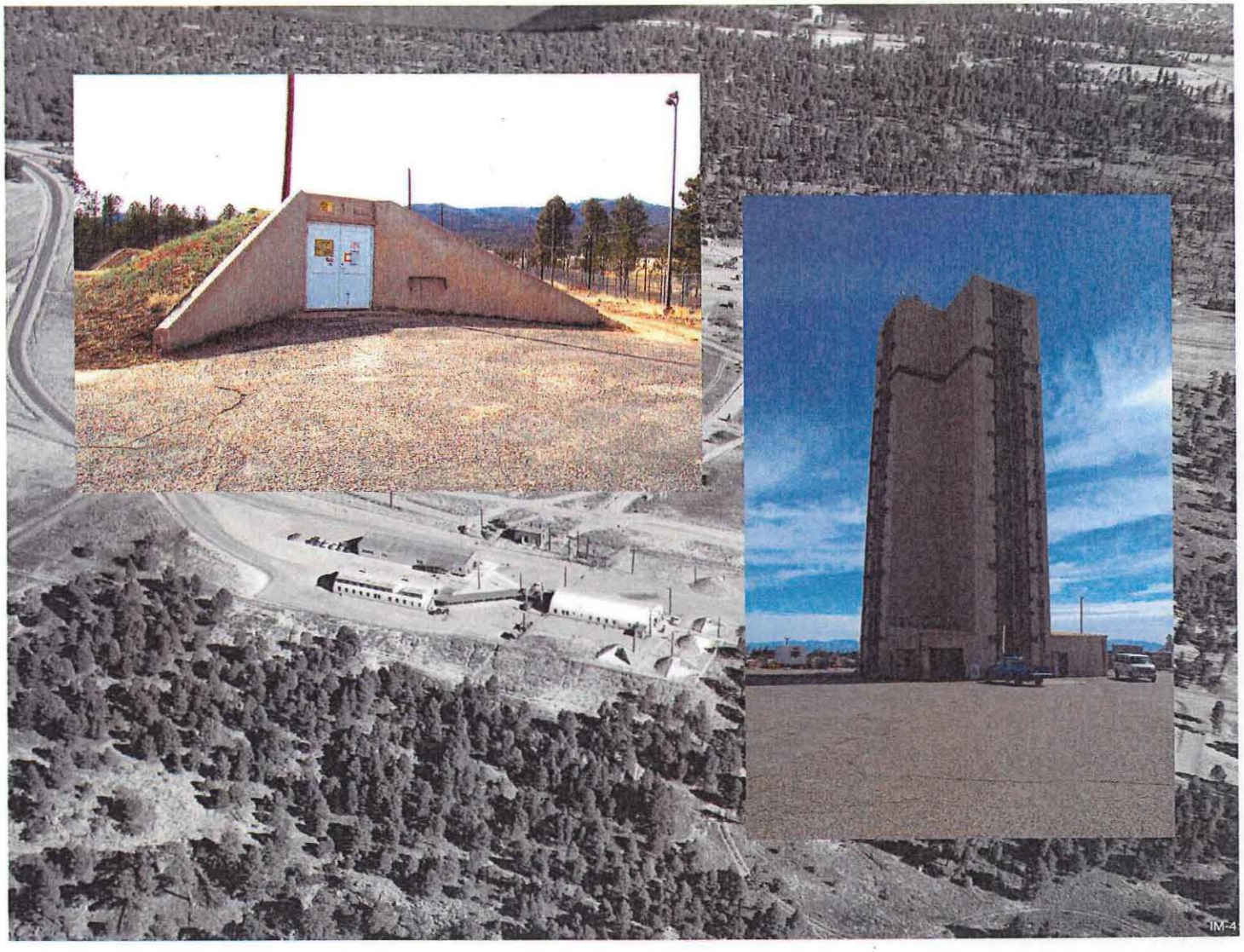
LA-UR-05-3279

DX Division's Facility Strategic Plan: Consolidation and Revitalization at Technical Areas 6, 8, 9, 14, 15, 22, 36, 39, 40, 60, and 69

Volume 1



ENV-ECO Cultural Resources Team
Environmental Stewardship Division
LOS ALAMOS NATIONAL LABORATORY

LA-UR-05-3279

DX Division's Facility Strategic Plan: Consolidation and Revitalization at Technical Areas 6, 8, 9, 14, 15, 22, 36, 39, 40, 60, and 69

Volume 1

Historic Building Survey Report No. 244

Los Alamos National Laboratory

December 20, 2005
Survey No. 902

Prepared for the Department of Energy
National Nuclear Security Administration
Los Alamos Site Office

prepared by

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EXECUTIVE SUMMARY

Los Alamos National Laboratory's (LANL) Dynamic Experimentation (DX) Division has developed a facility strategic plan identifying possible consolidations of existing work functions and potential future uses of facilities that may adversely affect LANL historic properties (those built between 1942 and 1963). In 2003 and 2004, LANL's Cultural Resources Team evaluated 163 properties in DX Division's administrative area for inclusion on the National Register of Historic Places (Register) in compliance with the National Historic Preservation Act (NHPA). Sixty-four of these properties are Register-eligible and 89 are not. An additional 10 laboratory, processing, or testing buildings were identified as undetermined for the Register because they were built after 1963 and their historical significance is still unfolding. Descriptions of the 163 properties are contained in Appendix A. An additional 15 DX properties have already been evaluated for historical significance; property descriptions and eligibility recommendations for these previously reviewed properties are included in earlier LANL reports (McGehee *et al.* 2005a, McGehee *et al.* 2005b, McGehee and Garcia 2004, McGehee and Garcia 2005, McGehee *et al.* 2003, McLain and Garcia 2001, and Garcia *et al.* 2005). Summary information related to previously reviewed properties managed by DX Division is included in Appendix B.

In addition to being evaluated for the Register, DX's historic properties were also assessed for their preservation and public interpretation potential, and the most historically significant properties were identified for permanent retention. Four of DX's properties are candidates for permanent retention. These properties represent some of Los Alamos's most important contributions to the history of World War II and the Cold War: TA-6-37, TA-22-1, TA-60-17, and TA-60-19. Eligible DX properties not currently slated for preservation will be reevaluated for permanent retention if they are identified for extensive modification or decontamination and decommissioning in the future. Additional NHPA compliance correspondence will be submitted to the New Mexico State Historic Preservation Officer outlining required documentation measures for any DX Division properties that will be adversely affected by DX's consolidation plans.

INTRODUCTION

DX Division's Facility Strategic Plan

Los Alamos National Laboratory's (LANL) Dynamic Experimentation (DX) Division has identified a series of proposed actions that have the potential to affect historic LANL properties located within DX's administrative boundaries. These actions are related to DX's facility strategic plan for the consolidation and revitalization of its operations and facilities and may include modifying or vacating historic properties, as well as removing historic equipment and associated records. Some of the buildings and structures, if determined to be excess property, may become candidates for decontamination, decommissioning, and eventual demolition.

Proposed actions include the construction of several new facilities leading to the consolidation of existing operations and personnel. Environmental impacts related to operations will be reduced as a result of DX Division's facility strategic plan. For example, some existing open-air firing points will be replaced by confined firing sites (LANL 2003a).

DX Division

Many of the properties under the administrative control of DX Division are located within technical areas (TAs) that were established during World War II's (WWII) Manhattan Project. Historical operations included the development, fabrication, and testing of components used in the United States' first nuclear devices: the "Trinity" test and the two atomic bombs dropped on Japan during WWII ("Fat Man" and "Little Boy"). Post-WWII operations included the development of components for the Cold War nuclear stockpile and for atmospheric tests in the Pacific and at the Nevada Test Site (NTS). DX's current operations are situated in TAs that are functionally connected and share a common scientific history; however, each TA has its own unique history (see "Description of TAs" below).

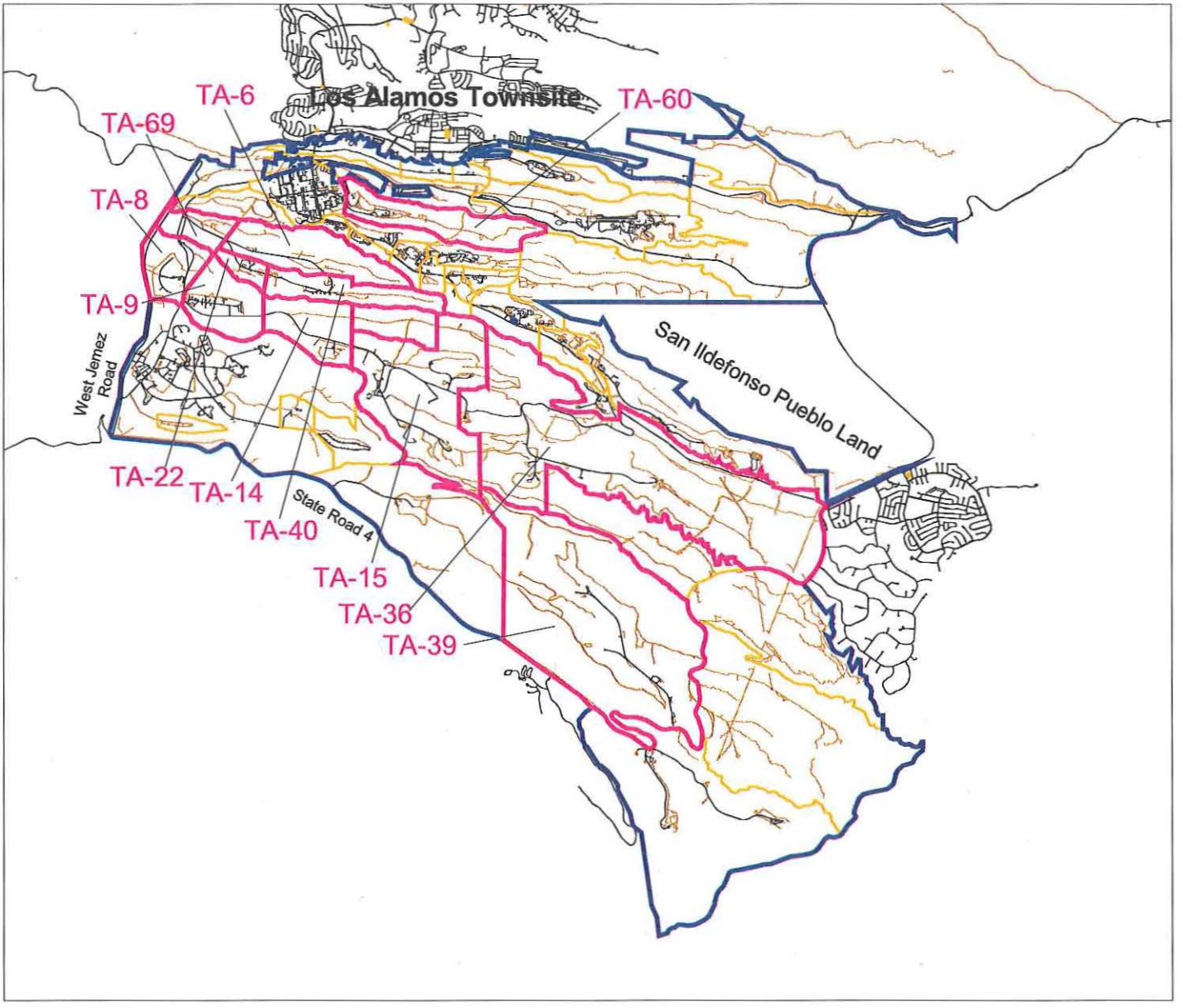
Today, DX Division's primary mission is research, development, and testing in support of nuclear weapons and Department of Defense (DOD) programs (LANL 2005). Specifically, DX Division is a leader in the area of nuclear stockpile stewardship, having certification responsibility for the majority of the nation's active nuclear weapons stockpile (LASO 2003). DX Division manages several key elements of LANL's nuclear weapons program: the dynamics of materials, the Joint DOD/Department of Energy (DOE) Munitions Technology program, subcritical experiments (SCEs), and weapons hydrodynamic experiments. Important programs include explosively driven pulsed-power physics and high-energy-density physics, detonator production, high explosive science, and advanced conventional munitions development for DOD programs. Principal facilities include eleven multipurpose firing sites, detonator production facilities, and the PHERMEX (Pulsed High-Energy Radiographic Machine Emitting X-rays), and DARHT (Dual-Axis Radiographic Hydrodynamic Test) facilities. At NTS, DX also coordinates SCEs and oversees activities at U1A, an underground experimental complex (LANL 2005).

Historic Property Eligibility Assessment

In compliance with Sections 106 and 110 of the National Historic Preservation Act, this report contains documentation regarding the National Register of Historic Places (Register) eligibility status of LANL properties under the jurisdiction of DX Division. These properties are located on DOE land at TAs 6, 8, 9, 14, 15, 22, 36, 39, 40, 60, and 69. Work processes carried out within the boundaries of DX Division supported Manhattan Project and Cold War nuclear weapons research and development. DX Division has been a center of research, development, and testing in support of the nuclear weapons program at LANL since the early 1940s and still actively supports the United States nuclear weapons program. Historical information about DX Division activities and recommendations for Register eligibility are included in this initial assessment report. A discussion of the multiple property method used to evaluate the DX properties is also included. Descriptions, selected drawings, and photographs of the evaluated properties are in Appendix A. Some of DX Division's properties have already been assessed for historical significance and are not described in Appendix A of this report. However, information related to these properties is listed in a summary table in Appendix B.

Survey Methods

In 2003 and 2004, a historic building survey of DX Division properties was conducted by Sheila A. McCarthy, Historical Architect, Benchmark Consulting Group; John Ronquillo, Sigma Science, Inc.; Ken Towery, Site and Project Planning Group, LANL; and Kari Garcia and Ellen McGehee, Ecology Group, LANL. The building survey was accomplished by conducting field visits to LANL areas that include properties managed by DX Division (Map 1). Architectural and engineering elements of DX's properties were documented and photographs were taken. LANL records research was also conducted.



Los Alamos
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DX Division Tech Areas
LANL Boundary
Technical Areas
Roads
Roaddirt
Parkpave
Parkdirt

DX Division Strategic Plan

LANL Boundary and TA-6, TA-8, TA-9, TA-14, TA-15, TA-22, TA-36, TA-39, TA-40, TA-60, TA-69

Map 1

HISTORICAL OVERVIEW

Manhattan Project (1942–1946)

In 1939, Albert Einstein wrote a letter to President Franklin Roosevelt warning him of a possible German atomic bomb threat (Rothman 1992). President Roosevelt, acting on Einstein's concerns, gave approval to develop the world's first atomic bomb and appointed Brigadier General Leslie Groves to head the "Manhattan Project." Groves, in turn, chose Robert Oppenheimer to coordinate the design of the bomb.

A single isolated and secret research facility was proposed. General Groves had several criteria: security, isolation, a good water supply, an adequate transportation network, a suitable climate, an available labor force, and a locale west of the Mississippi located "at least 200 miles from any international border or the West Coast" (Rothman 1992). In 1942, Oppenheimer, who had visited the Pajarito Plateau on a horseback trip, suggested the Los Alamos Ranch School. Oppenheimer and his staff moved to Los Alamos in early 1943 to begin work. The recruitment of the country's "best scientific talent" and the construction of technical buildings were top priorities (LANL 1995:8). The University of California agreed to operate the site, code name "Project Y," under contract with the government (an arrangement that has continued to this day). Although the fission bomb was conceptually attainable, many difficulties stood in the way of producing a usable weapon. Technical problems included timing the release of energy from fissionable material and overcoming engineering challenges related to producing a deliverable weapon. Nuclear material and high explosive studies were of immediate importance (LANL 1995).

Two bomb designs appeared to be the most promising: a uranium "gun" device and a plutonium "implosion" device. The gun device involved shooting one subcritical mass of uranium-235 into another at sufficient speed to avoid pre-detonation. Together, the two subcritical masses would form a supercritical mass, which would release a tremendous amount of nuclear energy (Hoddeson *et al.* 1998). This method led to the development of the "Little Boy" device. Because it was conceptually simple, "Little Boy" was never tested before its use at Hiroshima. Scientists were less confident about the implosion design, which used shaped high explosives to compress a subcritical mass of plutonium-239. The symmetrical compression would increase the density of the fissionable material and cause a critical reaction.

In 1944, the uncertainties surrounding the plutonium device necessitated a search for an appropriate test site for the implosion design, later used in the "Fat Man" device. Manhattan Project personnel chose the Alamogordo Bombing Range in south-central New Mexico for the location of the test. A trial run involving 100 tons of trinitrotoluene (TNT) was conducted at the test site ("Trinity Site") on May 7, 1945. This dress rehearsal provided measurement data and simulated the dispersal of radioactive products (LANL 1995). The Trinity test was planned for July and its objectives were "to characterize the nature of the implosion, measure the release of nuclear energy, and assess the damage" (LANL 1995:11). The world's first atomic device was successfully detonated in the early morning of July 16, 1945. Little Boy, the untested uranium gun device, was exploded over the Japanese city of Hiroshima on August 6, 1945. On August 9, 1945, Fat Man was exploded over Nagasaki, essentially ending the war with Japan.

Early Cold War Era (1946–1956)

The future of the early Laboratory was in question after the end of WWII. Many scientists and site workers left Los Alamos and went back to their pre-war existences. Norris Bradbury had been appointed director of the Laboratory following Oppenheimer's return to his pre-WWII duties (LANL 1993a). Bradbury felt that the nation needed "a laboratory for research into military applications of nuclear energy" (LANL 1993a:62). In late 1945, General Groves directed Los Alamos to begin stockpiling and developing additional atomic weapons (Gosling 2001). Post-war weapon assembly work was now tasked to Los Alamos's Z Division, which had been relocated to an airbase (now Sandia) in nearby Albuquerque, New Mexico (Gosling 2001).

In 1946, Los Alamos became involved in "Operation Crossroads," the first of many atmospheric tests in the Pacific. Later, also in 1946, the U.S. Atomic Energy Commission (AEC) was established to act as a civilian steward for the new atomic technology born of WWII. The AEC formally took over the Laboratory in 1947, making a commitment to retain Los Alamos as a permanent weapons facility.

With the beginning of the Cold War—the term "Cold War" was first coined in 1947—weapons research once again became a national priority. Weapons research at Los Alamos, spearheaded by Edward Teller and Stanislaw Ulam, focused on the development of the hydrogen bomb, the feasibility of which had been discussed seriously at Los Alamos as early as 1946. The simmering Cold War came to a full boil in late 1949 with the successful test of "Joe I," the Soviet Union's first atomic bomb. In January 1950, President Truman approved the development of the hydrogen bomb; Truman's decision led to the remobilization of the country's weapons laboratories and production plants. The year 1950 also marked the initial meeting of Los Alamos's "Family Committee"—a committee tasked with developing the first two thermonuclear devices (LANL 2001). In 1951, the Nevada Proving Ground (now the NTS) was established and the first Nevada atmospheric test, "Able," was conducted. In the same year, Los Alamos directed "Operation Greenhouse" in the Pacific and successfully conducted both the first thermonuclear test, "George," and the first thermonuclear "boosted" test, "Item." In 1952, the first thermonuclear bomb, known as "Mike," was detonated at Enewetak Atoll in the Pacific (LANL 1993a).[1] In short order, the Soviet Union responded with a successful fusion demonstration in August 1953, followed by a test of a hydrogen bomb in 1955. The arms race was on. By 1956, Los Alamos had successfully tested a new generation of high explosives (plastic-bonded explosives) and had begun to make improvements to the primary stage of a nuclear weapon (LANL 2001).

Although weapons research and development has always played a major role in the history of LANL, other key themes for the years 1942–1956 include supercomputing advancements, fundamental biomedical and health physics research, high explosives research and development, reactor research and development, pioneering physics research, and the development of the field of high-speed photography (McGehee and Garcia 1999). The Early Cold War era at Los Alamos ended in 1956, a date that marks the completion of all basic nuclear weapons design at LANL; later research at Los Alamos focused on the engineering of nuclear weapons to fit specific

[1] A better understanding of the Marshall Islands language has permitted a more accurate transliteration of Marshall Island names into English. Enewetak is now the preferred spelling (formerly Eniwetok).

delivery systems. The year 1956 was also the last year that Los Alamos was a closed facility—the gates into the Los Alamos town site came down in 1957.

Late Cold War Era (1956–1990)

The Late Cold War era saw Los Alamos's continued support of the atmospheric testing programs in the Pacific and at NTS. In 1957, the first of many underground tests at NTS was conducted. Other defense mission undertakings during this time included treaty and test ban verification programs (such as the satellite detection of nuclear explosions), research and development of space-based weapons, and continued involvement with stockpile stewardship issues. Non-weapons undertakings supported nuclear medicine, genetic studies, National Aeronautics and Space Administration collaborations, superconducting research, contained fusion reaction research, and other types of energy research (McGehee and Garcia 1999).

DESCRIPTION OF TECHNICAL AREAS

TA-6, Two-Mile Mesa Site (TM Site)

Historical Background

TA-6 is located on Two-Mile Mesa to the south of LANL's main administrative area (TA-3) and the town of Los Alamos. Wartime research at TA-6 focused primarily on developing the detonators necessary for the atomic bomb. TM Site was also used to develop methods for recovering active material (plutonium) in the event that the Trinity Site field test of the implosion device failed.

The first facilities at TM Site were constructed in 1944 and were used for miscellaneous high explosives tests (U.S. DOE 1986). Early buildings and structures were rough field installations and included bunkers, a control building, and a shop building. By the spring of 1944, Los Alamos scientists were using building TA-6-3 to conduct firing tests located at a sand pit built approximately one-half mile to the east. The TA-6-3 control bunker and an associated generator building (TA-6-2) were the first facilities at TM Site (Figure 1). A large concrete experimental structure (TA-6-37), located to the east of TM Site, was built by October of 1944 to support plutonium recovery operations (Figure 2). The "concrete bowl," as it is now known, was designed "for experiments of recovery when a gadget [bomb] is immersed in an elevated tank of water" (LASL 1944). Small wooden storage structures, housing Fat Man bomb casings or other components, were also located on the mesa top area to the east of TA-6 (Creamer 1992, McGehee *et al.* 2003, Masse *et al.* 2001).

In 1945, Manhattan Project director Robert Oppenheimer ordered most detonator work moved to Two-Mile Mesa. In response to this directive, TM Site was enlarged in the spring of 1945 to include detonator manufacturing and testing facilities; new construction consisted of laboratories, concrete detonator test structures, and storage magazines. Soon the wartime Laboratory had erected over forty buildings to support detonator development. A new administration building, laboratories, and firing chambers were clustered to the north of Two-Mile Mesa Road, east of buildings TA-6-2 and TA-6-3. A group of eleven storage magazines and other associated buildings was located across the road to the south.

TA-6 was a very active place at its wartime peak. Detonator operations included classifying and weighing PETN, pressing and sealing the PETN in tubes, and assembling detonators.[2] Shake tests of detonators were also conducted. TA-6 remained the center of detonator testing at the Laboratory during the immediate post-war period. However, in 1948, Laboratory director Norris Bradbury directed that a new TA be created for detonator research. The boundaries of this new TA, TA-22, included land that was originally part of TA-6. Soon after, all office, laboratory, and fabrication work moved from TA-6 to nearby TA-22. In 1950, Bradbury established TA-40 to replace the firing chambers at TA-6. The last firing tests at TA-6 took place in 1952 and all firing experiments moved to nearby TA-40 (located to the east of TM Site on Two-Mile Mesa). Explosives development, laser and chemistry research, and photographic operations continued at TA-6 until the early 1980s. In particular, the research section of the Detonator Group, GMX-7,

[2] PETN – The explosive "Pentaerythritol Tetranitrate"

used several buildings at TA-6 until 1972 for experiments on detonation and shock waves in gases (LANL 1993b).

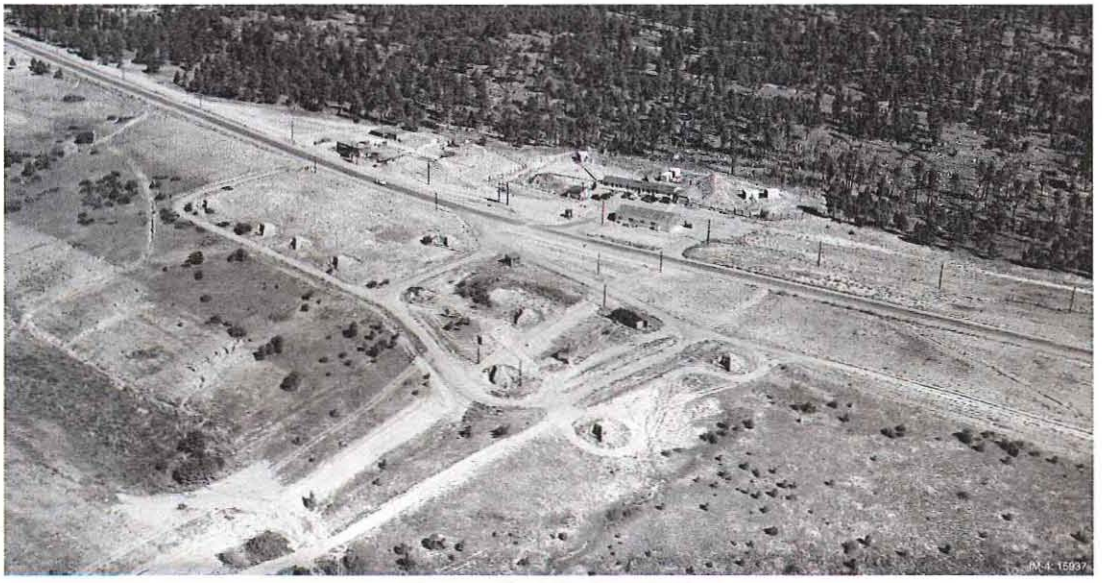


Figure 1. TA-6 (1950)

Figure 2. The Concrete Bowl, TA-6 (1991)

Current Function

In 1986, the Electronic Engineering and Fabrication Group (E-2) was using TA-6 to support its cable storing and manufacturing activities. Also, during this time, the Environmental Health Physics Group (HSE-9) was using building TA-6-3 as a storage location for its bioassay samples (U.S. DOE 1986). A new warehouse (TA-6-124) and associated storage yard are now located within the boundaries of historic TA-6; these property improvements were made in the last few years. In 2004, buildings TA-6-1, -2, -3, -5, -6, -7, -8, and -9 were removed as part of LANL's routine phasing out of aging properties. Most of these WWII-era facilities had been abandoned for several years and were in serious disrepair (Figure 3). Today, the Concrete Bowl (TA-6-37) is the only historic property remaining at TA-6 (Map 2).

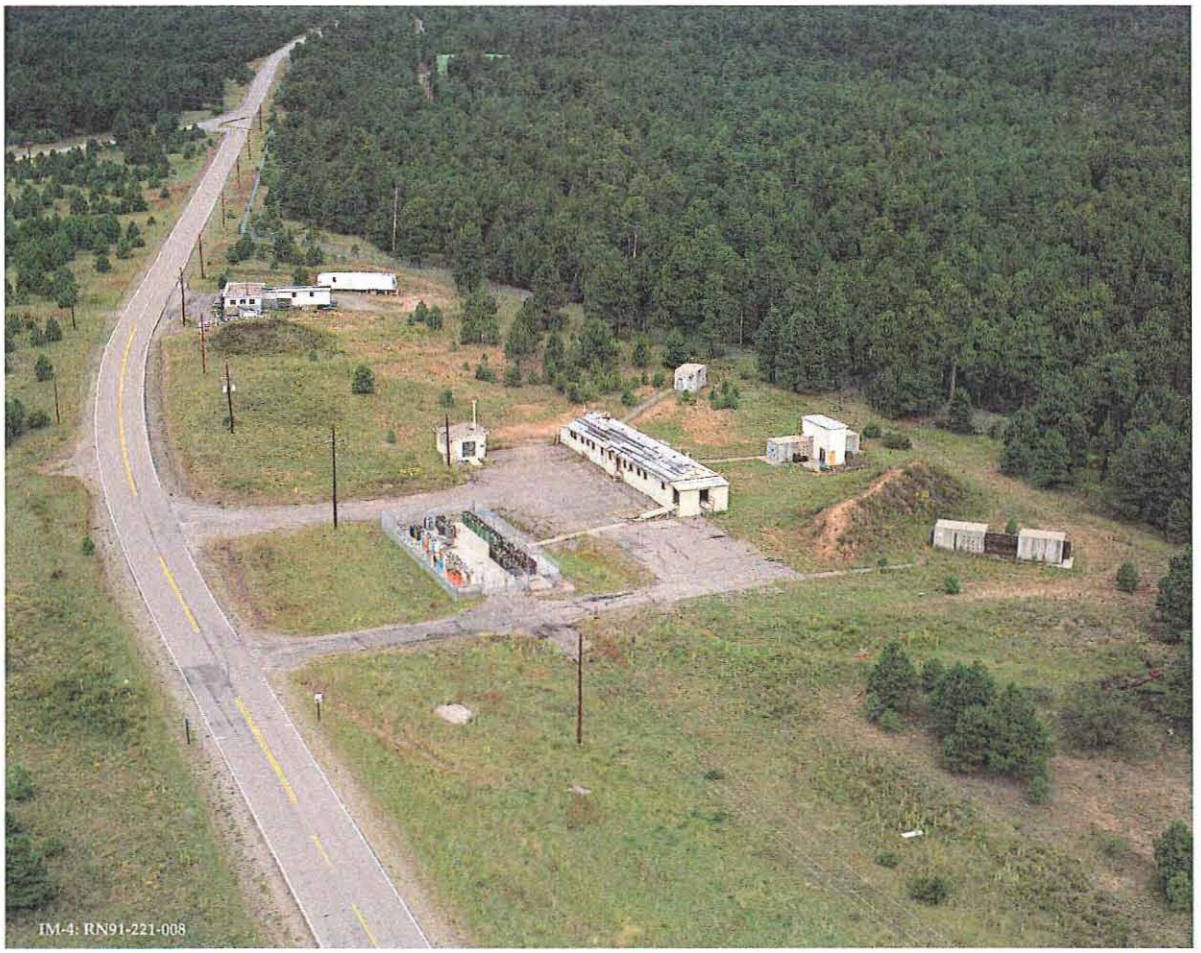
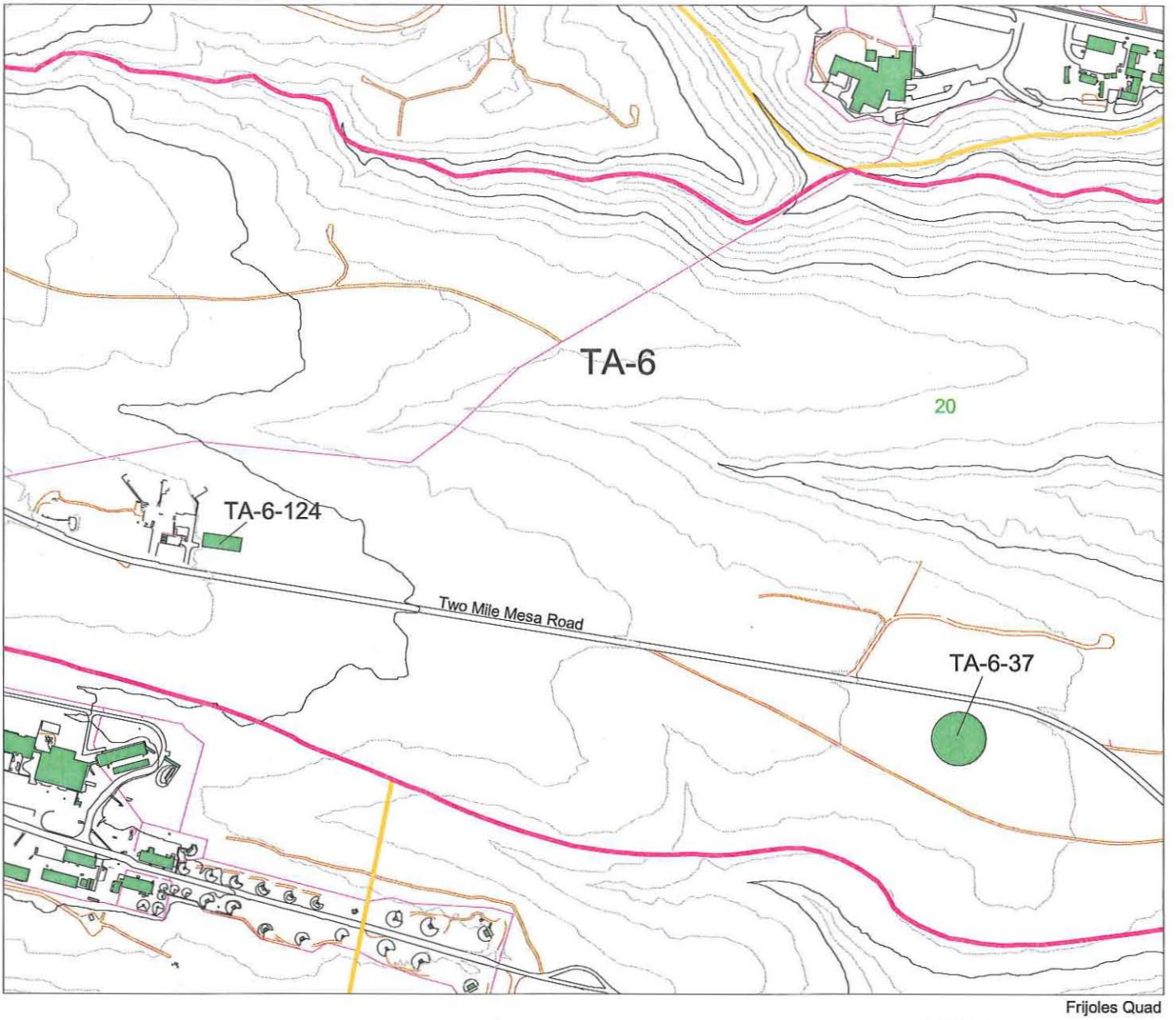


Figure 3. TA-6 WWII Facilities (1991)



Frijoles Quad

Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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100 0 100 200 300 Meters

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DX Division Bldgs Currently Being Evaluated
DX Division Tech Areas
LANL Boundary
20 Foot Contours
100 Foot Contours
Technical Areas
Township, Section, Range
USGS 7.5 Minute Quad
Roads
Roaddirt
Parkpave
Parkdirt
Fences
Buildings/Structures

DX Division Strategic Plan

TA-6

Map 2

TA-8, GT Site or Anchor West Site (AW Site)

Historical Background

TA-8, historically known as Anchor West Site, was used during WWII to conduct gun tests in support of the gun device. The buildings at TA-8 included standard proving ground facilities that were designed with a central control area for explosives operations. Three concrete "bombproof" buildings were built into a ravine and were designed to be partially underground (Figure 4). Placing the buildings lower in the ravine allowed for gun emplacements to be positioned above the roof level of the control building. This unique proving ground layout lessened the hazards associated with using high-alloy tubes and with firing the tubes in free recoil. The Anchor Ranch Proving Ground was completed and in active use by mid-September 1943. Special test guns were ordered from the Naval Gun Factory at the end of 1943, but were not ready until March 1944. During the four-month waiting period, personnel at TA-8 conducted practice tests, perfected gun testing operations, and established high-speed photographic techniques for documenting the test data (McGehee 2002). In May 1944, the first industrial-type radiograph was made at Anchor West Site using a medical X-ray unit (U.S. DOE 1986). This early radiographic work was carried out in one of the log guesthouses that were part of the pre-war Anchor Ranch. In August 1944, these operations were moved to T-Site, another early TA (see TA-16 below) (U.S. DOE 1986).

Beginning in the fall of 1945, TA-8 was used by Laboratory explosives personnel for high explosives research and development. In July 1949, construction of a new radiographic complex was begun. The new "GT-Site" was completed by 1950, the same year that some of the older wartime facilities at Anchor West Site were being removed (Figure 5). Early GT-Site contained a storage vault; source rooms; high explosives magazines; and X-ray, betatron, and film processing equipment. During the Cold War years, facilities at TA-8 were used for ultrasonic and electromagnetic testing. Research involving high explosives, plutonium, uranium, arsenic, lithium hydride, and titanium oxide was also conducted. In 1953, J Division personnel used some of the remaining Anchor West buildings for crystal growing experiments (U.S. DOE 1986).

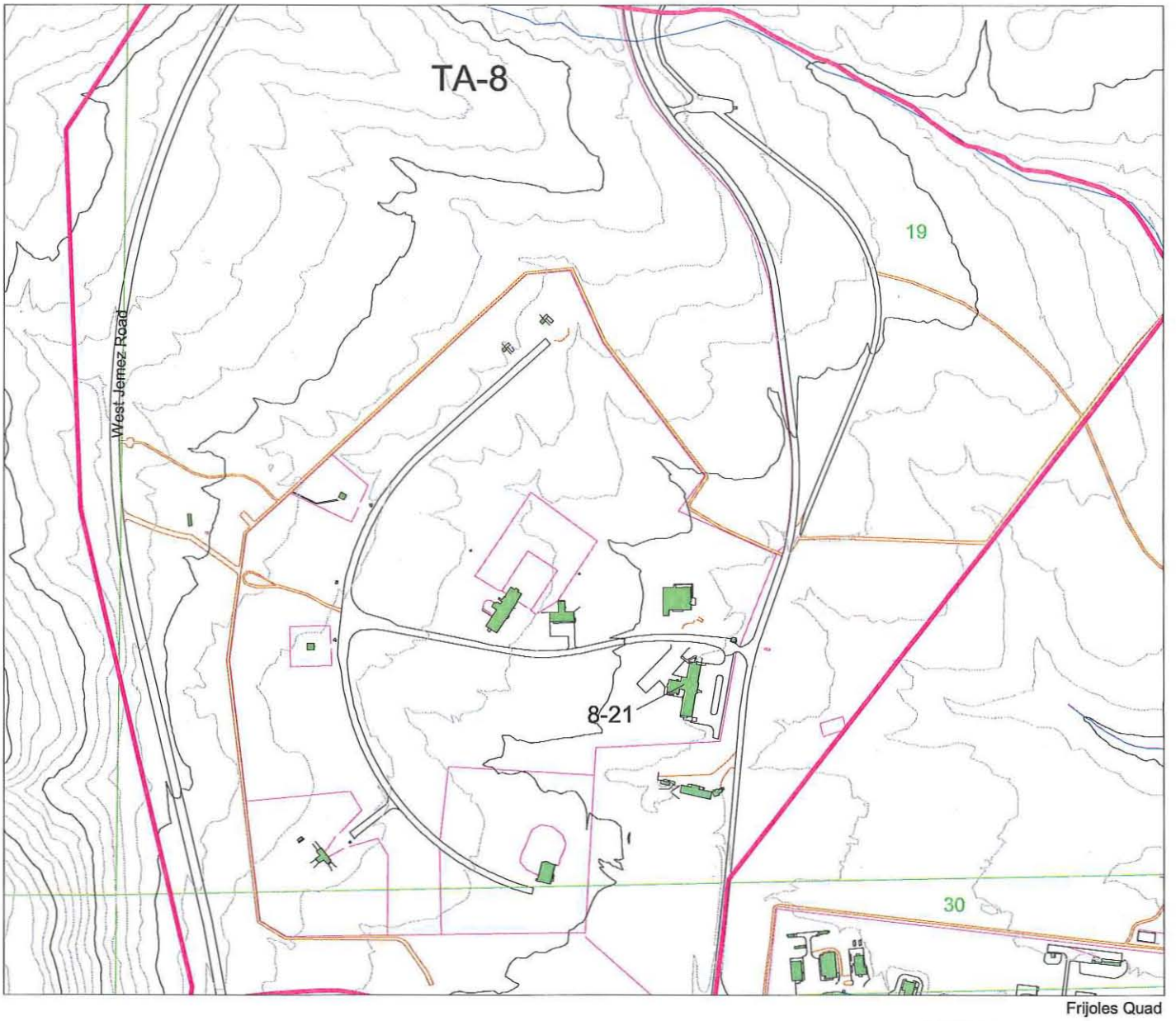
Figure 4. Anchor West Site (TA-8) (1950)
(Gun Site facilities located in upper half of aerial view, above main road in center of photo)

Figure 5. TA-8, New Construction (1950)

Current Function

TA-8—now known as GT-Site—supports non-destructive testing and evaluation activities (Figure 6). In addition to standard office space, TA-8 contains laboratory areas that house high-intensity radiography equipment used for studies of high explosives, plutonium, uranium, arsenic, lithium hydride, and titanium oxide. Other diagnostic and scientific capabilities include photography laboratories, darkrooms, a scanning electron microscope instrument room, and a machine shop. Complete X-ray developing is also available in this facility (MacRoberts n.d., LANL 1993c, Harris 1993a) (Map 3).

Figure 6. 1991 Aerial of TA-8



Frijoles Quad

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- DX Division Bldgs Currently Being Evaluated
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- 20 Foot Contours
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- Technical Areas
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- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-8

Map 3

TA-9, Anchor Ranch Site East (AE Site)

Historical Background

Old TA-9

TA-9 (Old Anchor East Site) was established in 1943 to house X-ray work and explosives development, production, and testing activities (Figure 7). Firing areas at wartime TA-9 were used by group X-8 for field testing explosive charges. The main explosive manufacturing and X-ray facilities were located east and north across Anchor Ranch Road from the gun firing site at TA-6.

Old TA-9 had at least eight properties, three of which were connected by a covered walkway. The site's facilities included firing chambers that were shielded with earthen berms or covered with mounds of dirt. Other properties included an X-ray facility (TA-9-1) and a high explosives casting facility (TA-9-3). A high-speed, rotating prism camera was used at TA-9-1 to study implosions of spherical explosive charges. The building also had closed and open firing chambers. In September 1944, some of the rotating prism chamber work was moved from TA-9-1 to TA-14. TA-9-3 was a high explosive casting facility. The property housed magazines and chemical pilot plants and included areas for solvent storage, explosives machining, and explosives processing (U.S. DOE 1986).

In early 1945, the TA-9 casting operations were replaced by the large-scale casting operations taking place at the newly completed S Site high explosives area (Hawkins *et al.* 1988). Other activities at old TA-9 included flash photography and explosive lens system research. Groups X-2 and X-6 also made use of the wartime facilities at TA-9 during the late 1940s. Group X-2 was responsible for developing and producing new explosives. Group X-6 was responsible for studies in detonation physics. The buildings at old TA-9 were removed between 1960 and 1965 (U.S. DOE 1986, LANL 1993c).

Far Point Site

Far Point consisted of a pair of buried control shelters and a firing pit. The site was established in 1944 to conduct various explosives detonation experiments. These explosives tests were conducted in the open (west of the control shelter mounds) and at structure AE-15, an underground, steel-lined pit with a heavy roof. The firing pit was used for recovery shots and was abandoned in the spring of 1945 for similar but larger facilities at TA-12 and TA-14. Far Point was abandoned in the late 1940s because the structural integrity of the control rooms had deteriorated due to repeated shock loading. The site was decommissioned in 1965 (LANL 1993c).

Nu Site

Nu Site (formerly TA-23) was established in 1943 or 1944 and was used for explosives testing during WWII. The site contained one firing point and four small structures. The firing site was located just west of present day TA-9-76. Nu Site was decommissioned in 1949 or 1950 in preparation for the construction of New Anchor East and, at that time, was incorporated into TA-9 for administrative purposes (LANL 1993c).

New TA-9

Construction of New Anchor East Site began in 1950, immediately following the completion of construction activities at TA-8 (Figure 8). Approximately 30 new properties were built (LANL 1993c).

New Anchor East consists of a collection of permanent facilities that range from laboratory/office building combinations to processing and development buildings. Facilities include machining buildings, a pressing facility, a carpenter shop, compressed gas and solvent storage buildings, magazines for high explosives storage, and ovens. The mission of the group that currently occupies the facility (the Explosive Technology Group—known as M-1 in 1993) has not changed significantly over the last four decades. The group synthesizes and formulates energetic materials, tests their sensitivity and performance, and monitors their compatibility with other weapons components (LANL 1993c).

Research and development efforts at new TA-9 include high explosives synthesis and laboratory testing, high explosives synthesis scale-up and processing (ball-milling and sieving), and high explosives casting and pressing. Analytical work includes mass spectroscopy and tritium analysis. Research related to compressed gas reactions and temperature compatibility studies (nuclear aging) has also been conducted at new TA-9 (LANL 1993c, Harris 1993b).

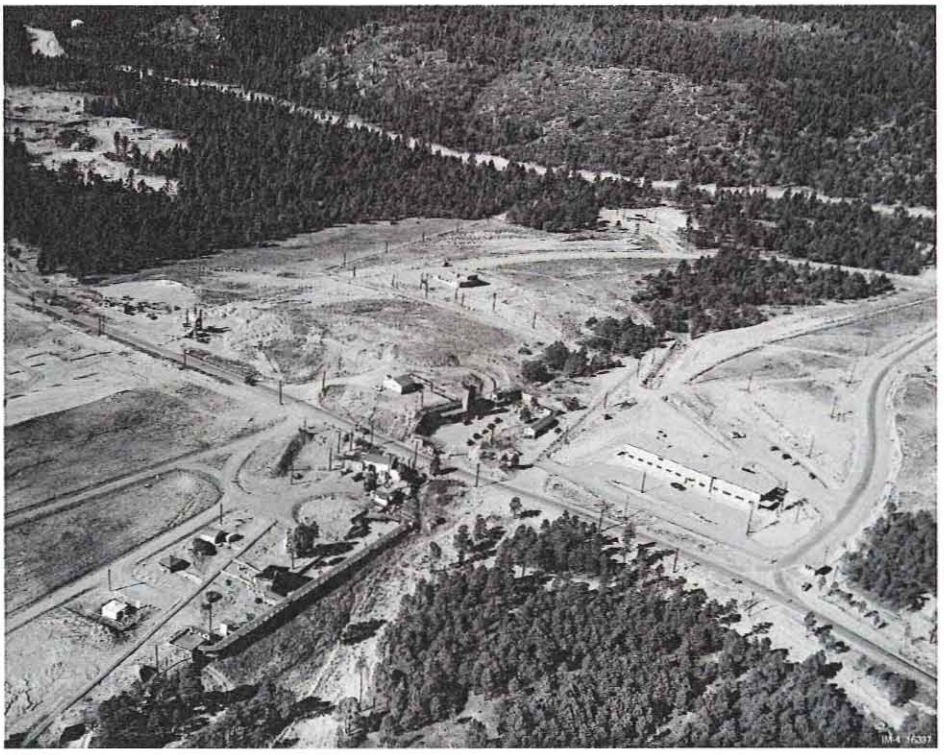


Figure 7. Old TA-9, below road in lower half of photo (1950)

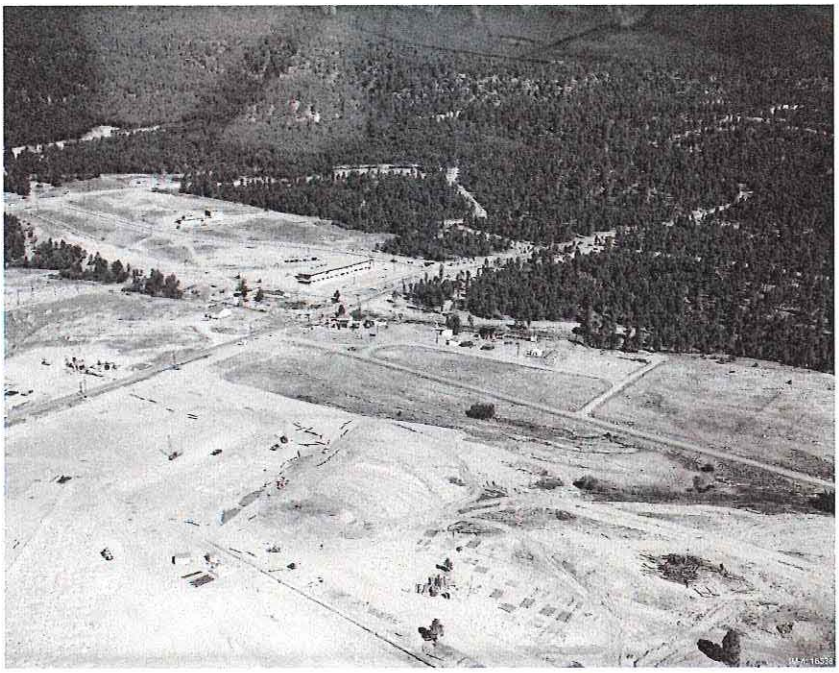
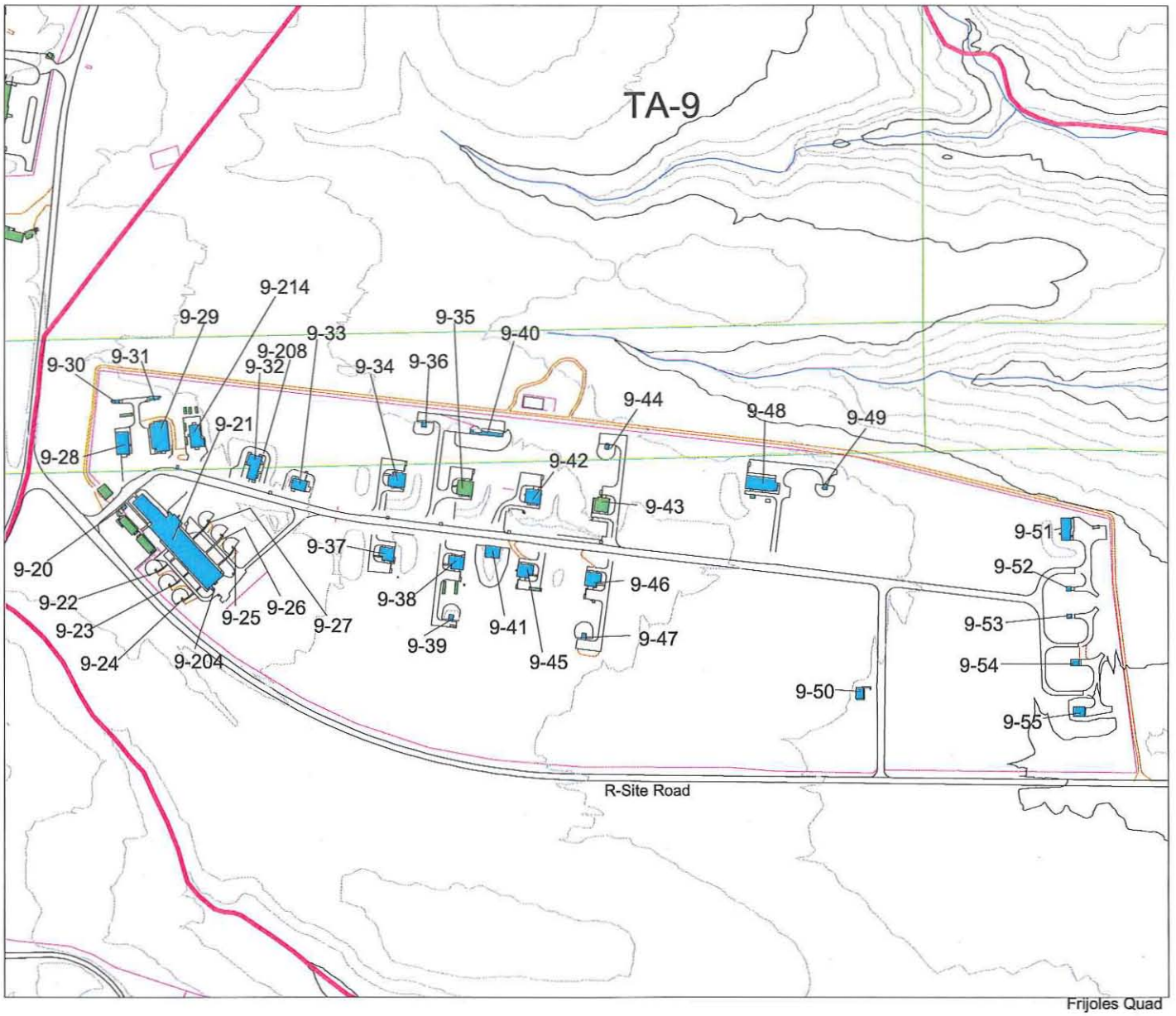


Figure 8. Old TA-9 (center of photo) and location of new TA-9 (lower third of photo) (1950)

Current Function

Explosive testing operations at present-day TA-9 are located south of Old Anchor East Site at New Anchor East (Figure 9) (Map 4). Generally, the site is used for the development, production, and testing of explosives (LANL 1993c).

Figure 9. 1991 Aerial of TA-9



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400 0 400 800 Feet

90 0 90 180 270 Meters

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DX Division Strategic Plan

TA-9

Map 4

TA-14, Q Site

Historical Background

TA-14 is a firing site dating back to the Manhattan Project years (Figure 10). Since 1944, it has been a dedicated site for the development and testing of explosives, including tests involving radioactive materials. TA-14 was constructed by X Division for close observation work on small explosive charges (LANL 1994). The site was used during the war to observe small-scale implosions. Cylinder implosions were studied using a rotating prism camera. The terminal observation method was also used at this TA. Q Site wartime facilities included a control building, high explosives magazines, trimming buildings, open and closed firing chambers, and a shop and darkroom building (U.S. DOE 1986). The firing site was renovated in 1952 and several buildings were removed at that time (LANL 1994). Renovations included a new and extensive firing complex and a later gun firing facility (TA-14-34), both of which were still being used in 1986 (U.S. DOE 1986). The gun firing building had an observation port, firing port, gun mount, and gun mount pad. This facility allowed rounds to be fired at cased high explosives charges (U.S. DOE 1986). Later research at TA-14 by groups M-1 and M-8 (the Explosives Technology Group and the Explosives Application Group, respectively) involved M-1's testing of the sensitivity of explosives and the operation of M-8's bullet/gun firing facility (U.S. DOE 1986).

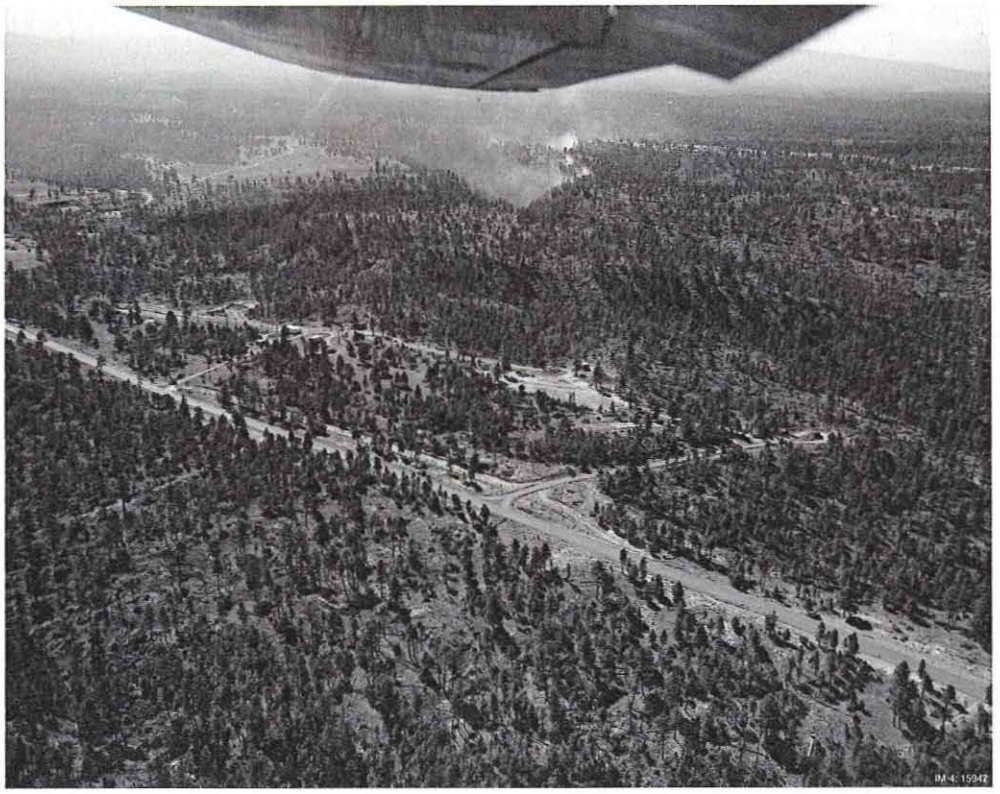
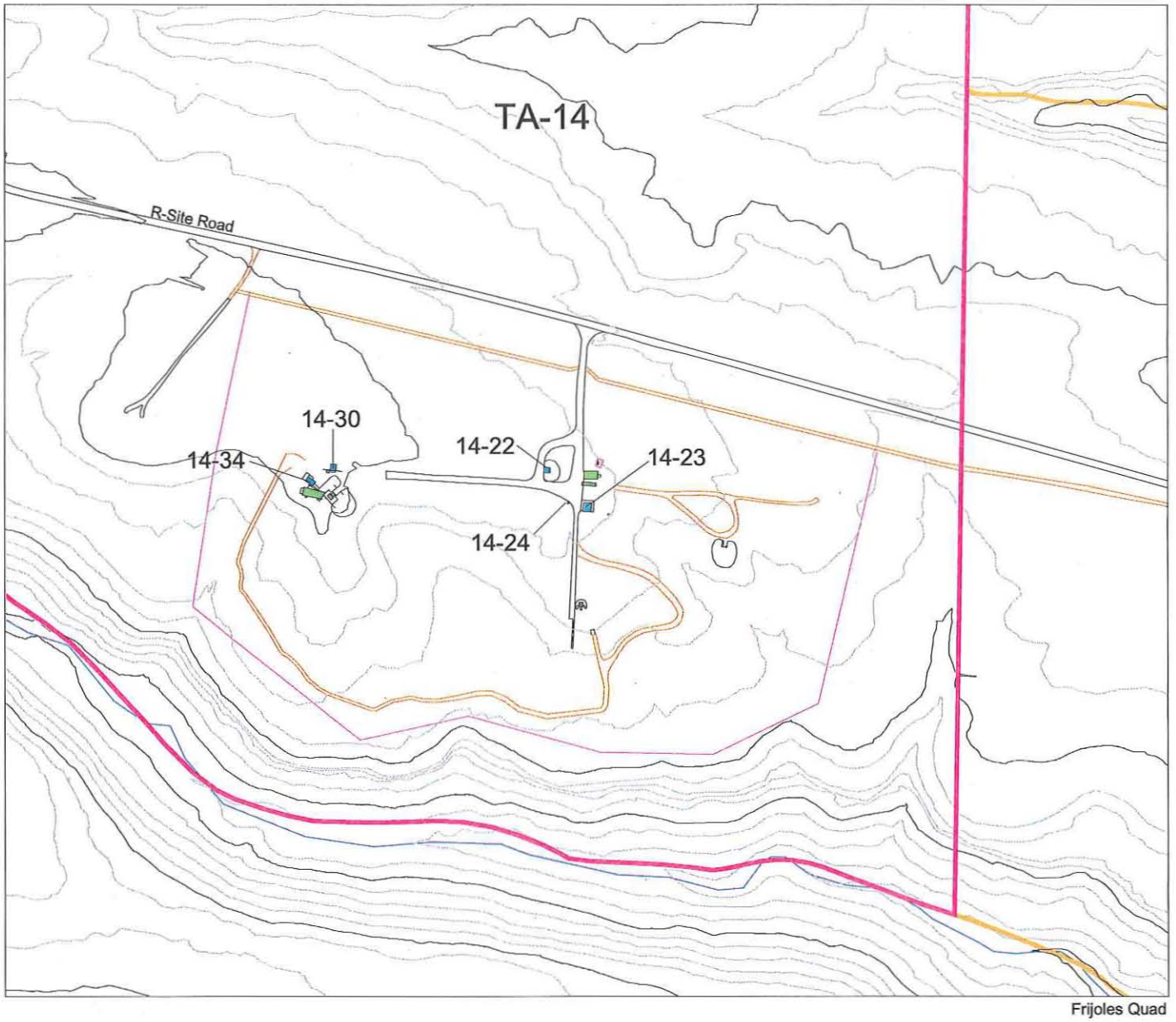


Figure 10. TA-14 (circa 1950)

Current Function

The principal use for TA-14, that of testing and observing explosives of all kinds (including those associated with radioactive materials), has remained the same since it was first constructed during the Manhattan Project (Figure 11) (Map 5). Open and closed firing chambers, firing points, and magazines are located within the area (U.S. DOE 1986).

Figure 11. 1991 Aerial of TA-14



Frijoles Quad

Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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- DX Division Bldgs Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-14

Map 5

TA-15, R Site

Historical Background

TA-15 (R Site) is located on top of Three-mile Mesa between Cañon de Valle and Three-mile Canyon. During WWII, the flash photography method was used at TA-15 to study the implosion of cylinders. Manhattan Project facilities at TA-15 included control and observation buildings as well as firing pits and other firing structures (Figure 12). Many of these early implosion-testing structures have been removed. Over TA-15's history, about twelve different firing areas have been used. The PHERMEX facility was built in the early 1960s to perform dynamic radiography of the weapon components of nuclear weapons during explosion. A second major dynamic radiographic machine named ECTOR was installed in the early 1980s for studies similar to those at PHERMEX (LANL 1992). In 1999, the first axis of the DARHT facility was completed. In 2003, LANL completed construction of the second axis (LANL 2003b). The dual axis nature of the facility will allow scientists to obtain time-sequenced material in order to see in three dimensions what happens in a nuclear mockup.

A series of connected buildings were once located in an area of TA-15 called "the Hollow." This area is located south of building TA-15-40 and west of R Site Road. The buildings, beginning with TA-15-20 in 1949, had varied uses as assembly buildings, laboratories, and shops. The prototype for the PHERMEX accelerator and the prototype REX (Relativistic Electron Beam Experiment) of the prototype for the first axis of DARHT were developed and tested in "the Hollow" (LANL 1992).

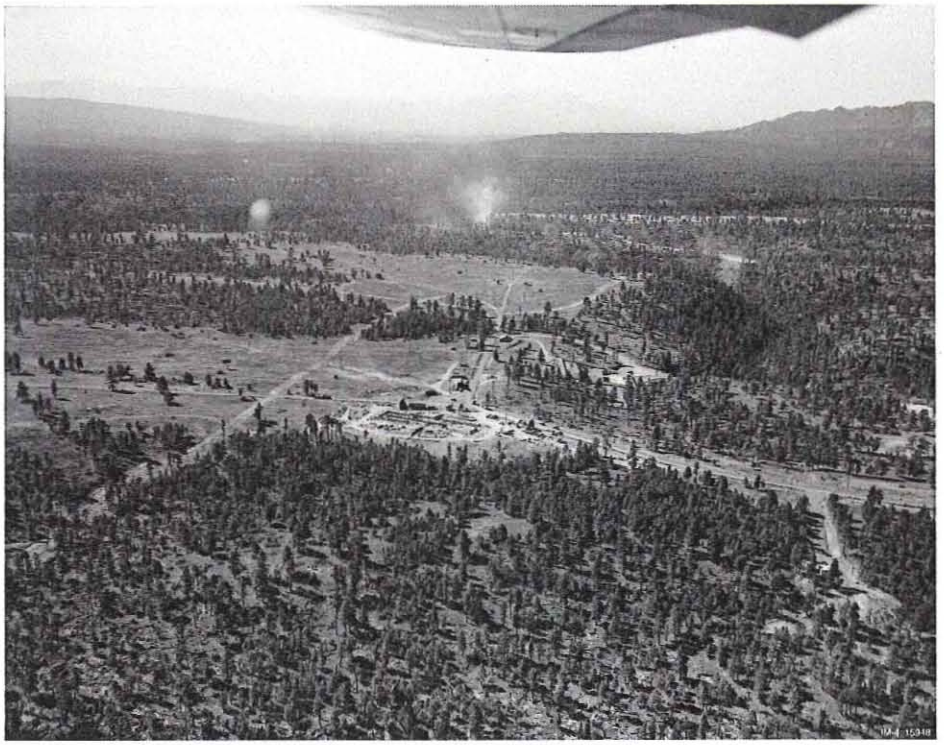


Figure 12. TA-15 (1950)

Current Function

TA-15 consists of a number of firing areas used extensively since 1944 for research and explosive testing of weapon design components (Figures 13 and 14) (Maps 6–8). Active sites include the PHERMEX and DARHT facilities where radiography is used to obtain data on the performance of an explosive assembly during detonation.

Figure 13. TA-15, Administrative Area (1991)

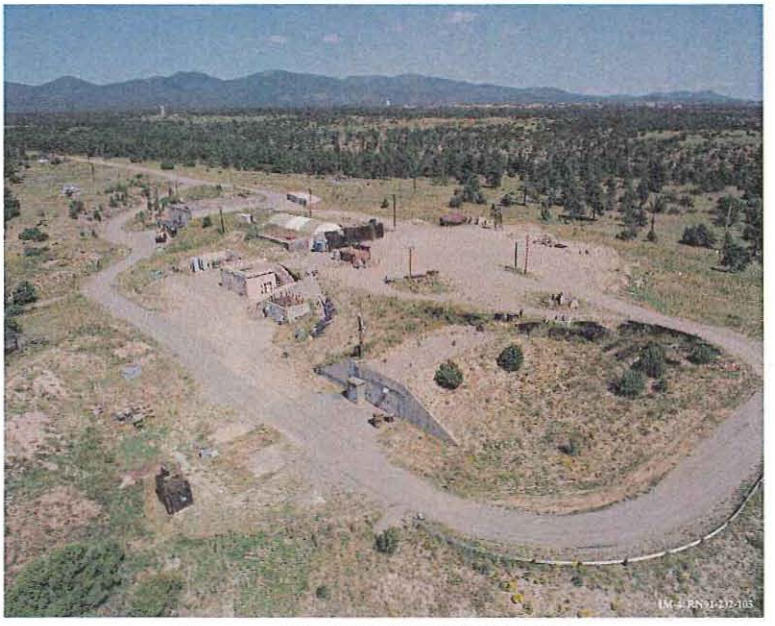
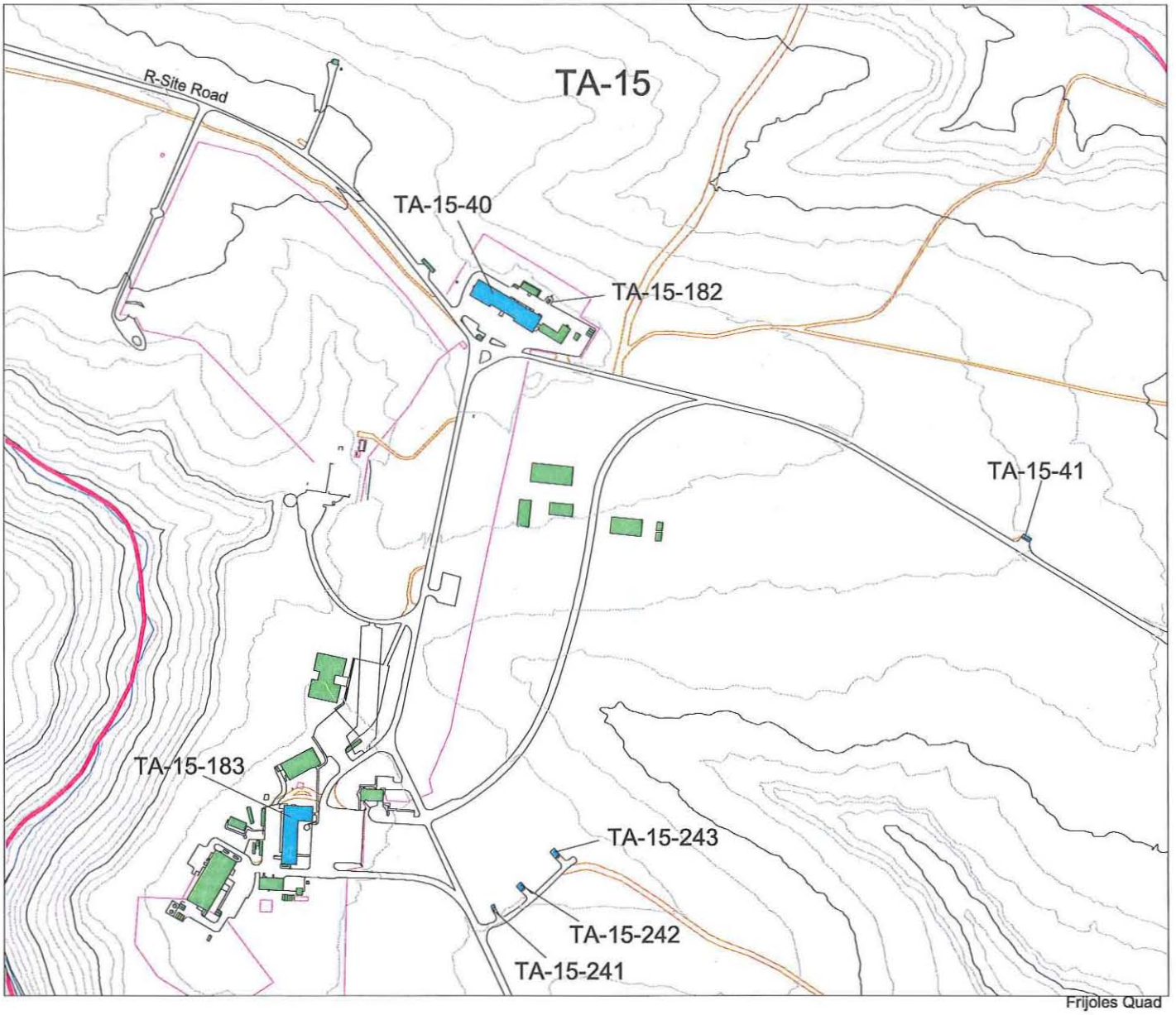


Figure 14. PHERMEX (1991)



Frijoles Quad

Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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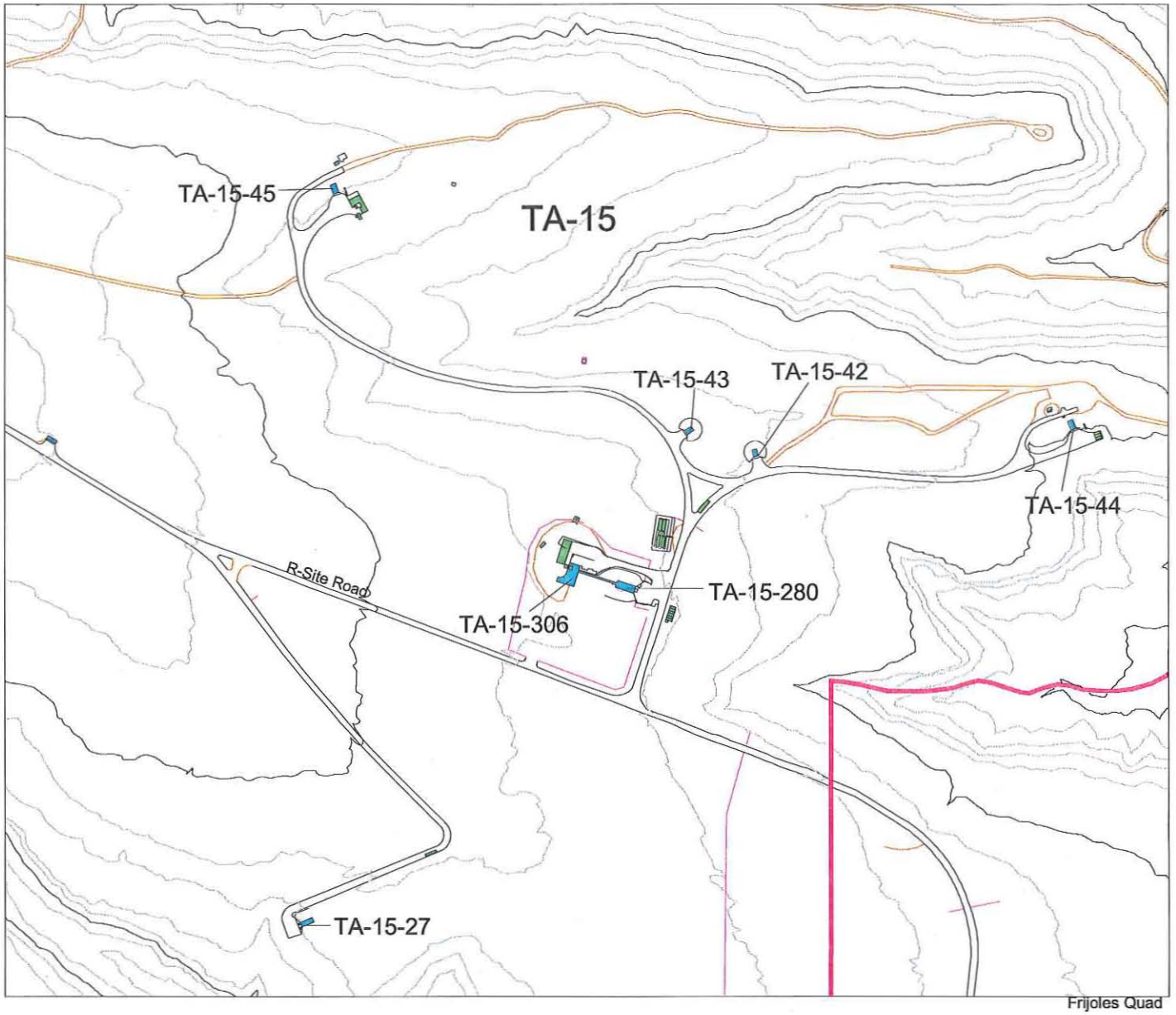
- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-15 West

Map 6



Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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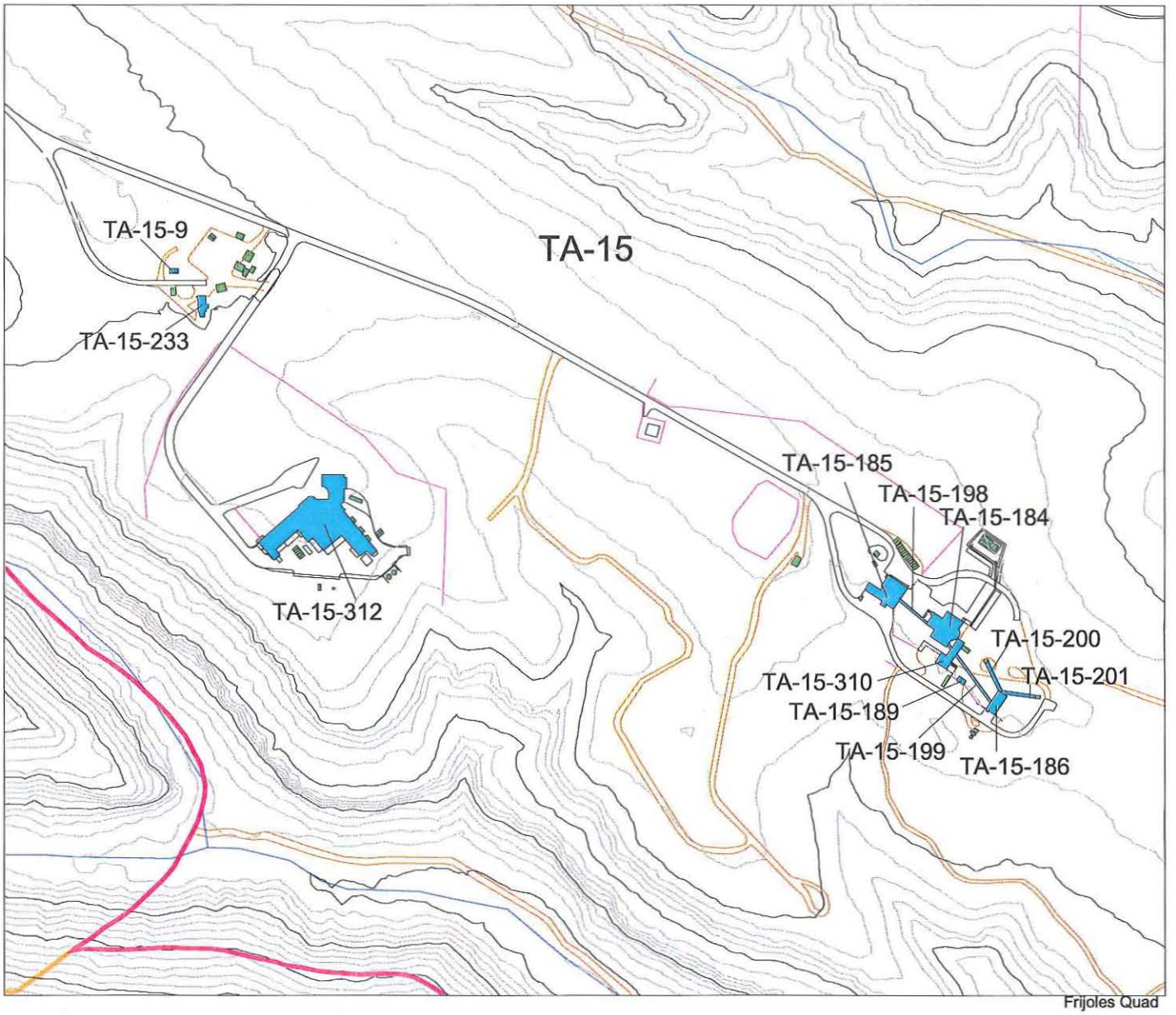
- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-15 North

Map 7



Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
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- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-15 South

Map 8

TA-22, Trap Door Site (TD Site)

Historical Background

Wartime work at TA-22 (TD Site) focused on the handling of special assemblies, an operation that had previously been conducted at TA-25 (V Site). Several buildings were used for this operation: two large prefabricated steel buildings (TA-22-1 and TA-22-4), two larger frame magazines (TA-22-2 and TA-22-3), and one log ranch house (TA-22-26) (Figures 15 and 16). In 1945, the high explosives components of the "Fat Man" bomb were assembled in building TA-22-1.

In 1947, the site was taken over by the explosives division and it has been used for detonator research ever since. Other operations at TA-22 include chemistry, laser, and photo work in TA-22-34. Electroplating and, later, etching activities were conducted in TA-22-52. The electroplating operations at TA-22-52 were conducted over a 20- to 25-year period and supported the stripping and re-plating of the gold coating on the Laboratory's Ten Site reactor at TA-35 (U.S. DOE 1986).

Several buildings have been built since the wartime period, including more than 20 magazines, a multi-function warehouse, machine/plastics shop, and electronics lab (TA-22-5), a boiler (TA-22-6), a PETN recrystallization process building (TA-22-25), a laboratory (TA-22-34), and a shops and plating building (TA-22-52) (U.S. DOE 1986).

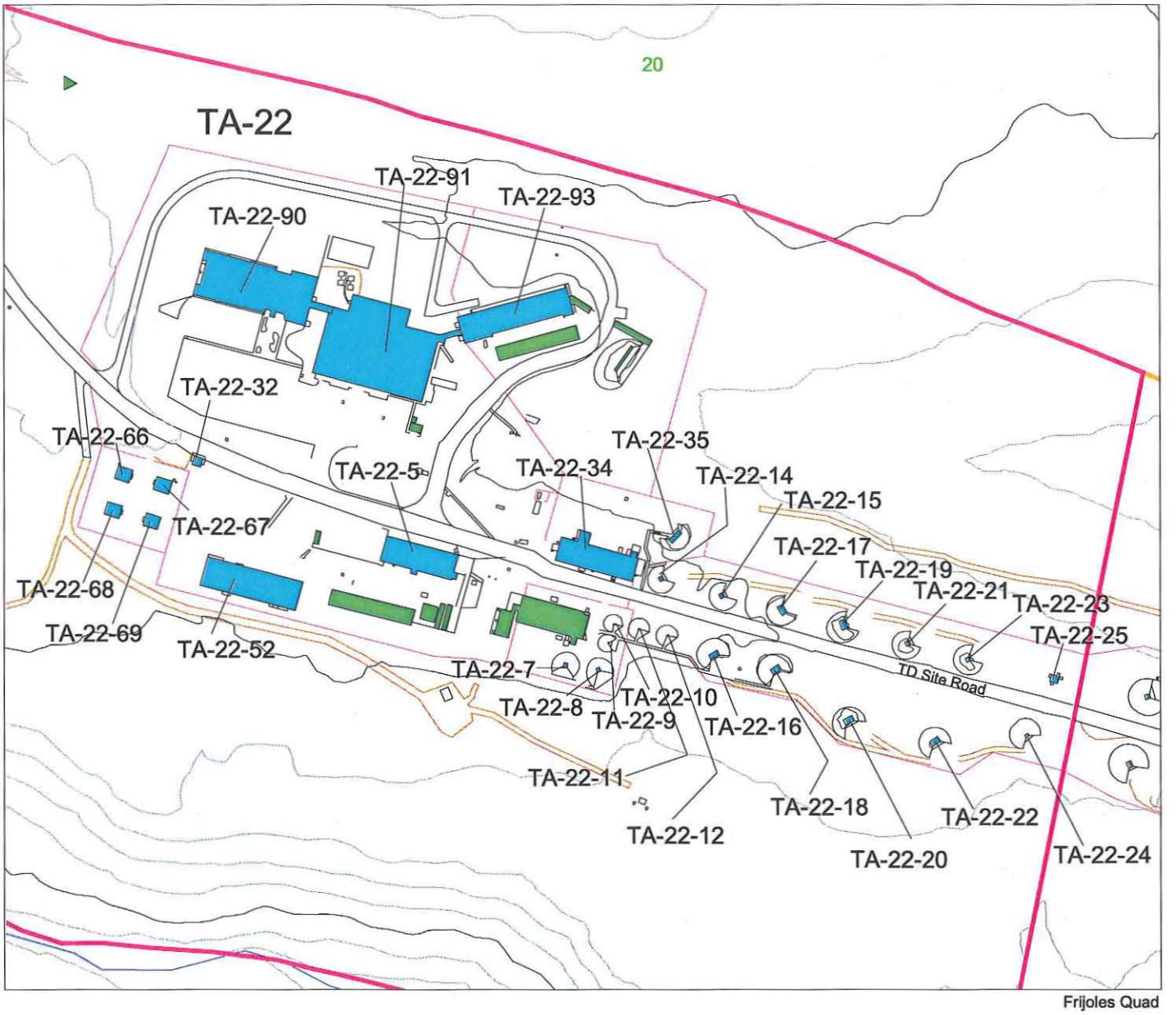
Figure 15. Quonset Hut at TA-22 (2001)

Figure 16. TA-22 (1950)

Current Function

Work at TA-22 currently focuses on the development and fabrication of detonation systems (Figure 17) (Map 9). Recent operations at TA-22 have been centered in buildings TA-22-91 and TA-22-93 (built in 1984). Detonation cables have been manufactured in building 91 through a photo-etching process that starts with a commercially available laminate of copper-coated plastic film. TA-22-93 is the detonator fabrication facility where detonators of all kinds have been made, mainly using the explosive PETN. A laboratory and testing facility have also been in operation at TA-22. This building, TA-22-34, was first occupied in the early 1950s (U.S. DOE 1986).

Figure 17. 1991 Aerial of TA-22



Frijoles Quad

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National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- LANL Boundary
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-22

Map 9

TA-36, Kappa Site

Historical Background

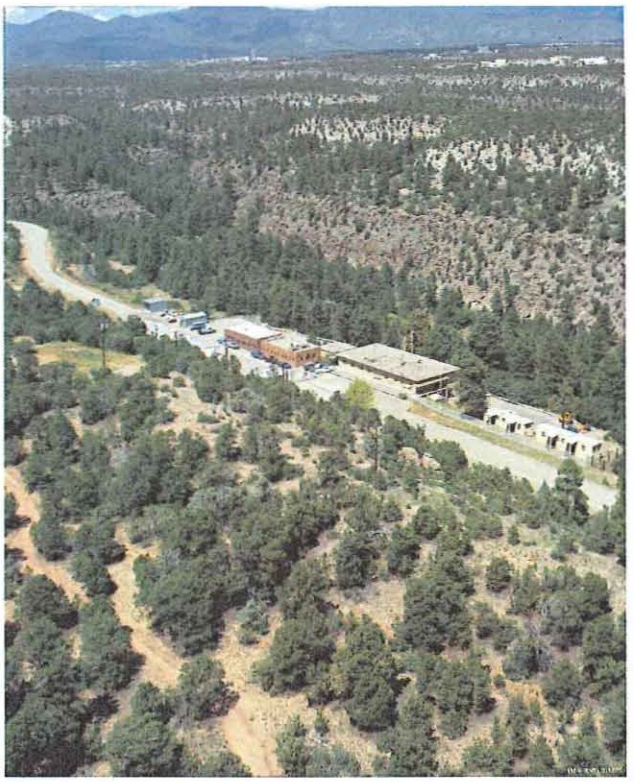
TA-36 was built in 1950 to replace WWII explosives testing facilities at Anchor Far Point (TA-9) and Nu Site (TA-23), among others. Kappa Site (TA-36) was identified for development in 1947 or 1948 by then Laboratory director Norris Bradbury for use by group GMX-8 (later known as M-3, then as M-8). The main office building, TA-36-1, was constructed in 1949 and was operational in 1950 (LANL 1993d:5-22, 5-63). As of 1992, approximately 30,000 shots had been fired at TA-36's firing sites.

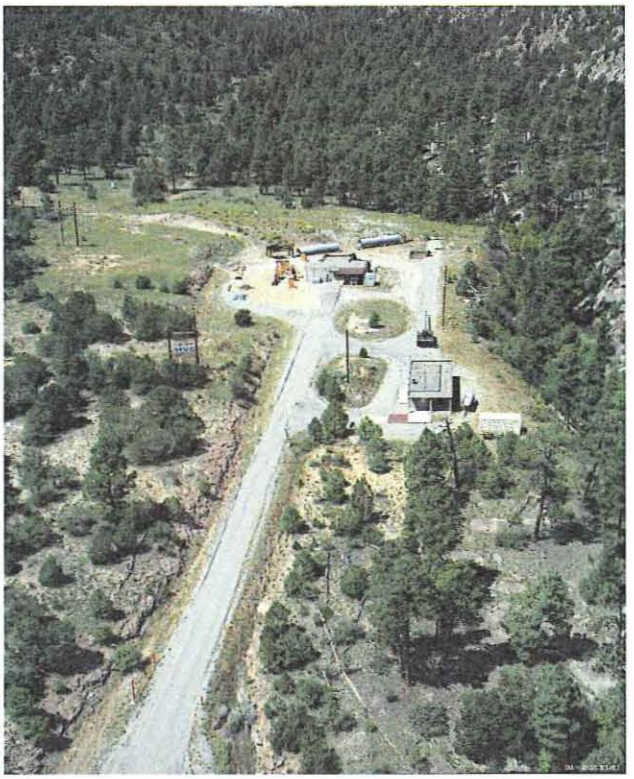
Many shots took place on wooden platforms to minimize sand dispersion. In addition, assembly drop tests were conducted at TA-36 in 1953 (U.S. DOE 1986). Explosives tests at TA-36 are broadly grouped into two categories—stationary tests and penetration tests. In a stationary test, a prefabricated shot assembly, together with detonator cables and monitoring instrumentation, is placed on a wooden table at the firing point and detonated. (Shot assemblies typically contain explosives and sometimes include various amounts of diverse metals and plastics.) In a penetration test, a projectile is fired out of a barrel toward a target. Drop-tests, in which mock-up weapons are dropped from a predetermined height to a pad below, were conducted at TA-36's Lower Slobbovia (LANL 1993d:2-1, 2-2, 2-3).

Current Function

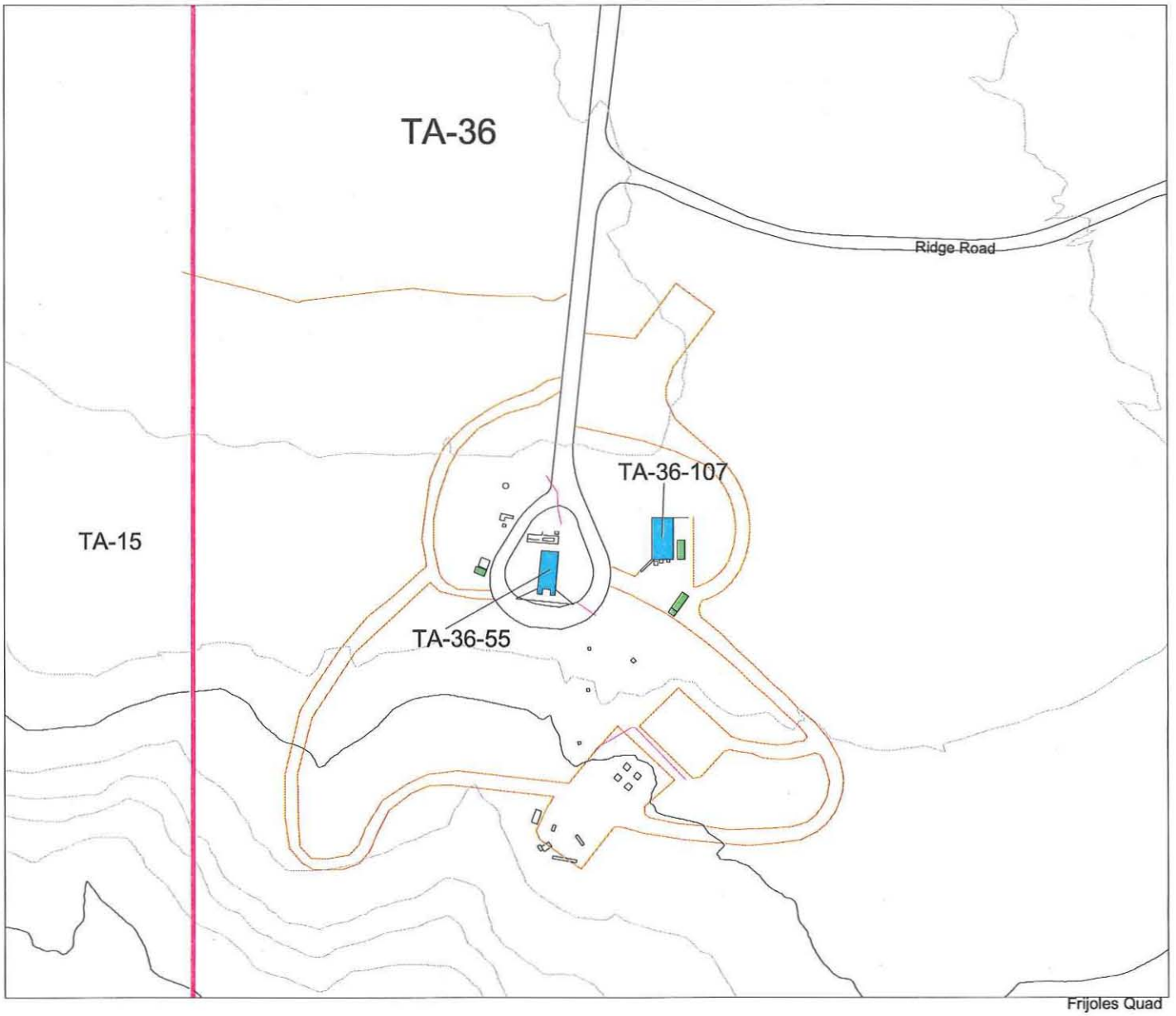
Five firing sites—with associated control and preparation buildings—are still located at TA-36: IJ (historically part of TA-15), Eenie, Meenie, Minie, and Lower Slobbovia (Figures 18 and 19) (Maps 10–13). Operations at TA-36 have focused on explosives research, especially the study of phenomena associated with the detonation of high explosives. A sled track used to conduct high explosives impact testing is also located at TA-36's Lower Slobbovia.

Two general types of activities are currently conducted at TA-36: 1) shot detonations and 2) storage and assembly activities related to a variety of shot materials, such as prefabricated metal and explosives components, detonators, cables, and instrumentation (including several X-ray machines). In 1985, Explosives Applications Group (M-8) researchers at TA-36 turned their focus to explosives research involving small quantities of uranium, firing several hundred shots each year (U.S. DOE 1986) (LANL 1993d:2-5).





Figures 18 and 19. 1991 Aerials of TA-36



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ENV-ECO Ecology Group

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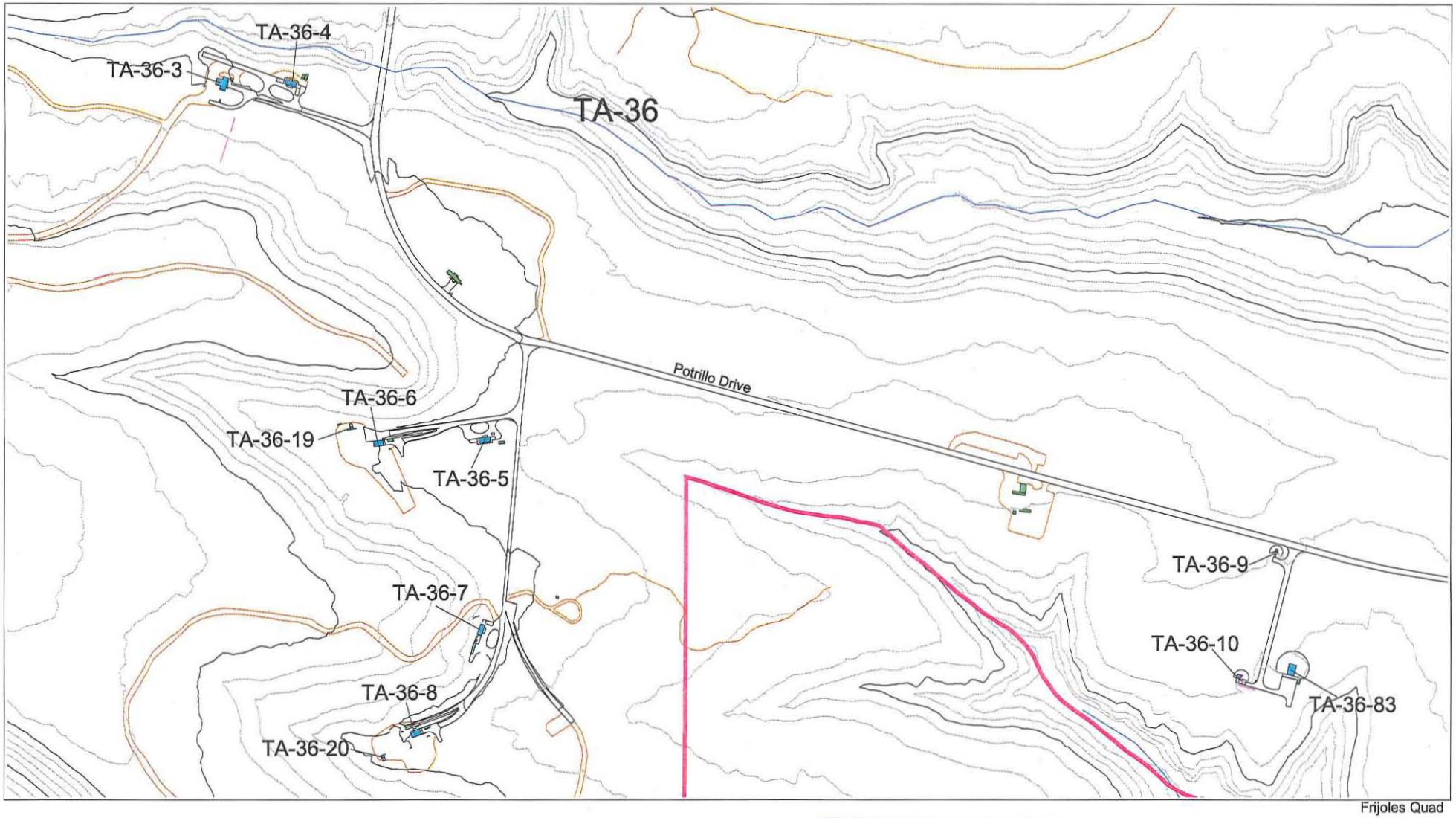
- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-36 West

Map 10



Frijoles Quad

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DX Division Strategic Plan

TA-36 South

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

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200 0 200 400 600 800 Feet

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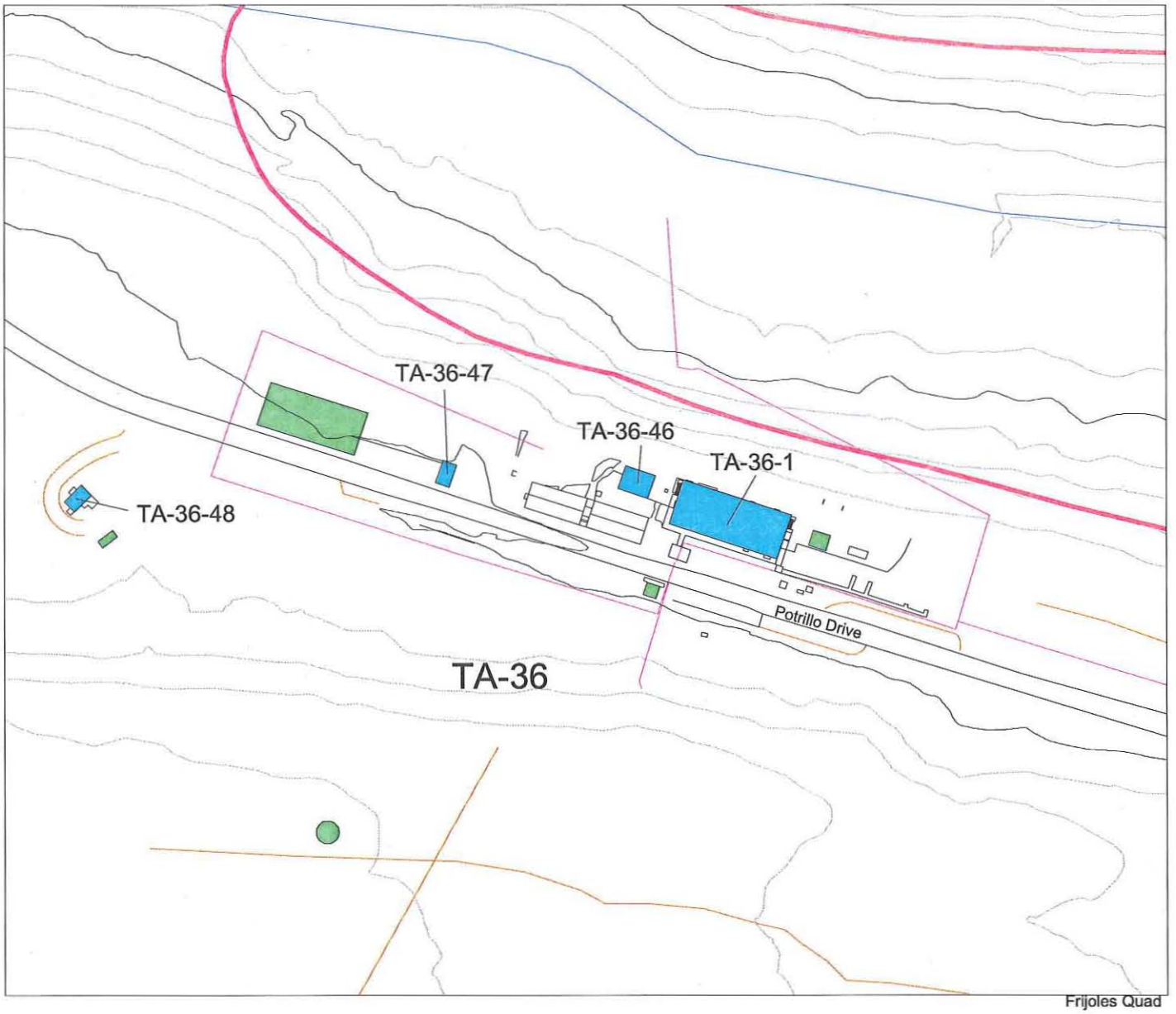
Map 11



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ENV-ECO Ecology Group

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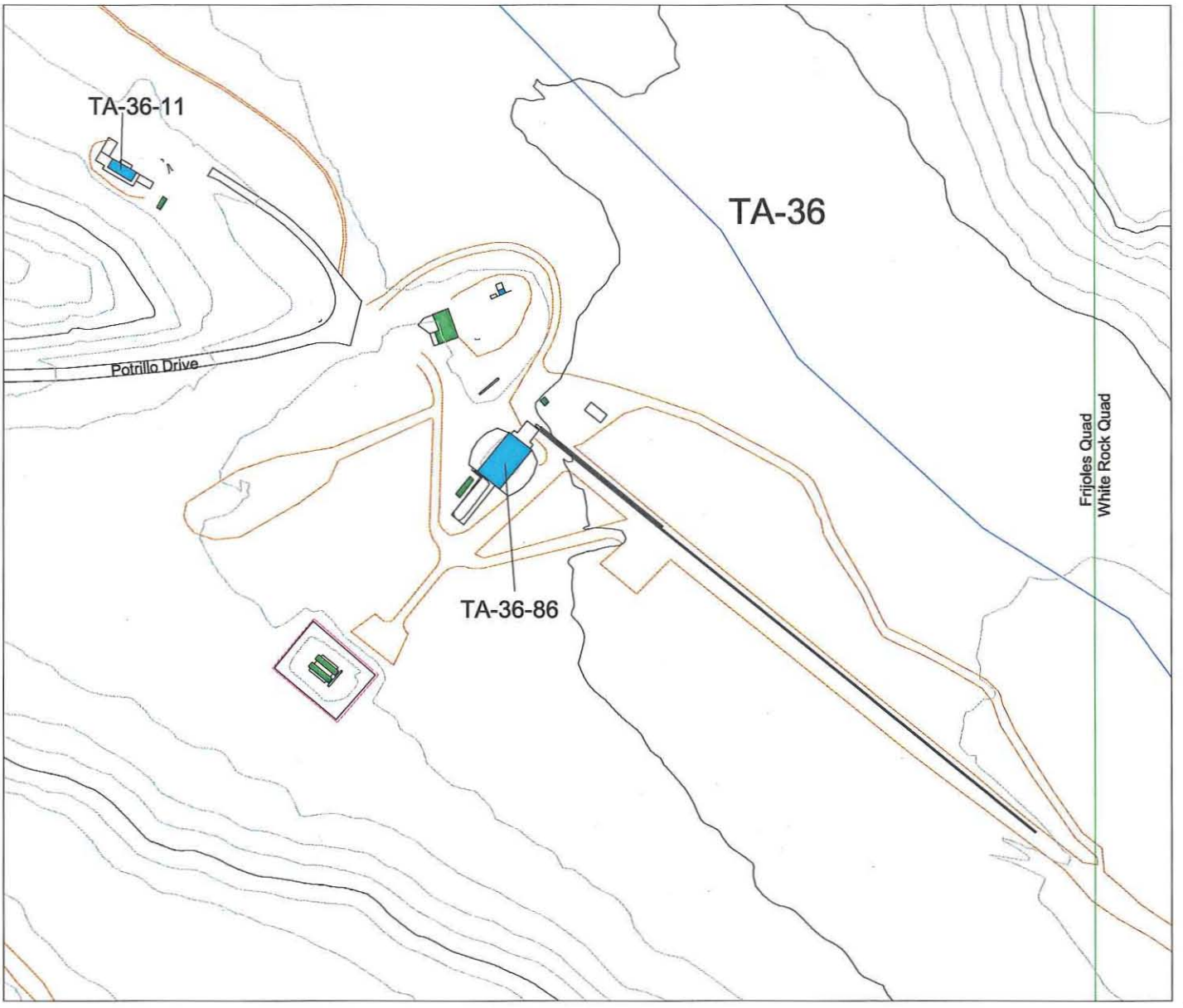
DX Division Buildings Currently Being Evaluated
DX Division Tech Areas
20 Foot Contours
100 Foot Contours
LANL Boundary
Technical Areas
Drainage
Township, Section, Range
USGS 7.5 Minute Quad
Roads
Roaddirt
Parkpave
Parkdirt
Fences
Buildings/Structures

DX Division Strategic Plan

TA-36 North

Map 12



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Cultural Resources Team
ENV-ECO Ecology Group

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-36 East

Map 13

TA-39, Ancho Canyon Site

Historical Background

TA-39 (Ancho Canyon Site) was established in 1953 by the Shock Wave Physics Group (M-6) primarily as an area for the open air testing of high explosives. Typical shots at the firing points involve explosives fired on a wooden table or over a plastic container full of water.

In the 1950s, TA-39 consisted of three firing chambers (TA-39-6, TA-39-7, and TA-39-8) and a laboratory and office building (TA-39-2). Other support buildings and structures included a trim building (TA-39-4) and two magazines (TA-39-3 and TA-39-5). By the 1980s, several additional firing facilities had been added: two gun buildings (TA-39-56 and TA-39-89), a firing chamber (TA-39-57), a capacitor bank enclosure (TA-39-67), a gas gun (TA-39-69), a magazine (TA-39-77), and a firing point (TA-39-88). Gun firing operations included a facility with several low-velocity guns (one of which fired projectiles into the canyon wall) and a facility with a high-velocity gas gun fired inside a building. Firing points 6, 8, 56, 57, and 88 were active in 1986. In 1987, the shop at building TA-39-2 was relocated to a separate metal building (TA-39-98) and, in 1989, the pulsed-power assembly building (TA-39-111) was constructed (LANL 1993e:2-1, 2-2) (U.S. DOE 1986).

Current Function

TA-39 is still used as a firing site, and site facilities include firing chambers, magazines, a gun building, and firing points associated with high explosives testing (Figure 20) (Maps 14–16).

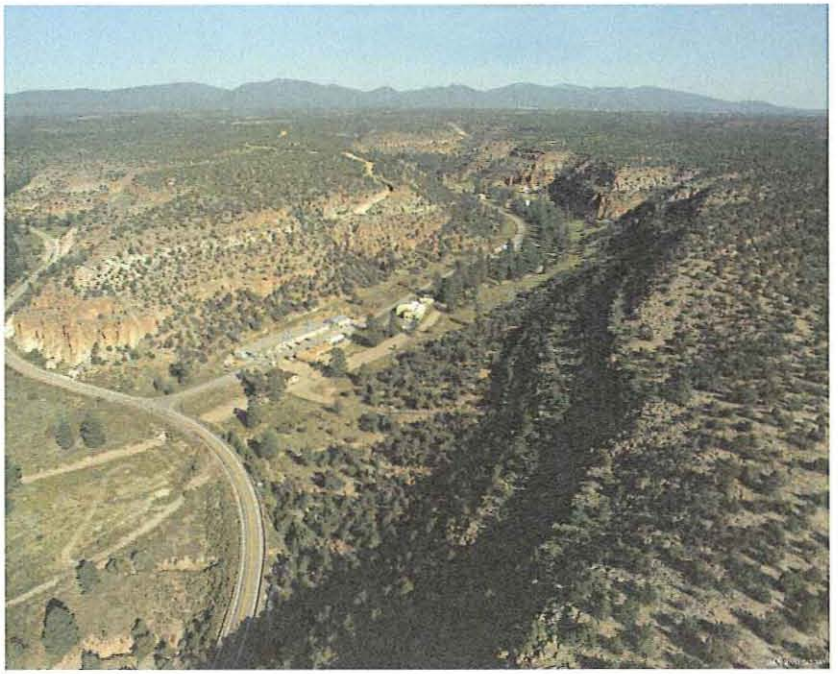
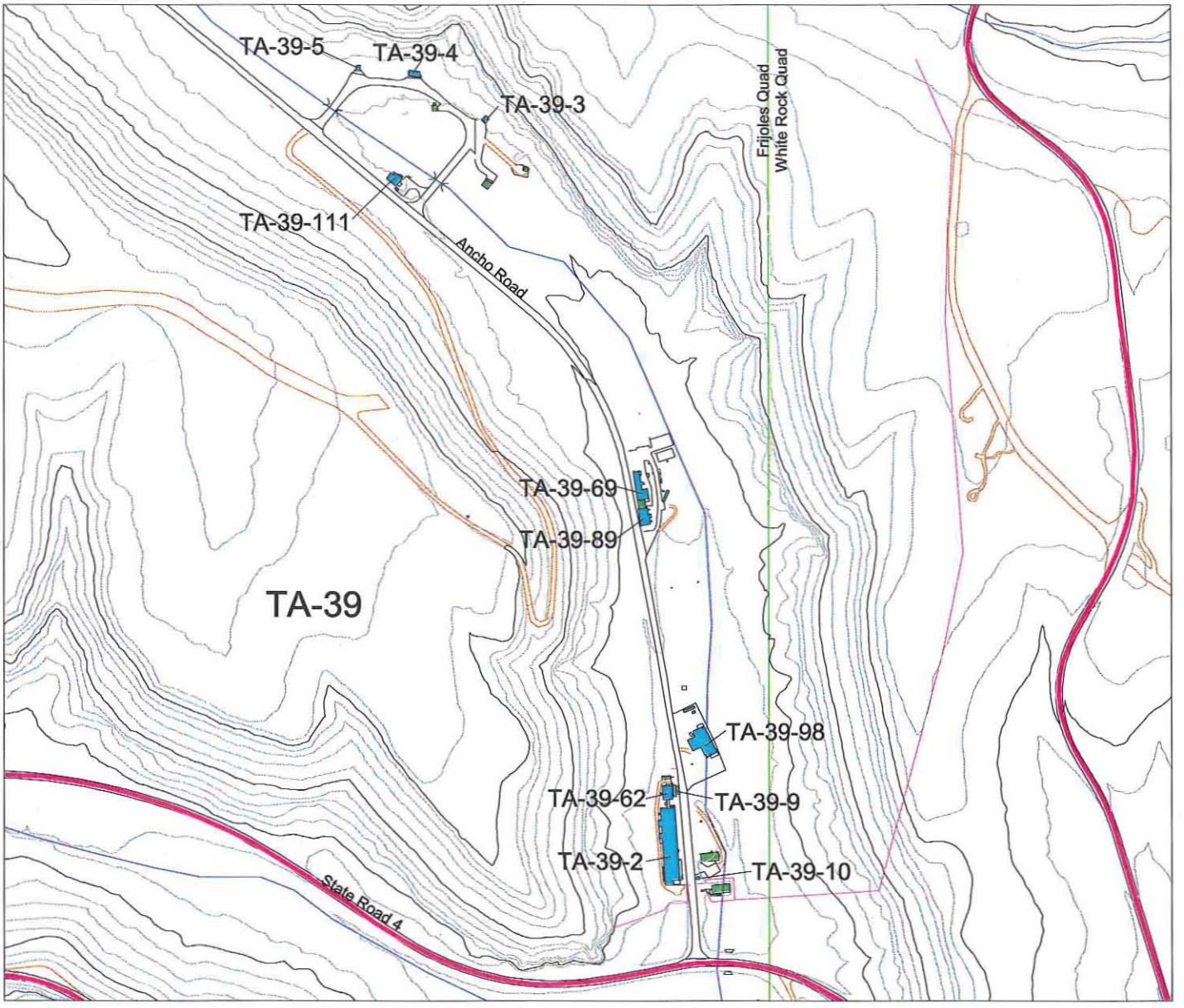


Figure 20. 1991 Aerial of TA-39



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Cultural Resources Team
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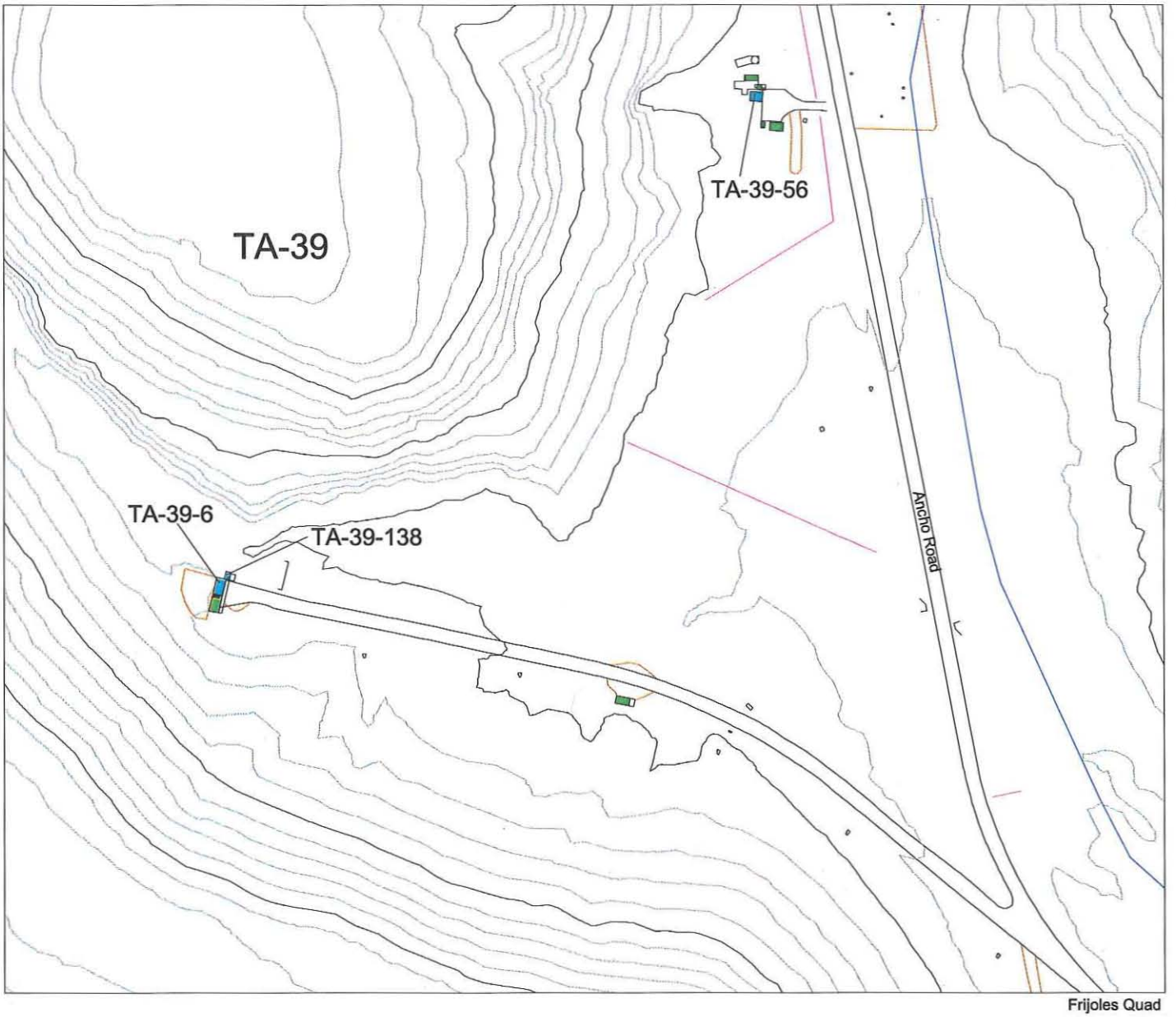
DX Division Buildings Currently Being Evaluated
DX Division Tech Areas
LANL Boundary
20 Foot Contours
100 Foot Contours
Technical Areas
Drainage
Township, Section, Range
USGS 7.5 Minute Quad
Roads
Roaddirt
Parkpave
Parkdirt
Fences
Buildings/Structures

DX Division Strategic Plan

TA-39 South

Map 14



Frijoles Quad

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Cultural Resources Team
ENV-ECO Ecology Group

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- LANL Boundary
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
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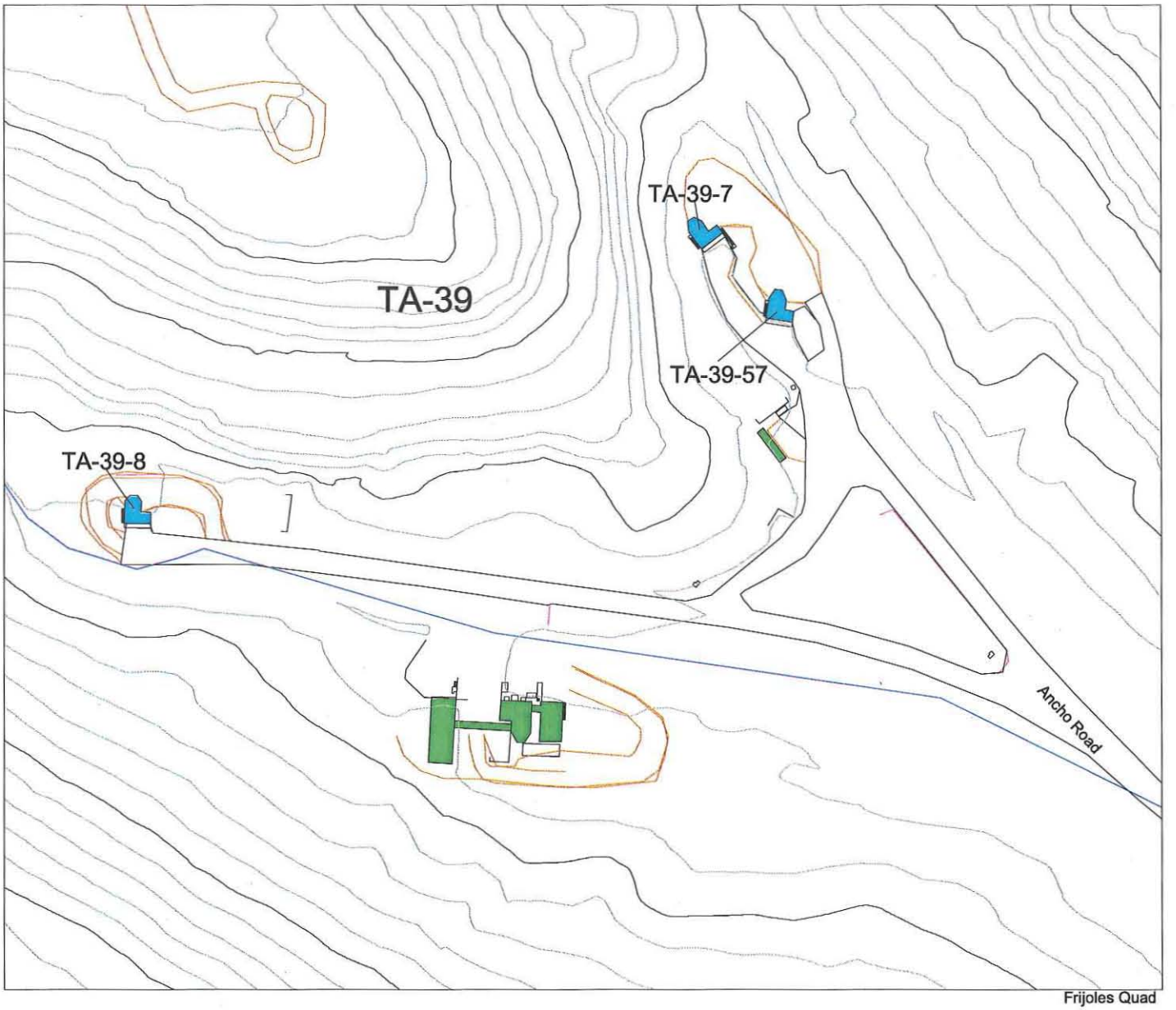
DX Division Strategic Plan

TA-39 Central

Map 15



Frijoles Quad

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National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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DX Division Strategic Plan

TA-39 North

Map 16

- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- LANL Boundary
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

TA-40, Detonator Firing Site (DF Site)

Historical Background

TA-40 (DF Site) was constructed in 1950 to replace the detonator firing sites at Two-Mile Mesa Site (TA-6) (Figure 21). TA-40-9 was used for detonator tests during the 1950s and was later enclosed to contain a gas gun. In 1992, TA-40-8 was expanded, and a containment system consisting of a large vessel with a high-efficiency particulate air filtration system was installed (LANL 1993b:5-80).

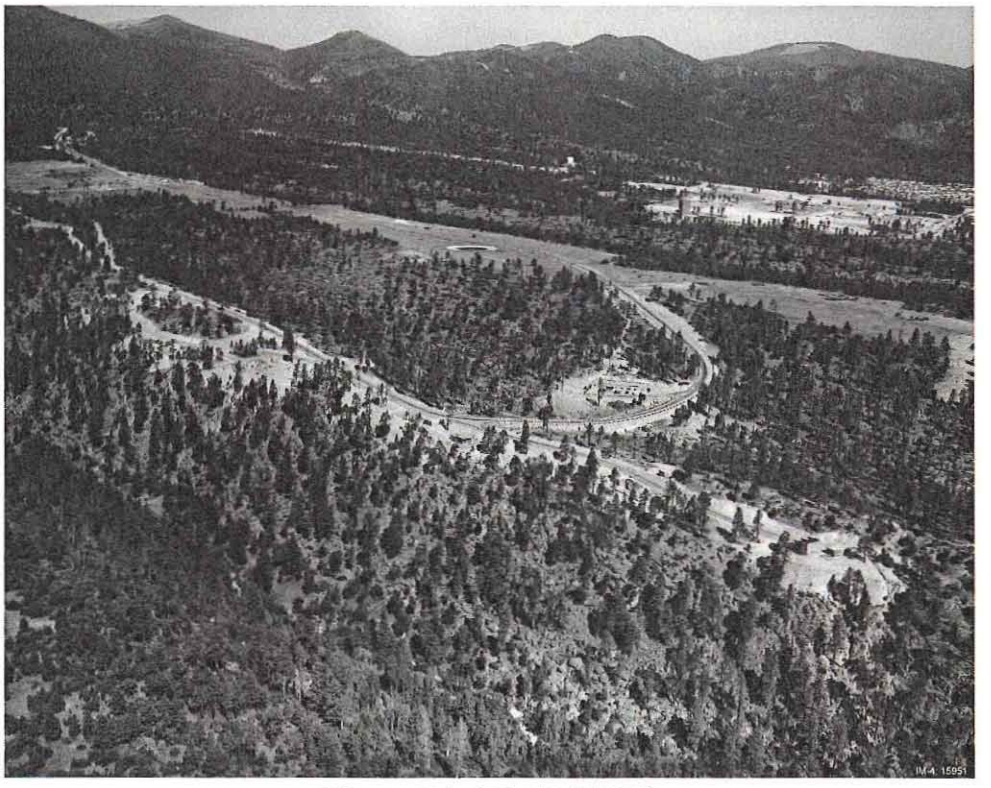


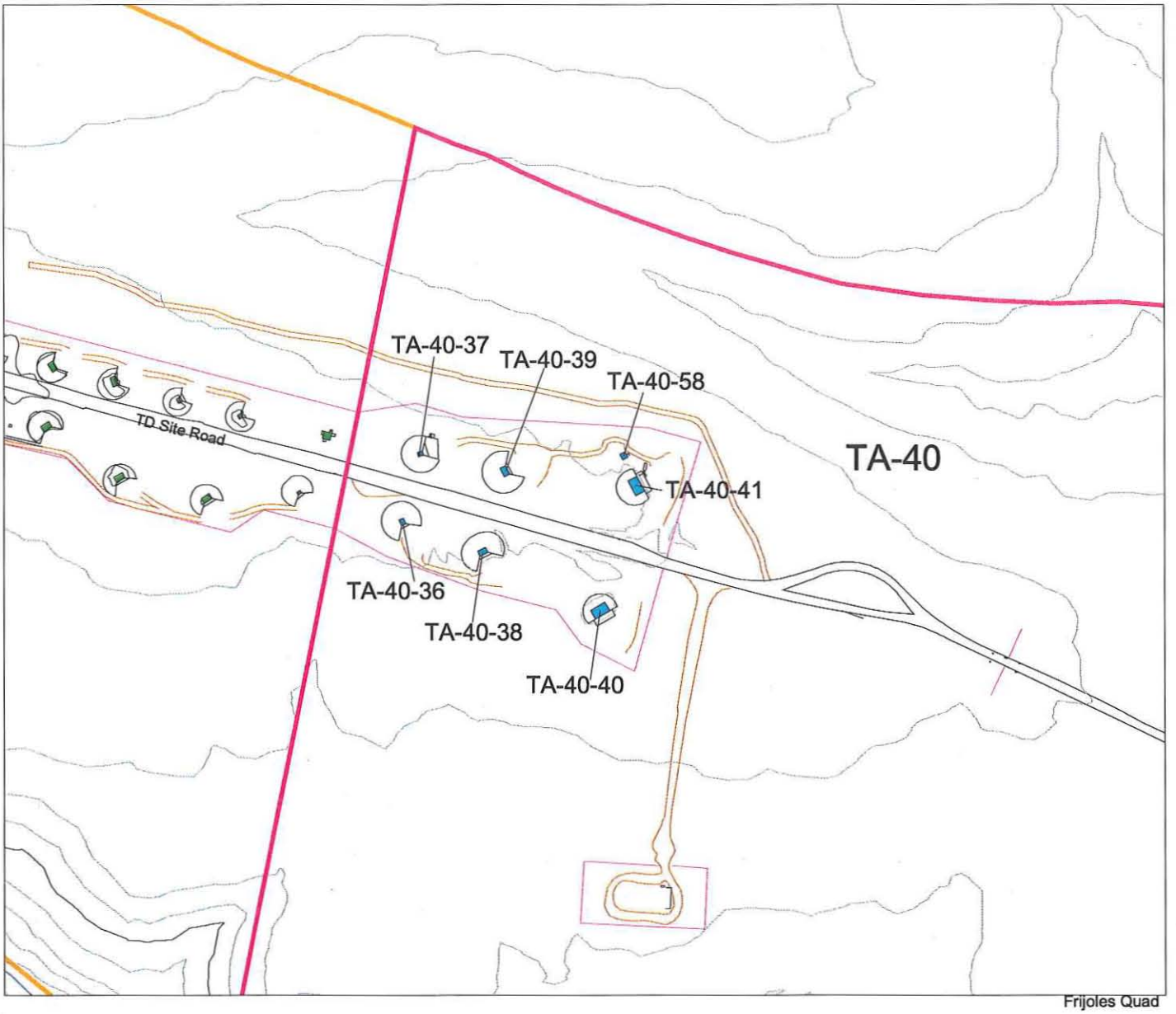
Figure 21. TA-40 (1950)

Current Function

Several groups have used TA-40 since it was built in 1950, but the bulk of the work has centered on the physics of detonation and detonator testing. In 1986, TA-40 was occupied by the Reaction Science Group (M-9), which studied the physics of detonation, and the Detonation Systems Group (M-7). TA-40 was built to conduct detonator firing tests; these tests occur at six different firing points (Figure 22) (Maps 17 and 18). Each firing site consists of a reinforced concrete and steel building from which a shot is observed using various types of optical diagnostics (LANL 1993b:5-79). Small detonator tests are held inside rooms that have one side open to the outside. Larger tests are held on outside pads. Buildings TA-40-4 and TA-40-12 contain interior firing chambers. TA-40-9 houses a gas gun, fired by nitrogen and helium, which is used to test the effects of copper and aluminum on explosives. Magazines, preparation

buildings, and a laboratory and office building (TA-40-41) all serve to support firing activities at TA-40. Darkroom facilities for photographic work are also present at the site (U.S. DOE 1986).

Figure 22. 1991 Aerial of TA-40



Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
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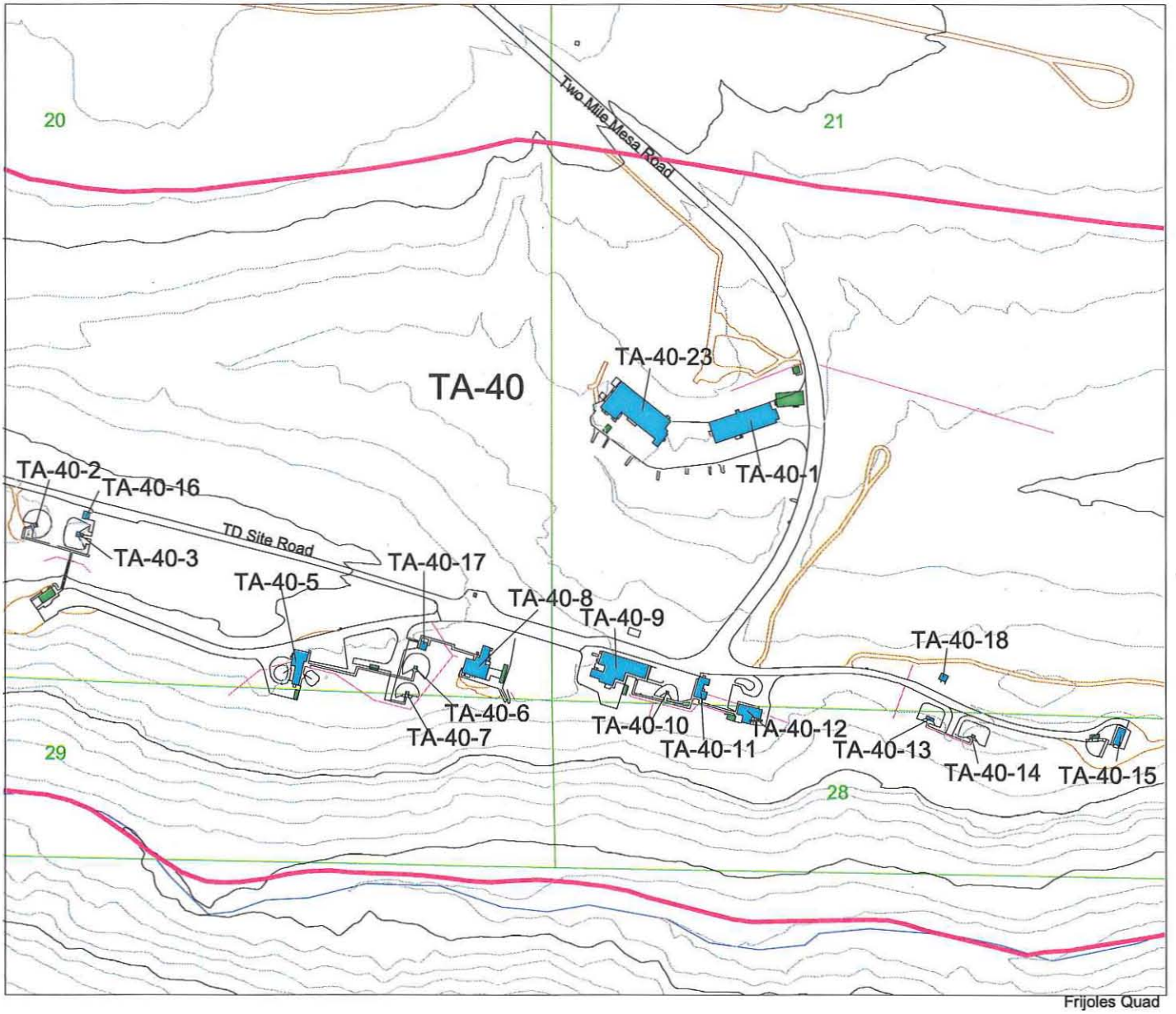
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-40 West

Map 17



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National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
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- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
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- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-40 East

Map 18

TA-60, Sigma Mesa Site

Historical Background

TA-60 was created in 1989 out of land that was originally within the boundaries of TA-3. Several abandoned experimental areas are located at TA-60, including a solar pond and test drill hole. Significant facilities on Sigma Mesa include support buildings for NTS underground testing activities: the NTS test fabrication facility and associated NTS test tower (LANL 1993f:2-3, 2-4). TA-60-17 and TA-60-19 (formerly TA-3-489 and TA-3-1485) were both built in 1985 and are collectively known as the Test Fabrication Facility (Figure 23). The tower building (60-19) contains two rack towers, and the other building (60-17) has office, shop, and rack fabrication areas. Racks constructed and tested at this facility were sent to the NTS in support of the U.S. underground testing program, discontinued in 1992. Only a few rack towers exist in the U.S.; other similar properties are located in Las Vegas, Nevada, and at the NTS (LANL 1993f:2-7, 5-63).

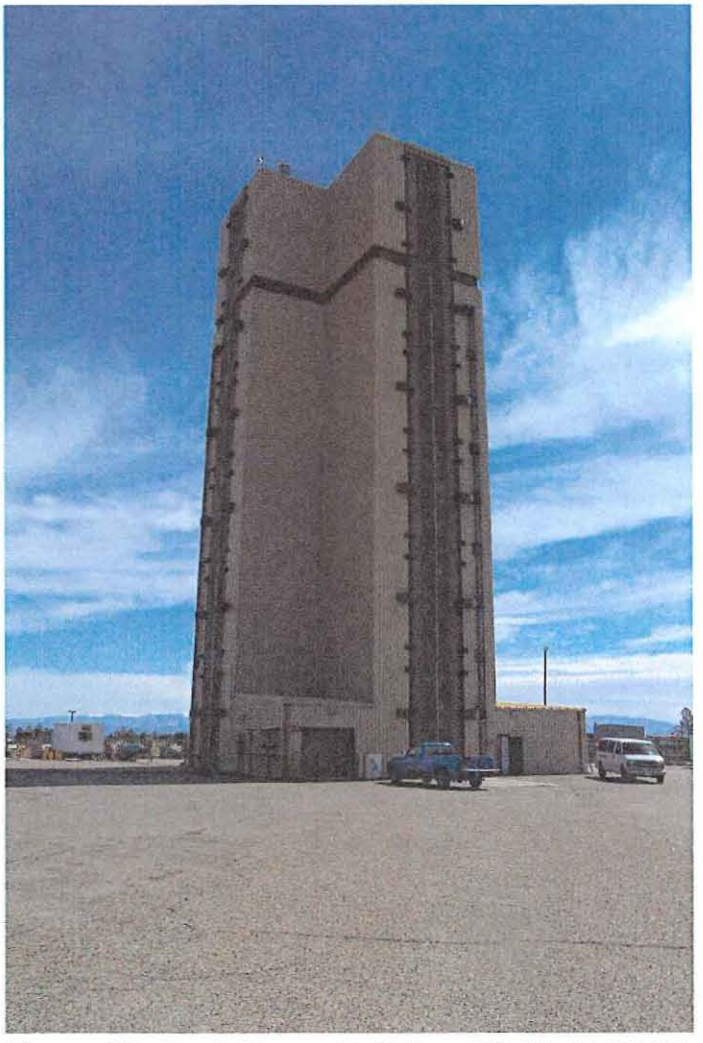
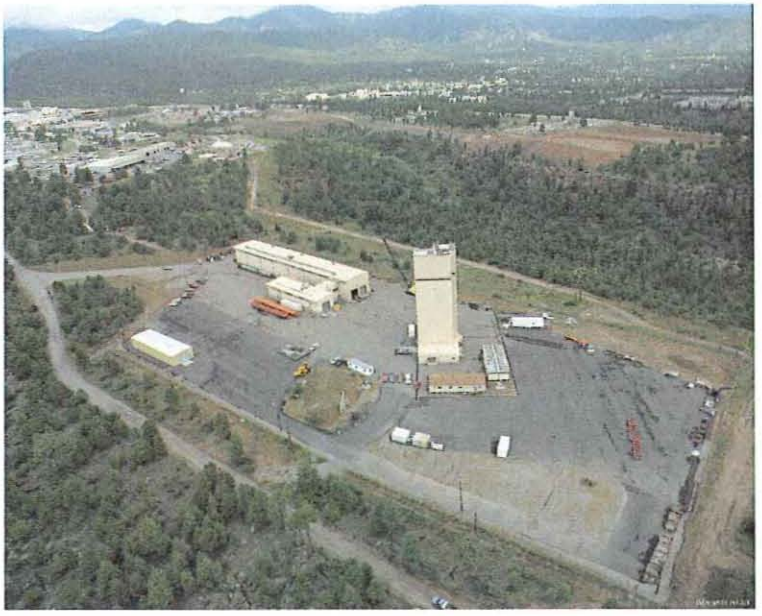


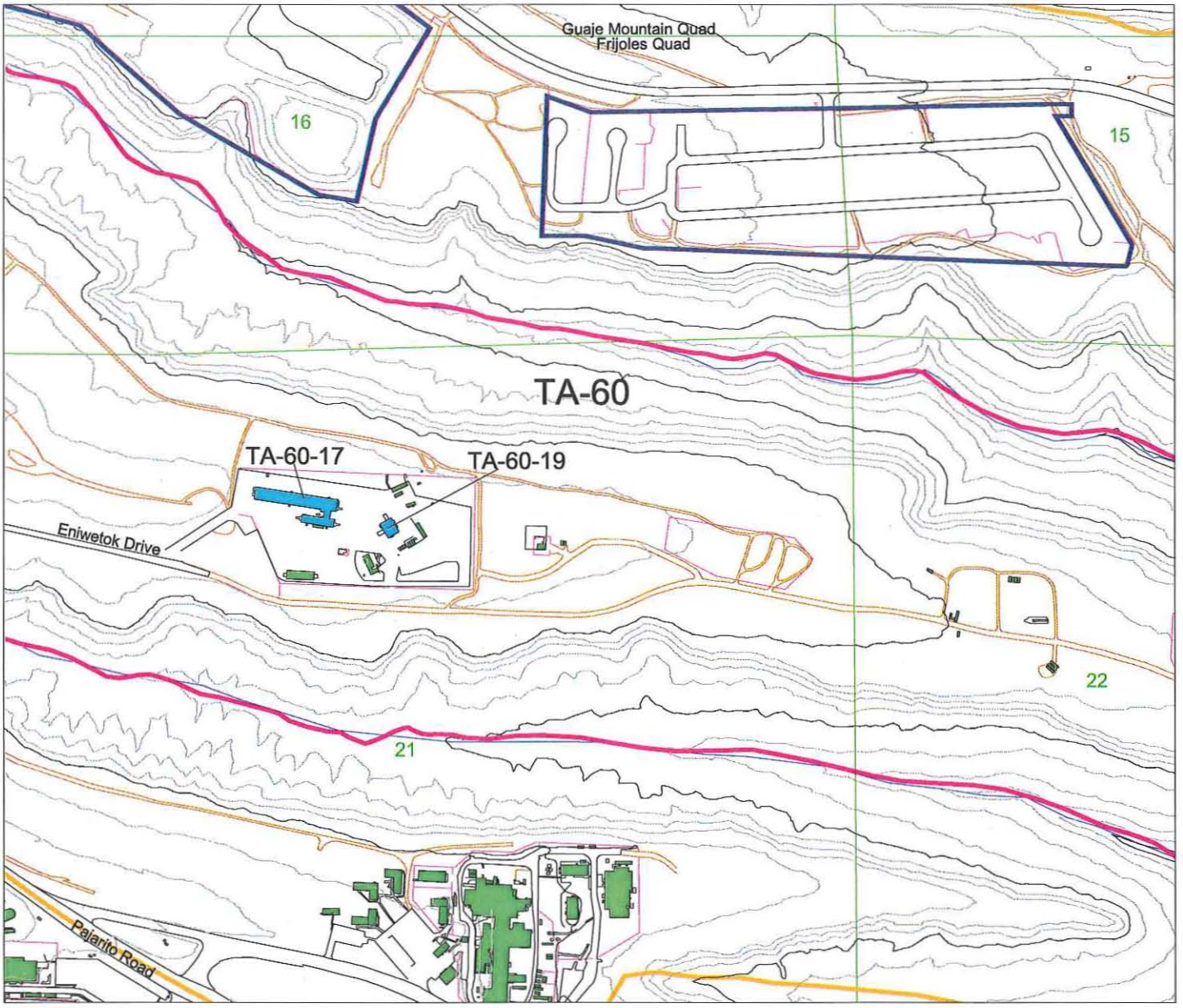
Figure 23. Rack Tower Building, TA-60-19 (2003)

Current Function

TA-60 is the current location for a variety of support and maintenance operations. Pesticide, topsoil, and material storage areas are also located on Sigma Mesa (Figures 24 and 25) (Map 19).



Figures 24 and 25. 1991 Aerials of TA-60



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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- LANL Boundary
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-60

Map 19

TA-69

Historical Background

TA-69 is located north of TAs 8 and 9 and has few facilities. Guard station TA-69-1 was built by 1953 and has been occupied since 1955. This building was formerly numbered ULR-68 (LANL 1993c:2-13). Other early facilities at TA-69 include a small security pass station and an incinerator building (now removed). Incinerator building TA-69-3 was built in 1959. The building housed two incinerators that were used to burn classified documents such as computer listings; this process continued until the late 1970s when documents were shredded instead of burned. The second incinerator (a "confidential paper destroyer") and its associated stack were added some time after the original construction of the facility (LANL 1993c).

Current Function

The classified incinerator located within TA-69 was removed in 2004, leaving the guard station and its associated security pass station as the remaining long-term properties at TA-69 (McGehee and Garcia 2004). In 2003, the Laboratory's new Emergency Operation Center (EOC), TA-69-33, was constructed near the intersection of Anchor Ranch Road and West Jemez Road (Figure 26) (Map 20).

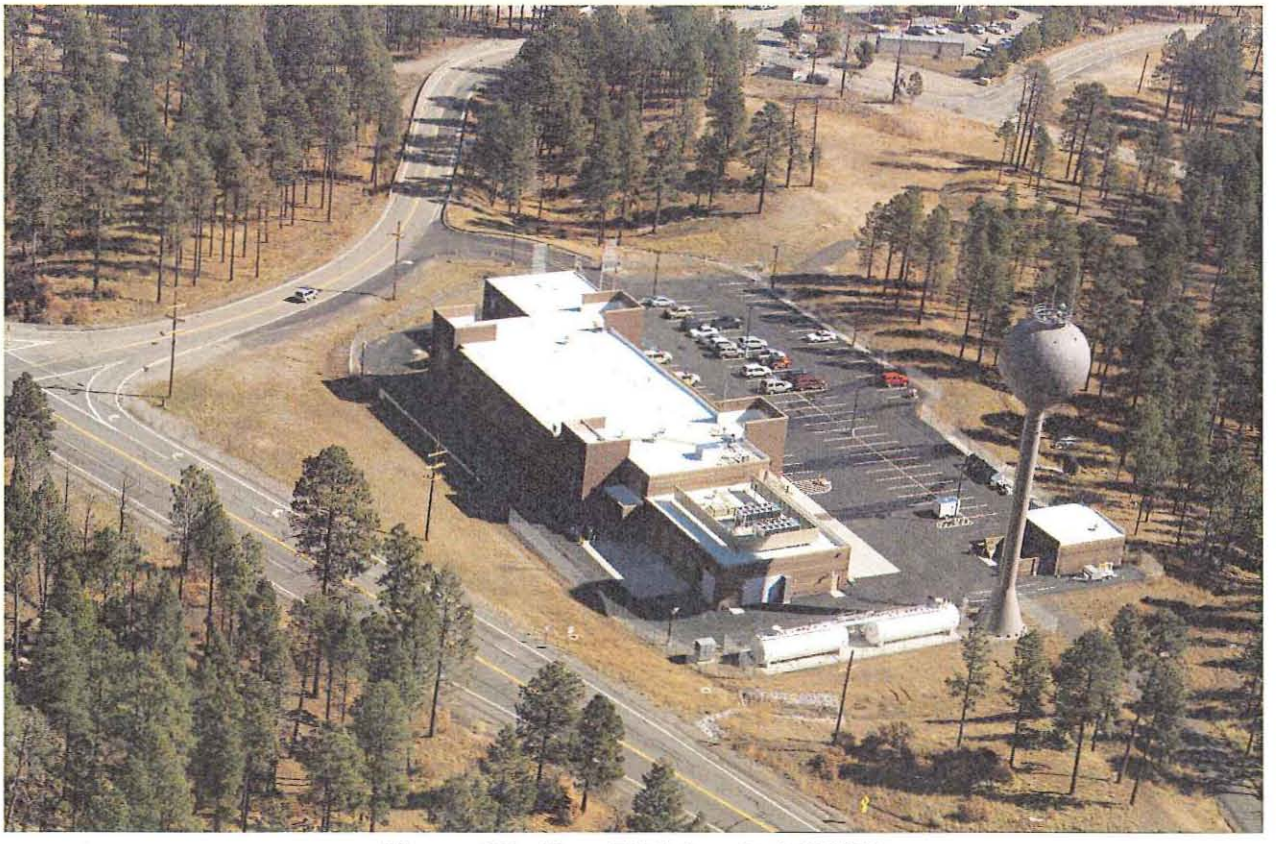
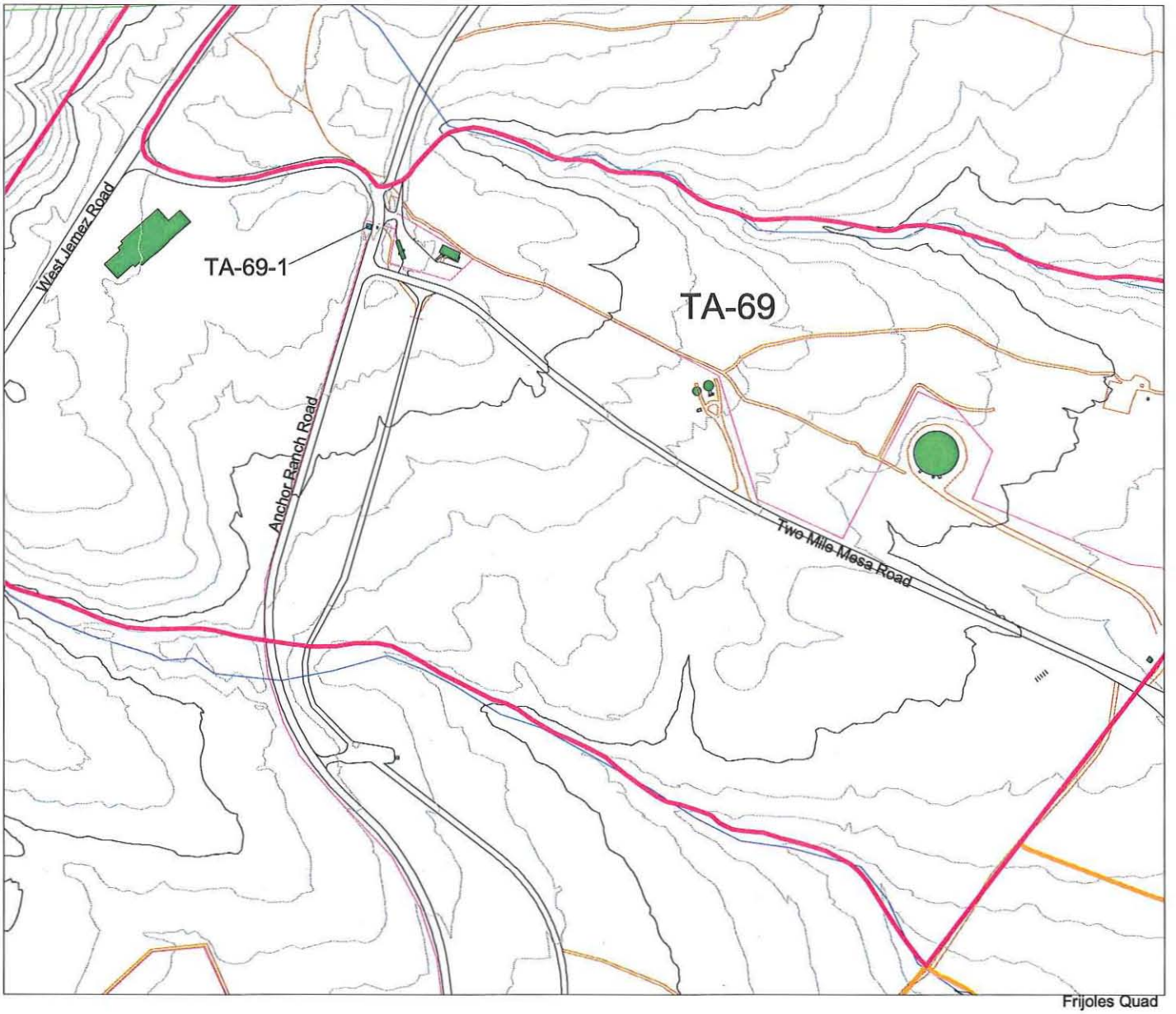


Figure 26. New EOC (center) (2003)



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Cultural Resources Team
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- 100 Foot Contours
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- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

TA-69

Map 20

MULTIPLE PROPERTY METHOD OF EVALUATION

DX Division's buildings and structures were evaluated using a multiple property documentation approach. This systematic approach serves as a useful evaluation tool to determine the historical significance of a large group of thematically related properties, such as those under DX's management. A key element of the multiple property documentation approach is context. Contexts provide information about historical patterns and trends and have clearly defined themes, geographical areas, and chronological periods (U.S. NPS 1999). Within the administrative boundaries of DX Division, the properties are linked to one or more themes underlying the main context: *Research, Development, and Testing in Support of the Nuclear Weapons Program.* The buildings and structures are technologically related and date to the Manhattan Project and Cold War time periods at Los Alamos (1942–1963). Following the multiple property documentation approach, properties within DX Division's administrative control were linked with one or more historical themes. Decisions relating to final eligibility recommendations were based on the type of property, the level of physical integrity, and associations with significant themes.

Associated Property Types

The multiple property documentation approach requires the identification of property types that are associated with historical contexts. This identification facilitates the evaluation of individual properties within the broader complex of properties being reviewed. Properties are compared with other historical resources that have similar histories and similar physical characteristics (Hanford Site 1999a).

There are four general property types associated with DX Division's historical themes.

1. Laboratory-Processing-Testing Buildings or Structures such as high explosives and detonator research and development facilities.

2. Administration Buildings such as office buildings and facilities housing facility management and health and safety personnel.

3. Security Buildings and Structures such as guard stations, access control buildings, security lights, and fencing.

4. Support Buildings and Structures such as warehouses, storage buildings, water tanks, utilities, and waste treatment facilities.

Laboratory-processing-testing facilities within DX Division's administrative boundaries are associated with the technical functions underlying the main context of research, development, and testing in support of the nuclear weapons program. Specific activities carried out in this type of property support high explosive research and development, detonator research and development, hydrodynamic testing, and weapon components inspection and verification. Storage magazines, identified in this report as "second tier" properties, are considered an essential but secondary type of laboratory-processing-testing building. These properties do not

house key operations; however, research and development activities would not function without them.

Laboratory-processing-testing facilities are representative of the "industrial vernacular" architectural style prevalent at Los Alamos. Like LANL's other research facilities, the design of DX Division's properties is primarily determined by the nature of each facility's operations. For example, earthen berms are often strategically located between buildings that house high explosives operations in order to reduce damage from accidental explosions. Heavily reinforced concrete is the primary construction material used when designing a facility for high explosives, detonators, and radioactive materials research because concrete is inherently secure, durable, and cleanable. The type of activities carried out in each building or structure also determines the configuration of interior space, and the physical layout of these facilities is often dictated by safety concerns.

Administration buildings under DX Division's control are closely associated with the operation of nearby laboratory-processing-testing facilities. Administration buildings typically house support and research operations such as administrative and staff offices, monitoring and facility management staff offices, light laboratory space, showers, and change rooms. Administration buildings are typically located away from the main firing areas. This practice allows personnel and material from the administration facilities to remain separate from high explosives or other hazards and maximizes the distance from test shots.

Security buildings and structures are associated with the general operation of DX Division and support the main overarching theme of research, development, and testing related to the Laboratory's nuclear weapons program. Examples of this property type include guard stations, access control buildings, and physical exclusion structures such as fencing and barriers.

Support buildings and structures were originally built to support Manhattan Project and Cold War research and development. Like laboratory-processing-testing facilities, support facilities are divided into two subcategories. "First tier" support properties are primarily buildings and include machine shops, warehouses, power plants, and significant water tanks. "Second tier" support properties are primarily structures; examples include pump houses and electrical substations.

Core properties within each associated property type have also been identified. These buildings or structures are key representatives of their associated theme(s) and are often eligible for the National Register.

Integrity

Although properties may be significant or exceptionally significant and may be eligible for the Register based on association with historical events and contexts, integrity must be determined for all buildings that, on first-cut, are considered eligible. The LANL Cultural Resources Team has developed four integrity codes to better assess potentially eligible properties. The integrity requirements for properties eligible under Criterion A are less stringent than for those properties eligible under Criterion C. A historically significant property with a level 3 integrity could still be eligible, especially if an element of historical uniqueness is involved. Properties eligible

under Criterion C should have no lower than a level 2 integrity. Level 4 integrity properties are not eligible for the Register.

1. Excellent Integrity - the property is still closely associated with its primary context and retains integrity of location, design, setting, workmanship, materials, feeling, and association. Little or no remodeling has occurred to the property and all remodeling is in keeping with its associated historic context and significant use period. Good examples at LANL would be TA-21-1001 with its original file cabinets and relatively stable use history (the building has always housed records) and the Van de Graaff facility (TA-3-16) with its original equipment, records, and control panels.

2. Good Integrity - the property's interior and exterior retain historic feeling and character but most of the original equipment may be gone. The property may have had minor remodeling.

3. Fair Integrity - a property in this category should retain original location, setting, association, and exterior design. All associated interior machinery and equipment may be absent but the key question is "Is this property still recognizable to a contemporary of the building's historic period?"

4. Poor Integrity - the property has no connection with the historically significant setting, feeling, and context. Major changes to the property have occurred. The property would be unrecognizable to a contemporary.

Themes

Activities within the administrative boundaries of DX Division can be grouped under five historical themes that support DX's main context: *Research, Development, and Testing in Support of the Nuclear Weapons Program.* The five main themes and associated TAs are listed below. Some of the operations conducted within the TAs are linked with more than one theme. Minor themes not listed below include "security," "classified research support," and "administration." Buildings associated with these themes include existing guard stations at TA-9, -22, and -69; a recently removed, classified document incinerator located at TA-69; and the main administration buildings at each DX Division TA (McGehee and Garcia 2004).

WWII Weapons Development (including gun assembly research [Little Boy], implosion research [Fat Man], plutonium recovery, and Fat Man assembly)
TA-6, TA-8, TA-9, TA-14, TA-15, and TA-22

Detonator Research and Development (R&D) (including WWII and Cold War detonator research, development, and testing)
TA-6, TA-22, TA-36, and TA-40

High Explosives R&D and Testing (including WWII high explosives casting and testing and Cold War explosives research and testing)
TA-9, TA-14, TA-15, TA-36, TA-39

Dynamic Radiography and Radiographic Inspection (including PHERMEX and DARHT radiography and nondestructive radiographic testing and inspection)
TA-8 and TA-15

Underground Testing (Nevada Test Site support)
TA-60

Eligibility Criteria

Laboratory-processing-testing facilities, administration buildings, and security buildings and structures do not need to possess an integrity of both exterior and interior features in order to be eligible for the National Register under Criterion A. In cases where original equipment has been removed, a property can still be considered significant for its historical associations. Laboratory-processing-testing, administration, and security properties need only retain original location, setting, association, feeling, and exterior design to maintain significant historical integrity under Criterion A. Properties eligible under Criterion C have to meet a more stringent standard of physical integrity. Additions and remodeling that reflect changing scientific missions are acceptable under Criterion C (Hanford Site 1999b).

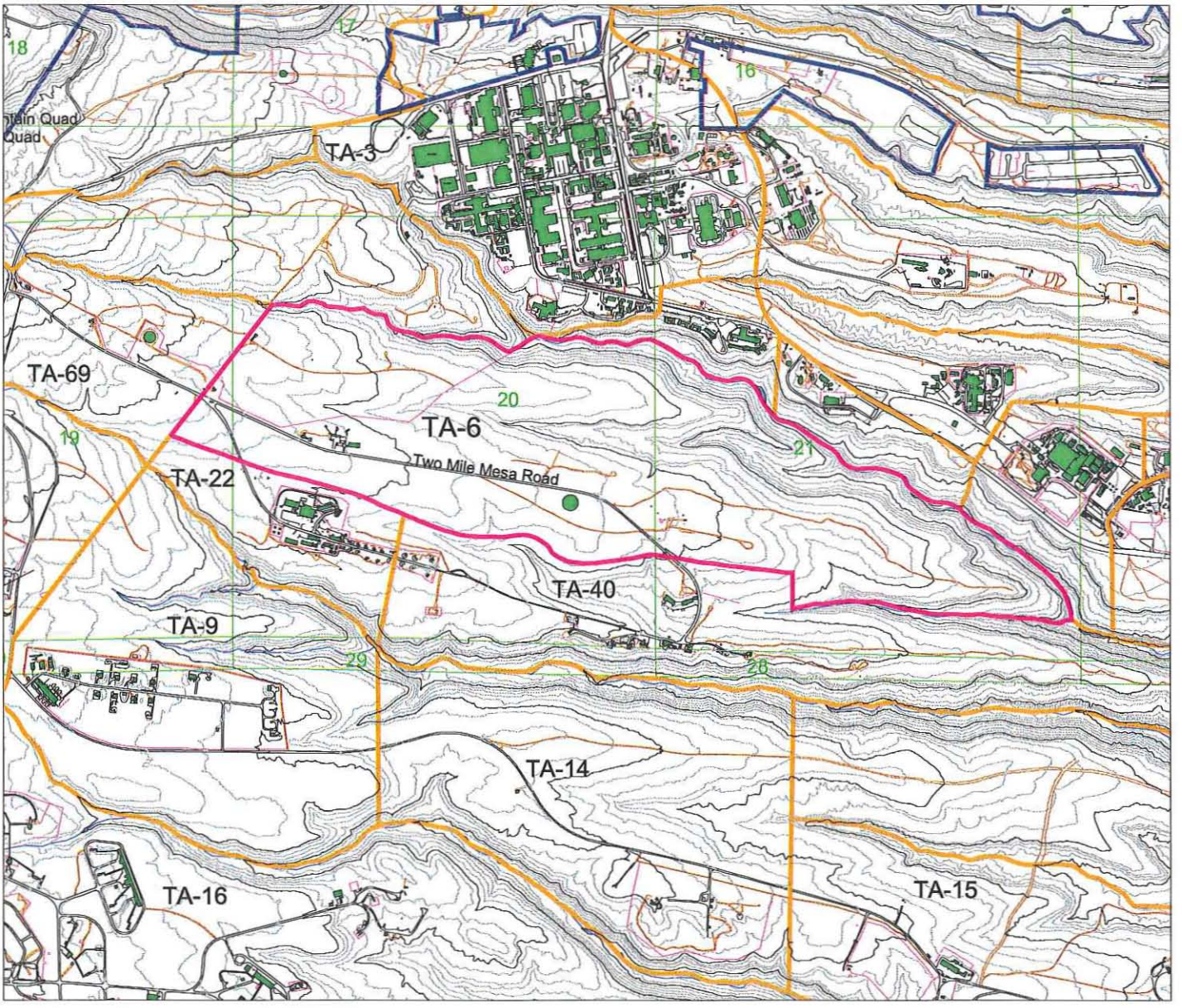
In order to be eligible under Criterion A, support buildings and structures must have functioned as significant support facilities within an associated historical context (Hanford Site 1999b). "First tier" support properties, if linked to a historically significant context and 50 years old or older, may be eligible for the Register. If less than 50 years old, support properties must be exceptionally significant. "Second tier" support and laboratory-processing-testing properties, primarily structures, are usually not eligible for the Register (even if they are 50 years old or older) because of the minor role they played in history.

NATIONAL REGISTER ELIGIBILITY RECOMMENDATIONS

Properties Determined Eligible for the National Register of Historic Places

In 2003 and 2004, a historic property survey was conducted for 163 buildings and structures within TAs 9, 14, 15, 22, 36, 39, 40, 60, and 69, LANL, New Mexico (Maps 21–31). Of the 163 properties surveyed for Register eligibility, 64 were determined eligible under Criterion A ("properties associated with events that have made a significant contribution to the broad patterns of our history"), or both Criteria A and C ("properties that represent a significant and distinguishable entity"). Historically, these properties supported research, development, and testing in support of the nuclear weapons program during the Manhattan Project and the Cold War, from the 1940s to the early 1960s at LANL.

Table 1 lists the buildings that are eligible for listing on the Register. The individual property descriptions in Appendix A contain specific information regarding their eligibility.



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Cultural Resources Team
ENV-ECO Ecology Group

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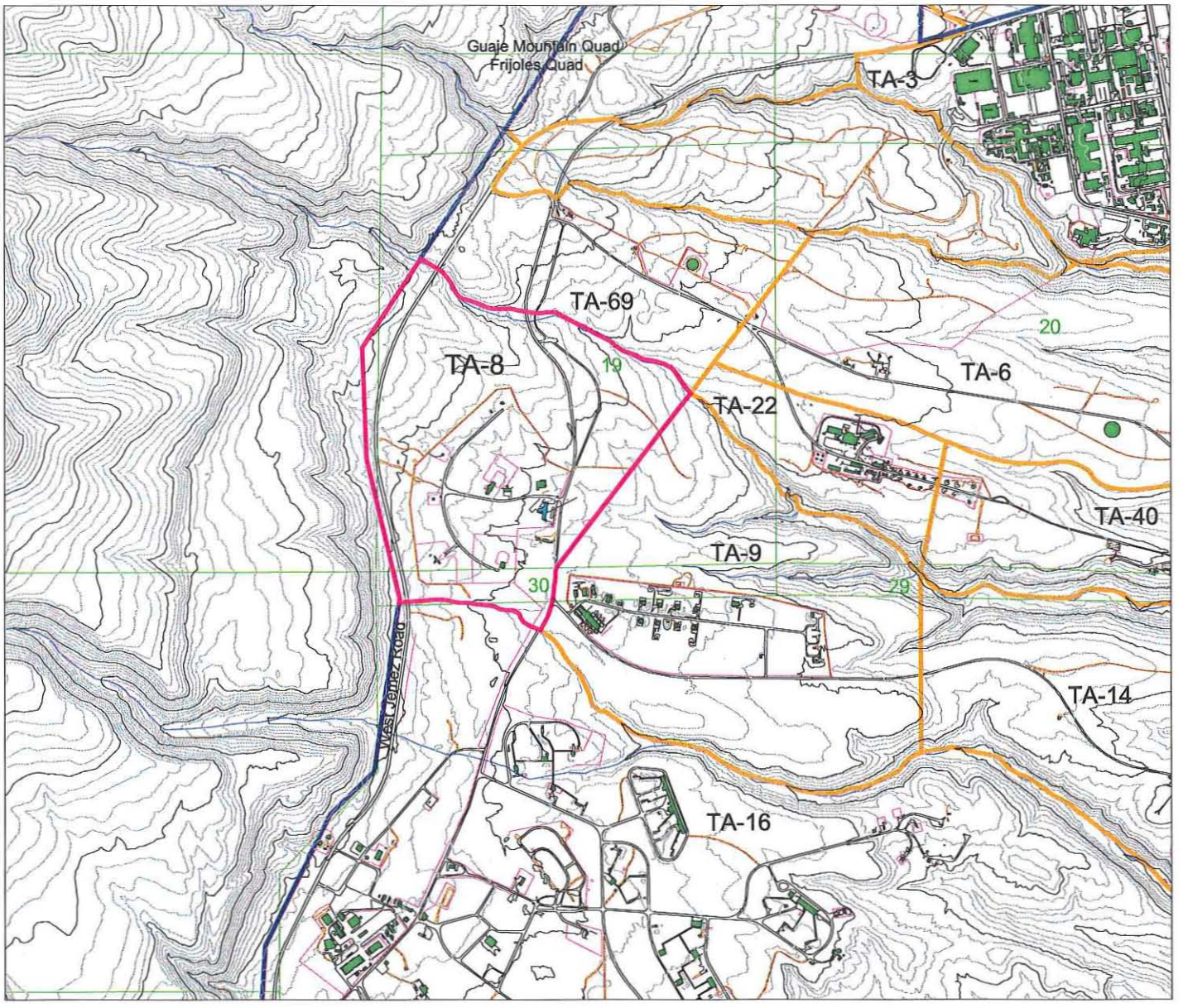
- DX Division Bldgs Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

Buildings Currently Being Reviewed TA-6

Map 21



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ENV-ECO Ecology Group

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- DX Division Bldgs Currently Being Evaluated
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- 20 Foot Contours
- 100 Foot Contours
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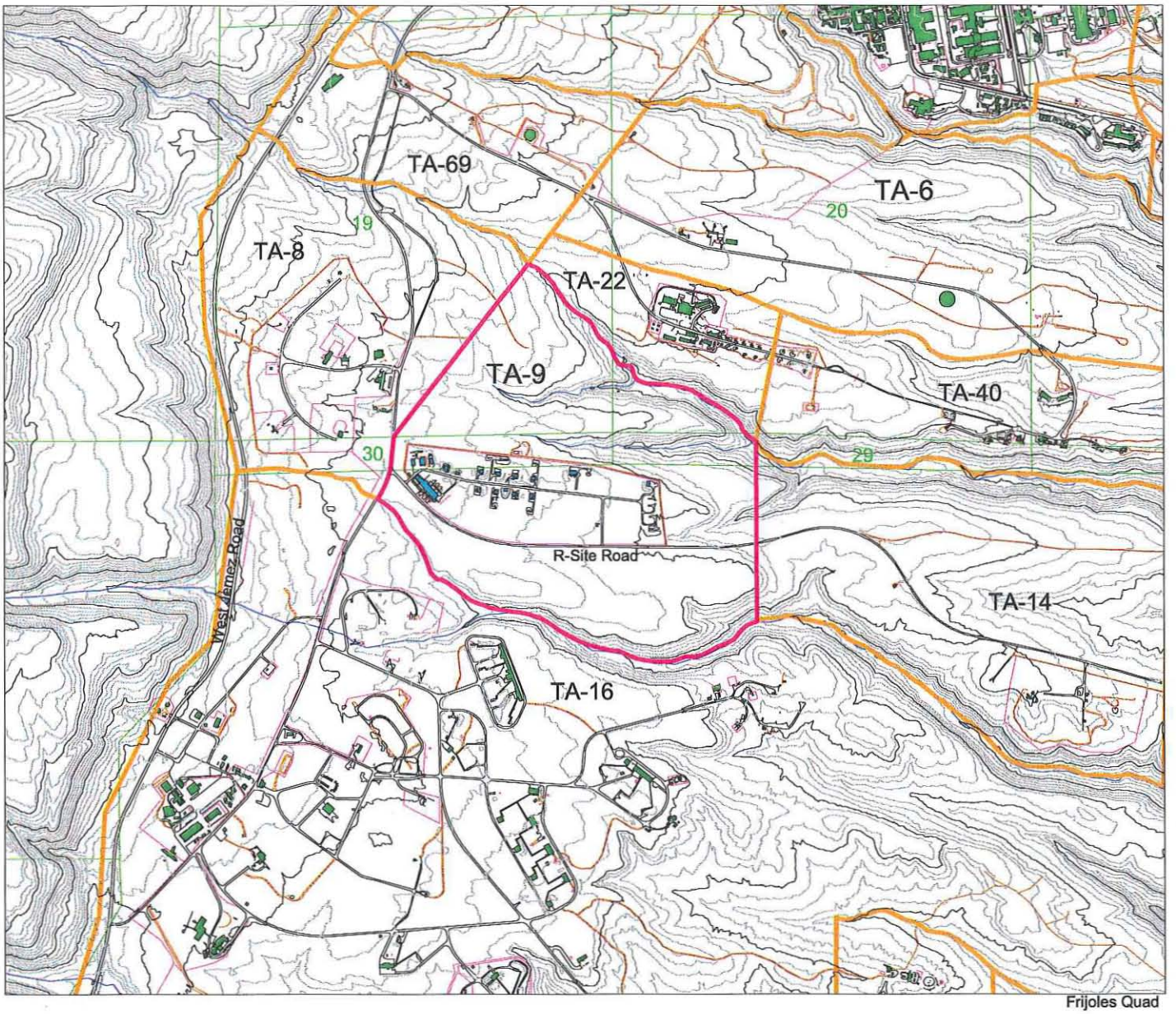
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

Buildings Currently Being Reviewed TA-8

Map 22



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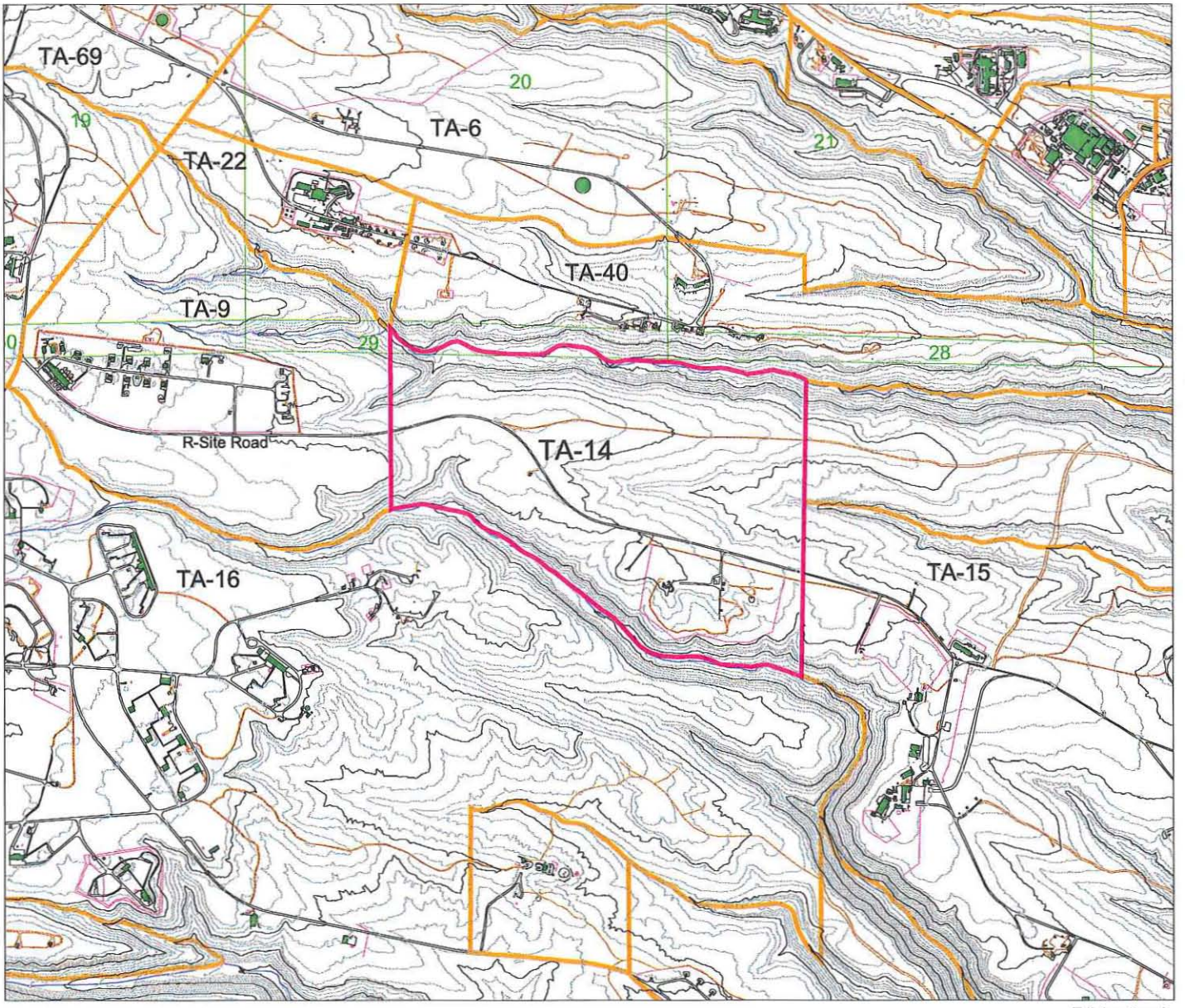
DX Division Strategic Plan

Buildings Currently Being Reviewed TA-9

- DX Division Bldgs Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- LANL Boundary
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

Map 23



Frijoles Quad

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ENV-ECO Ecology Group

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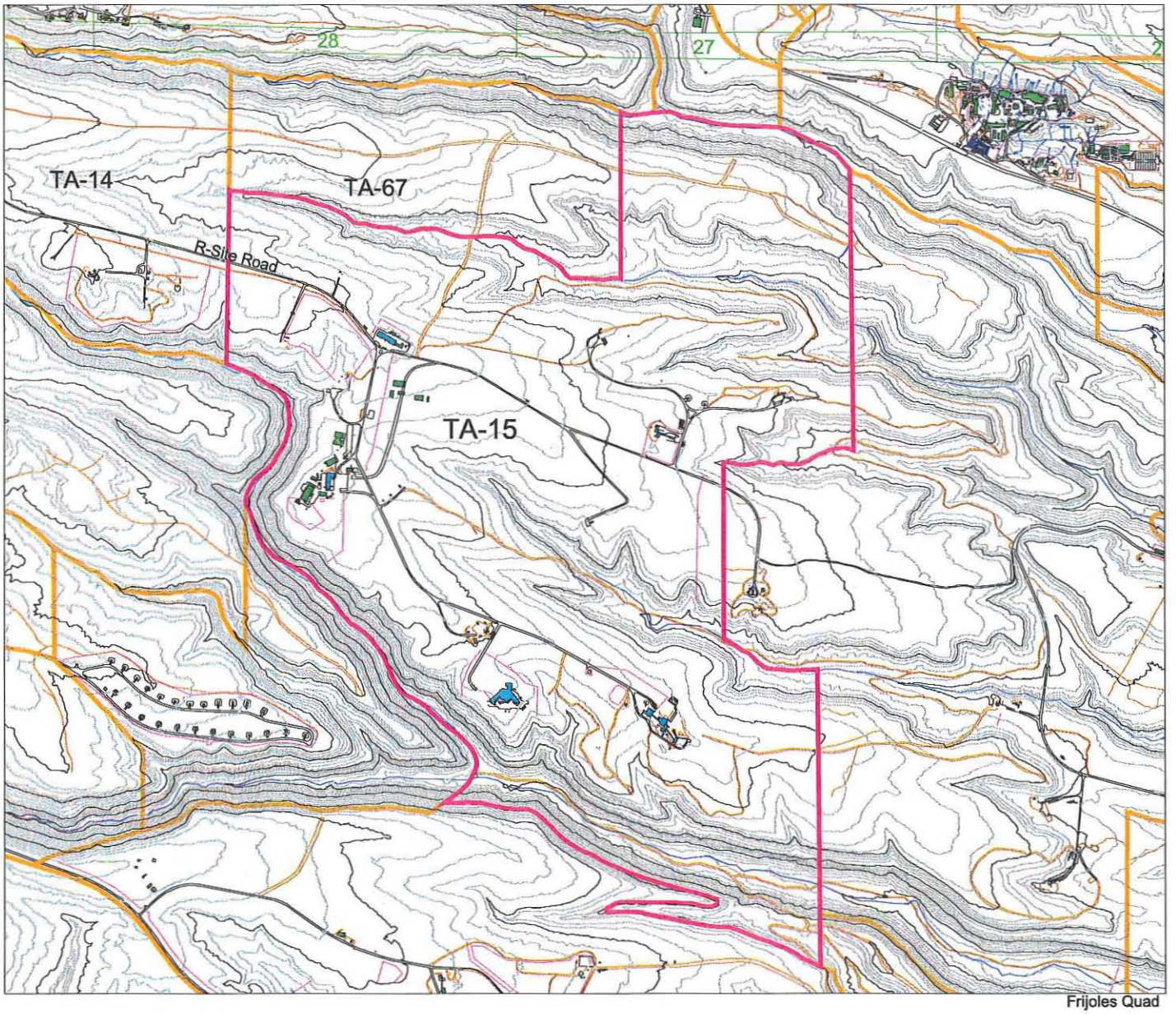
- DX Division Bldgs Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

Buildings Currently Being Reviewed TA-14

Map 24



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ENV-ECO Ecology Group

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DX Division Buildings Currently Being Evaluated
DX Division Tech Areas
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Technical Areas
LANL Boundary
Drainage
Township, Section, Range
USGS 7.5 Minute Quad
Roads
Roaddirt
Parkpave
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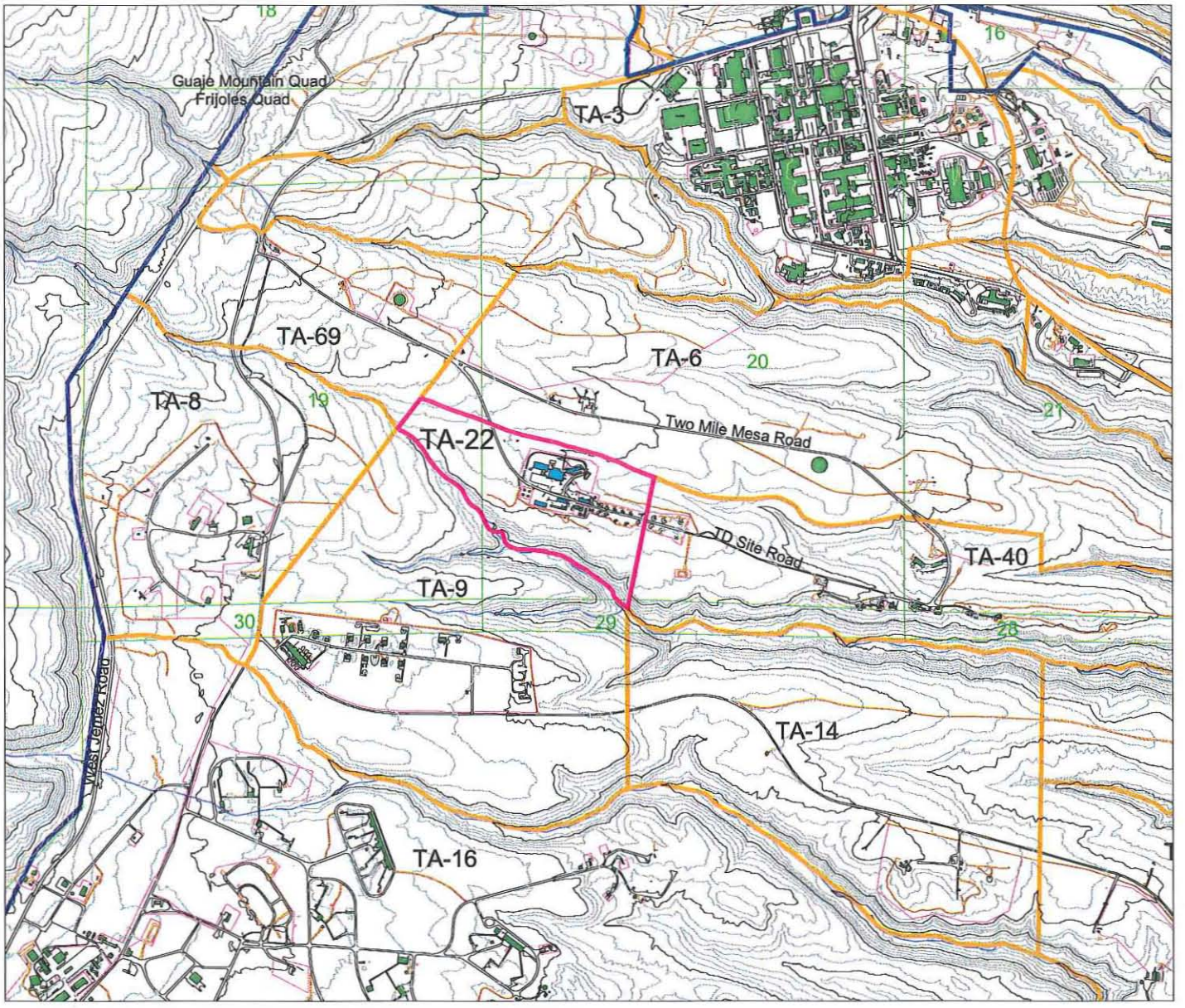
Fences
Buildings/Structures

DX Division Strategic Plan

Buildings Currently Being Reviewed TA-15

Map 25



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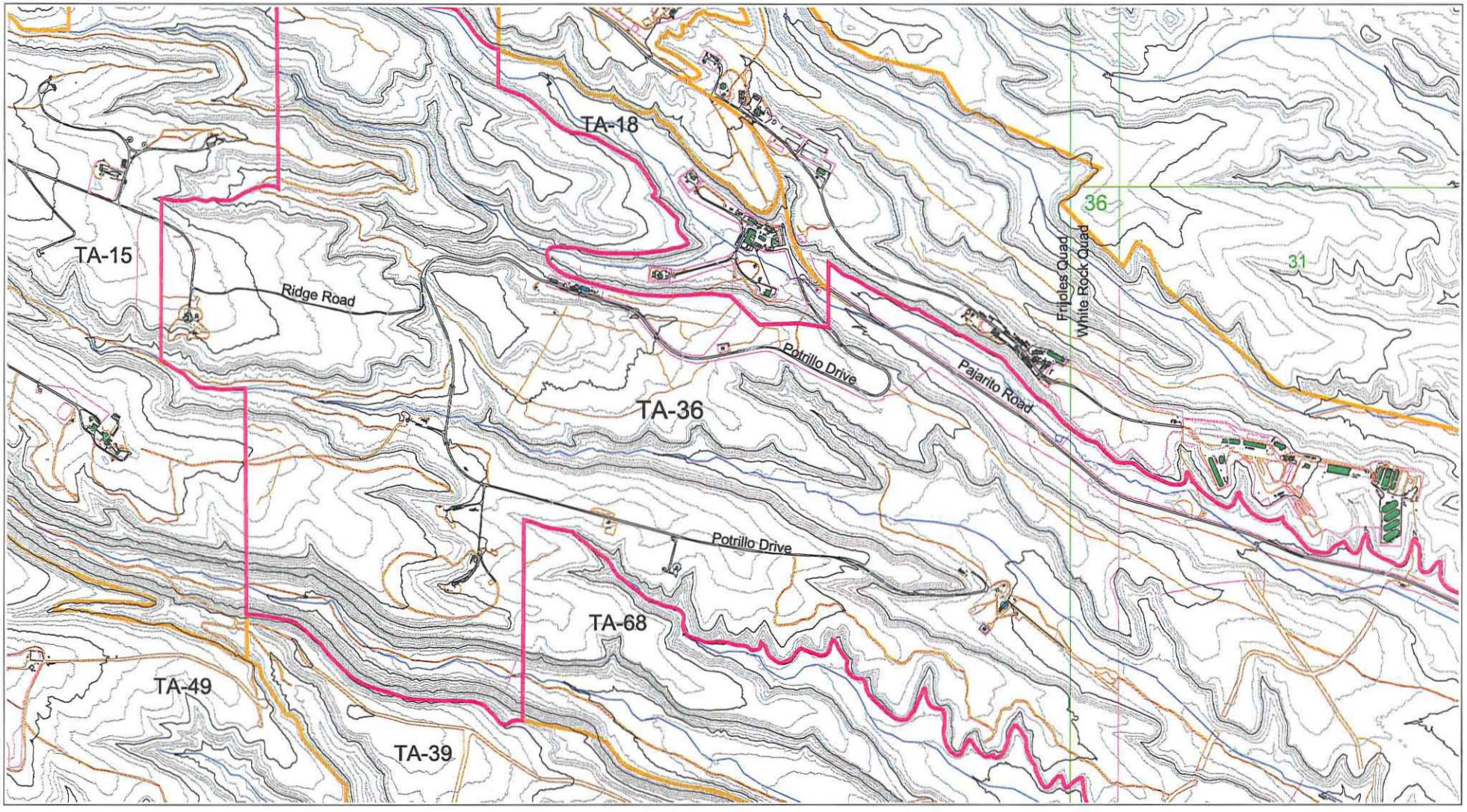
- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- LANL Boundary
- Technical Areas
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

DX Division Strategic Plan

Buildings Currently Being Reviewed TA-22

Map 26



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DX Division Strategic Plan

Buildings Currently Being Reviewed TA-36

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- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- LANL Boundary
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

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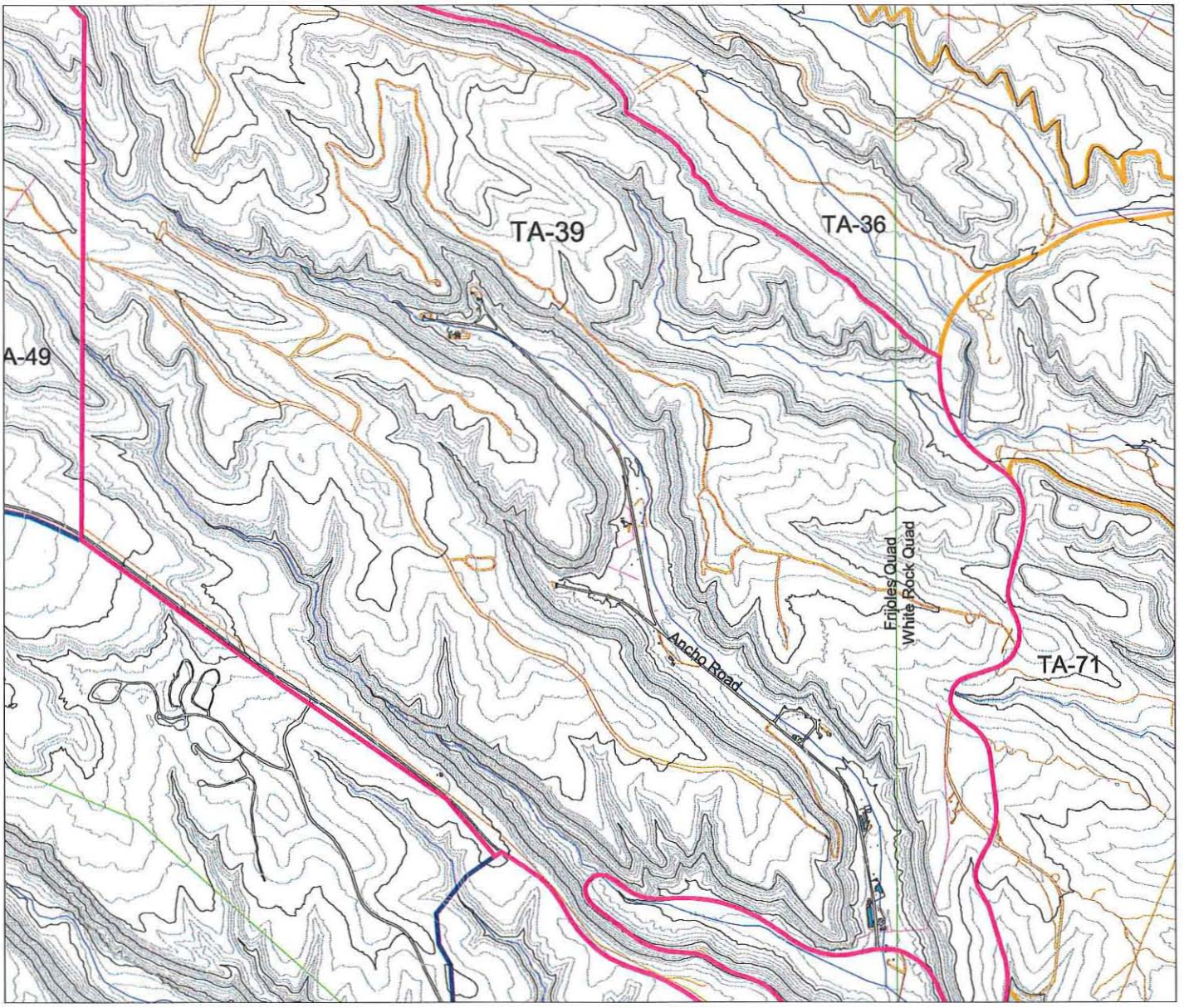
Map 27



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DX Division Buildings Currently Being Evaluated
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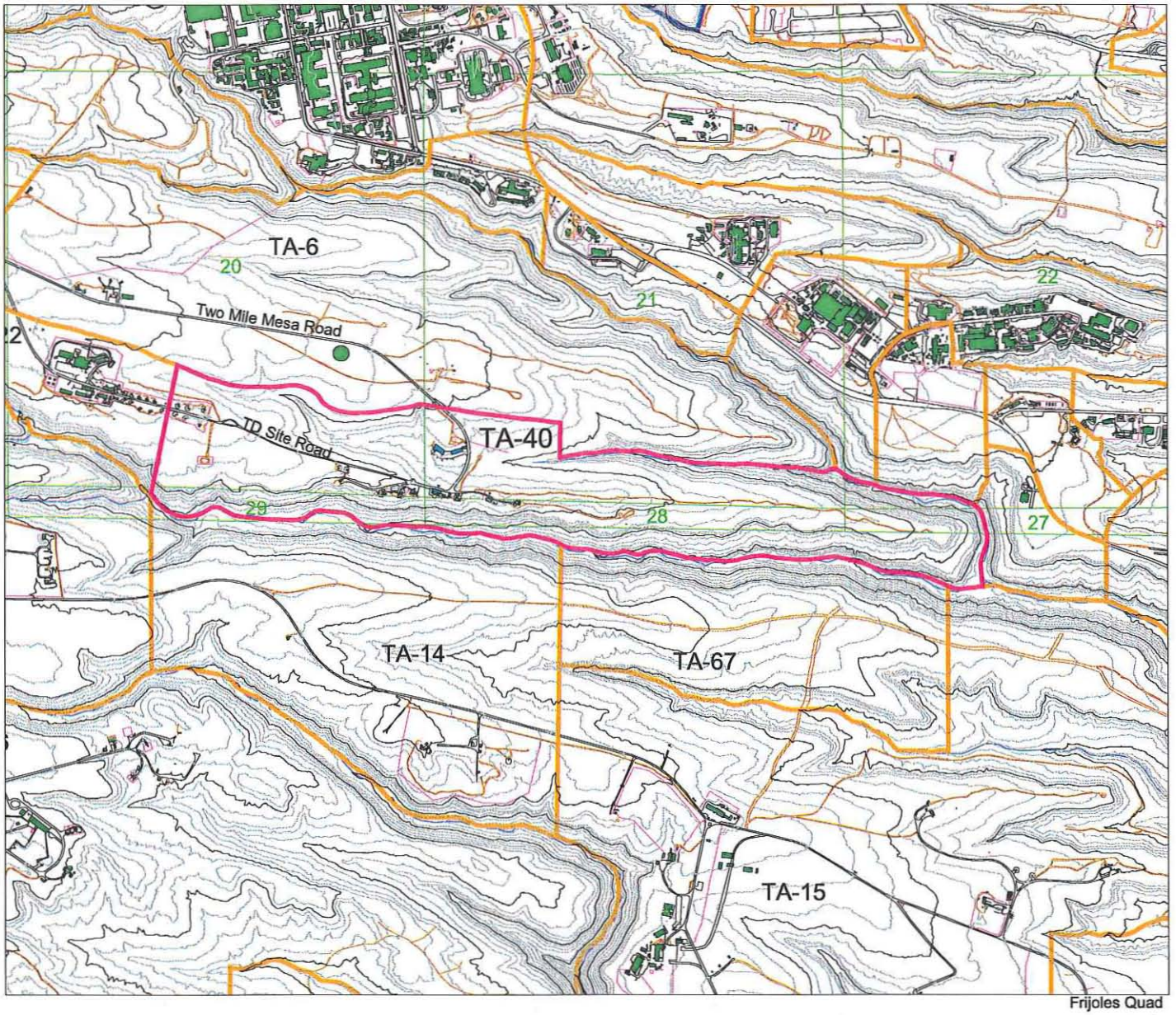
Technical Areas
Drainage
Township, Section, Range
USGS 7.5 Minute Quad
Roads
Roaddirt
Parkpave
Parkdirt
Fences
Buildings/Structures

DX Division Strategic Plan

Buildings Currently Being Reviewed TA-39

Map 28



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National Laboratory
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ENV-ECO Ecology Group

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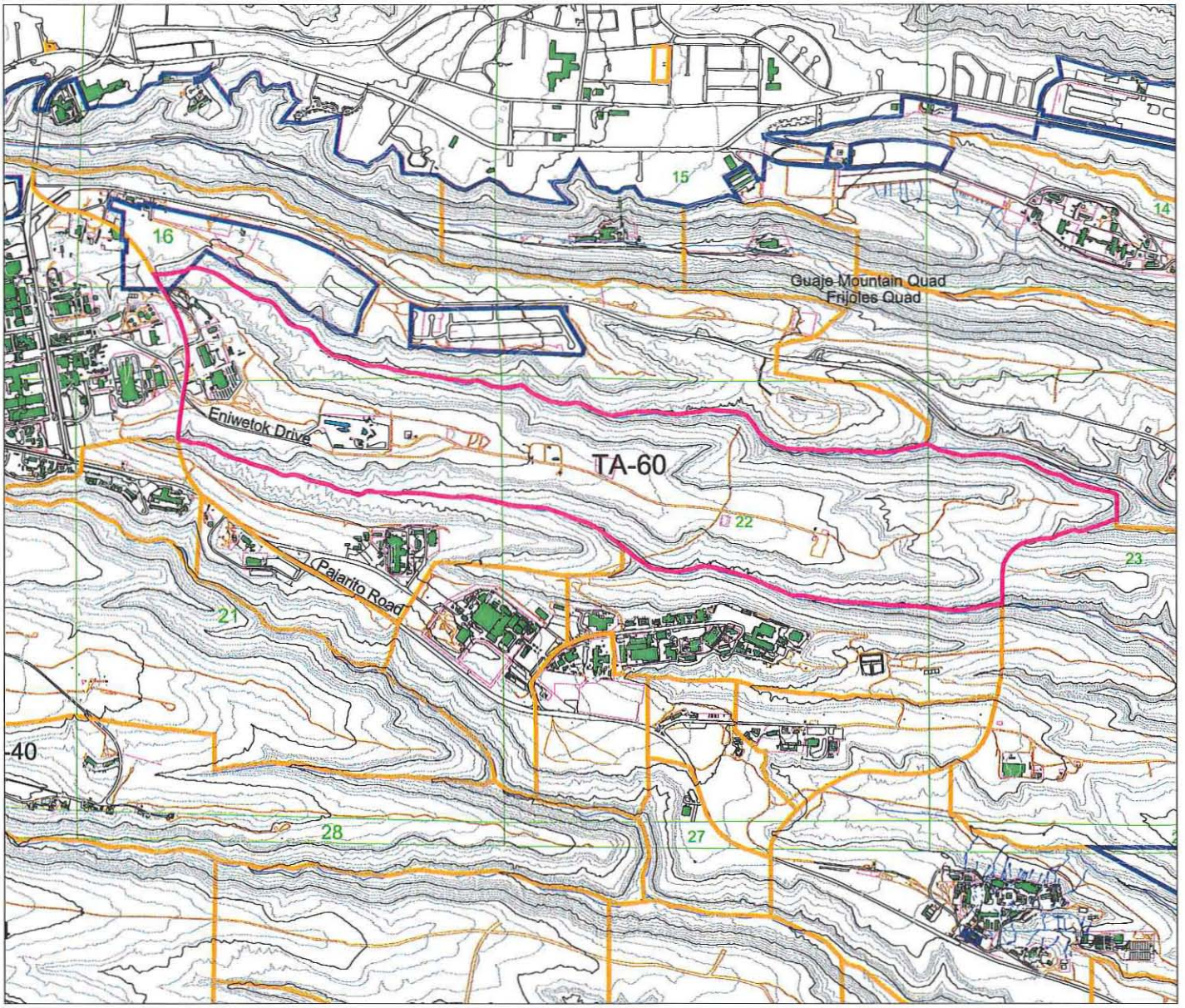
DX Division Strategic Plan

Buildings Currently Being Reviewed TA-40

- DX Division Buildings Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- LANL Boundary
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

Map 29



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- Roads
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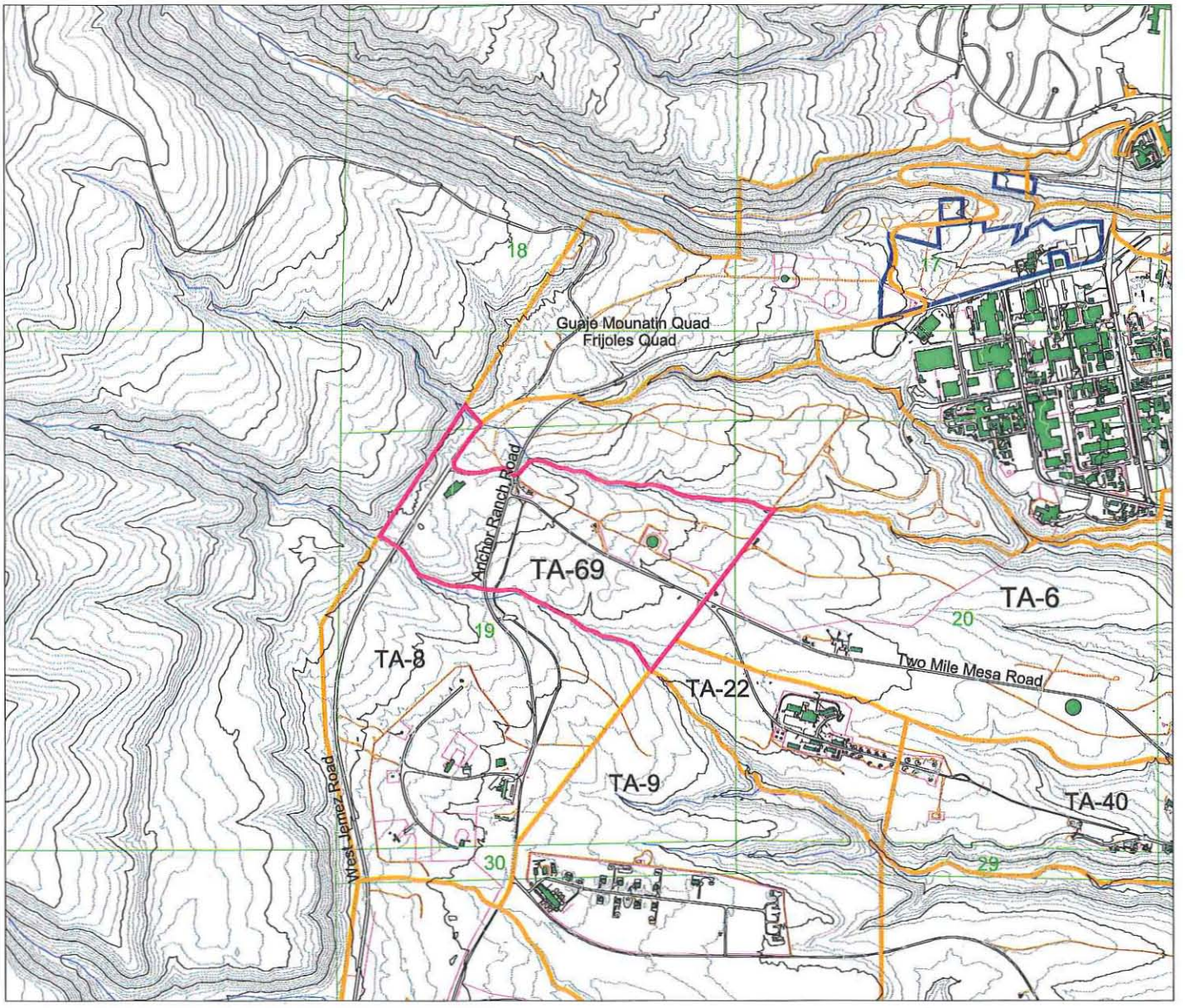
- Fences
- Buildings/Structures

DX Division Strategic Plan

Buildings Currently Being Reviewed TA-60

Map 30



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DX Division Strategic Plan

Buildings Currently Being Reviewed TA-69

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- Parkdirt
- Fences
- Buildings/Structures

Map 31

Table 1. Eligible DX Properties (evaluated in this report)

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
9-21	Laboratory/Office Building	1952	High Explosives R&D and Testing; Administration	Lab/Processing (1st Tier)[3] & Administration	Excellent	Y
9-22	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
9-28	Shop Building	1952	High Explosives R&D and Testing	Support (1st Tier)	Excellent	Y
9-32	Laboratory/Office Building	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
9-33	Laboratory Building	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
9-34	Process Laboratory	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
9-36	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
9-40	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
9-41	Comfort Station Building	1952	High Explosives R&D and Testing	Administration (Health & Safety)	Excellent	Y
9-42	Process Laboratory	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
9-45	Process Laboratory	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
9-46	Process Laboratory	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
9-48	Machining Building	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
9-51	Environmental Test Chamber	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
9-53	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
9-55	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
9-208	Day Magazine	1962	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
14-22	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
14-23	Control Building	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
15-9	Camera Chamber	1948	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Fair	Y
15-27	Control Building	1947	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Fair	Y

[3] Lab/Processing = Laboratory-Processing-Testing

Table 1. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
15-40	Laboratory/Office Building	1951	High Explosives R&D and Testing; Dynamic Radiography, Radiographic Inspection; Administration	Lab/Processing (1st Tier) & Administration	Excellent	Y
15-42	Magazine	1951	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
15-43	Magazine	1951	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
15-45	Control Building	1951	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
15-183	Laboratory/Office Building	1961	High Explosives R&D and Testing; Dynamic Radiography & Radiographic Inspection; Administration	Lab/Processing (1st Tier) & Administration	Excellent	Y
15-184	PHERMEX Chamber	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Good/ Excellent	Y
15-185	Power Control Building	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Excellent	Y
15-186	Detection Chamber	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Excellent	Y
15-189	Power Supply Building	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
15-198	Tunnel (PHERMEX to Power Control Building)	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
15-199	Tunnel (PHERMEX to Detection Chamber)	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
15-200	Tunnel	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
15-201	Tunnel	1961	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
15-312	DARHT	1999	Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Excellent	Y
22-9	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
22-16	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
22-23	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
22-25	Issue and Receiving Building (Process Building)	1949	Detonator R&D	Lab/Processing (1st Tier)	Good	Y
22-34	Laboratory Building	1952	Detonator R&D	Lab/Processing (1st Tier)	Excellent	Y

Table 1. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
22-35	Magazine	1952	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
36-3	Control Building	1951	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	Y
36-5	Preparation Building	1950	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
36-6	Control Building	1950	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
36-10	Magazine	1950	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
36-19	Instrument Chamber	1950	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	Y
36-48	Controlled Environment Building	1965	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
36-55	Control Building	1950	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	Y
39-2	Laboratory/Office Building	1953	High Explosives R&D and Testing; Administration	Lab/Processing (1st Tier) & Administration	Good	Y
39-3	Magazine	1953	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
39-4	Trim Building	1953	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	Y
39-5	Ready Magazine	1953	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	Y
39-6	Firing Chamber #1	1953	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
39-56	Gun Building	1958	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Fair	Y
39-69	Light Gas Gun Facility	1964	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
40-1	Laboratory/Office Building	1950	Detonator R&D; Administration	Lab/Processing (1st Tier) & Administration	Good	Y
40-14	Preparation Building	1950	Detonator R&D	Lab/Processing (1st Tier)	Excellent	Y
40-15	Firing Point	1950	Detonator R&D	Lab/Processing (1st Tier)	Excellent	Y
40-36	Magazine	1952	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
40-38	Magazine	1952	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
40-40	Magazine	1952	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
60-17	Test Fabrication Facility (Assembly Building)	1986	Underground Testing (NTS support)	Lab/Processing (1st Tier)	Excellent	Y

Table 1. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
60-19	Test Fabrication Facility (Rack Tower)	1986	Underground Testing (NTS support)	Lab/Processing (1st Tier)	Excellent	Y
69-1	Guard Station	1953	Security	Security	Excellent	Y
Total Number of Eligible Properties	**64**					

Properties with Undetermined Eligibility Status for the National Register of Historic Places

Some of the properties surveyed were built after the date parameters (Table 2) of the historic context (1942 to 1963) and not enough time has passed in order to adequately evaluate their ultimate significance. However, several of these recent properties are associated with important Los Alamos research, and these properties have been identified as "undetermined" for the Register because their historical significance is still unfolding. A few of the post-1963 facilities reviewed in this report were deemed eligible for the Register because of their association with exceptionally significant scientific and technological developments (ref. TA-60-17, TA-60-19, and TA-15-312, Table 1). These properties have greater national significance because of the unique role they have played or continue to play in the history of nuclear weapons research, development, and testing.

Table 2. Undetermined DX Properties (evaluated in this report)

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
15-280	Control Building	1977	Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Excellent	UND[4]
15-306	Multidiagnostic Hydrotest Facility	1984	Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Excellent	UND
15-310	Multidiagnostic Operations Building	1988	Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Excellent	UND
22-91	Detonator Facility	1983	Detonator R&D	Lab/Processing (1st Tier)	Excellent	UND
22-93	High Explosives Wing	1983	Detonator R&D	Lab/Processing (1st Tier)	Excellent	UND
36-83	Advanced Technology Assessment Center (ATAC) Storage Magazine	1987	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	UND
36-86	Pulsed Intense (flash) X-ray Machine (PIXY) Facility/ATAC Ballistic Test Facility	1990	High Explosives R&D and Testing; Dynamic Radiography & Radiographic Inspection	Lab/Processing (1st Tier)	Excellent	UND

[4] UND = Undetermined

Table 2. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
36-107	Weapons Component Firing Site Control Bunker	1990	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	UND
39-89	Gas Gun Support Building	1981	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	UND
39-111	Pulsed Power Assembly Building	1990	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	UND
Total number of undetermined properties	**10**					

Properties Determined Not Eligible for the National Register of Historic Places

Not all DX Division properties constructed within the defined period of significance qualify as significant properties. In some cases, a property is of secondary or minor importance and does not contribute to the understanding of the manufacturing of nuclear weapons during the Manhattan Project and Cold War eras. For example, some DX Division properties have served a purely support function, and although they may have supported the mission of the division, they do not adequately illustrate the historical themes shaping the history of the Laboratory. In other cases, properties associated with significant LANL events have been modified to such an extent that the loss of physical integrity has impacted their status as Register-eligible properties. Additionally, several DX properties belong to a series of nearly identical building designs, and only the best example of each building design is usually eligible for the Register.

Table 3 lists the buildings that are not eligible or potentially eligible for listing on the Register. The individual property reports (Appendix A) contain specific information regarding their eligibility status.

Table 3. Non-Eligible DX Properties (evaluated in this report)

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
9-20	Guard Station	1952	High Explosives R&D and Testing; Security	Security	Good	N
9-23	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-24	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-25	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-26	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-27	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N

Table 3. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
9-29	Stock/Equipment Building	1952	High Explosives R&D and Testing	Support (1st Tier)	Excellent	N
9-30	Gas Storage	1952	High Explosives R&D and Testing	Support (2nd Tier)	Excellent	N
9-31	Solvent Storage	1952	High Explosives R&D and Testing	Support (2nd Tier)	Excellent	N
9-37	Process Laboratory	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
9-38	Process Laboratory	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
9-39	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-44	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-47	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-49	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-50	Receiving and Shipping	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-52	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-54	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
9-204	Refrigerator Shelter	1958	High Explosives R&D and Testing	Support (2nd Tier)	Excellent	N
9-214	Storage Building	1948	Detonator R&D and High Explosives R&D and Testing	Support (1st Tier)	Poor	N
14-24	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
14-30	Magazine	1952	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
14-34	Bullet Test Facility	1957	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Poor	Y
15-41	Storage Building	1951	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	N
15-44	Control Building	1951	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Fair	N
15-182	Storage Building	1955	High Explosives R&D and Testing	Support (2nd Tier)	Fair	N
15-233	Betatron Building	1963	Dynamic Radiography & Radiographic Inspection	Support (2nd Tier)	Fair	N

Table 3. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
15-241	Ready Magazine	1965	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
15-242	Make Up Building	1968	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
15-243	Main Magazine	1968	Dynamic Radiography & Radiographic Inspection	Lab/Processing (2nd Tier)	Excellent	Y
22-5	Warehouse & Plastic Shop	1949	Detonator R&D	Lab/Processing (2nd Tier)	Good	N
22-7	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-8	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Good	N
22-10	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-11	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-12	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-14	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-15	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-17	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-18	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-19	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-20	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-21	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-22	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-24	Magazine	1949	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
22-32	Guard Station	1949	Detonator R&D and Security	Security	Excellent	N
22-52	Shops Building	1952	Detonator R&D	Support (2nd Tier)	Excellent	N
22-66	Storage Building	1955	Detonator R&D	Support (2nd Tier)	Excellent	N
22-67	Storage Building	1955	Detonator R&D	Support (2nd Tier)	Excellent	N
22-68	Storage Building	1955	Detonator R&D	Support (2nd Tier)	Excellent	N

Table 3. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
22-69	Storage Building	1955	Detonator R&D	Support (2nd Tier)	Excellent	N
22-90	Office Building	1984	Detonator R&D; Administration	Administration	Excellent	Y
36-1	Laboratory/Office Building	1950	High Explosives R&D and Testing; Administration	Lab/Processing (1st Tier) & Administration	Good	Y
36-4	Preparation Building	1950	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
36-7	Preparation Building	1950	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
36-8	Control Building	1950	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
36-9	Magazine	1950	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Excellent	Y
36-11	Preparation Building	1950	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Excellent	Y
36-13	Instrument Chamber	1950	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	Y
36-20	Instrument Chamber	1950	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Good	Y
36-46	Storage Building	1958	High Explosives R&D and Testing	Support (2nd Tier)	Excellent	N
36-47	Firing Stand Storage Building	1963	High Explosives R&D and Testing	Support (2nd Tier)	Good	N
39-7	Firing Chamber #2	1953	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
39-8	Firing Chamber #3	1953	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
39-9	Hose House	1953	High Explosives R&D and Testing	Support (2nd Tier)	Excellent	N
39-10	Hose House	1953	High Explosives R&D and Testing	Support (2nd Tier)	Excellent	N
39-57	Duplicate Firing Chamber/Firing Point #7	1958	High Explosives R&D and Testing	Lab/Processing (1st Tier)	Good	Y
39-62	Storage Building	1961	High Explosives R&D and Testing	Support (2nd Tier)	Excellent	N
39-98	Branch Shops Building	1987	High Explosives R&D and Testing	Support (1st Tier)	Excellent	N
39-138	Neutron Flux Storage	1979	High Explosives R&D and Testing	Lab/Processing (2nd Tier)	Fair	N
40-2	Magazine	1950	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
40-3	Preparation Building	1950	Detonator R&D	Lab/Processing (1st Tier)	Excellent	N
40-5	Firing Point	1950	Detonator R&D	Lab/Processing (1st Tier)	Poor	N

Table 3. continued

Property Number	Original Use	Date	Associated Themes	Property Type	Integrity	Core
40-6	Preparation Building	1950	Detonator R&D	Lab/Processing (1st Tier)	Excellent	Y
40-7	Magazine	1950	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
40-8	Firing Point	1950	Detonator R&D	Lab/Processing (1st Tier)	Poor	N
40-9	Firing Point	1950	Detonator R&D	Lab/Processing (1st Tier)	Poor	N
40-10	Magazine	1950	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
40-11	Preparation & Utility	1950	Detonator R&D	Lab/Processing (1st Tier)	Poor	N
40-12	Firing Point	1950	Detonator R&D	Lab/Processing (1st Tier)	Fair	Y
40-13	Magazine	1950	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	Y
40-16	Utility Building	1950	Detonator R&D	Support (2nd Tier)	Good	N
40-17	Utility Building	1950	Detonator R&D	Support (2nd Tier)	Good	N
40-18	Utility Building	1950	Detonator R&D	Support (2nd Tier)	Good	N
40-23	Machine Shop	1951	Detonator R&D	Lab/Processing (2nd Tier)	Fair	N
40-37	Magazine	1952	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
40-39	Magazine	1952	Detonator R&D	Lab/Processing (2nd Tier)	Excellent	N
40-41	Magazine	1951	Detonator R&D	Lab/Processing (1st Tier)	Excellent	N
40-58	Equipment Building	1961	Detonator R&D	Support (2nd Tier)	Good	N
Total number of non-eligible properties	**89**					

Master Eligibility Summary Table for DX Division Properties

Buildings in bold in Table 4 are candidates for permanent retention. These properties represent Los Alamos's most important contributions to the history of WWII and the Cold War within DX Division.

The State Historic Preservation Office is requested to concur with the eligibility determinations contained in this report. As a result of this historic building survey, this project complies with the National Historic Preservation Act of 1966 (as amended).

Table 4. Eligible DX Properties (evaluated in this report and previous reports)

Property Number	Date	Core	Property Type	Integrity
6-37	**1944**	**Y**	**Lab/Processing**	**Excellent**
8-21	1959	Y	Lab/Processing (1st tier) & Administration	Good
9-21	1952	Y	Lab/Processing (1st Tier) & Administration	Excellent
9-22	1952	Y	Lab/Processing (2nd Tier)	Excellent
9-28	1952	Y	Support (1st Tier)	Excellent
9-32	1952	Y	Lab/Processing (1st Tier)	Excellent
9-33	1952	Y	Lab/Processing (1st Tier)	Excellent
9-34	1952	Y	Lab/Processing (1st Tier)	Good
9-36	1952	Y	Lab/Processing (2nd Tier)	Excellent
9-40	1952	Y	Lab/Processing (2nd Tier)	Excellent
9-41	1952	Y	Administration (Health & Safety)	Excellent
9-42	1952	Y	Lab/Processing (1st Tier)	Good
9-45	1952	Y	Lab/Processing (1st Tier)	Good
9-46	1952	Y	Lab/Processing (1st Tier)	Excellent
9-48	1952	Y	Lab/Processing (1st Tier)	Excellent
9-51	1952	Y	Lab/Processing (1st Tier)	Good
9-53	1952	Y	Lab/Processing (2nd Tier)	Excellent
9-55	1952	Y	Lab/Processing (2nd Tier)	Excellent
9-208	1962	N	Lab/Processing (2nd Tier)	Excellent
14-6	1944	Y	Lab/Processing (2nd Tier)	Fair
14-22	1952	Y	Lab/Processing (2nd Tier)	Excellent
14-23	1952	Y	Lab/Processing (1st Tier)	Excellent
15-8	1947	Y	Lab/Processing (2nd Tier)	Good
15-9	1948	Y	Lab/Processing (1st Tier)	Fair
15-27	1947	Y	Lab/Processing (1st Tier)	Fair
15-40	1951	Y	Lab/Processing (1st Tier) & Administration	Excellent
15-42	1951	Y	Lab/Processing (2nd Tier)	Excellent
15-43	1951	Y	Lab/Processing (2nd Tier)	Excellent
15-45	1951	Y	Lab/Processing (1st Tier)	Excellent
15-138	1951	Y	Lab/Processing (2nd Tier)	Fair
15-141	1961	Y	Lab/Processing (2nd Tier)	Fair
15-183	1961	Y	Lab/Processing (1st Tier) & Administration	Excellent
15-184	1961	Y	Lab/Processing (1st Tier)	Good/Excellent
15-185	1961	Y	Lab/Processing (1st Tier)	Excellent
15-186	1961	Y	Lab/Processing (1st Tier)	Excellent
15-189	1961	Y	Lab/Processing (2nd Tier)	Excellent
15-198	1961	Y	Lab/Processing (2nd Tier)	Excellent
15-199	1961	Y	Lab/Processing (2nd Tier)	Excellent
15-200	1961	Y	Lab/Processing (2nd Tier)	Excellent
15-201	1961	Y	Lab/Processing (2nd Tier)	Excellent

Table 4. continued

Property Number	Date	Core	Property Type	Integrity
15-312	1999	Y	Lab/Processing (1st Tier)	Excellent
22-1	**1945**	**Y**	**Lab/Processing (1st Tier)**	**Good**
22-9	1949	Y	Lab/Processing (2nd Tier)	Excellent
22-16	1949	Y	Lab/Processing (2nd Tier)	Excellent
22-23	1949	Y	Lab/Processing (2nd Tier)	Excellent
22-25	1949	Y	Lab/Processing (1st Tier)	Good
22-34	1952	Y	Lab/Processing (1st Tier)	Excellent
22-35	1952	Y	Lab/Processing (2nd Tier)	Excellent
36-3	1951	Y	Lab/Processing (2nd Tier)	Good
36-5	1950	Y	Lab/Processing (1st Tier)	Excellent
36-6	1950	Y	Lab/Processing (1st Tier)	Good
36-10	1950	Y	Lab/Processing (2nd Tier)	Excellent
36-12	1950	Y	Lab/Processing (1st Tier)	Excellent
36-19	1950	Y	Lab/Processing (2nd Tier)	Good
36-48	1965	Y	Lab/Processing (1st Tier)	Good
36-55	1950	Y	Lab/Processing (2nd Tier)	Good
39-2	1953	Y	Lab/Processing (1st Tier) & Administration	Good
39-3	1953	Y	Lab/Processing (2nd Tier)	Excellent
39-4	1953	Y	Lab/Processing (2nd Tier)	Good
39-5	1953	Y	Lab/Processing (2nd Tier)	Good
39-6	1953	Y	Lab/Processing (1st Tier)	Good
39-56	1958	Y	Lab/Processing (1st Tier)	Fair
39-69	1964	Y	Lab/Processing (1st Tier)	Good
40-1	1950	Y	Lab/Processing (1st Tier) & Administration	Good
40-14	1950	Y	Lab/Processing (1st Tier)	Excellent
40-15	1950	Y	Lab/Processing (1st Tier)	Excellent
40-36	1952	Y	Lab/Processing (2nd Tier)	Excellent
40-38	1952	Y	Lab/Processing (2nd Tier)	Excellent
40-40	1952	Y	Lab/Processing (2nd Tier)	Excellent
60-17	**1986**	**Y**	**Lab/Processing (1st Tier)**	**Excellent**
60-19	**1986**	**Y**	**Lab/Processing (1st Tier)**	**Excellent**
69-1	1953	Y	Security	Excellent
Total number of eligible DX properties	**72**			

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