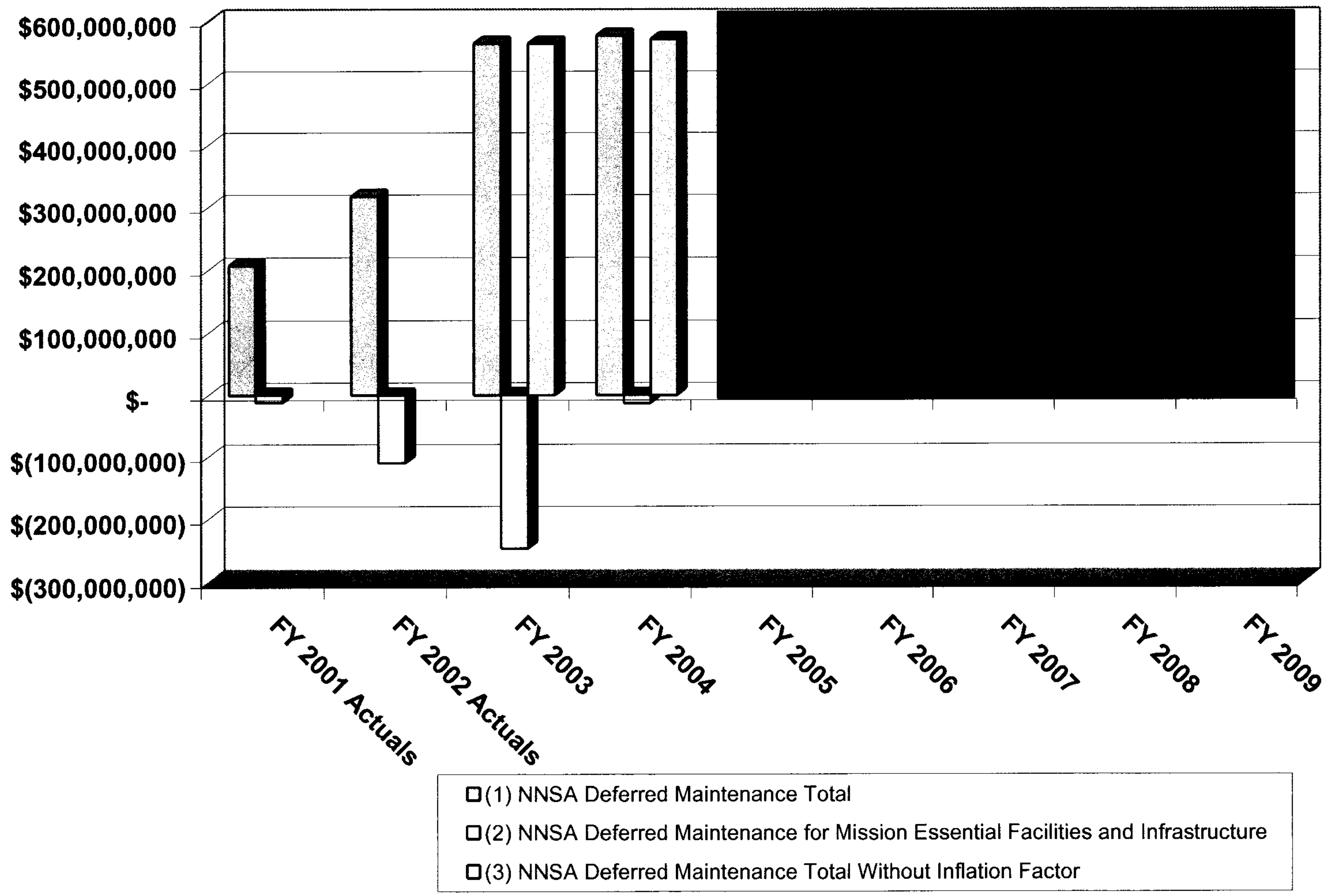
ATTACHMENT F-1
LANL NNSA Deferred Maintenance Baseline (FY03) and Deferred Maintenance Projections



Attachment G
NNSA Mission Essential Facilities and Infrastructure

[redacted]

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition

[redacted]

NNSA Mission Essential Facilities and Infrastructure Name	Facility Identification Number	GSF	Year Built	Current Condition
[redacted]				

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Attachment H
Facility Strategic Planning

[redacted]

Weapons Physics (WP) Directorate

Dynamic Experimentation (DX) Division

[redacted]

Physics (P) Division

[redacted]

Computer and Computational Sciences (CCS) Division

[redacted]

Weapons Engineering and Manufacturing (WEM) Directorate

Engineering Sciences and Applications (ESA) Division

[redacted]

Strategic Research (SR) Directorate

[redacted]

[redacted]

[redacted]

Chemistry (C) Division

[redacted]

Earth and Environmental Sciences (EES) Division

[redacted]

Theoretical (T) Division

[redacted]

Materials Science and Technology (MST) Division

[redacted]

Threat Reduction (TR) Directorate

Decision Applications (D) Division

[redacted]

Nonproliferation and International Security (NIS) Division at TA-33

[redacted]

Bioscience (B) Division

[redacted]

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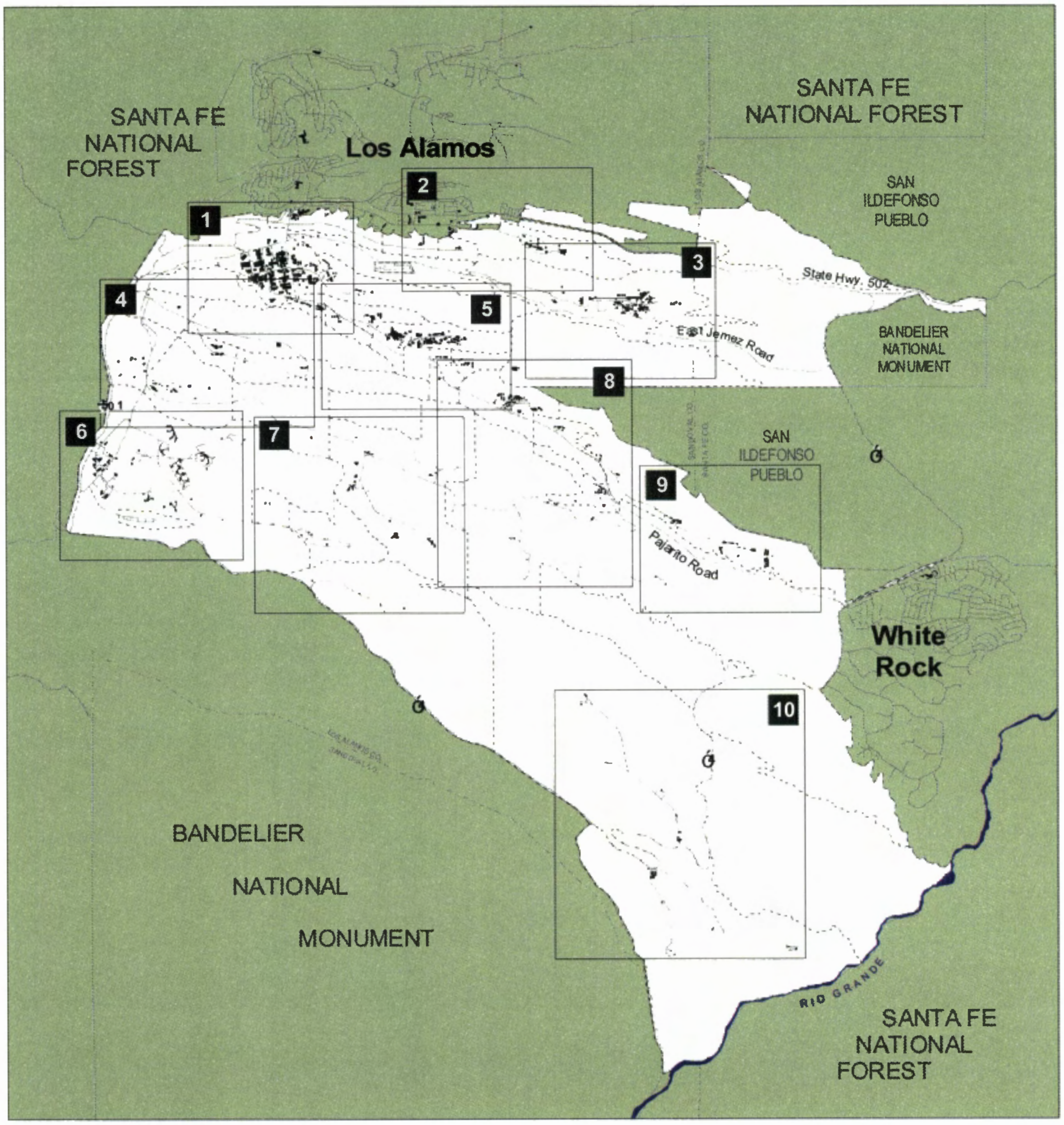
Attachment I
Sitewide Maps



Site Wide Index Map

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Current and Future Facility Status

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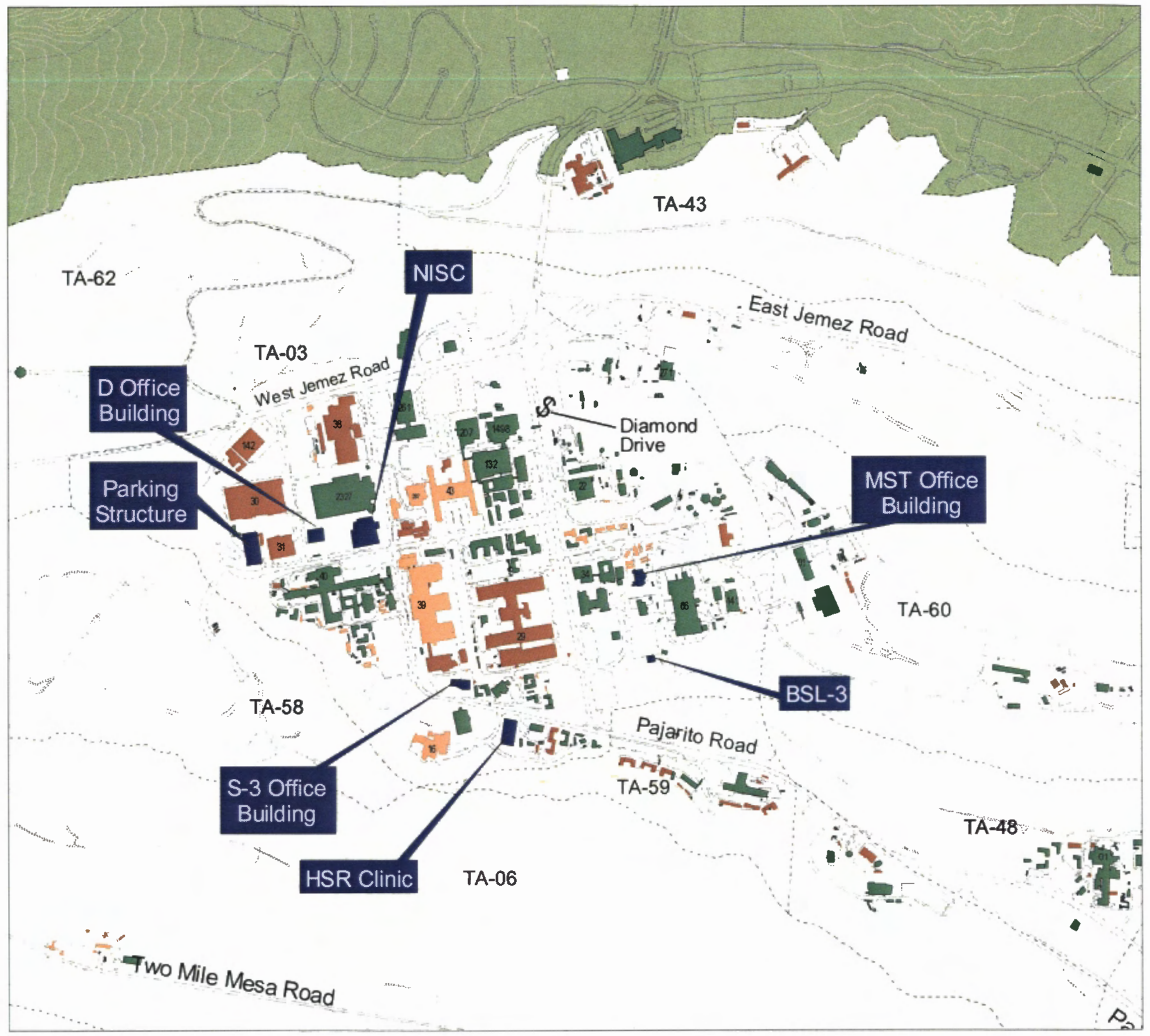
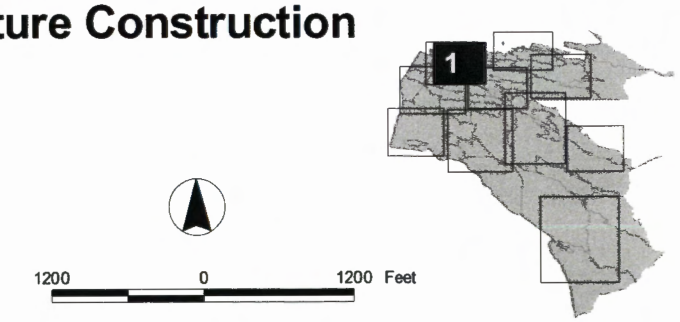


Facility Status, 2004
with Currently Funded Construction

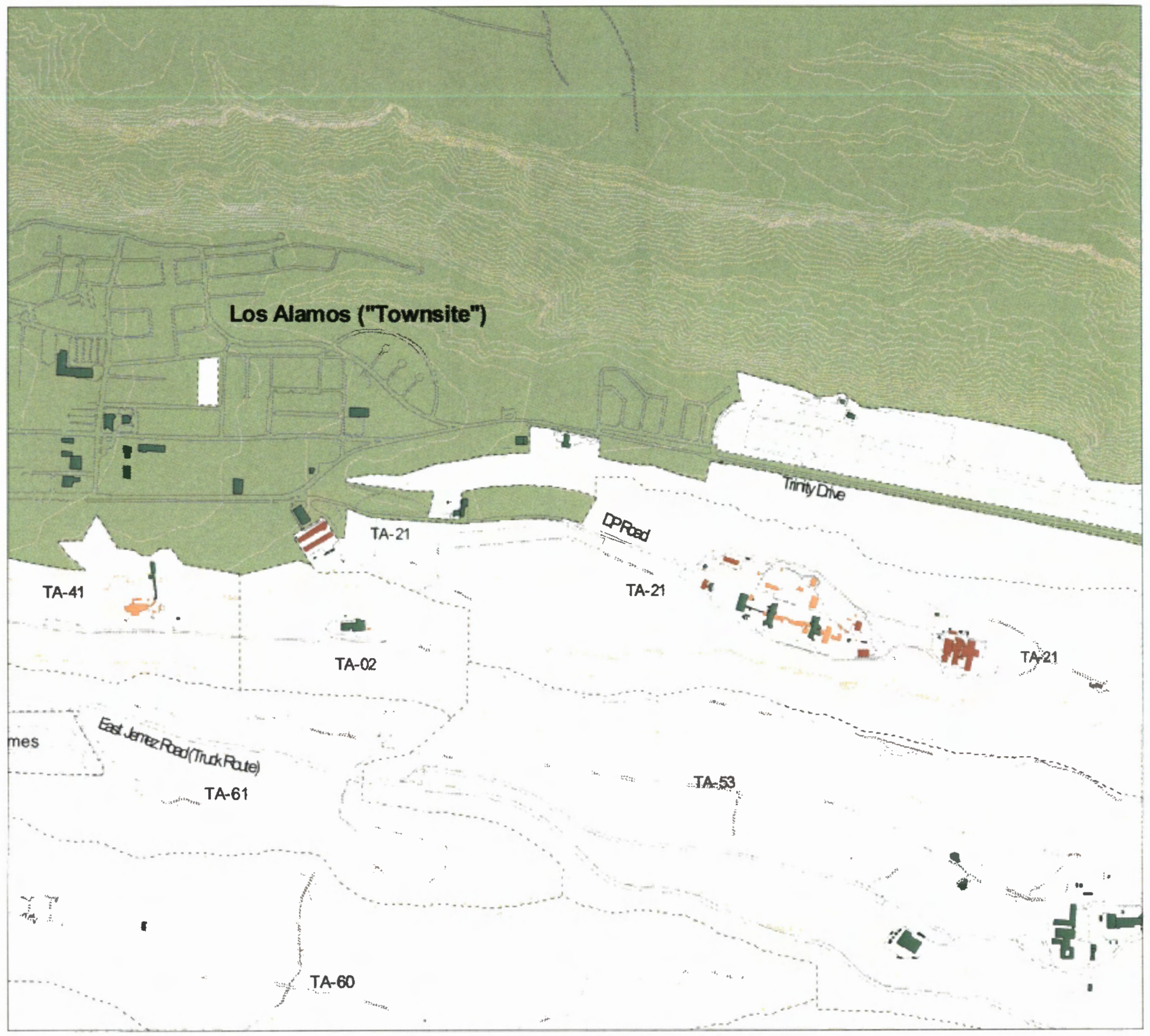
[redacted]

Facility Status, 2013
with Proposed Future Construction



LEGEND

- Active Facility
- Active, Proposed for Excess by 2012
- Excessed Facility
- Spare Facility
- New and/or Proposed Facility
- Technical Area Boundary
- Technical Area Boundary with Future Facility Construction Project



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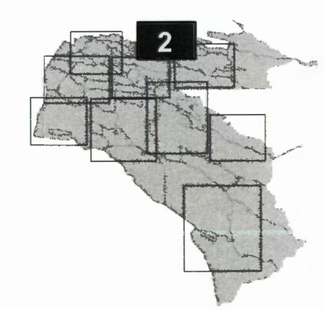
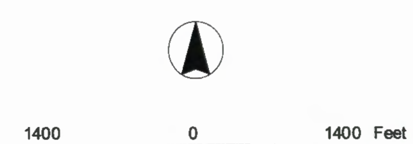
Facility Status, 2004
with Currently Funded Construction

Facility Status, 2013
with Proposed Future Construction





LEGEND

- Active Facility
- Active, Proposed for Excess by 2012
- Excessed Facility
- Spare Facility
- New and/or Proposed Facility
- Technical Area Boundary
- Technical Area Boundary with Future Facility Construction Project

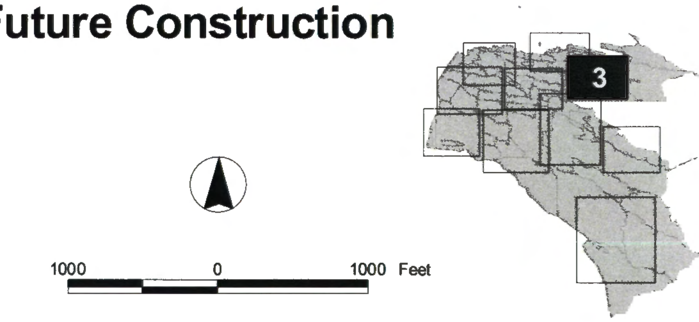
Facility Status, 2004
with Currently Funded Construction

[redacted]

Facility Status, 2013
with Proposed Future Construction

LEGEND

- Active Facility
- Active, Proposed for Excess by 2012
- Excessed Facility
- Spare Facility
- New and/or Proposed Facility
- Technical Area Boundary
- Technical Area Boundary with Future Facility Construction Project



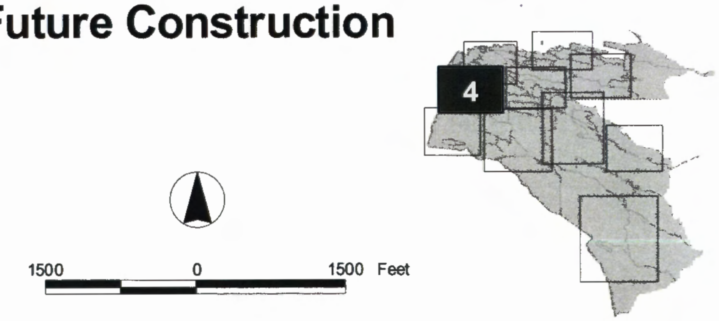
Facility Status, 2004
with Currently Funded Construction

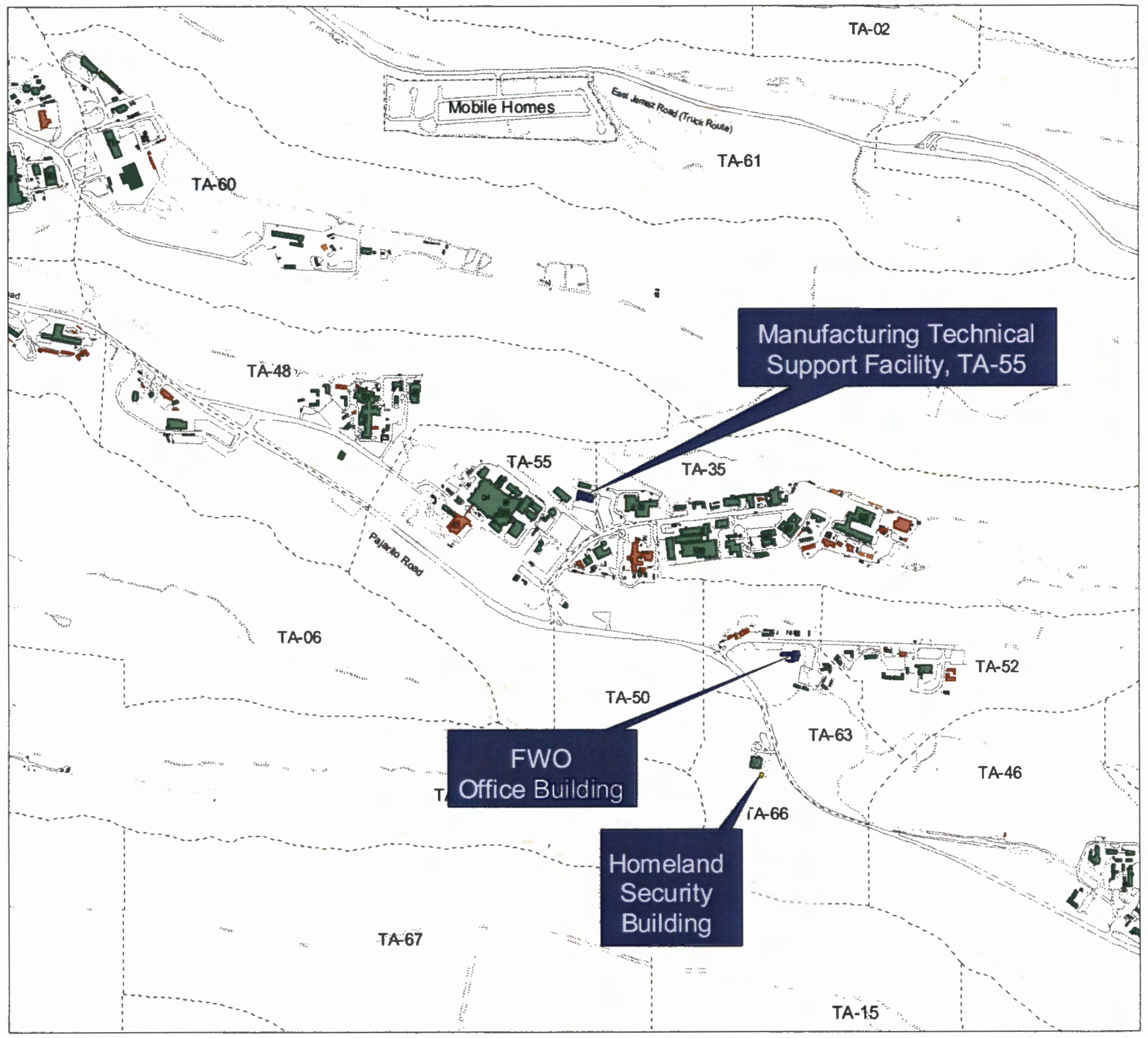
[redacted]

Facility Status, 2013
with Proposed Future Construction

LEGEND

- Active Facility
- Active, Proposed for Excess by 2012
- Excessed Facility
- Spare Facility
- New and/or Proposed Facility
- Technical Area Boundary
- Technical Area Boundary with Future Facility Construction Project





Facility Status, 2004
with Currently Funded Construction

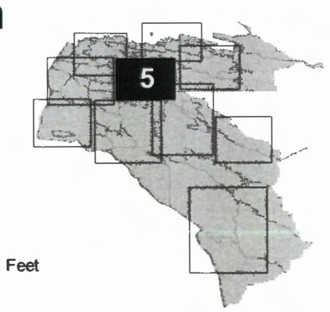
[redacted]

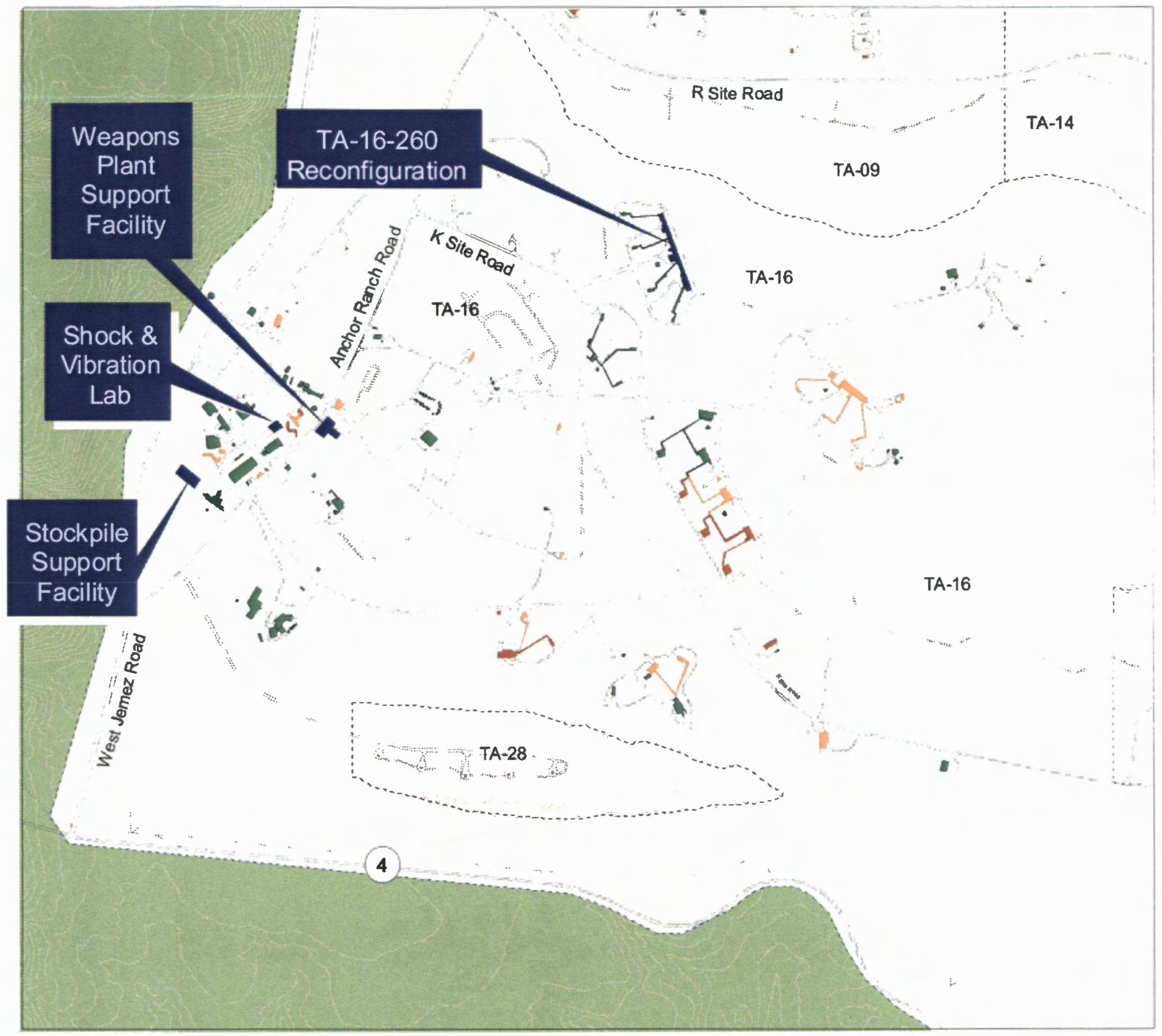
Facility Status, 2013
with Proposed Future Construction

LEGEND

- Active Facility
- Active, Proposed for Excess by 2012
- Excessed Facility
- Spare Facility
- New and/or Proposed Facility
- Technical Area Boundary
- Technical Area Boundary with Future Facility Construction Project

1400 0 1400 Feet

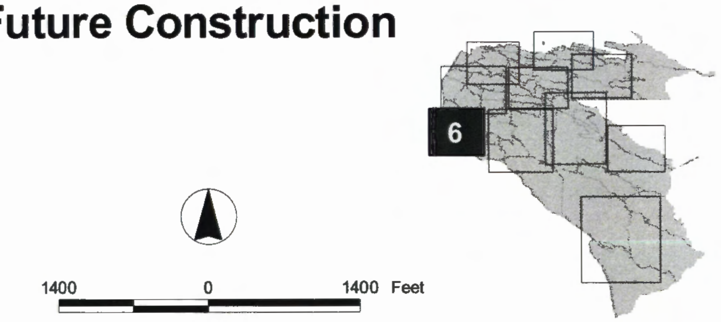




Facility Status, 2004
with Currently Funded Construction

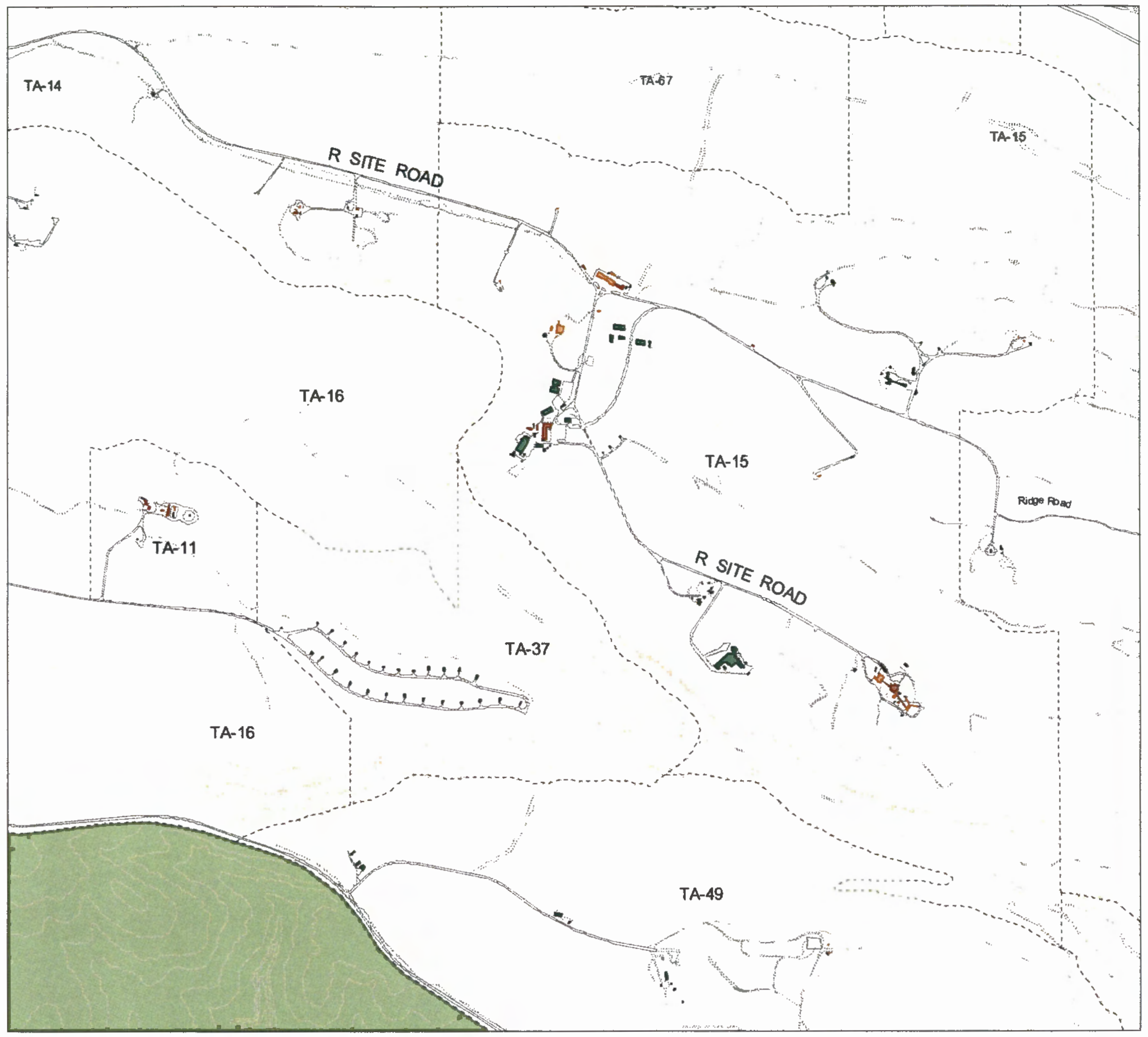
[redacted]

Facility Status, 2013
with Proposed Future Construction



LEGEND

- Active Facility
- Active, Proposed for Excess by 2012
- Excessed Facility
- Spare Facility
- New and/or Proposed Facility
- Technical Area Boundary
- Technical Area Boundary with Future Facility Construction Project



Facility Status, 2004
with Currently Funded Construction

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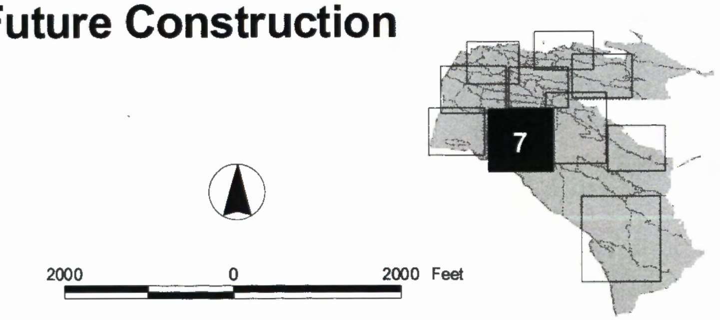
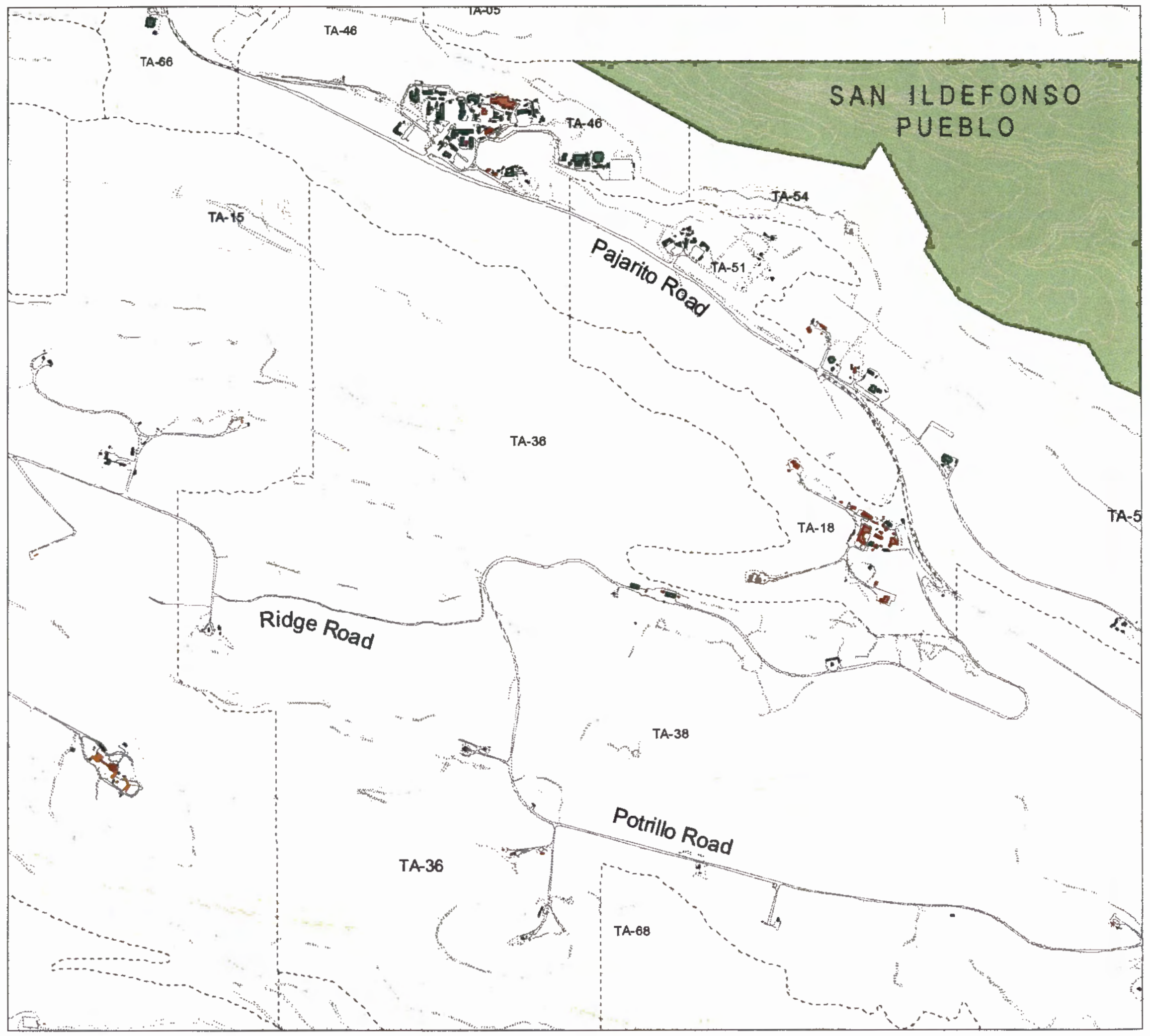
Facility Status, 2013
with Proposed Future Construction



LEGEND

- Active Facility
- Active, Proposed for Excess by 2012
- Excessed Facility
- Spare Facility
- New and/or Proposed Facility
- Technical Area Boundary
- Technical Area Boundary with Future Facility Construction Project



Facility Status, 2004
with Currently Funded Construction

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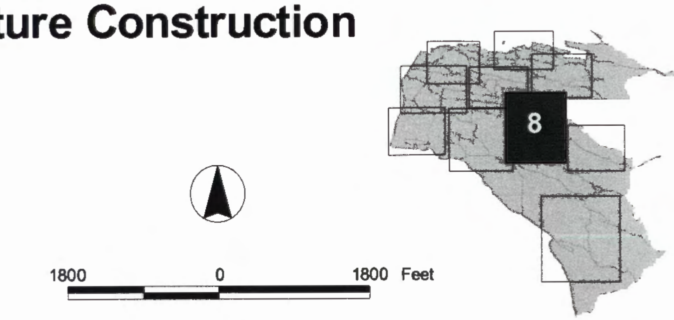
Facility Status, 2013
with Proposed Future Construction



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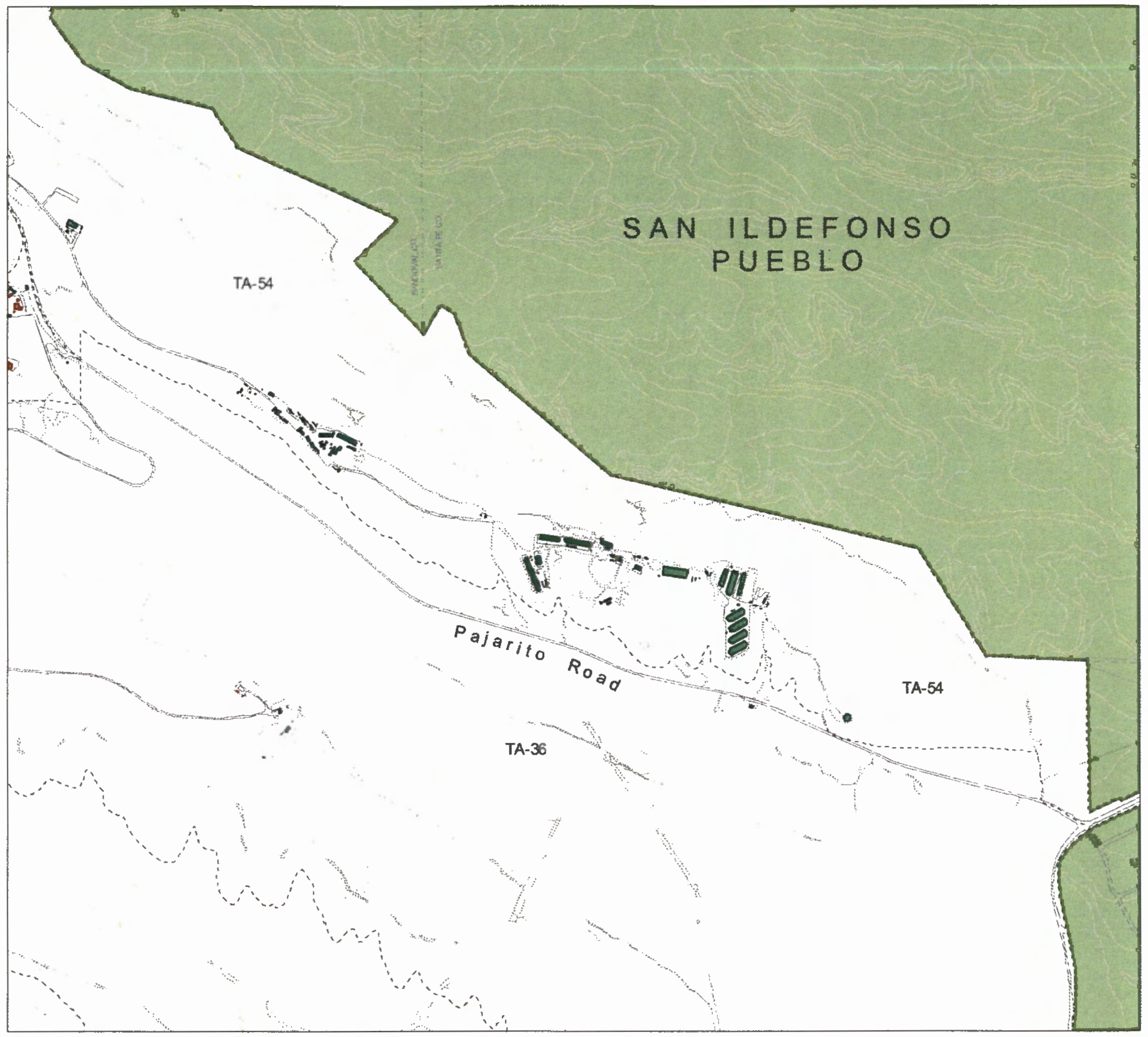

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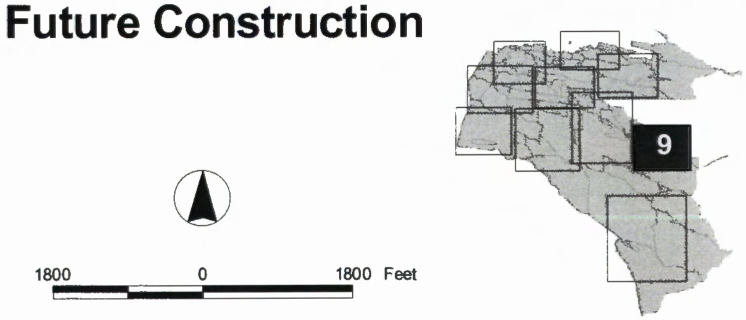
Facility Status, 2004
with Currently Funded Construction

Facility Status, 2013
with Proposed Future Construction



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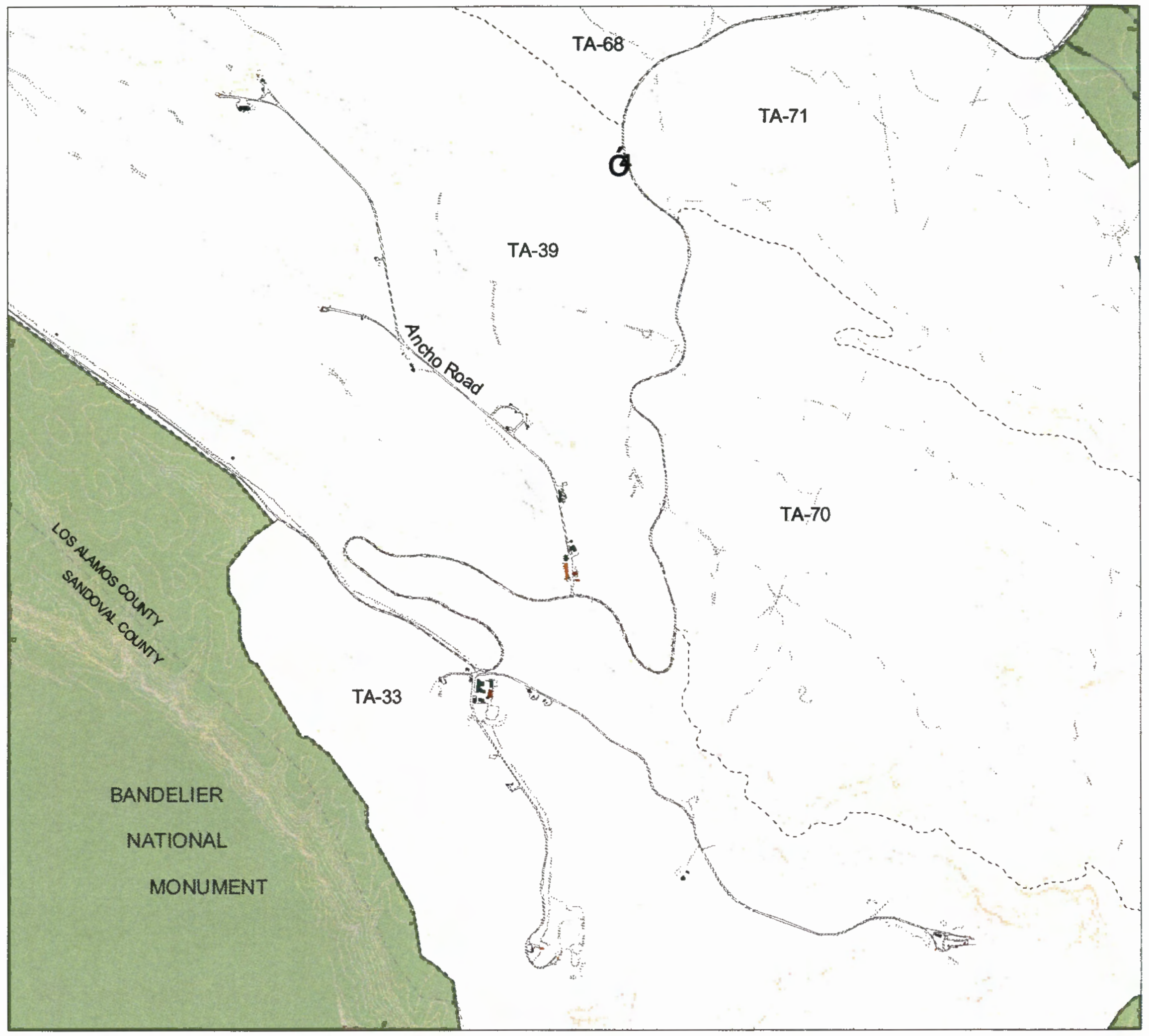

Facility Status, 2004
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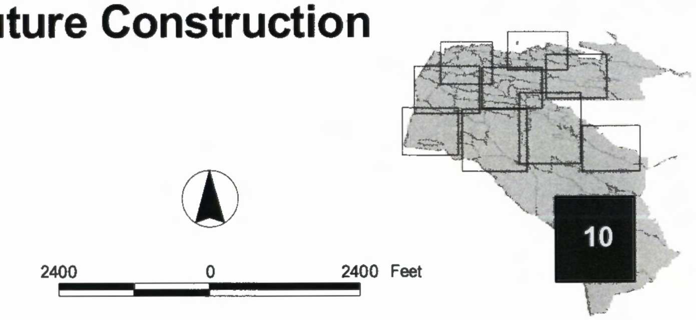

Programmatic Associations Maps

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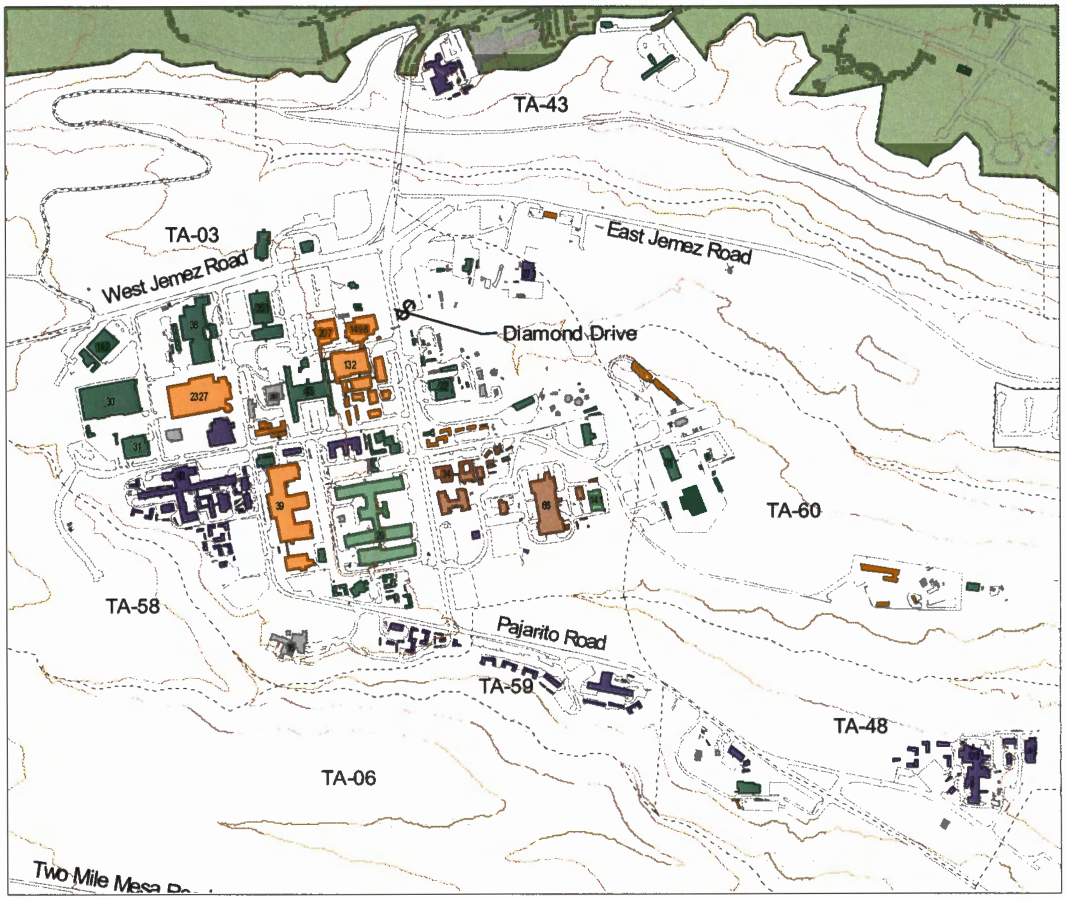
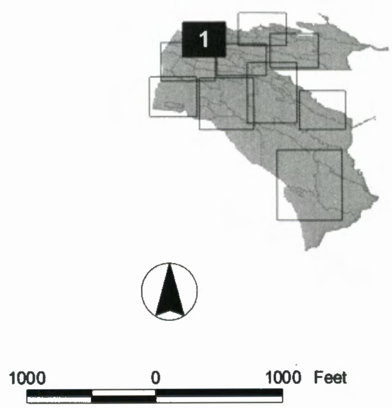
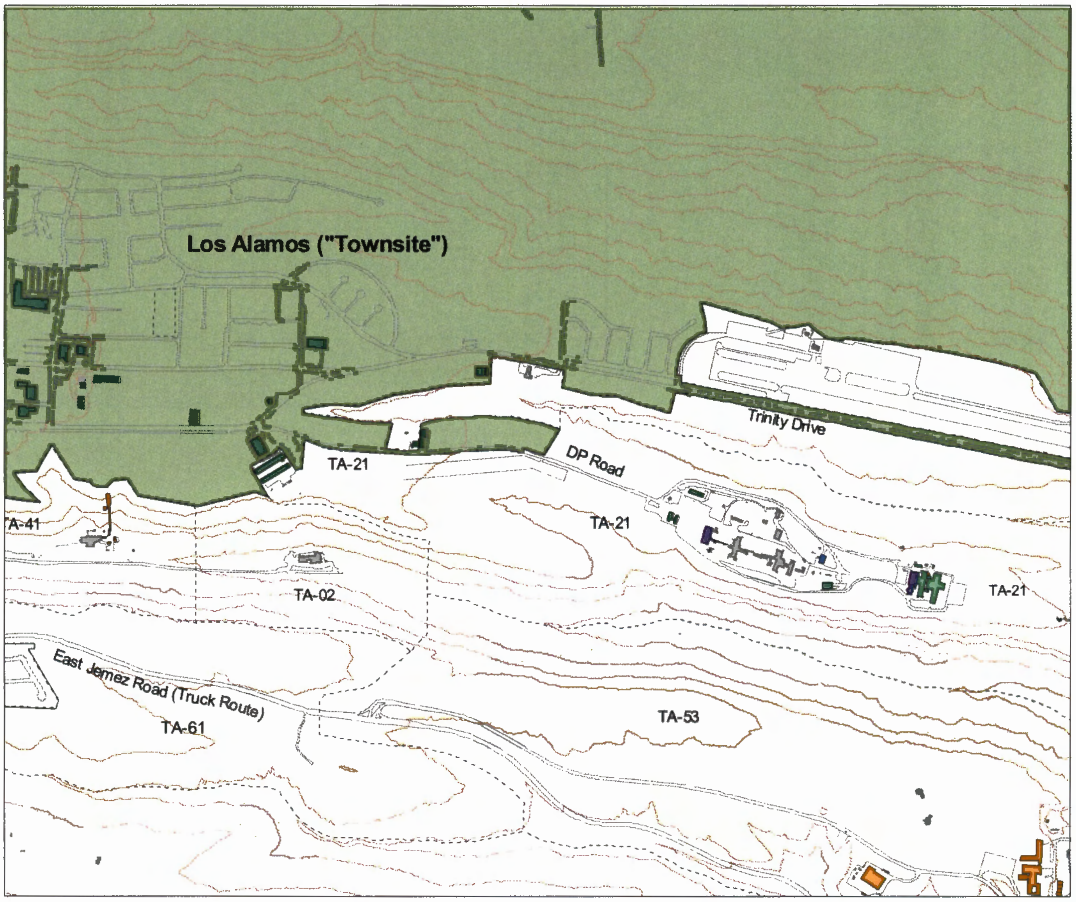


Programmatic Associations

LEGEND

- NA-11: Stockpile Stewardship
- NA-12: Stockpile Management
- DP-GEN: General
- DP-LL: Infrastructure & Defense Programs Landlord
- EM: Environmental Management
- Non-DP or Institutional Science Base
- Other
- Technical Area Boundary





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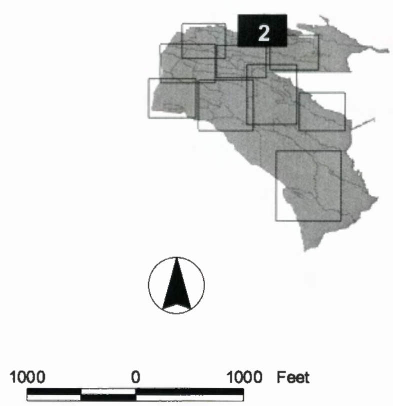

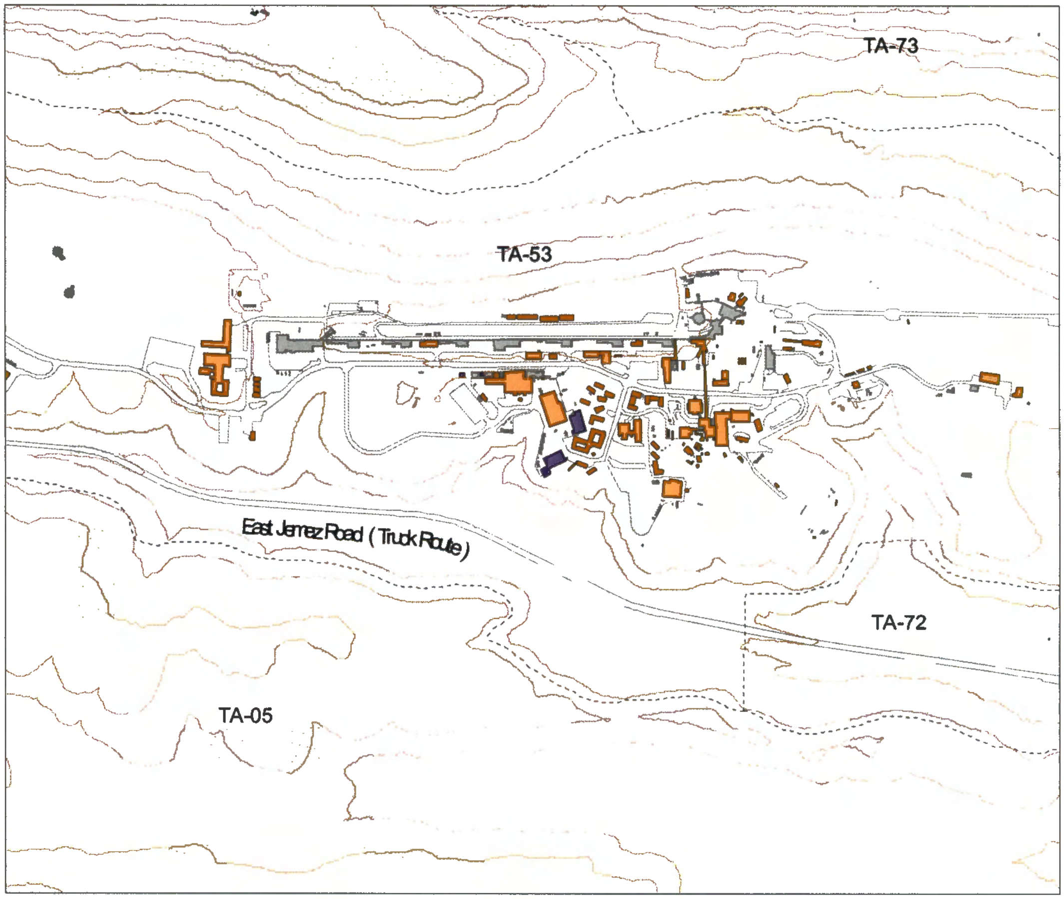

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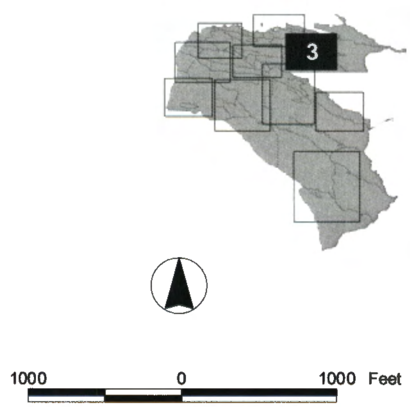

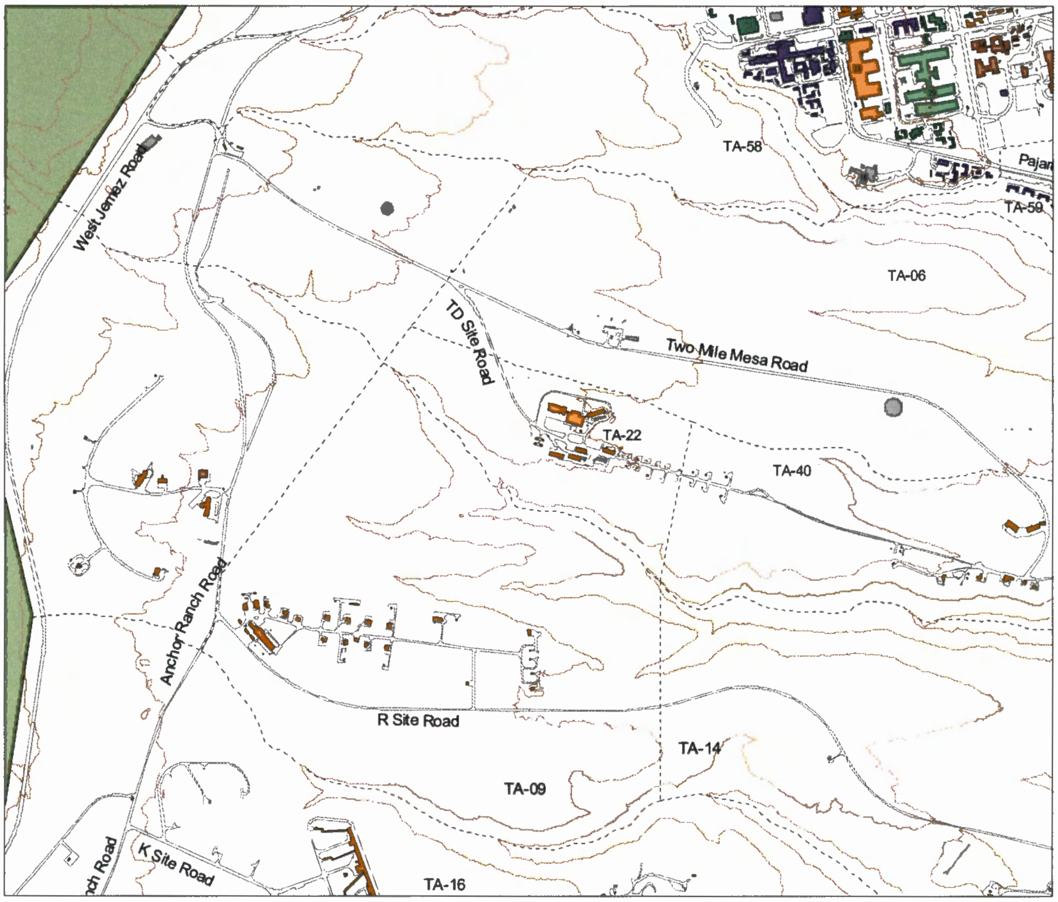

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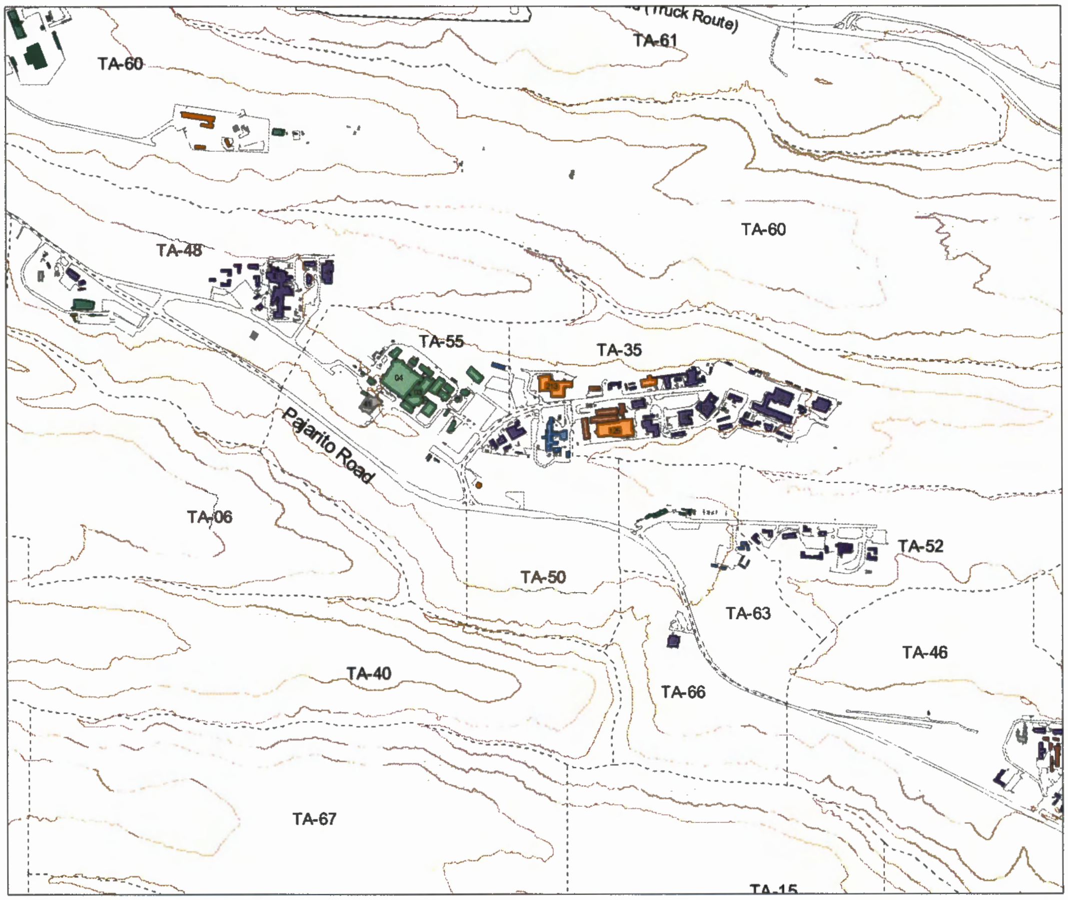

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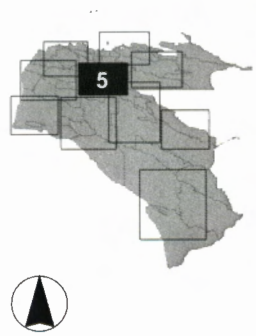

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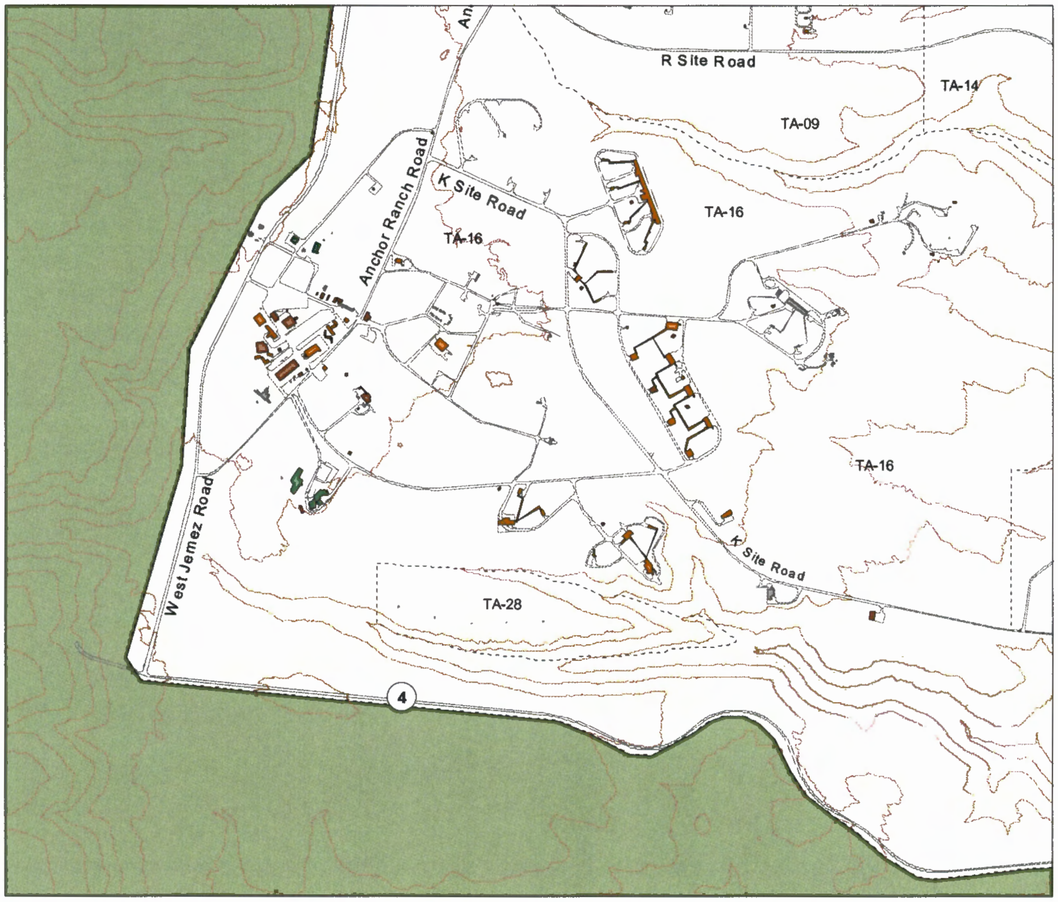

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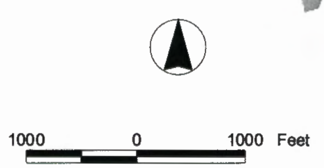

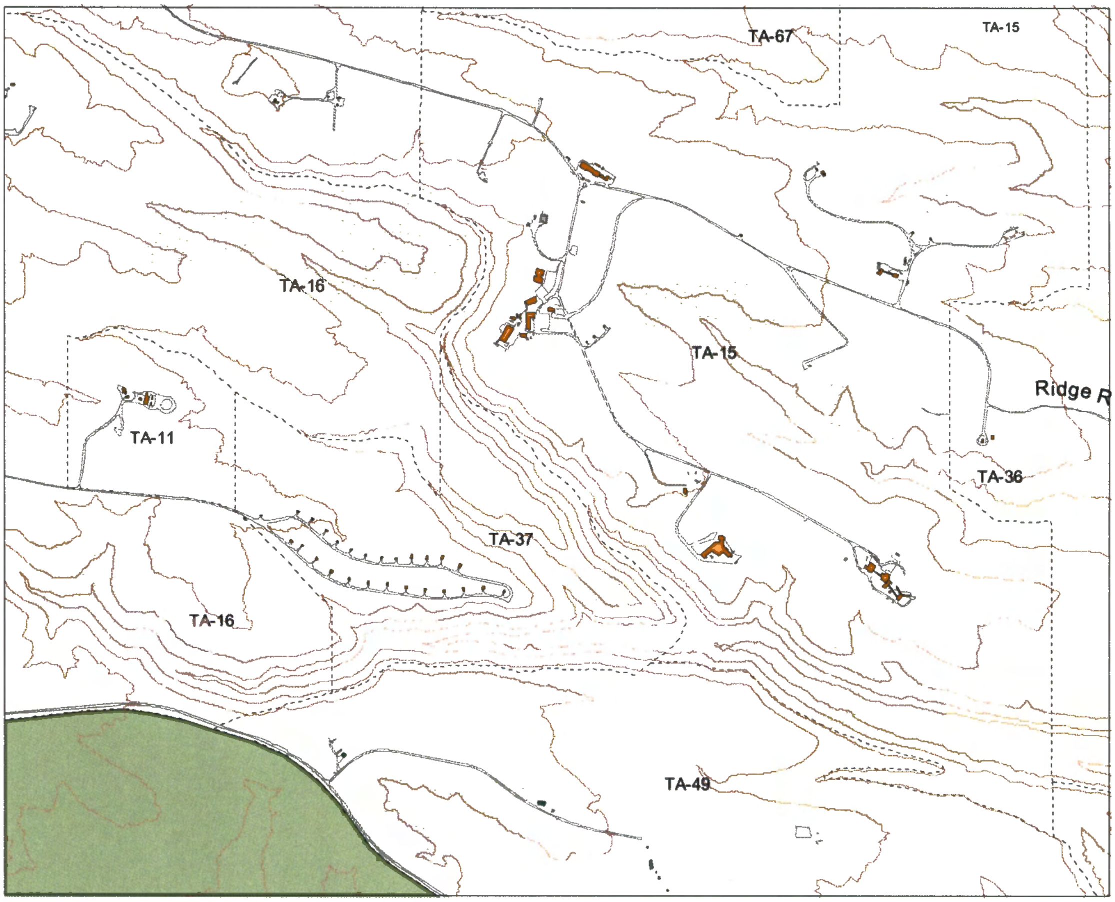

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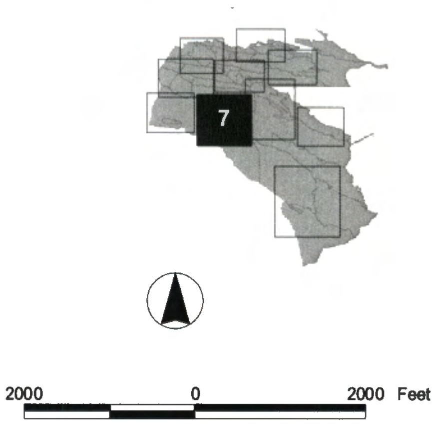

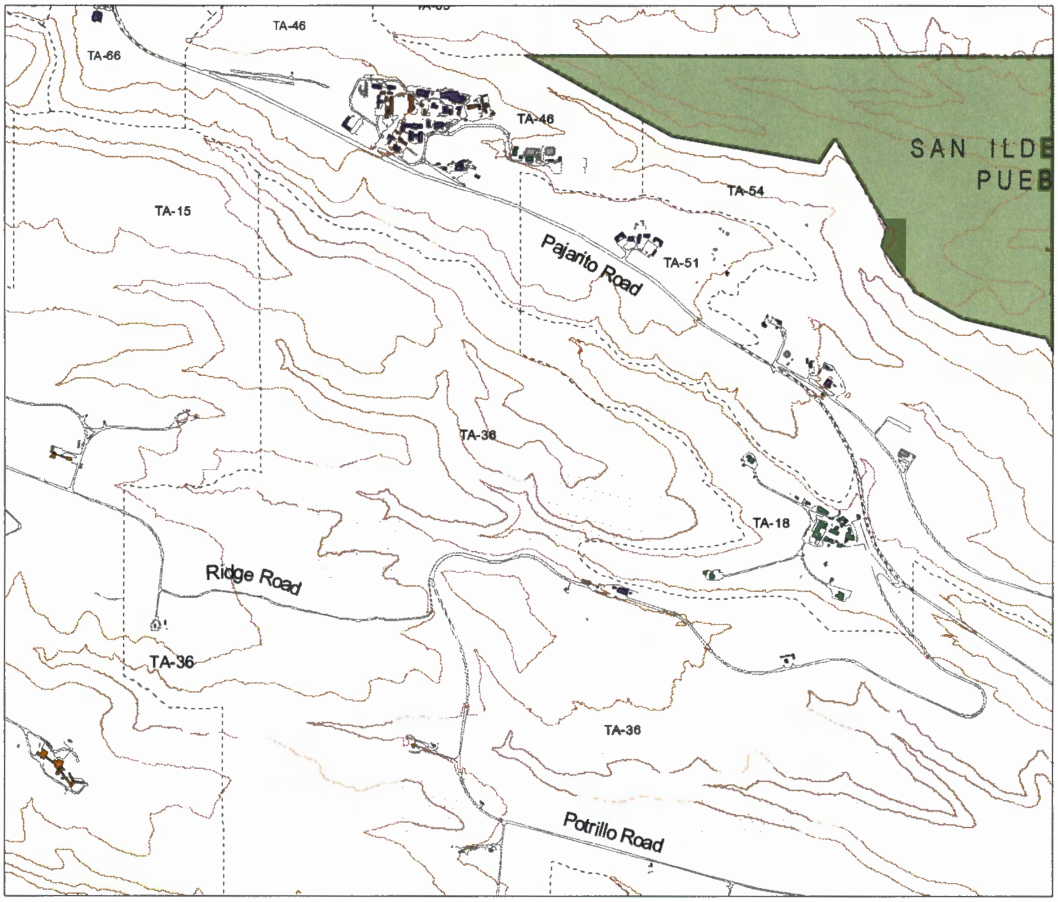

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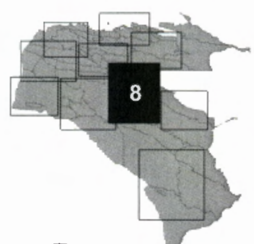

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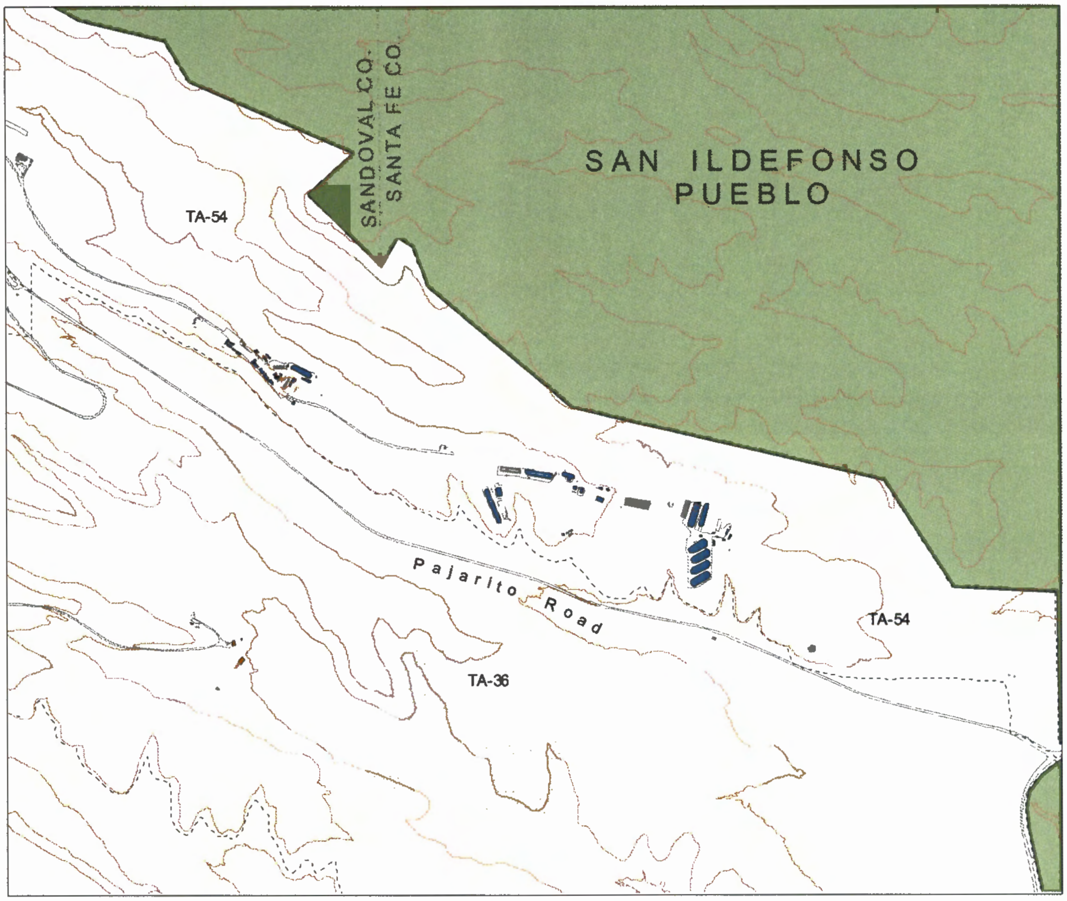

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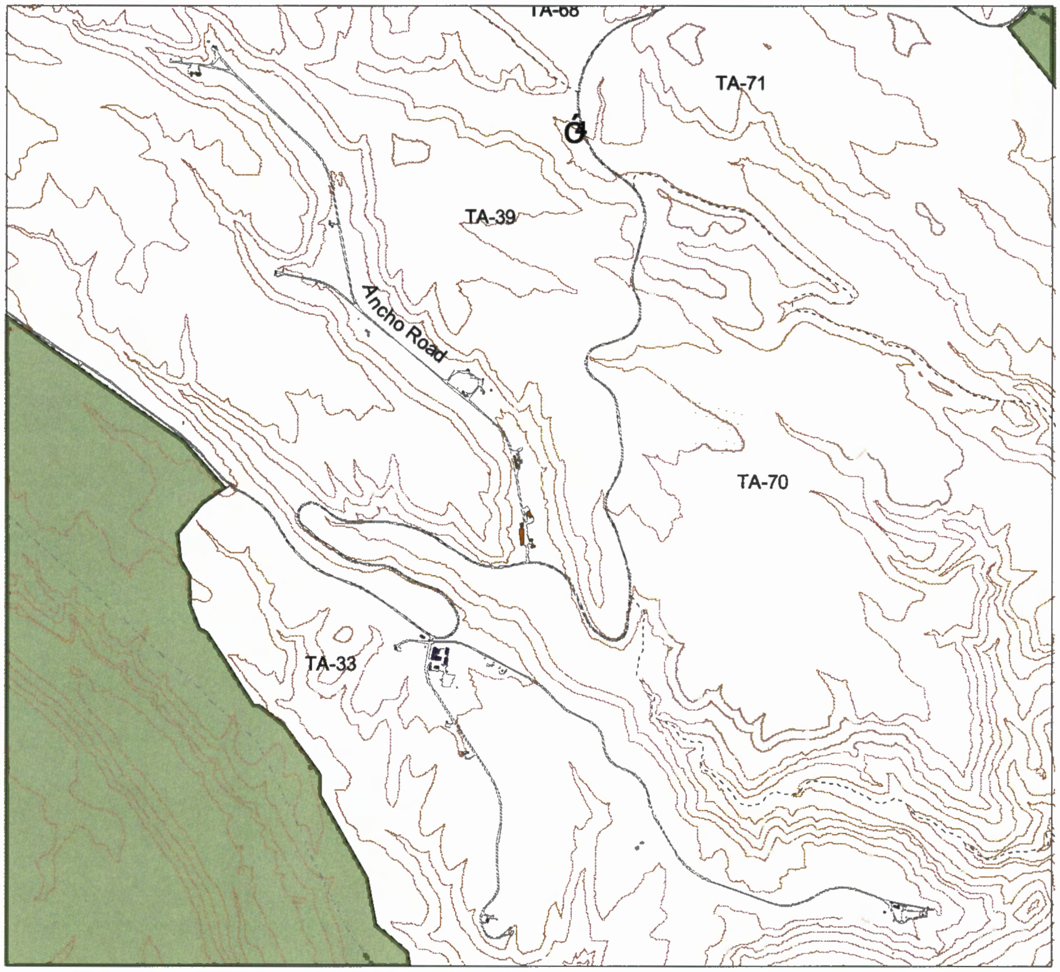

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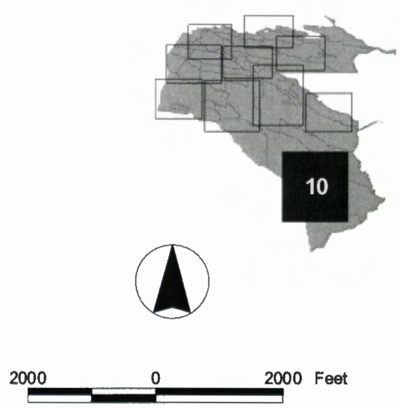

Utility Maps

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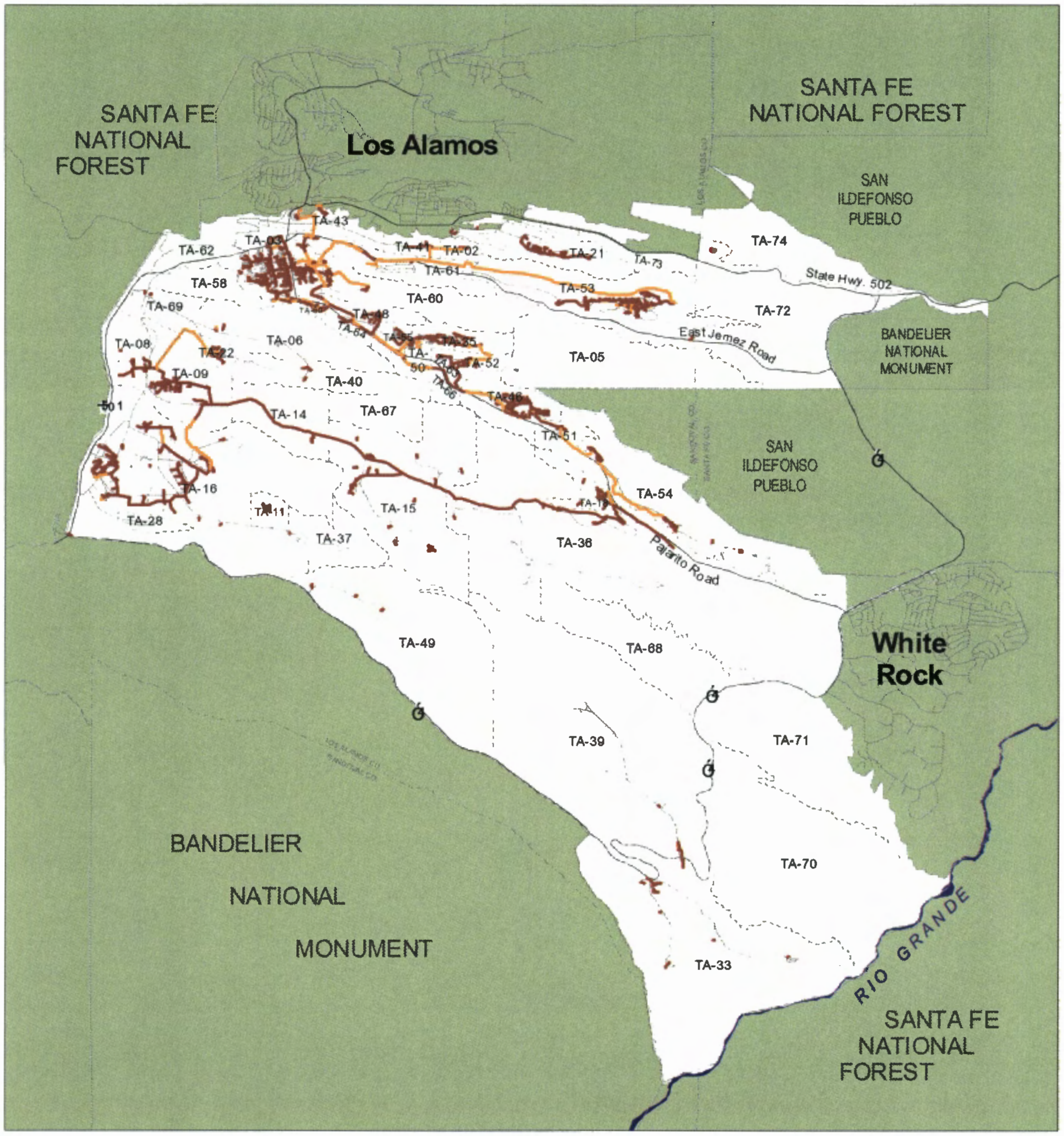
Electrical Utilities

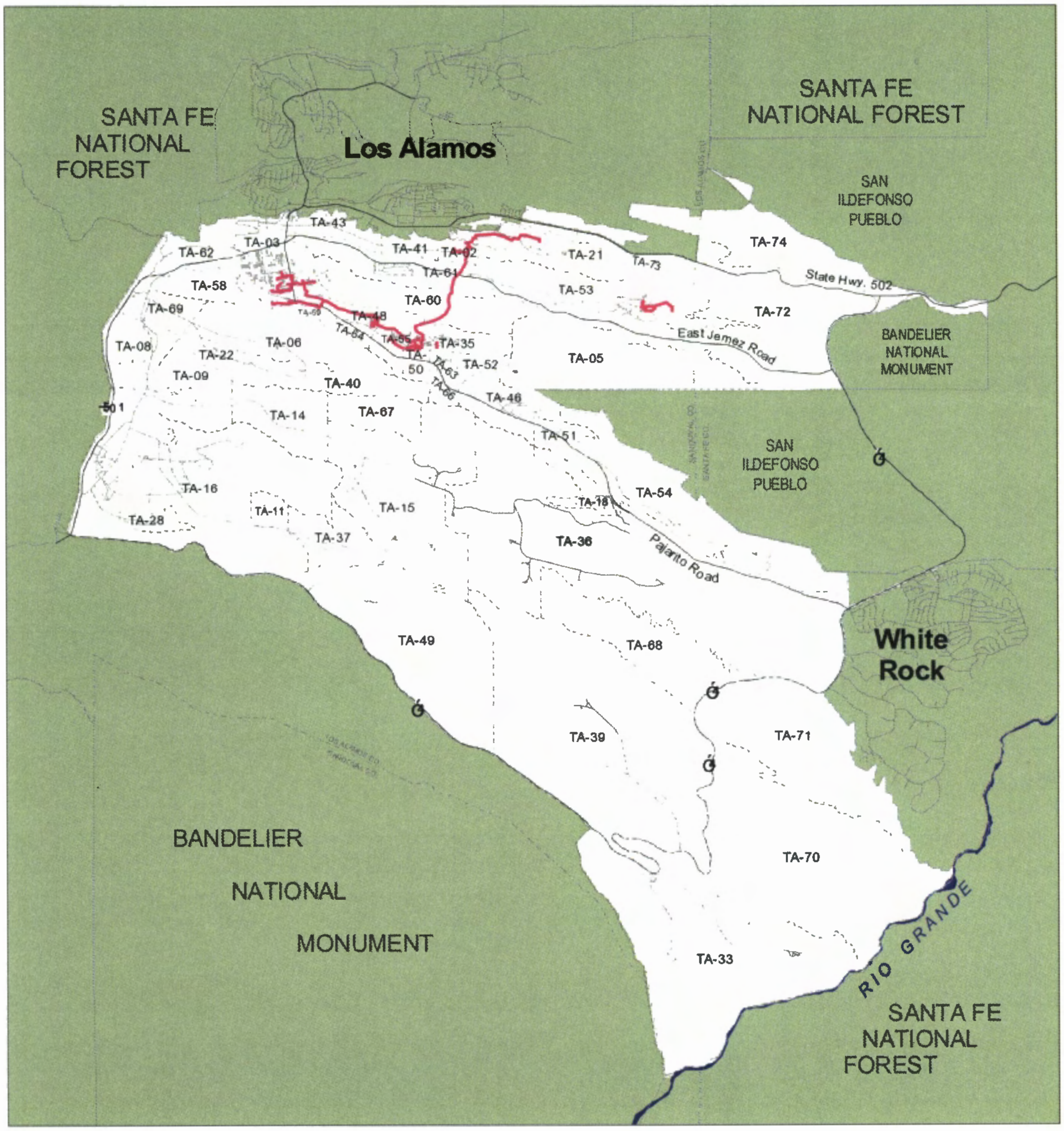
LEGEND

- Electric Transmission
- Electric Distribution
- Proposed 115kv Transmission Line

8000 0 8000 Feet



Sanitary Sewer Utilities

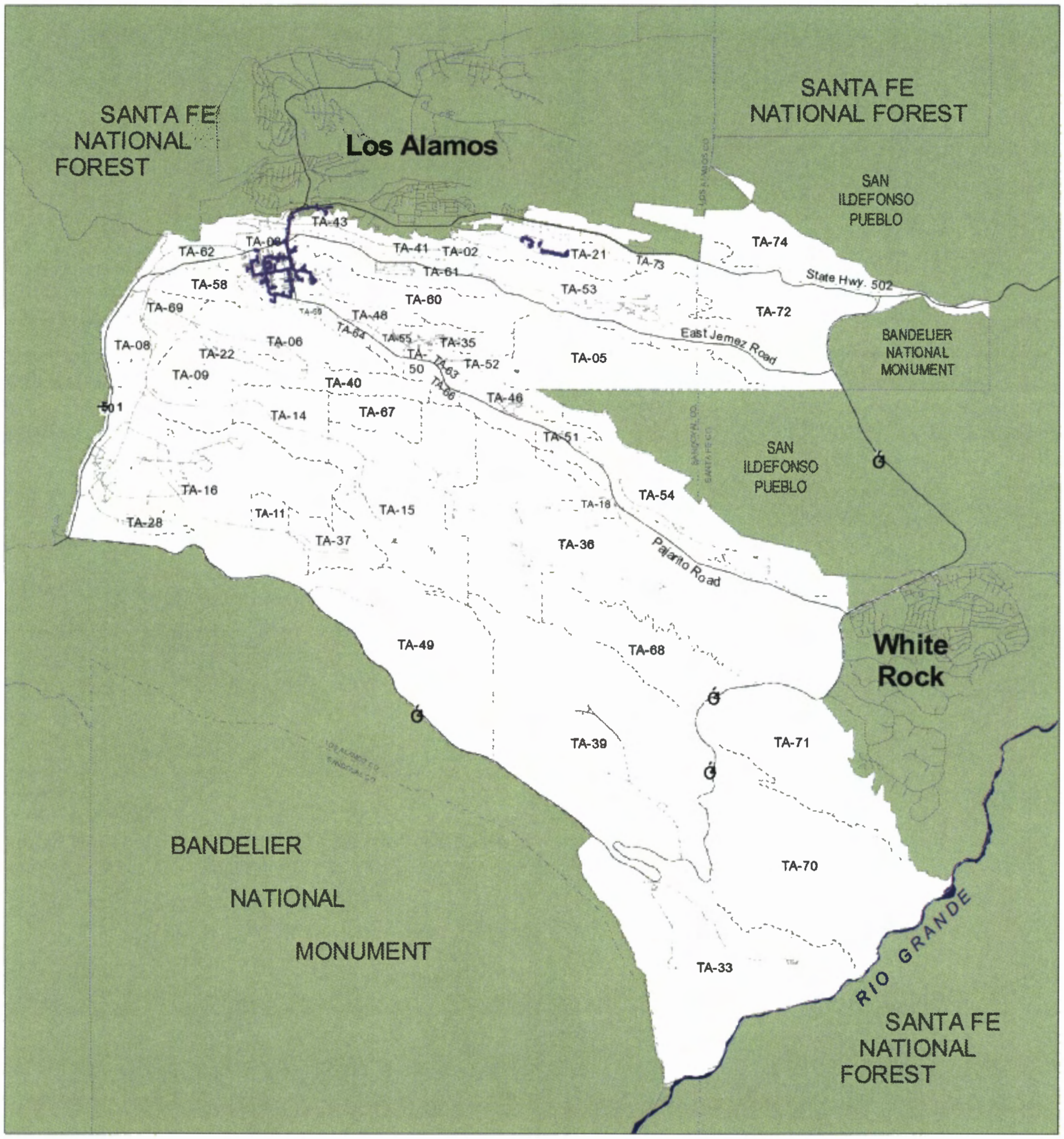


Radioactive Liquid Waste

LEGEND

Radioactive Liquid Waste

8000 0 8000 Feet

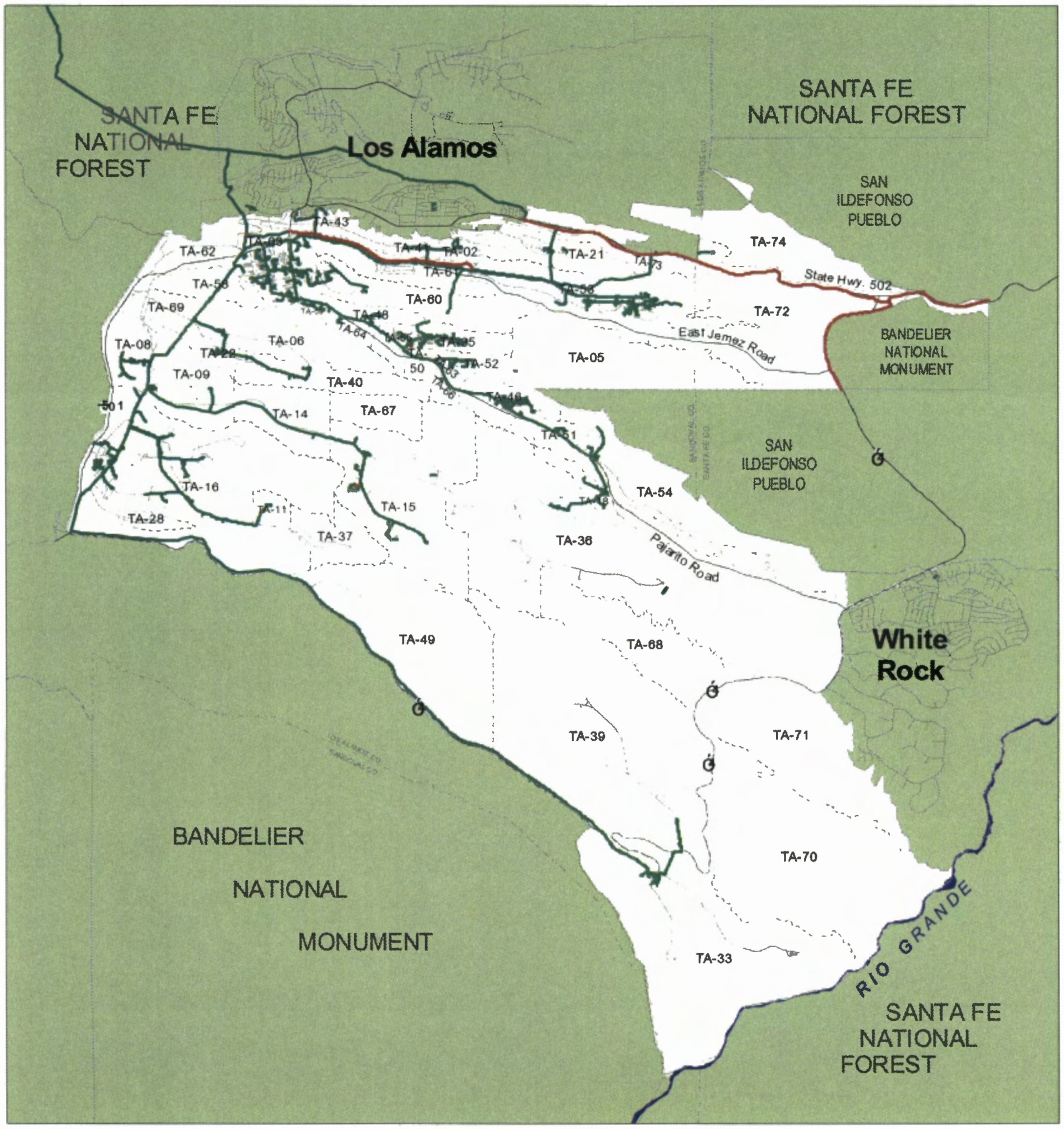


Steam Utilities

LEGEND

Steam Distribution Line

8000 0 8000 Feet

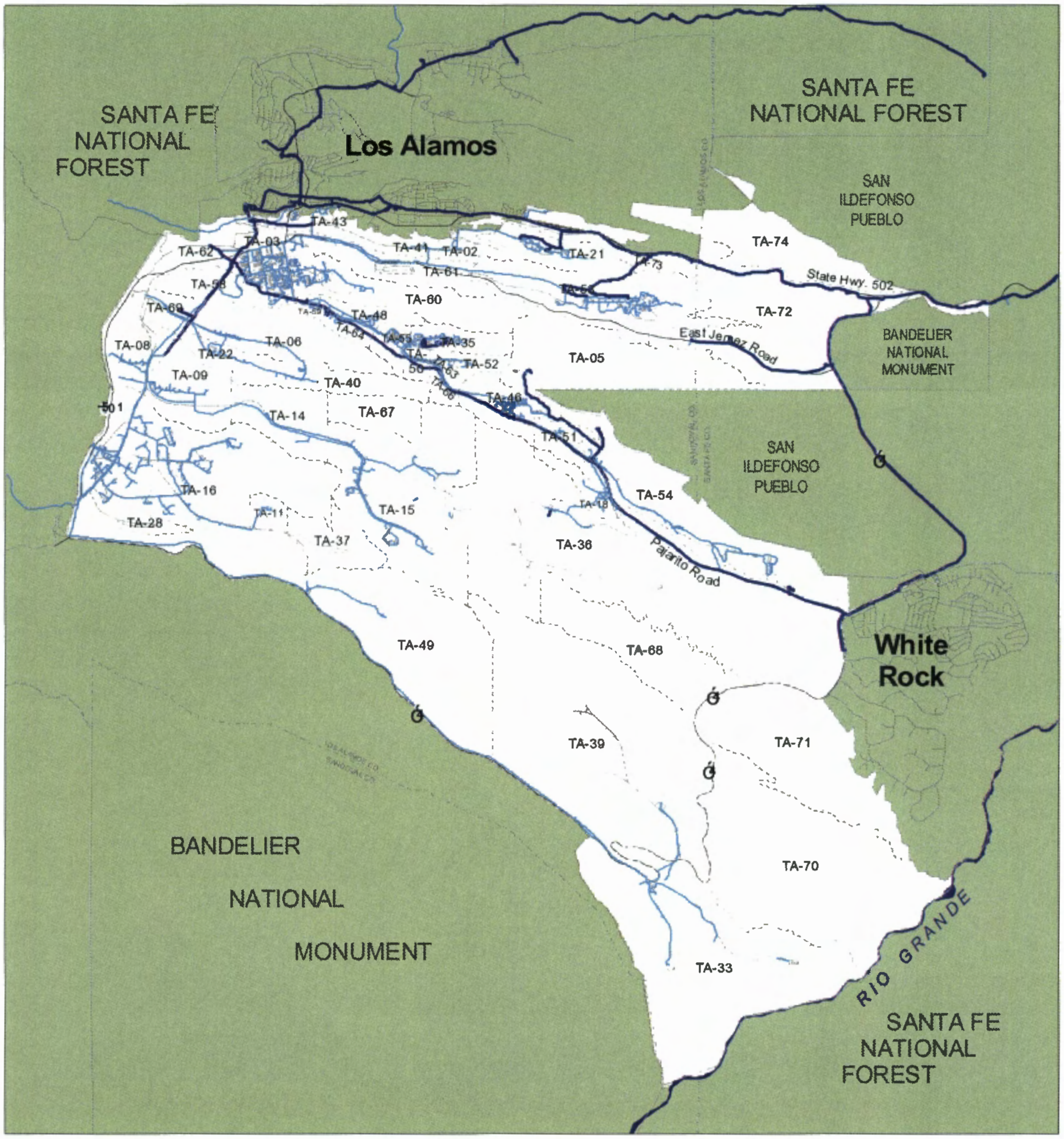


Natural Gas Utilities

LEGEND

- Gas Transmission
- Gas Distribution

8000 0 8000 Feet



Water Utilities