

## F. Experimental Engineering Planning Area

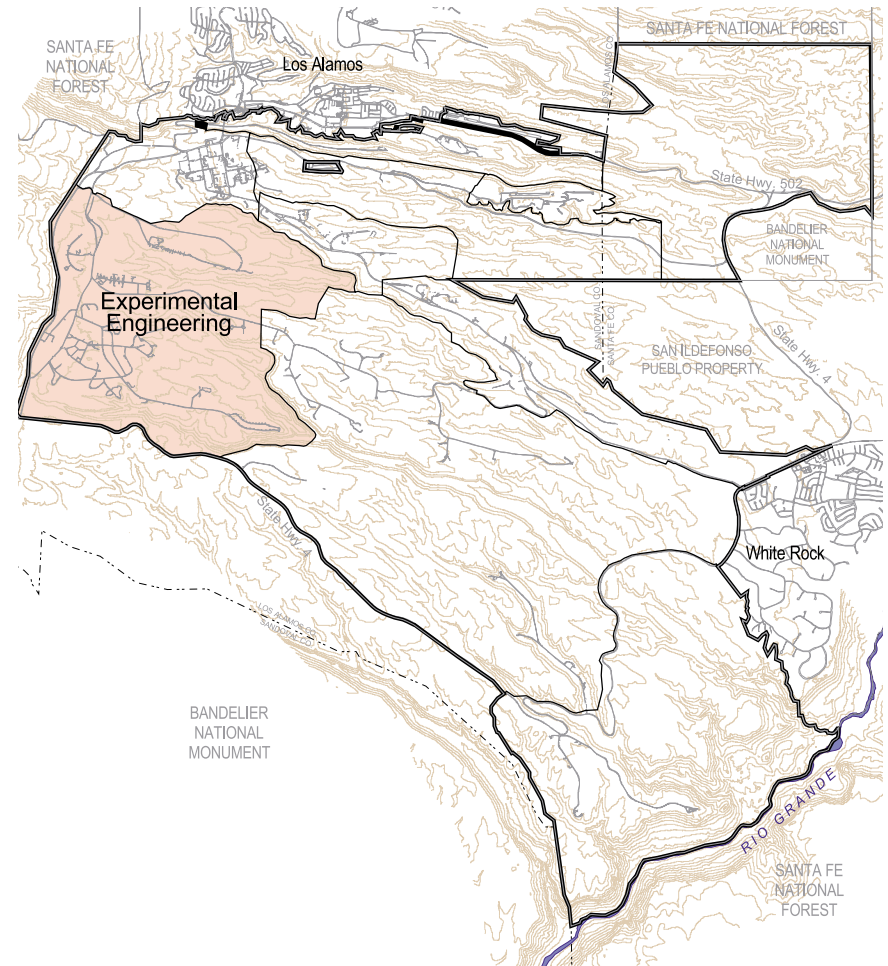
### 1. General Description

The Experimental Engineering Planning Area shares the western-most section of the Laboratory with the Core Planning Area. The Experimental Engineering Planning Area is approximately 6.9 square miles. The Core Planning Area and Pajarito Corridor West Planning Area form the north boundary, while the Dynamic Testing Planning Area abuts the eastern edge. The southern boundary aligns with NM State Hwy. 4 and Bandelier National Monument. The western boundary is the Santa Fe National Forest. West Jemez Road parallels the western boundary and is located within the Laboratory property.

Predominately weapons research and development is carried out in this planning area. The Experimental Engineering Planning Area consists of:

- TA-08: Non destructive testing and M division offices.
- TA-09: Fabrication feasibility studies and research on the physical properties of explosives.
- TA-11:
- TA-14: Weapons systems and functions analysis.
- TA-16: Weapons research, testing, stockpiling.
- TA-22: Detonator development for high explosives.
- TA-28:
- TA-37:
- TA-40: Explosive testing and characterization and the developed portions of TA-67 and TA-69.

Map IV- F1: Key Map

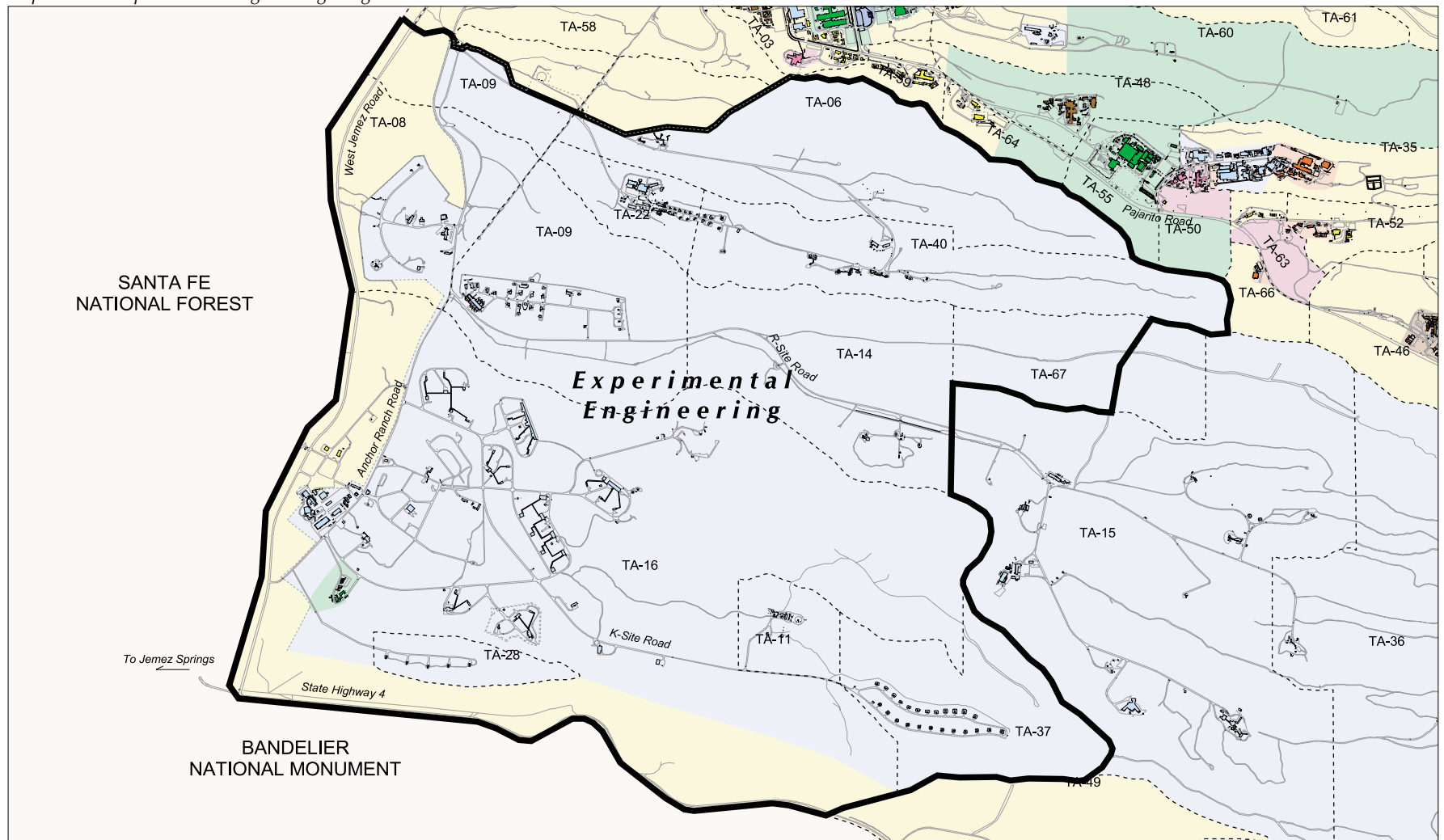


## 2. *Specific Planning Assumptions*

Planning assumptions to guide physical planning at the Experimental Engineering Planning Area for the next ten years are:

- The Experimental Engineering Planning Area will host future tritium consolidation efforts by replacing the tritium facilities at TA-21 (in the Omega West Planning Area) with new facilities at TA-16. ESA Division has developed cost estimates to close TA-21 tritium operations and reestablish them at TA-16; however, plans for specific facilities have not been developed at this time.
- DX Division has proposed an assembly facility as part of the complex Advanced Hydrotest Facility (AHF). It will replace the existing assembly facility at TA-08. The new assembly facility should be located near a new radiographic facility that will also replace the existing radiographic facility at TA-08. Both of these new facilities support the Dual-Axis Radiographic Hydrodynamic Test (DARHT) facility that will become one of the principal tools for evaluating and ensuring the safety and reliability of the enduring stockpile.
- ESA has laboratories and offices scattered in trailers, transportables and other substandard facilities. New offices are needed in close proximity to the ESA Division office at TA-16.

Map IV-F2: Experimental Engineering Programmatic Associations



AREA / STRUCTURE	PROGRAM
	Defense Program / Stockpile Stewardship
	Defense Program / Stockpile Weapons Management
	Defense Program / Landlord or Institutional
	Office of Science
	Laboratory Directed Research & Development

AREA / STRUCTURE	PROGRAM
	Multiple Programs
	Nonproliferation & National Security
	Non DOE Programs
	Environmental Restoration & Waste Management
	County or Private within DOE Boundary



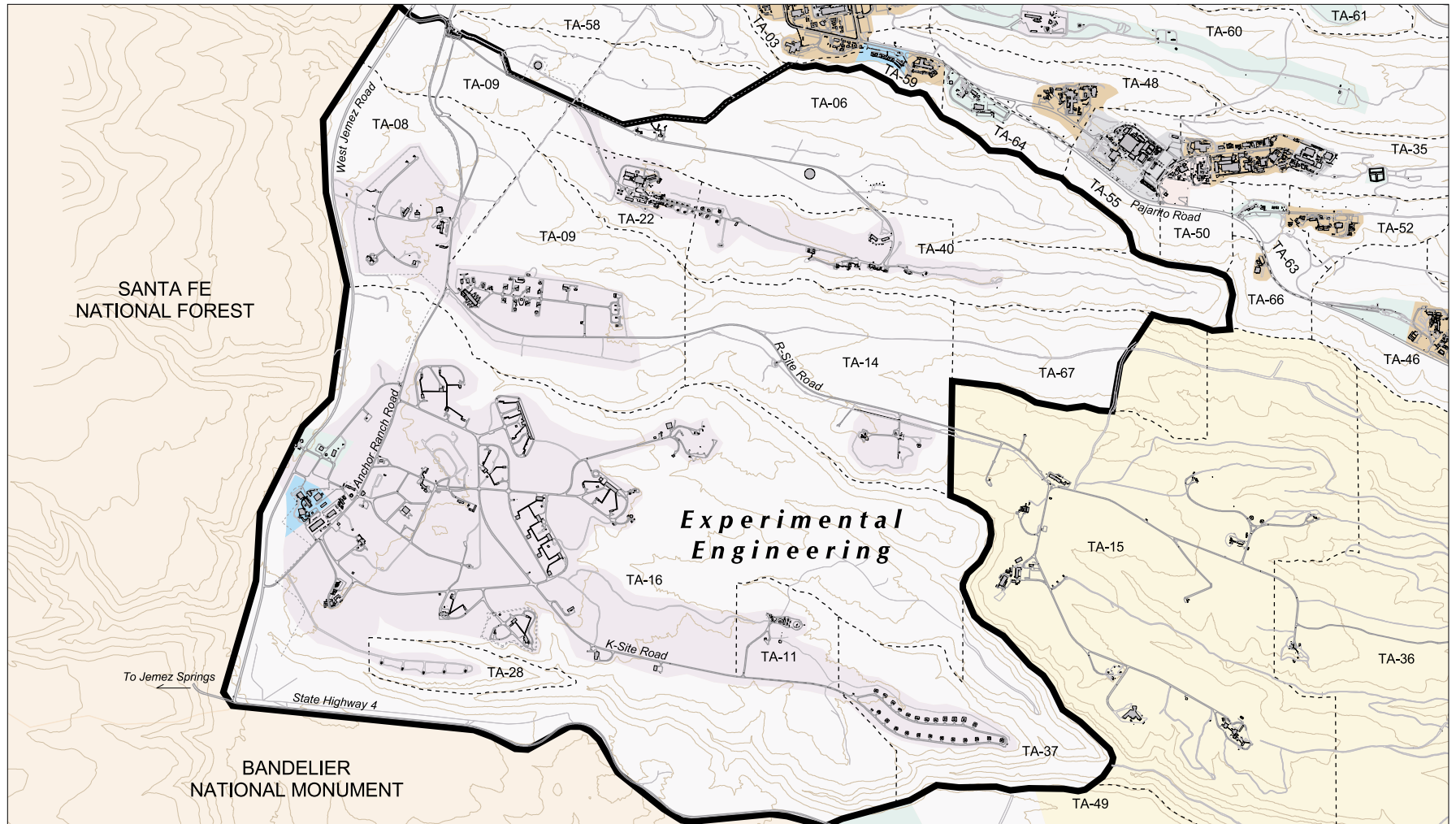
### **3. Land Use**

Much of the work in the Experimental Engineering Planning Area is related to ongoing stockpile stewardship programs. New growth and development can be expected from the Advanced Hydrotest Facility (AHF) complex. Additional similar work in the adjacent related Dynamic Testing Planning Area, will further impact this planning area as access to that planning area is through the Experimental Engineering Planning Area.

#### ***a. Existing Land Use***

The principal land use in the Experimental Engineering Planning Area is High Explosives R&D, including its associated explosives safety zones and buffer areas. The remainder of the area (and majority of the area's acreage) is Reserve. Table IV.F1 presents existing and future acreage of each of the two land use categories.

Map IV-F4: Experimental Engineering Existing Land Use



**LEGEND**

- |                              |                            |                                   |
|------------------------------|----------------------------|-----------------------------------|
| LANL Buildings               | Experimental Science       | Reserve                           |
| Non Dept. of Energy Property | High Explosive R&D         | Theoretical/Computational Science |
| Planning Area                | High Explosive Testing     | Waste Management                  |
| Research Park                | Nuclear Materials R&D      |                                   |
| Administration               | Physical/Technical Support |                                   |
| Airfield                     | Public/Corporate Interface |                                   |



### ***b. Future Land Use***

Unless explosives containment technology decreases explosives safety zones and opens land presently covered by these zones, this planning area will be limited to high explosives R&D. This planning area will remain the primary location for weapons engineering activities related to their design, analysis and preparations for testing. Two line-divisions occupy this area: Engineering Science and Applications (ESA) and Dynamic Experimentation (DX). ESA Division occupies the majority of real estate with its division office at TA-16. DX Division office is located at TA-08.

Both ESA and DX divisions plan to develop new facilities, some of which are related to implementing the tri-lab Mega Strategy. New facilities will be constructed within the existing confines of the High Explosives R&D land use area and, in most cases, will be in close proximity to or will replace an existing facility. Therefore, significant expansion of the High Explosives R&D land use area is not anticipated.

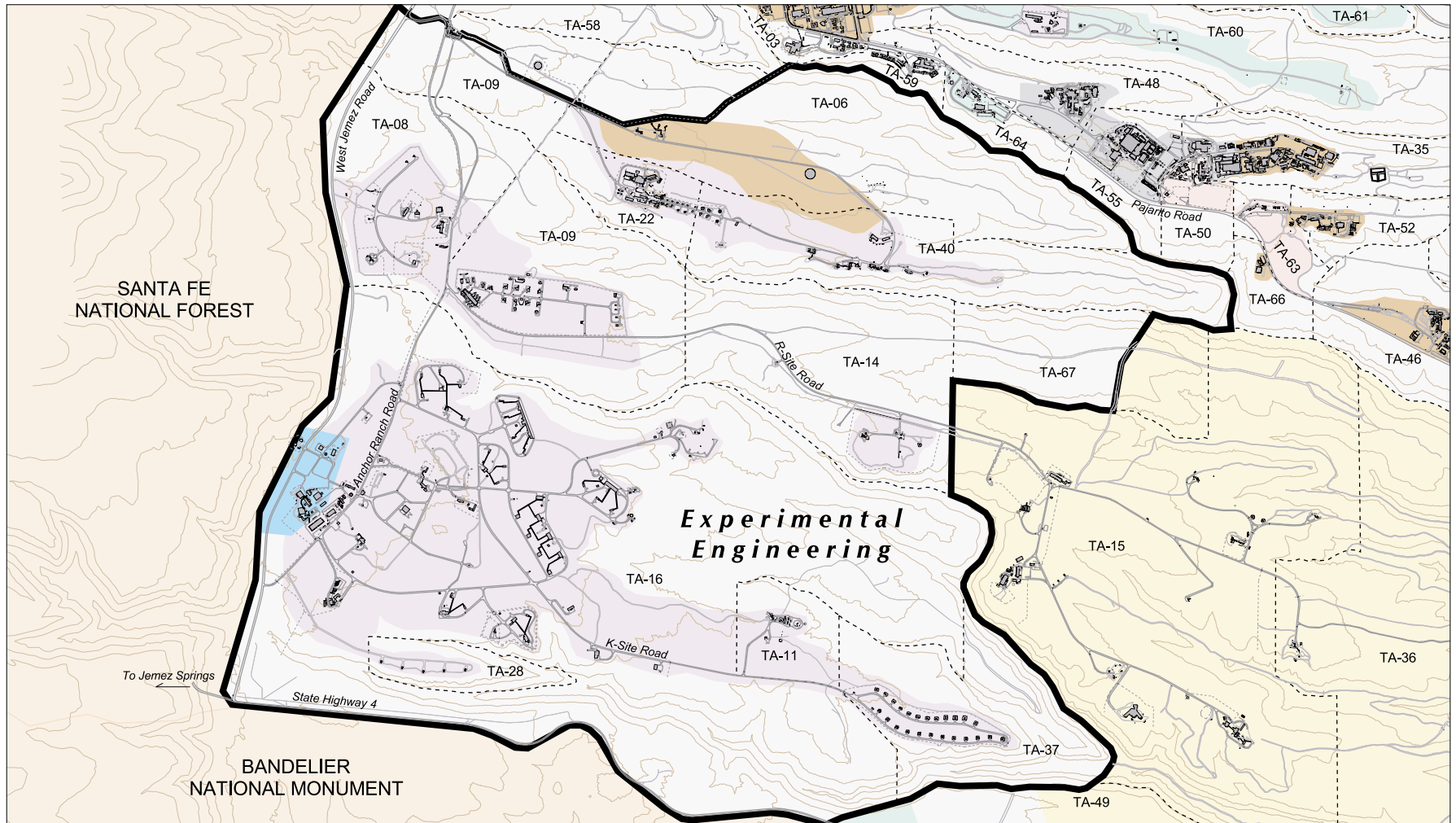
An addition to the detonator facility is now in the conceptual phase of development. The building will support DX work related to Detonator Research and Development. Construction of the GPP facility is scheduled for FY2000 with completion in FY2002. It is located in TA-22 and near Building 22-93.

Given the security and buffer constraints associated with the activities within this planning area, other land uses will not be able to locate here in the future.

Table IV.F1: Experimental Engineering Land Use

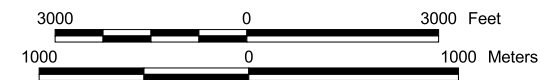
<b>Existing Land Use</b>		<b>Future Land Use</b>	
<u>Land Use Category</u>	<u>Acreage</u>	<u>Land Use Category</u>	<u>Acreage</u>
Administration	13	Administration	48
Physical/Technical Support	13	Physical/Technical Support	117
High Explosive R&D	1,283	High Explosive R&D	1,309
Reserved (Capable of development: 700 acres)	<u>3,083</u>	Reserved ( <u>Capable of</u> development: 700 acres)	<u>2,918</u>
<b>Total</b>	<b>4,392</b>	<b>Total</b>	<b>4,392</b>

Map IV-F5: Experimental Engineering Future Land Use



**LEGEND**

- |                              |                            |                                   |
|------------------------------|----------------------------|-----------------------------------|
| LANL Buildings               | Experimental Science       | Reserve                           |
| Non Dept. of Energy Property | High Explosive R&D         | Theoretical/Computational Science |
| Planning Area                | High Explosive Testing     | Waste Management                  |
| Research Park                | Nuclear Materials R&D      |                                   |
| Administration               | Physical/Technical Support |                                   |
| Airfield                     | Public/Corporate Interface |                                   |



#### ***4. Transportation/Circulation***

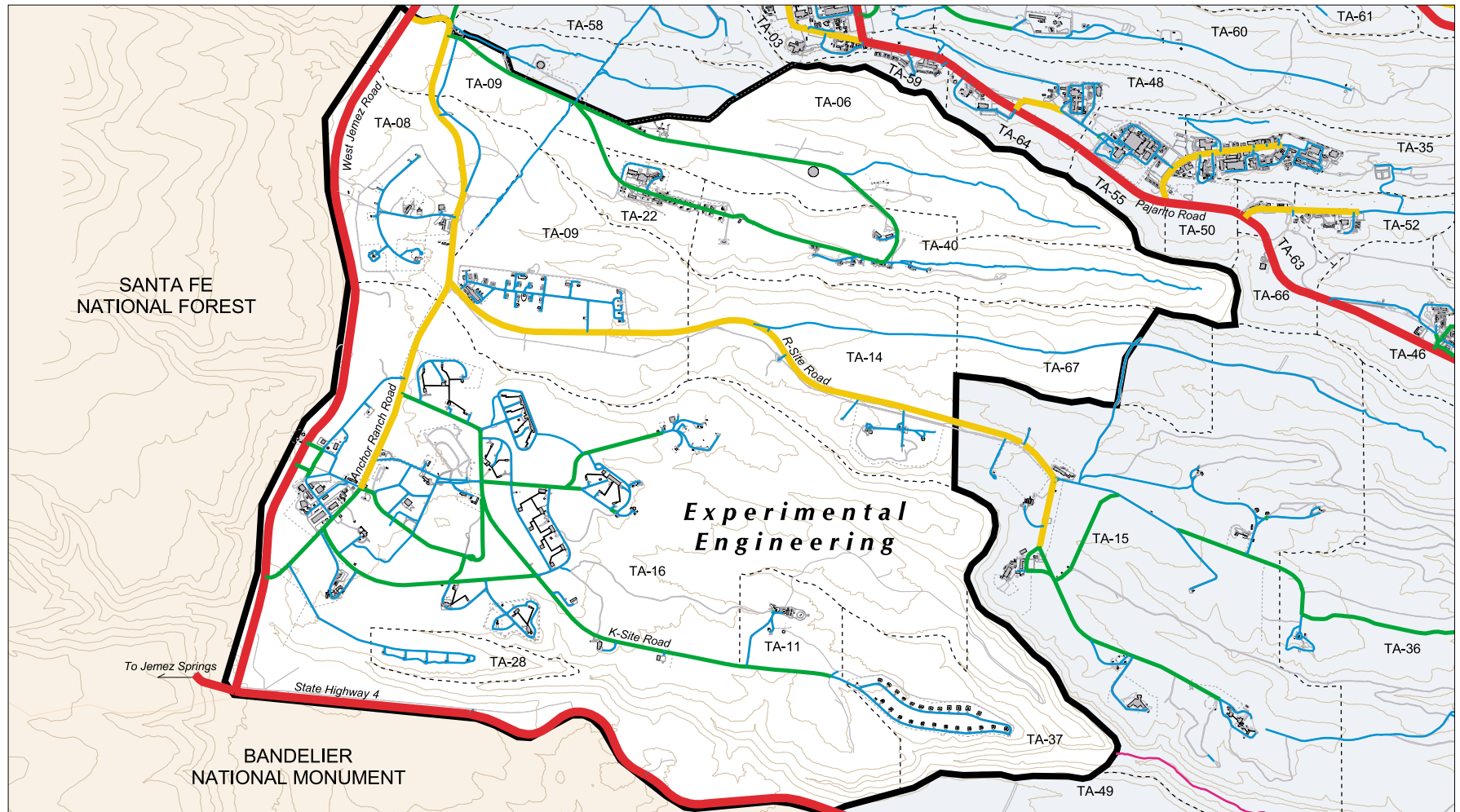
##### ***a. Existing Transportation/Circulation/Parking***

The transportation system in the Experimental Engineering Planning Area relies on access from West Jemez Road together with a series of interior roads that were incrementally constructed to provide access to widely dispersed high explosives research, development, storage, and testing facilities. While Jemez Road is adequate, this area's collector, secondary, and access/service roads are generally in poor condition.











All roads leading into TAs-06, -08, -11, -14, -15, -16, -28, -37, -67, and -69 are inaccessible to public traffic.

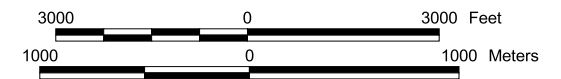


Map IV-F6: Experimental Engineering Existing Transportation



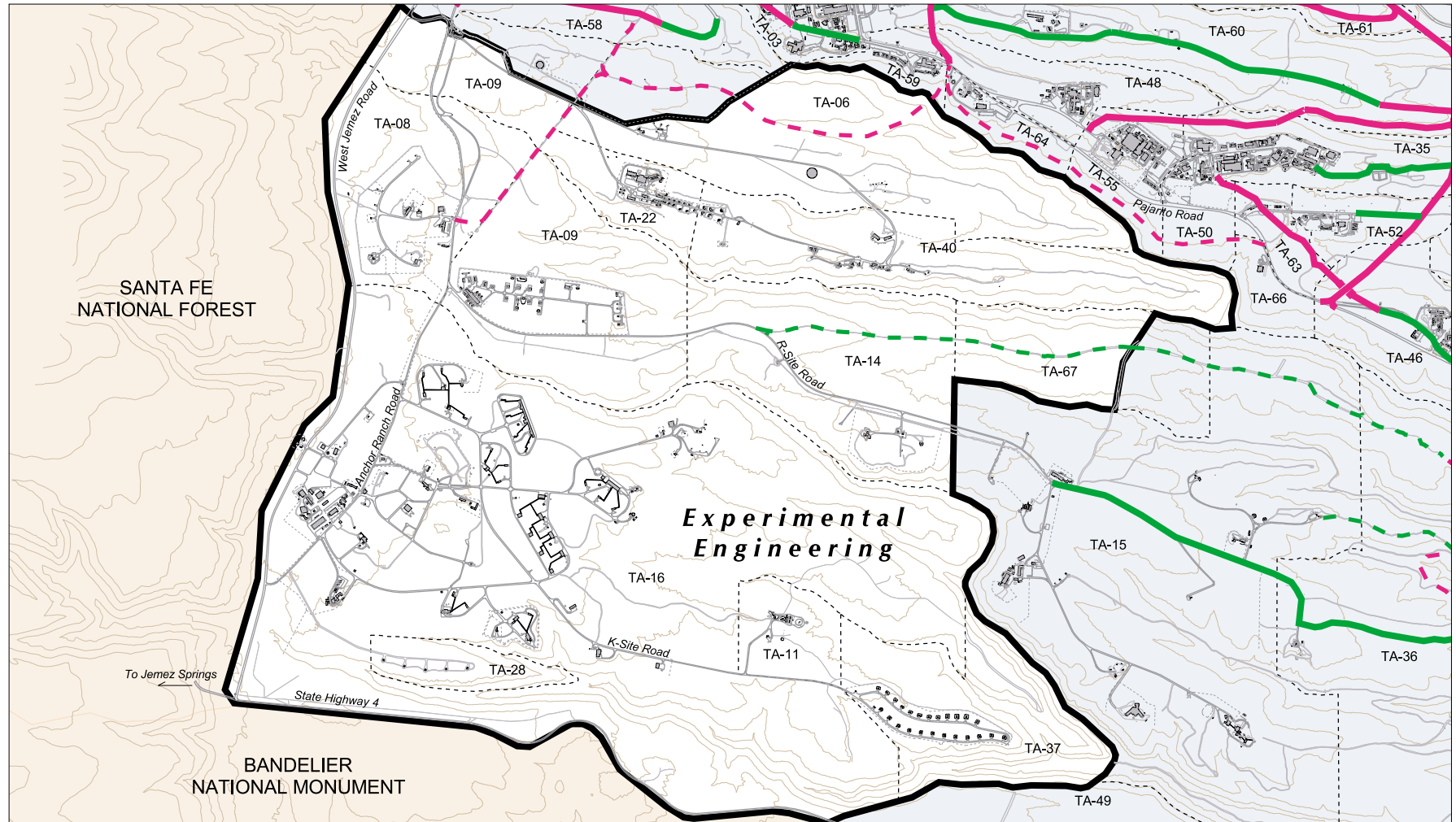
LEGEND

- |  |  |
|--|--|
|  Arterial         |  Dept. of Energy Property     |
|  Collector        |  LANL Buildings               |
|  Local            |  Non Dept. of Energy Property |
|  Access / Service |  Planning Area                |
|  Emergency Lanes  |  Research Park                |



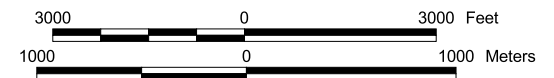
*b. Future Transportation*

Map IV.-F7: Experimental Engineering Future Transportation



LEGEND

- New Construction
- - - Long Range Proposed New Construction
- Road Improvements
- - - Long Range Proposed Improved Roads
- Road Elimination
- Dept. of Energy Property
- LANL Buildings
- Non Dept. of Energy Property
- Planning Area



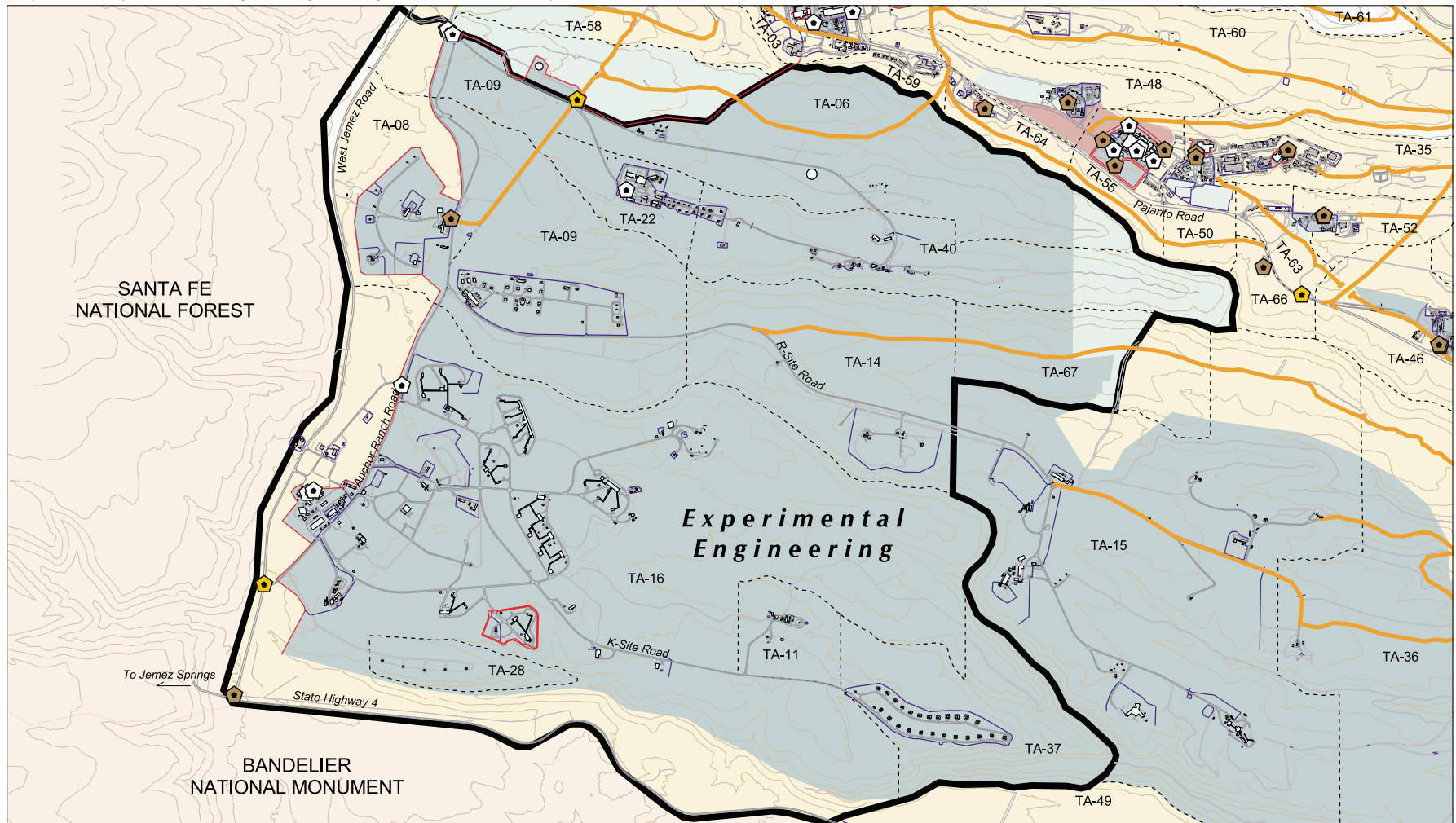
## 5. *Security*

The entrance to the Experimental Engineering Planning Area (also known as Two-Mile Mesa South) is designated a limited-security area. The location deep within the Laboratory makes it suitable for SNM security functions or other activities requiring protected areas or material access areas, over the long term.

The area should remain a limited security area, with guard stations at Anchor Ranch Road and at some point along the proposed road between TA-06 and TA-59. The northern half of TA-06 could be fenced off from this area and designated for controlled activities. To accomplish this it would be necessary to relocate the Anchor Ranch Road guard station and install a new guard station at the junction of Two-Mile Mesa Road and the proposed TA-06/64 connector road.

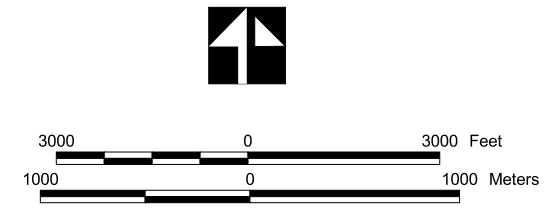
Purpose-built facilities should be constructed to provide secure storage for classified parts. These facilities should accommodate both high explosives (HE) parts and non-HE parts. These facilities should be constructed and alarmed to meet all DOE security requirements.

Map IV-F8: Experimental Engineering Existing And Future Security Areas



LEGEND

- |                              |                              |                                   |
|------------------------------|------------------------------|-----------------------------------|
| Industrial Fences            | Proposed Guard Stations      | Secured Building                  |
| Security Fences              | Active Guard Station         | Existing Limited Security Area    |
| Proposed/Improve Roads       | Closed Guard Station         | Existing Property Protection Area |
| Roads                        | Planning Area                | Existing Protected Area           |
| Technical Area Boundaries    | Future Limited Security Area | Future Protected Area             |
| Non Dept. of Energy Property | Research Park                | Security Buffer                   |



## 6. *Utilities*

### a. *Water System*

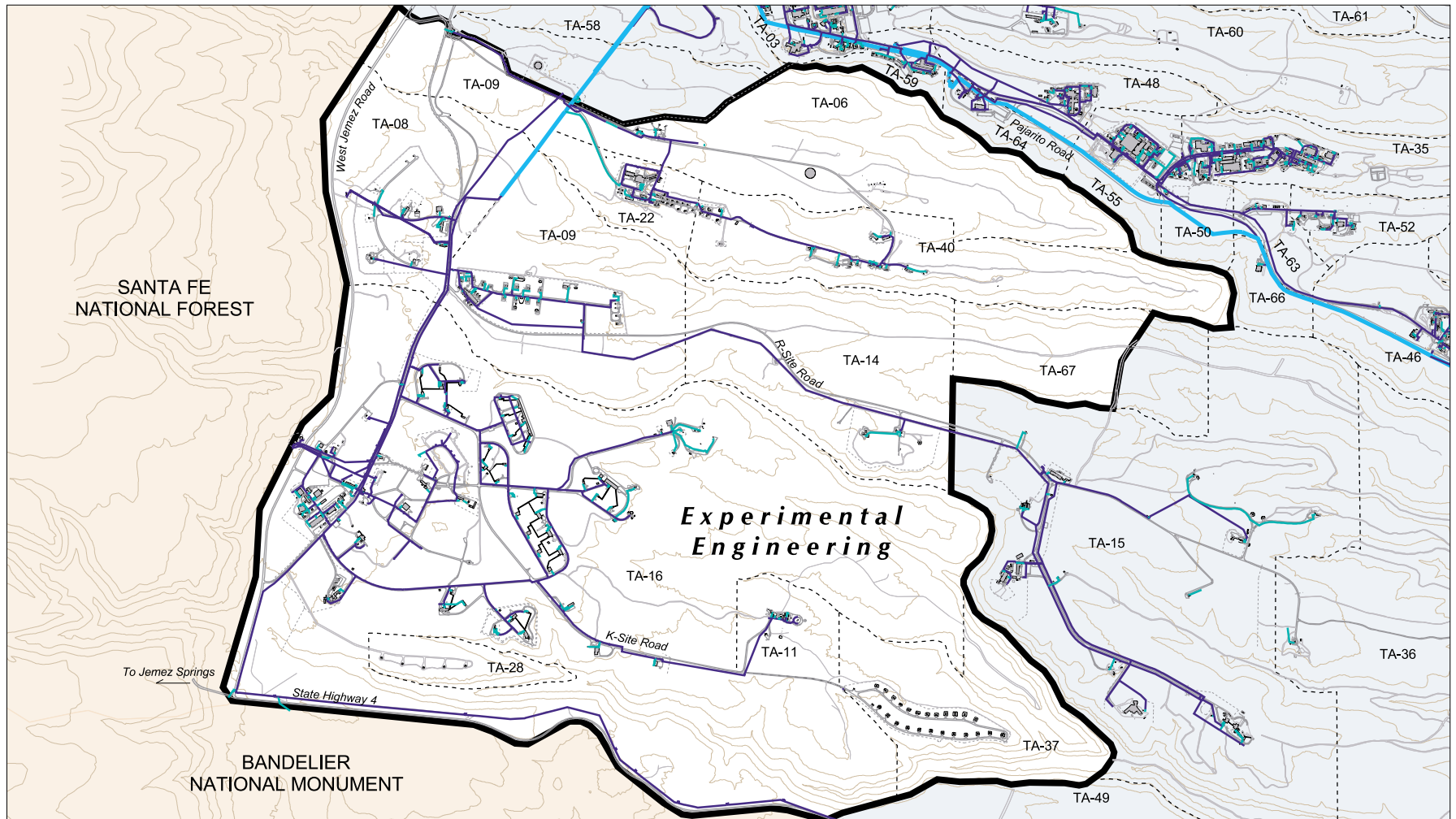
**Condition of System:** Throughout all planning areas the water distribution system is in good condition. No projects are required to improve any water system conditions.

**System Materials:** Pipe materials used in the water distribution system include cast iron, steel, asbestos cement, reinforced concrete, copper, ductile iron, and plastic. Cast iron has been replaced by ductile iron for distribution sized pipe. Steel and reinforced concrete are not common in today's systems of the Laboratory's size (greater than 24 inches diameter). Plastics and ductile iron dominate the water supply market for these sizes and fittings. Concerns regarding materials include:

- Replacement of asbestos cement pipe, particularly in areas where pipe may be disturbed for repair or replacement.
- Replace aged cast iron or steel pipe.

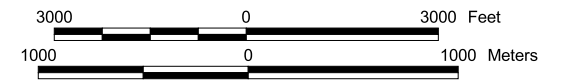
**System Capacities:** Fire hydrants are typically connected to 6-inch-diameter pipe. Laboratory water service lines that provide water for fire protection need to be replaced if they have diameters that are less than 6 inches.

Map IV-F9: Experimental Engineering Existing Water System



LEGEND

- Water Distribution Lines
- Water Service Lines
- Water Transmission Lines
- Planning Area
- Dept. of Energy Property
- LANL Buildings
- Non Dept. of Energy Property



**b. Sanitary Sewer System**

**Condition of System:** The sewer system is generally in good operating condition, with the exception of a gravity pipe segment between manholes 769 and 770 in TA-16. The pipe in this appears to be collapsed, and the line requires daily pumping and hauling to the TA-03 truck collection dropoff. This line is scheduled for replacement.

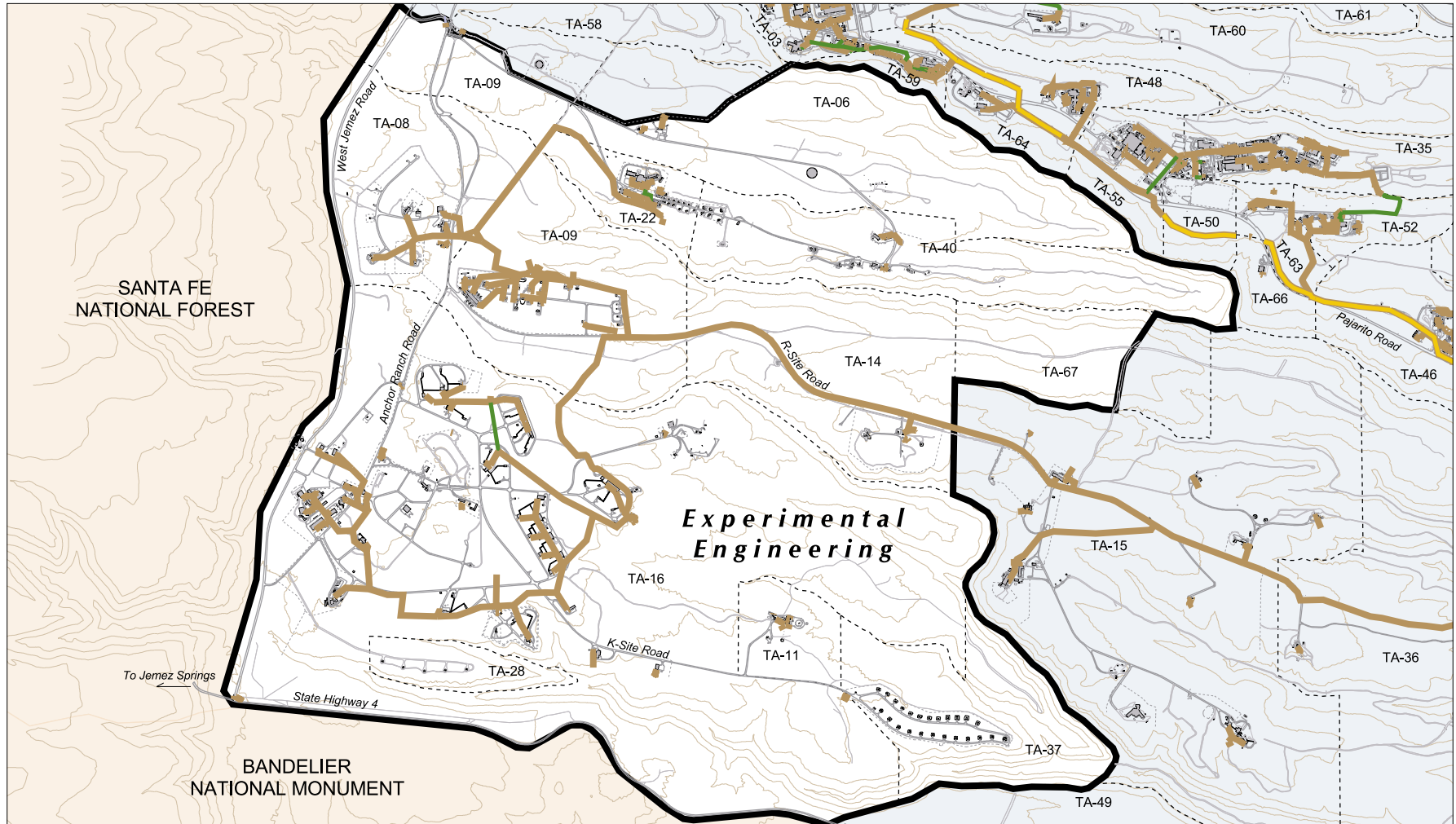
**System Materials:** Pipe materials used in the sewer system include cast iron, vitrified clay, steel, asbestos cement, reinforced concrete, copper, ductile iron, and plastic. Material concerns are:

- Replacement of concrete pipe that has shown evidence of interior deterioration from exposure to sewer gases.
- Replacement of asbestos cement pipe, especially where it could be disturbed by maintenance operations.
- General condition of aged vitrified clay pipe.










**System Capacities:** The sewer system has no capacity issues, with the exception of limitations set by lift station pumps. There is currently a strategy in place to abandon lift stations where economically feasible and replace with gravity flow. Those gravity systems will accommodate increased demands and require considerably less maintenance.

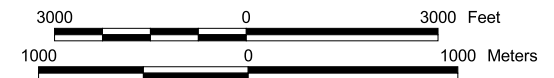


Map IV.-F10: Experimental Engineering Existing Sanitary Sewer System



LEGEND

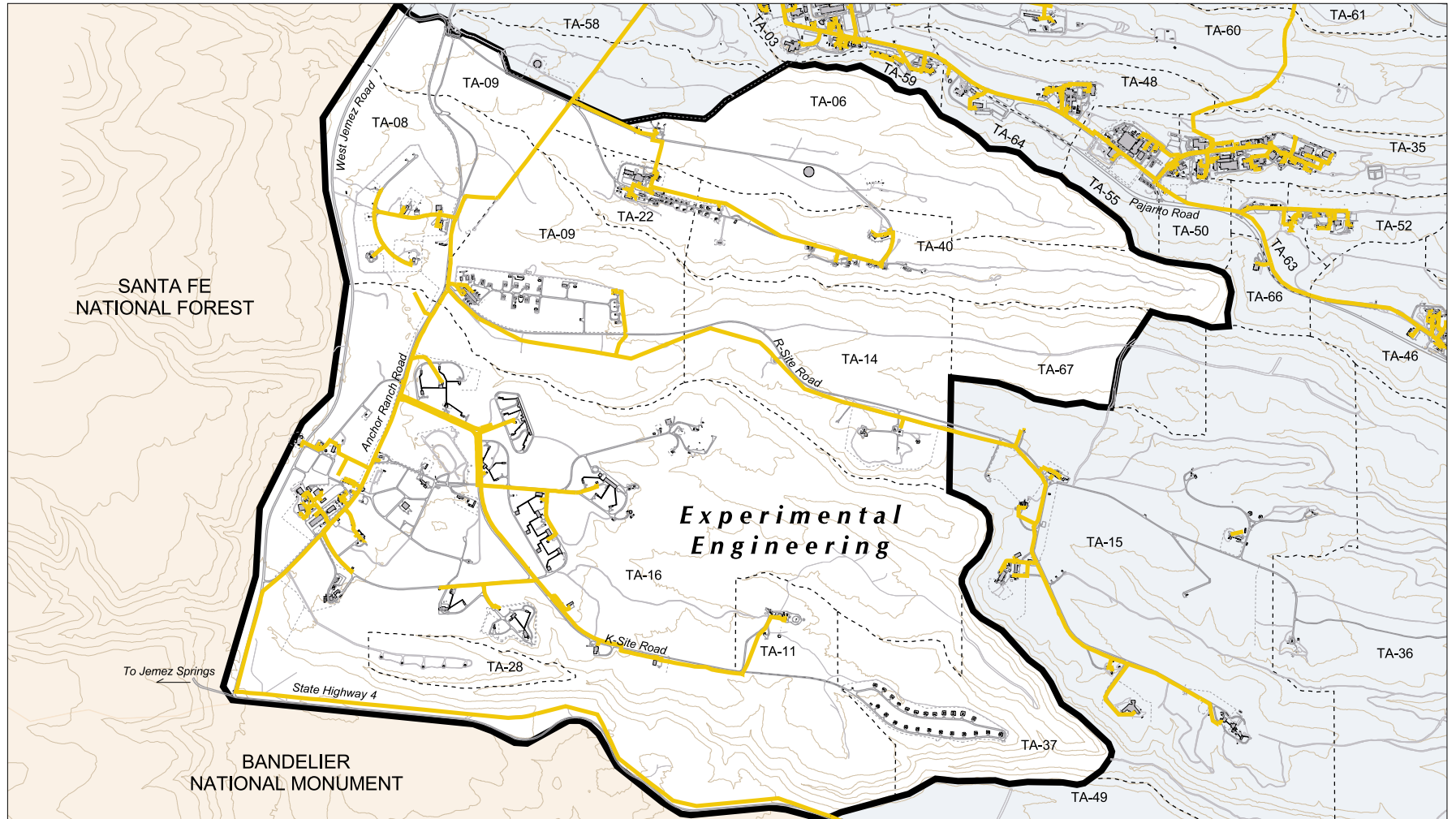
- |  |  |
|--|--|
|  Gravity Lines    |  Dept. of Energy Property     |
|  Effluent Lines   |  LANL Buildings               |
|  Force Main Lines |  Non Dept. of Energy Property |
|  Drain Lines      |  Planning Area                |
|  Service Lines    |  |



***c. Natural Gas System***

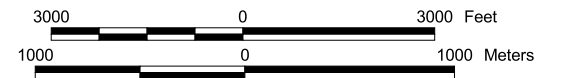
A 2-inch steel pipe in good condition serves this area. However, there is a capacity shortfall, because the pipe is too small. There is an active project underway to replace the pipe with a 4-inch PE pipe.

Map IV-F11: Experimental Engineering Existing Natural Gas System



LEGEND

- Natural Gas Distribution
- Natural Gas Transmission
- Planning Area
- Dept. of Energy Property
- LANL Buildings
- Non Dept. of Energy Property



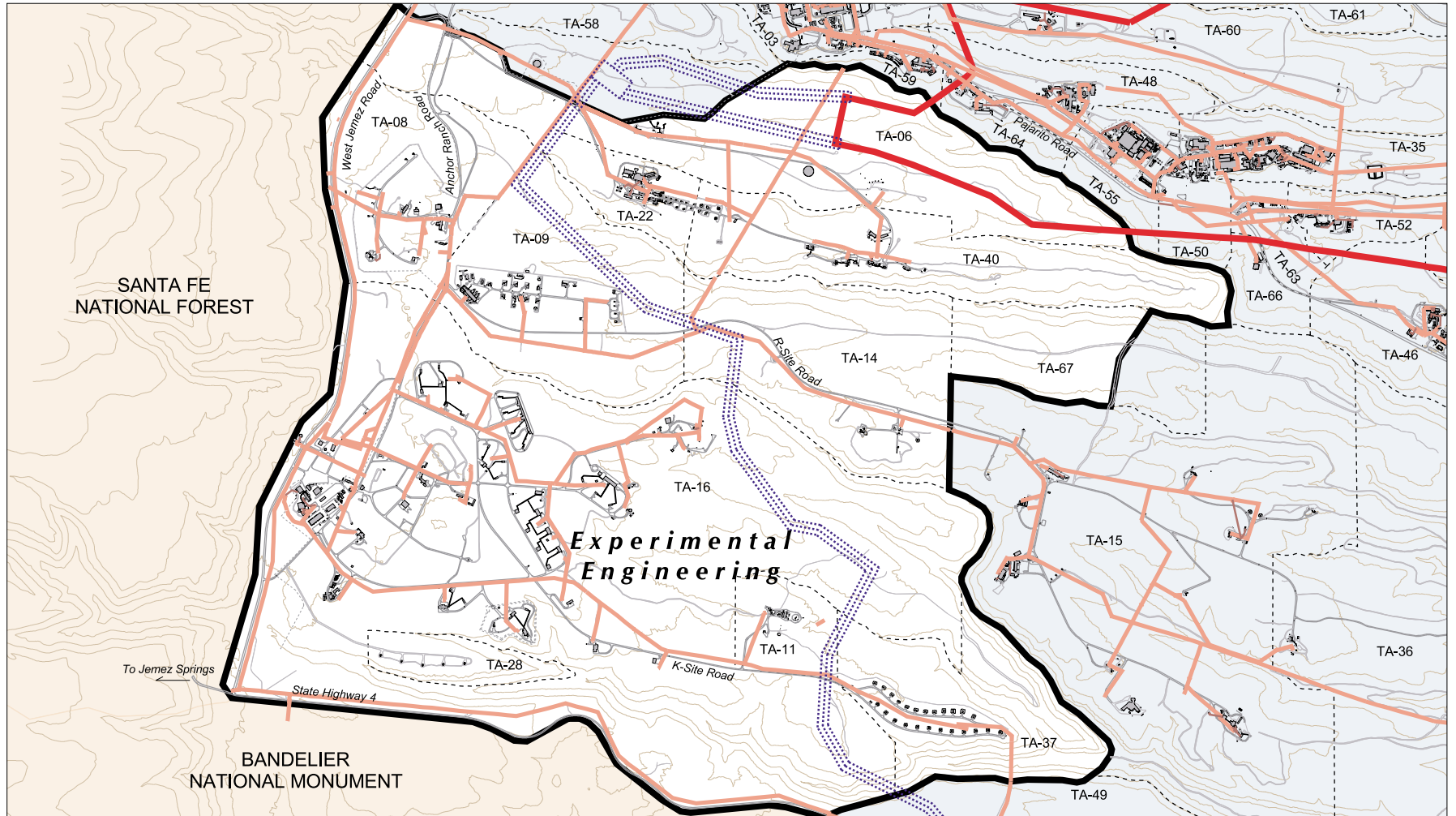
***d. Electric Transmission and Distribution System***

Two 115kV transmission lines presently carry all the bulk electric power for the Laboratory, the town site and White Rock. Both lines terminate on a common bus. A third 115 kV transmission line is planned to interconnect with the Laboratory power system at a new and physically separate location from the original two lines. This will provide for redundancy and provide increased reliability and security.

One-third of the lightning-caused interruptions occur on the single 2-17 13.8kV distribution circuit. Improved insulation coordination on this circuit, the longest aerial circuit at the Laboratory, is a typical example of specific upgrades that can improve distribution system reliability for the entire site.

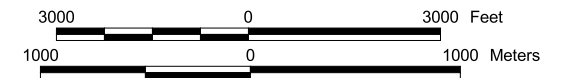
There are two remaining transformers that are PCB contaminated. These transformers should either be replaced or refilled with a suitable dielectric fluid to mitigate the PCB concerns.

Map IV-F12: Experimental Engineering Existing Electrical System



LEGEND

- Proposed 155 kv Transmission Line
- Electrical Transmission
- Electrical Distribution
- Electrical Service
- Dept. of Energy Property
- LANL Buildings
- Non Dept. of Energy Property
- Planning Area



### 7. Facilities

The Experimental Engineering Planning Area accounts for about 6% of the Laboratory’s on-site population. There are 336 buildings totaling approximately 872,000 GSF of space, or 11% of the Laboratory’s total GSF. Eighty-four percent of the planning area facilities are in poor or failing condition, and 78% of the area’s employees are housed in these facilities. The majority of structures, approximately 37%, are used for production purposes.

Table IV-F3: Experimental Engineering Employee Environment Condition

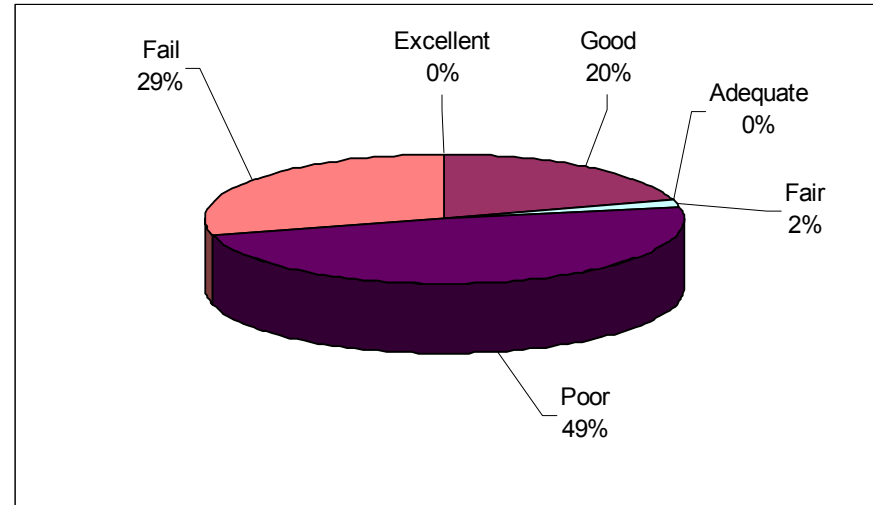


Table IV-F2: Experimental Engineering Facilities Condition

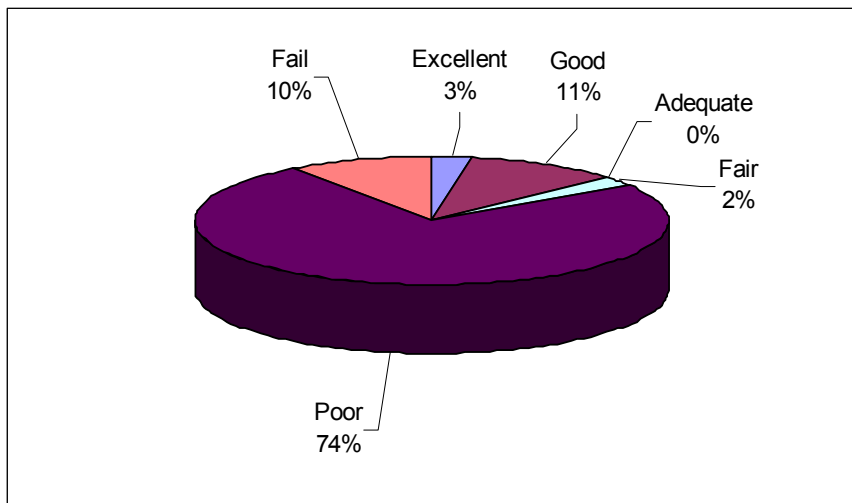
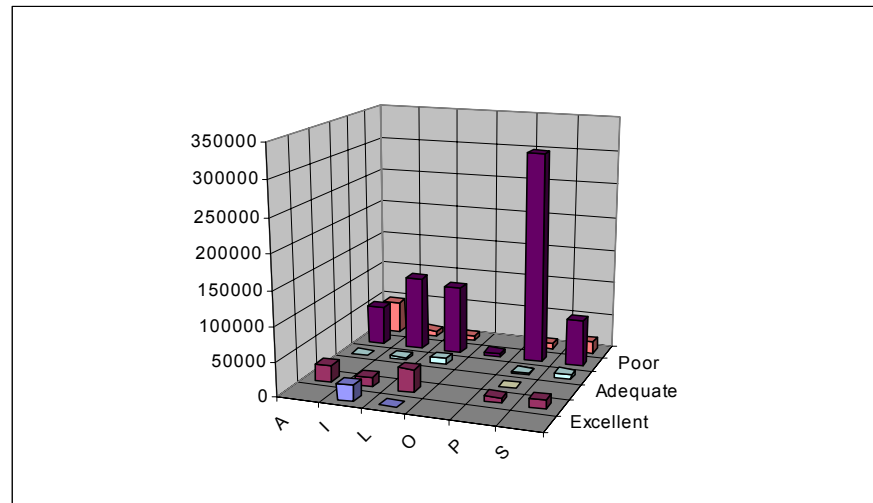


Table IV-F4: Experimental Engineering Facility Use and Condition



## **8. *Environment, Safety and Health***

There are a number of environmental constraints that limit development of this area. The extensive, narrow canyon systems of Canon de Valley to the east, Water Canyon to the south, and an unnamed canyon to the west limit development. These canyons contain 100 year floodplains. The eastern canyon portion of the area is federally protected species habitat and associated buffer zones. Archeological survey areas cover most of the mesa tops in the western portion of the Experimental Engineering Planning area. Development in these environmentally sensitive areas is discouraged.

## **9. *Quality Environment***

With the exception of the cluster of buildings at TA-16 the Experimental Engineering Planning Area is rural in character. Most buildings and other facilities are in isolated locations and surrounded by undeveloped open or forested land.

Site plan improvements are needed at TA-16 and consist of improved security and access from parking areas located outside the security fence and clearer definition between interior vehicular and pedestrian circulation and parking. Visual improvements also are needed at TA-16; they include upgraded building appearances, clearer directional signage, and the introduction of landscaping around buildings and in parking lots and attractive outdoor areas between existing building clusters where people can congregate for lunch and other informal outdoor functions.

<b><i>Experimental Engineering Planning Area Assessment/Needs Summary</i></b>			
<b><i>Current Functions/Capability</i></b>	<b><i>Current Mission Activity</i></b>	<b><i>Forecasted Functions/Capabilities</i></b>	<b><i>Plan Discussion</i></b>
<b>Administrative Offices and Labs</b>			
Offices	Program Administration	Continue as current	Office space is substandard, in old or temporary facilities. Plan is to add several GPP offices to improve conditions.
<b>Non Destructive Testing (NDE) Facilities - TA-8</b>			
Radiography	NWP Manufacturing Surveillance, Certification, & Nuclear Materials	Continue as current. May increase with changes in program requirements	TA-08 facilities are very old. Newer facilities near the related activities of DAHRT, TA-55, AHF would reduce need to transport materials over public roads.
<b>Supporting Infrastructure Central Steam/Fire Station Facilities</b>			
Central Steam Generation	None	None	Facility should be decommissioned
Fire Station	All missions in area	Continue as current	
<b>Tritium Facilities</b>			
Tritium Processes	NWP Nuclear Materials	Continue as current	Consolidation of all tritium activities in this area is planned.
<b>HE Burn Sites</b>			
Burning of HE Materials	NWP Manufacturing NW R&T	Continue as current	
<b>Drop Testing Facilities</b>			
Drop Testing of Devices & Assemblies	NWP Manufacturing NW R&T	Continue as current	



<i>Needed Development</i>	<i>Proposed Projects</i>	<i>Land Use</i>	<i>Transp.</i>	<i>Security</i>	<i>Utilities</i>	<i>Facilities</i>	<i>Quality</i>	<i>ESH</i>
ESA to replace trailers, transportables with 3 permanent buildings	ESA Office Consolidation & Revitalization	●	●	○	○	●	●	●
Replace existing radiographic facility Replace existing assembly facility	New Radiographic Facilities Need project	●	●	●	○	●	●	●
D&D Steam Plant	Need project	●	○	○	●	●	●	●
Consolidate tritium facilities to TA-16	ESA Technical Support Facility/ Tritium Group Office Bldg. LANL Tritium Consolidation	●	●	●	●	●	●	●
Secure storage locations needed	No project							
	No project							

<b><i>Experimental Engineering Planning Area Assessment/Needs Summary</i></b>			
<b><i>Current Functions/Capability</i></b>	<b><i>Current Mission Activity</i></b>	<b><i>Forecasted Functions/Capabilities</i></b>	<b><i>Plan Discussion</i></b>
<b>Storage &amp; Bunker Facilities - TA-9/28/37</b>			
Storage of Explosives	NWP Manufacturing NW R&T	Continue as current	
<b>V-Site Historical Facilities</b>			
None	None	Save Manhattan era historical site	
<b>HE Component Manufacturing &amp; Assembling Facilities</b>			
HE Manufacturing & Assembly	NWP Manufacturing NW R&T	Continue as current	
<b>Detonator Facilities - TA-22/40</b>			
Detonators	NWP Manufacturing NW R&T	Continue as current	Detonator facility (finish FY2002)
<b>Infrastructure Facilities</b>			
Utility, Access & Infrastructure	All mission in the planning area	Continue as current	<p>Road System: Site roads and parking in this planning area need reorganization for safety, ESH and visual quality improvements.</p> <p>Utilities: Natural gas line upsize from 2" to 4" to Dynamic Testing.</p> <p>Utilities replacements of aged, unsafe, and non-compliant utility components.</p> <p>Quality Environment: Signage improvements, outdoor spaces and improved architectural appearance needed.</p> <p>ESH: Restoration of unused roads.</p>

<i>Needed Development</i>	<i>Proposed Projects</i>	<i>Land Use</i>	<i>Transp.</i>	<i>Security</i>	<i>Utilities</i>	<i>Facilities</i>	<i>Quality</i>	<i>ESH</i>
	None							
Historic V-site	Preservation of V-Site Facilities	●	○	●	○	○	●	○
	None							
	None							
Upgrade various roads into expansion areas as development occurs	Need project	●	●	○	○	○	●	●
Open entrance at southwest corner of TA-16 to West Jemez Road	Need project	○	●	●	○	○	●	○
Close and reclaim unused roads in planning area	Need project	○	○	●	○	○	●	●
ESA Site Circulation Improvements Improve security between buildings and install two pedestrian transtile gates	Need project	●	●	●	○	○	●	●
	Need Project	○	●	●	○	○	●	○
Utility improvements	TA-11 Sanitary Sewer Upgrade	○	○	○	●	●	●	●
	Natural Gas Line Upsize	○	○	○	●	●	●	●
Upgrade architectural/physical appearance, develop landscape and outdoor interactive space and improve site signage.	Need Project	○	●	●	○	●	●	●

