U.S. Army Environmental Center

Community Environmental Response Facilitation Act (CERFA) Report

Bennett Army National Guard Facility
Bennett, Colorado

Prepared for:

U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND 21010

Prepared by:

THE EARTH TECHNOLOGY CORPORATION
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Requests for this document must be referred to
Commander, U.S. Army Environmental Center
Aberdeen Proving Ground, Maryland 21010

April 1994

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This report presents the results of the Community Environmental Response Facilitation Act (CERFA) investigation conducted by The Earth Technology Corporation (TETC) at Bennett Army National Guard Facility, a U.S. Government property selected for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. Under CERFA (Public Law 102-426), Federal agencies are required to identify real property that can be immediately reused and redeveloped. Satisfying this objective requires the identification of real property where no hazardous substances or petroleum products, regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), were stored for one year or more, known to have been released, or disposed.

The Bennett Army National Guard Facility is a 243-acre site (more or less) located in Arapahoe County, Colorado, approximately 30 miles southeast of Denver, Colorado. The installation's primary mission was from 1961 to 1965, when it served as a Titan Missile Launch Complex. Activities associated with the property that have environmental significance were fuel storage, and wastewater disposal.

TETC reviewed existing investigation documents; U.S. Environmental Protection Agency (USEPA), State, and county regulatory records; environmental data bases; and title documents pertaining to Bennett Army National Guard Facility during this investigation. In addition, TETC conducted interviews and visual inspections of Bennett Army National Guard Facility as well as visual inspections and data base searches for the surrounding properties.

Information in this CERFA Report was current as of April 1994. This information was used to divide the installation into four categories of parcels: CERFA Parcels, CERFA Parcels with Qualifiers, CERFA Disqualified Parcels, and CERFA-Excluded Parcels, as defined by the Army.

The total BRAC property acreage at Bennett Army National Guard Facility is 243 acres. Areas of the facility that have no history of CERCLA-regulated hazardous substance or petroleum product release, disposal, or storage are categorized as CERFA Parcels. TETC determined that approximately 212 acres of the 243-acre property fall within the CERFA Parcel category, predominantly in the center part of the installation.

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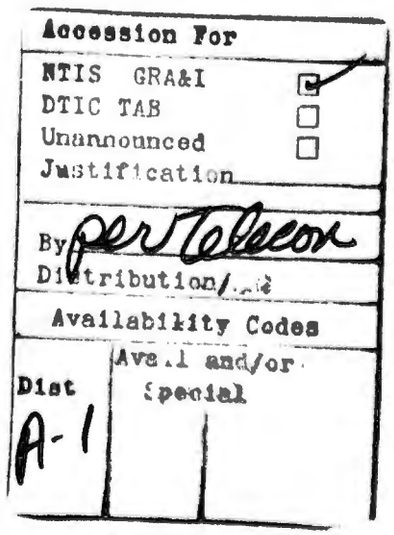

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LIST OF ACRONYMS

BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
ERIIS	Environmental Risk Information and Imaging Services
ICBM	Intercontinental Ballistic Missile
IRP	Installation Restoration Program
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
RCRA	Resource Conservation and Recovery Act
TETC	The Earth Technology Corporation
USAEC	U.S. Army Environmental Center
USATHAMA	U.S. Army Toxic and Hazardous Material Agency

EXECUTIVE SUMMARY

This report presents the results of the Community Environmental Response Facilitation Act (CERFA) investigation conducted by The Earth Technology Corporation (TETC) at Bennett Army National Guard Facility, a U.S. Government property selected for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. Under CERFA (Public Law 102-426), Federal agencies are required to identify real property that can be immediately reused and redeveloped. Satisfying this objective requires the identification of real property where no hazardous substances or petroleum products, regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), were stored for one year or more, known to have been released, or disposed.

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The total BRAC property acreage at Bennett Army National Guard Facility is 243 acres. Areas of the facility that have no history of CERCLA-regulated hazardous substance or petroleum product release, disposal, or storage are categorized as CERFA Parcels. TETC determined that approximately 212 acres of the 243-acre property fall within the CERFA Parcel category, predominantly in the center part of the installation.

Areas of the facility that had no evidence of such release, disposal, or storage, but contained hazards not regulated by CERCLA (such as asbestos, radon gas, lead-based paint, unexploded ordnance, radionuclides, or not in-use equipment containing polychlorinated biphenyl) were categorized as CERFA Parcels with Qualifiers. No portions of the facility were identified as CERFA Parcels with Qualifiers.

Areas of the facility, for which there is a history of release, disposal, or storage for one year or more of CERCLA-regulated hazardous substances or petroleum products or had a release of hazards identified above were categorized as CERFA Disqualified Parcels. Thirty-one (31) acres of installation property are identified as CERFA Disqualified Parcels.

Areas on the facility that will be retained by the Federal Government or that have already been transferred by deed are categorized as CERFA-Excluded Parcels. None of the property was identified as CERFA-Excluded Parcels.

The primary objective of CERFA is satisfied by the identification of CERFA Parcels and CERFA Parcels with Qualifiers. As a result, concurrence has been sought from the regulatory agencies on these two categories of parcels. This CERFA Report has been reviewed by the U.S. Army Environmental Center (USAEC), Bennett Army National Guard Facility, Region VIII USEPA, and the Colorado State Department of Environmental Quality. Comments from these organizations have been incorporated into this final report. Any unresolved issues from the regulatory agencies are identified.

This report contains maps that summarize the categorization of Bennett Army National Guard Facility on the basis of the above definitions. This Executive Summary should be read only in conjunction with the complete CERFA Report for this installation. The CERFA Report provides the relevant environmental history to substantiate the parcel categorization. This report does not address other property transfer requirements that may be applicable under the National Environmental Policy Act, nor does it address natural resource considerations such as the threat to plant or animal life.

1.0 INTRODUCTION

This Community Environmental Response Facilitation Act (CERFA) Report for Bennett Army National Guard Facility was prepared by The Earth Technology Corporation (TETC) under Contract No. DAAA15-91-0009, Delivery Order 0010, for the U.S. Army Environmental Center (USAEC), Base Closure Division. The purpose and scope of the work are presented in this section. The sources used to conduct the investigations for the CERFA report are identified in Section 2. Background information for the Bennett Army National Guard Facility is provided in Section 3. CERFA investigation results are discussed in Section 4. Finally, Section 5 includes maps that provide Bennett Army National Guard Facility boundaries, land transfers, and delineate the parcels of the facility according to CERFA Parcel identification requirements.

1.1 PURPOSE AND SCOPE

Public Laws 100-526 and 101-510 designated more than 100 Army facilities for closure and realignment. As a result, it became necessary to expedite the environmental investigation and cleanup process prior to the release and reuse of Army Base Realignment and Closure (BRAC) property. The BRAC environmental restoration program was established with the first round of base closures (BRAC 88) and continued with subsequent rounds (BRAC 91, BRAC 93, etc.). The BRAC program is similar to the Army's Installation Restoration Program (IRP), but it has been expanded to include such categories of contamination as asbestos, radon, polychlorinated biphenyls (PCBs), and others that are not normally addressed under the IRP program.

The first step in the BRAC environmental restoration program was the preparation of Enhanced Preliminary Assessments (PAs). The term "enhanced" is used to distinguish these assessments from previous IRP PAs: the BRAC PAs are conducted from a property transfer perspective and evaluate substances (e.g., asbestos, radon, PCBs) that are not included in the previous PAs. The Enhanced PAs include reviews of existing installation documents, regulatory records, and aerial photographs; a site visit and visual inspection; and employee interviews. Enhanced PAs were conducted for BRAC 88 and BRAC 91 installations and are currently underway at BRAC 93 installations. An Enhanced PA was prepared for Bennett Army National Guard Facility in January 1990 by Roy F. Weston, Inc., under the direction of USAEC (formerly the U.S. Army Toxic and Hazardous Material Agency [USATHAMA]).

In October 1992, Public Law 102-426, CERFA, amended Section 120(h) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and established new requirements for contamination assessment and regulatory agency notification/concurrence for Federal facility closures. CERFA requires the Federal Government to identify property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed before ending activities on real property owned. The government's assessment of a facility as uncontaminated must be concurred with by the appropriate regulatory agencies (U.S. Environmental Protection Agency on National Priority List bases and the State on non-National Priority List bases). These requirements retroactively affect the Army BRAC 88 and BRAC 91 environmental restoration activities and are being implemented at BRAC 93 sites concurrently

with their Enhanced PAs. The primary objective of the CERFA is that Federal agencies expeditiously identify real property that can be rapidly reused and redeveloped. CERFA does not mandate that the Army transfer real property so identified.

TETC was awarded the task to identify real property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed at 12 BRAC 88 sites. This report presents the findings of this CERFA response for Bennett Army National Guard Facility, Bennett, Colorado.

1.2 Definition of Terms

The following definitions are used to categorize and label parcels identified on the installation:

- CERFA Parcel -- A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. CERFA parcels include areas where PCB containing equipment is in operation, but there is no evidence of release. CERFA parcels also include any portion of the installation which once contained related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, stored (not in-use) PCB-containing equipment, asbestos contained within building materials, and lead-based paint applied to building material surfaces, but which have since been fully remediated or removed.

- CERFA Parcel with Qualifier(s) -- A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. Parcel does however contain related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, radionuclides contained within products being used for their intended purposes, asbestos contained within building materials, lead-based paint applied to building material surfaces, or stored (not in-use) PCB containing equipment.

- CERFA Disqualified Parcel -- A portion of the installation real property for which investigation reveals evidence of a release, disposal, or storage for more than one year of a CERCLA hazardous substance, petroleum, or petroleum derivatives; or a portion of the installation threatened by such a release or disposal. CERFA Disqualified Parcels also include any portion of the installation where PCB, asbestos containing material, lead-based paint residue, or any ordnance has been disposed of, and any locations where chemical ordnance has been stored. Additionally, CERFA Disqualified Parcels include any areas in which CERCLA hazardous substances or petroleum products have been released or disposed of and subsequently fully remediated.

- ★ CERFA Excluded Parcel -- A portion of the installation real property retained by the Department of Defense, and therefore not explicitly investigated for CERFA. CERFA Excluded Parcels also include any portions of the installation which have already been transferred by deed to a party outside the Federal Government, or by transfer assembly to another Federal agency.

The following labels are used in conjunction with the identified parcels:

- ★ P = CERFA Parcel
- ★ Q = CERFA Parcel with Qualifier(s)
- ★ D = CERFA Disqualified Parcel
- ★ E = CERFA-Excluded Parcel

Each parcel has been given a unique number to which the appropriate labels are attached. For example, 4P indicates that the fourth parcel is in the CERFA Parcel category.

The presence of hazards not regulated by CERCLA places a parcel in the CERFA Parcel with Qualifier category. This is indicated by the following labels:

- ★ A = Asbestos
- ★ L = Lead-based Paint
- ★ P = PCB
- ★ R = Radon
- ★ X = Unexploded Ordnance
- ★ RD = Radionuclides

For example, the designation, 5Q-L indicates that the fifth parcel is in the CERFA Parcel with Qualifiers category because of the presence of lead-based paint. Similarly, parcel label 8Q-X/R indicates that the 8th parcel is in the CERFA Parcel with Qualifiers category because of the presence of unexploded ordnance and radon.

The following designations are used to indicate the type of contamination or storage present in a parcel that has been placed in the CERFA Disqualified category:

- ★ PR = Petroleum Release
- ★ PS = Petroleum Storage
- ★ HR = Hazardous Substance Release
- ★ HS = Hazardous Substance Storage

For example, 12D-HR indicates that the twelfth parcel is in the CERFA Disqualified category because of evidence of hazardous substance release.

For all parcels, "(P)" is used to indicate that the presence of a contaminant is possible, but that data are unavailable for verification. For example, 9Q-A(P) indicates that the ninth parcel is in the CERFA Parcel with Qualifiers category because of the possible presence (unverified) of asbestos-containing material. Similarly, parcel label 15D-HR/PS/A(P) indicates that the 15th

parcel is classified as a CERFA Disqualified Parcel on the basis of evidence of a hazardous substance release and petroleum storage. It may also have asbestos-containing material.

1.3 GEOGRAPHICAL AND ENVIRONMENTAL SETTING

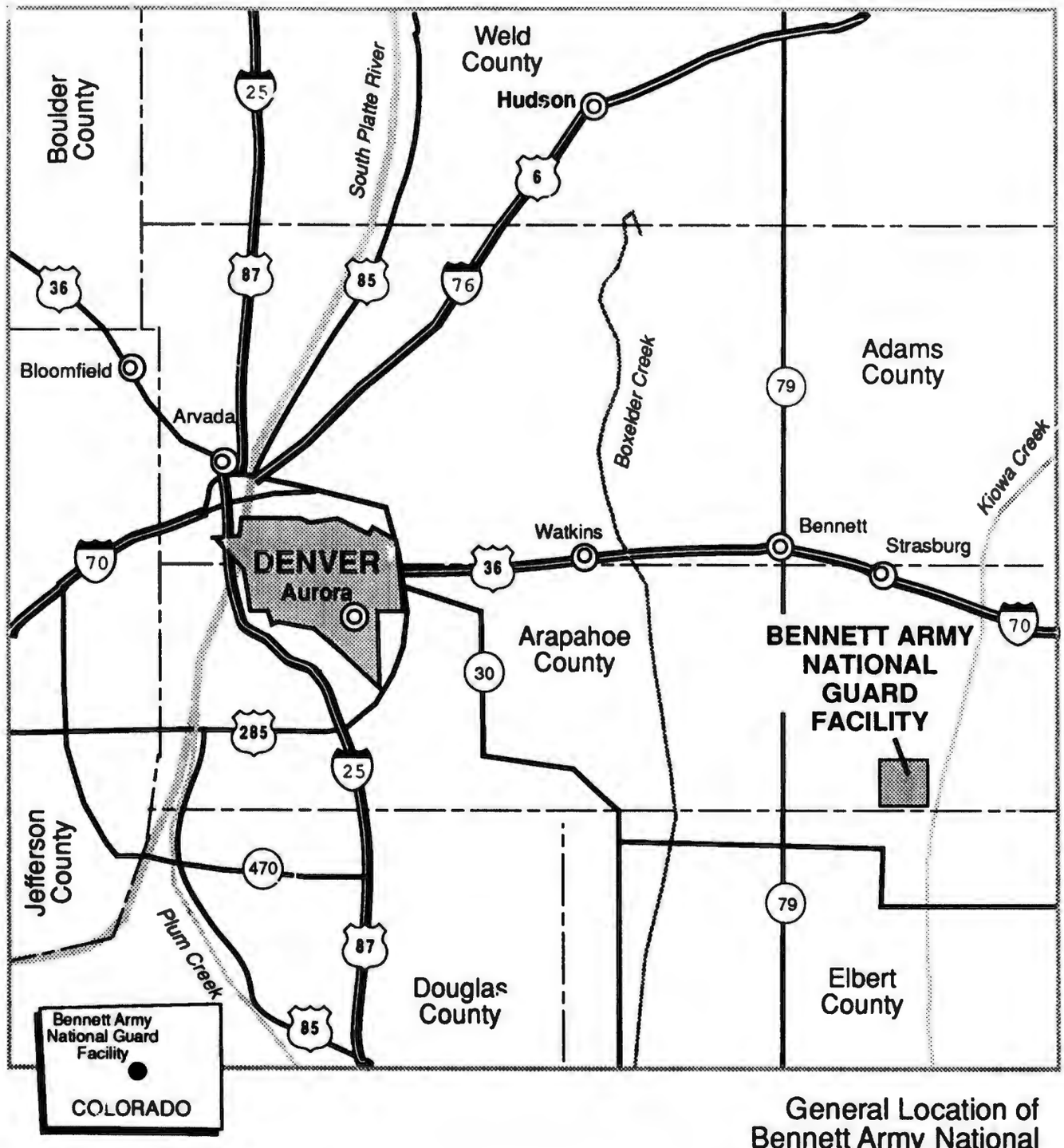
The Bennett Army Nation Guard Facility is located approximately 30 miles southeast of Denver, Colorado, and 15 miles south of Bennett in Arapahoe County, Colorado (Section 29, Township 5S, Range 63W). The facility is located on rolling plains in a rural area. Figure 1-1 presents the location of the installation. Since 1980, scattered housing has been built on surrounding property in the residential subdivision called the Denver East Ranchette.

1.3.1 Physical Setting

The BRAC property that is the subject of this report consists of the Army-owned abandoned Titan I Missile Complex and its surrounding property, which have a combined size of 242 acres. The BRAC property is in the southeast corner of the old Lowry Air Force Base Bombing Range. Most facility components are underground. The underground complex contains three missile launch areas, a powerhouse, control center, an antenna terminal, and utility systems. Approximately 2,100 feet of tunnels connect the components of the complex. The tunnels constructed of 9.5 feet diameter corrugated metal sections, allowed personnel access and carried utility piping. Surficial structures include a perimeter fence, paved access roads, missile silo access holes, ventilation shafts, antenna, silos, and an entry portal. Sewage treatment ponds are located in the southeast corner of the property. Three buildings at one time stood within the facility. The foundations of a Quonset hut and a shelter remain. The third building was a guard house near the road entry to the facility. The average elevation at the facility is 5,900 feet above sea level with the terrain consisting of rolling hills. Vegetation consists of native short prairie grass.

Each silo had a propellant terminal and an equipment terminal located nearby in separate reinforced-concrete structures. The powerhouse contained four diesel generators and hydraulic machinery for domestic services. A 40,000-gallon missile fuel storage tank, two 67,000-gallon diesel tanks, and one 5,000-gallon diesel tank were located underground near the powerhouse. The two 67,000-gallon tanks have been removed. All other tanks are still present.

Three water wells of 1,800 feet depth provided all water for the missile complex. The locations of the wells were verified during the CERFA investigation. A chemical waste clarifier and five concrete-seal chambers probably served as catchments for the chemical and contaminated wastes from the missile complex. The chemical waste clarifier was located near the control center and processed an "unknown waste stream" (Reference 1) from the control center and powerhouse. One 3-foot by 3.5-foot, concrete-seal chamber was located by each missile silo, by the antenna terminal, and in the center of the complex. Fluids were collected in sumps in the underground structures and pumped to the concrete-seal chambers on the ground surface. The nature and quality of the effluent is unknown. Engineering drawings show that marble, dolomite, or limestone chips were used in the systems to treat discharge from the units (Appendix A, Reference 7).



General Location of Bennett Army National Guard Facility, Colorado

Figure 1-1

1.3.2 Surface Water

The facility lies in the Kiowa Creek subdrainage of the South Platte River drainage basin. All surface water runoff drains to the north and east from the facility toward Kiowa Creek. Kiowa Creek is an intermittent tributary of the South Platte River located approximately 0.5 miles east of the facility. There are no permanent surface water bodies present within the facility boundaries; only normally dry arroyos exist. The Federal Emergency Management Agency (1989) has classified the facility as Zone X, which signifies that it lies outside of the 500-year flood plain.

1.3.3 Geology and Soils

The surficial geology on Bennett Army National Guard Facility is classified in the soil survey for Arapahoe County, Colorado, as Colby silt loam with 1 to 5 percent slopes. The Colby series consists of deep, well-drained, gently sloping to steep soils that occur on ridgetops and on a few short steep slopes in the eastern three-fourths of the county.

In a typical profile occurring in an undisturbed State, the surface layer is a light brownish-gray limy silt loam about 5 inches thick. The next layer, about 7 inches thick, is pale-brown silt loam that contains much lime and is easily penetrated by roots and water. The underlying material is very pale brown and pale brown limy silt loam to a depth of 60 inches. The soils present at the Bennett facility were extensively disturbed during construction of the Titan complex. While the basic characteristics of the soils remain intact, the structure of the soil has been destroyed.

The facility is situated on a broad plateau capped with alluvial materials of the Pleistocene Age. Bedrock material beneath the Bennett Army National Guard Facility has been identified as the Denver Formation. The Denver Formation is from the Paleocene Age and consists primarily of fine-grained sandstone, shale, and lignite facies. The composition of alluvial and bedrock materials is discussed further below.

Alluvial materials overlie bedrock in the vicinity of the Bennett Army National Guard Facility. These are broken down in three main groups, all of the Pleistocene Age. The Louviers, Slocum, and Broadway Alluvium groups are present on and near the facility.

The Louviers Alluvium consists of grayish-brown to yellow-brown clayey silt and coarse-to-cobbly clayey sands with gravel. The soil is well developed near the top of the ground surface and exhibits graded bedding with clay and silt layers.

The Slocum Alluvium consists of yellowish-brown to grayish-brown well stratified clayey sands containing lenses of silt, pebbles and cobbles in sediment and terrace deposits. The Broadway Alluvium consists of grayish-brown to moderate yellowish-brown, fine-to-coarse-grained, well-sorted stratified sand and finer-grained, silty humic sand. Well-developed soils are locally present in undisturbed areas on terraces above stream valleys.

Valley Fill Alluvium, of the Holocene Age, is localized in stream beds and in terrace walls above stream beds. Locally, the Piney Creek Alluvium consists of light yellowish-gray to dark

gray unconsolidated silt, sand, and coarse pebbly to cobbly gravel, containing interbedded dark brown clayey and silty lenses. This particular deposit is most noted in and above Kiowa Creek located just to the east of the facility.

Bedrock depth directly beneath the Bennett Army National Guard Facility is approximately 18 feet. A lithologic log of the water well located within the Bennett Army National Guard Facility shows the well was drilled to a total depth of 1,804 feet. Sandstone was encountered at 18 feet below ground surface. Below the sandstone, several claystone layers were identified as well as a 5 foot coal bed from 68 feet to 73 feet.

1.3.4 Hydrogeology

Groundwater in this region has multiple uses. Within a 2-mile radius of Bennett Army National Guard Facility there are approximately 75 wells. One-quarter of these wells are used as domestic water sources; the remainder are used for irrigation and livestock. The nearest active well is located approximately one-quarter mile from the facility. Active well depths range from 28 feet to 630 feet below ground surface and water levels in these wells range from 7 feet to 264 feet below ground surface. Wells throughout this range of depths are used to supply drinking water. The four major bedrock aquifers that occur in the basin are the Laramie-Fox Hills (deepest), the Arapahoe, the Denver, and the Dawson (uppermost).

The Denver Aquifer underlies 3,200 square miles in east-central Colorado and is the primary water source for Western Arapahoe County. Geologically, the Denver Formation sandstone and the Dawson Arkose (Arkosic sandstone) form the saturated sections of the Denver Aquifer. The water-bearing layers of sandstone and siltstone occur in poorly defined, irregular beds that are dispersed within relatively thick sequences of claystone and shale. The sandstone and siltstone are moderately consolidated and more coarse-grained than the claystone and shale. This allows for a better flow rate compared to the claystone and shale.

Near the Bennett Army National Guard Facility, the aquifer is less defined and more irregular, and, in most cases, only partially saturated. In the margin areas of the Denver Aquifer, the groundwater level is below the top of the Denver Formation. It appears near the facility as a partially saturated alluvial aquifer.

According to the well history of a water well drilled at the site, the depth to the Denver Aquifer at the Bennett facility can be determined to be 420 feet deep. Away from the facility, partially saturated alluvial aquifers occur above the Denver Formation.

Perched water zones are found in this region. The depth of the shallow aquifer in the region ranges from 7 feet in the southeast portion of Section 32 T55, R63W (immediately south of Bennett Army National Guard Facility) to 60 feet in the southwestern portion of the same section. Groundwater flow in the vicinity of the Bennett Army National Guard Facility was determined to be north-northwesterly toward the Bennett and Strasburg communities.

2.0 SCOPE OF INVESTIGATION

The scope of this CERFA investigation followed the protocol established in Public Law 102-426 supplemented by Department of Defense Policy on the Implementation of CERFA dated May 19, 1993. This section describes the sources that were used during the CERFA investigation conducted for Bennett Army National Guard Facility. Relevant information available from previous environmental studies are presented. Findings from Federal, State, and local government regulatory records, installation documents, aerial photographs, and personnel interviews are addressed. The visual inspection methods used during the site survey are identified.

2.1 EXISTING DOCUMENTS

Existing investigation documents and aerial photographs were reviewed to evaluate pertinent information that could be used as part of the CERFA report. These documents are summarized below and listed in Appendix A, "Reference List for Bennett Army National Guard." Primary source documents containing CERFA criteria information include the Enhanced PA (1990) and Remedial Investigation/Feasibility Study, Draft Technical Plan (1990), which are summarized in Table 2-1.

2.1.1 Titan Missile Base Construction, Lowry Air Force Base (January 1961)

In 1961, the U.S. Army Corps of Engineers Ballistic Missile Construction Office prepared a report to describe and illustrate the construction of the six hardened Titan missile launching complexes at Lowry Air Force Base and their support facilities. This report describes construction features, methods of operation, and construction problems. Numerous facts about the construction are provided in a question and answer section. A set of photographs is provided with the report showing construction of the Titan complex.

2.1.2 Lowry Area History (September 1958-December 1961)

The U.S. Army Corps of Engineers Ballistic Missile Construction Office produced a report of the Lowry Area History from 29 September 1958 to 16 December 1961. This report describes the construction of the Titan Intercontinental Ballistic Missile (ICBM) Complexes. Details are provided with regard to construction, engineering, materials, equipment, contracts, and costs. The report provides photographs of the Titan Complex construction.

2.1.3 The 451st Strategic Missile Wing and the Titan Launch Complexes (October 1961)

In 1961, the Directorate of Information of the 451st Strategic Missile Wing at Lowry Air Force Base prepared a pictorial and narrative review of the record of growth and construction progress of the Titan I facilities. This report provides a historical synopsis of the events leading up to construction as well as details of the construction.

TABLE 2-1
SUMMARY OF ENHANCED PA AND DRAFT TECHNICAL PLAN, BENNETT ARMY NATIONAL GUARD FACILITY, COLORADO

CERFA Label	Enhanced Preliminary Assessment (1990)	Draft Technical Plan/Remedial Investigation/Feasibility Study (1990)
Asbestos	An asbestos survey was recommended since loose insulation was reported as common.	Asbestos was noted in the powerhouse; the potential for asbestos-containing material to exist in most of the underground complex was noted. Limited asbestos samples were taken and asbestos content was confirmed in these samples.
Lead-based paint	Not within scope of the investigation.	Chipped paint was noted in underground complex; possible lead-based paint was noted in the video.
Polychlorinated biphenyls	Report notes that all underground transformers were removed.	Polychlorinated biphenyl storage was not within scope of the investigation (see Hazardous Release/ Disposal below).
Radon	Radon was not within scope of the investigation.	Radon was not within the scope of the investigation.
Unexploded ordnance	Unexploded ordnance was not considered a problem based on 1963 unexploded ordnance clearance; however, further records searches were recommended.	Unexploded ordnance as not within scope of the investigation.
Radionuclides	Radionuclides were not within scope of the investigation.	Radionuclides were not within scope of the investigation.
Petroleum release/disposal	A diesel odor was noted from a manhole.	No additional petroleum releases were identified.
Petroleum storage	Several tanks were identified (3 diesel tanks and one RP-1 missile fuel tank).	Two additional tanks were identified (1 labelled "UA" and 1 containing ethylene glycol).
Hazardous substance release/disposal	Leaks from two pole-mounted transformers were identified. Potential releases from 5 seal chambers, the chemical waste clarifier, and the sewage stabilization ponds/trench were identified. Several surface disturbances were identified as Potential waste Sites from the 1990 installation assessment for the aboveground complex (mounded material, standing liquid, stains, trenches, an impoundment, and a fill area). Standing water was identified in the underground control center, powerhouse, and launch areas; the quality and source of standing water is unknown. Sampling was recommended for all possible releases. One sulfuric acid tank had a hole in it.	Some dripping orange liquid was noted in Equipment Terminal 1.
Hazardous substance storage	Sulfuric acid tanks were identified in each of 3 propellant terminals.	An additional sulfuric acid tank was identified in the powerhouse. Two additional tanks (one labelled "acid" and one labelled "danger") were identified in the powerhouse.

2.1.4 Chronology, 451st Strategic Missile Wing (September 1958-June 1962)

This brief report provides a chronology of events for the period of 25 September 1958 to 30 June 1962. It covers the milestones recorded by the 451st Strategic Missile Wing from its activation.

2.1.5 Support Plan for Phase-out and Disposition of Titan I Operational Systems at Lowry Air Force Base (March 1965)

This plan was prepared in 1965 by Headquarters, Lowry Technical Training Centers, Lowry Air Force Base. The objective of the plan was to insure an effective, orderly phase-out, attrition/utilization, and disposition of Titan I operational systems, and to permit retention of missile sites in preservation status for an indefinite period.

2.1.6 Enhanced PA Report (January 1990)

An Enhanced PA was prepared by Weston for USATHAMA in 1990. Information contained in the Enhanced PA was obtained through visual inspection of the facility, review of available information from current property owners, review of related regulatory agency files at the local, State, and Federal levels, and interviews with available current and former personnel associated with the facility. The following environmentally significant operations were identified:

- ★ Sewage Stabilization Ponds and Runoff Trench
- ★ Two Pole-Mounted Transformers
- ★ Chemical Waste Clarifier
- ★ Seal Chambers
- ★ Ordnance
- ★ Potential Waste Sites (surface disturbances including mounded material, ground stains, containers, trenches, tanks, standing liquid, and pits); these locations were identified in the Installation Assessment (1990); (see Section 2.1.6 above)
- ★ Control Center
- ★ Power House Area
- ★ Launch Areas.

Further action was recommended for all environmental significant operations. For all environmental significant operations (except seal chambers, ordnance, and asbestos), intrusive sampling was recommended. Additional records searches were recommended for the seal chambers and ordnance. An asbestos survey was also recommended. Confined space inspections were recommended in addition to sampling for the Control Center, the Power House Area, and the Launch Areas.

2.1.7 Installation Assessment, Army Base Closure Program (April 1990)

In 1990, USEPA conducted an analysis of historical aerial photography of Bennett Army National Guard Facility. The analysis focused on locating and identifying any potential contamination sources within study area using photographs from 1937 to 1985.

Features evident throughout the analysis include permanent installation surface features: three missile silos, probable power/control domes (in photos from 1972 and later), probable antenna enclosures, access holes, two impoundments, a structure, and the fence. Other features found in the study area include pits, a possible fill area, disturbed and graded areas, ground scars, an impoundment, unidentified mounded material, standing liquid, numerous possible stains, possible tanks, a pipeline, buildings and structures, cleared areas, and vehicles.

2.1.8 Environmental Assessment and Finding of No Significant Impact, Closure of Bennett Army National Guard Facility (May 1990)

In August 1990, the Omaha District, Corps of Engineers issued a Finding of No Significant Impact for the potential impacts of Bennett Army National Guard Facility closure. The Environmental Assessment concluded that closure would result in no significant adverse impact on existing resources.

2.1.9 Remedial Investigation/Feasibility Study: Draft Technical Plan (October 1990)

In 1990, the draft plans for the Remedial Investigation/Feasibility Study were prepared by R.L. Stoller and Associates, Inc. for USATHAMA for the Bennett Army National Guard Facility. The plans have not been issued as final, and the Remedial Investigation has not been initiated.

Sampling rationale and plans are provided for the following sites:

Aboveground Complex:

- ★ Sewage Treatment Ponds
- ★ Waste Discharge Locations (to include the five seal chambers' discharge ditches and the chemical waste clarifier discharge ditch)
- ★ Two Pole-Mounted Transformers
- ★ Possible Spills from Miscellaneous Surface Disturbances (to include possible mounded material, ground stains, containers, trenches, tanks, standing liquid, and pits)

Underground Complex:

- ★ Fuel Tanks (two removed 67,000-gallon diesel tanks, one remaining 5,000-gallon diesel tank, and one remaining 40,000-gallon RP-1 propellant tank)
- ★ Standing water in each Launch Complex (each includes missile silo, propellant terminal, and equipment terminal)
- ★ Presence of asbestos-containing material
- ★ Sampling of contents of the two tanks that are part of the demineralization system in the Powerhouse, the RP-1 propellant tank, an unidentified tank in the powerhouse air-filtration facility, and the 5000-gallon diesel tank
- ★ Standing water in the antenna silos, the tunnel junction rooms, and the powerhouse.

In preparation of the Draft Technical Plans an underground visual inspection was conducted in Level B protective equipment. A video camera was used to document the visit. Detailed visual inspection notes are provided in an appendices to the Draft Technical Plans.

2.1.10 Preliminary Assessment, Missile Silo Sites, Arapahoe County, Colorado (September 1991)

In September 1991, the Colorado Department of Health conducted an assessment for the USEPA. The report covered all of the Lowry Bombing Range Missile Silo Sites, including the Bennett Army National Guard Facility. Much of the discussion is expected from the Enhanced PA Report, Bennett Army National Guard Facility prepared by Weston.

2.2 FEDERAL, STATE, AND LOCAL GOVERNMENT REGULATORY RECORDS

Information regarding permit and compliance status, enforcement actions, and the hazardous waste generator status of Bennett Army National Guard Facility was obtained through on-site and telephone interviews, an electronic data base search, and record reviews at various Federal, State, and local regulatory agencies.

Record reviews and interviews were conducted at the Colorado Department of Health in Denver, Colorado and the U.S. Environmental Protection Agency Region VIII. Federal and Army records made available by AEC and Bennett Army National Guard Facility were also reviewed.

An electronic data base search of Federal and State records resulted in a Federal/State Data Report and Map containing information from the following data bases:

- ★ National Priority List
- ★ Comprehensive Environmental Response Compensation, and Liability Information System
- ★ Toxic Release Inventory
- ★ Resource Conservation and Recovery Information System Treatment and Storage Facility
- ★ Resource Conservation and Recovery Information System Large Quantity Generators
- ★ Resource Conservation and Recovery Information System Small Quantity Generators
- ★ Civil Enforcement Docket
- ★ Emergency Response Notifications System
- ★ Facility Index System
- ★ Nuclear Facilities
- ★ Colorado Underground Storage Tanks
- ★ Colorado Leaking Underground Storage Tanks
- ★ Solid Waste Facilities Report
- ★ Open Dumps.

The search encompassed the properties within a 1-mile radius from the center of the installation. A copy of the data base search results are included in Appendix B. A summary of relevant regulatory information obtained during the record review process is presented below.

2.2.1 Permits and Permit Applications

Bennett Army National Guard Facility records indicate that the facility has never held any permits from regulatory agencies to conduct operations. The facility does not currently utilize or store hazardous materials or generate any hazardous waste.

2.2.2 Inspection Reports and Enforcement Actions

There were no documented inspections by regulatory agencies related to the Bennett Army National Guard Facility while the facility was operational. Representatives from the USAEC have kept USEPA Region VIII informed of all planned remediation activities at the site. In October 1993, Region VIII requested that USAEC initiate a sampling program. There were no Notices of Violation or compliance orders on record at the State or Federal agencies for Bennett Army National Guard Facility related to hazardous substance/waste storage handling.

2.3 INTERVIEWS

TETC conducted a site visit at Bennett Army National Guard Facility on October 5, 1993, to collect information and interview individuals associated with the installation. TETC was represented by Barbara Young.

Individuals interviewed at the installation included USAEC representative, Mr. Ken Quirk, and a State of Colorado, Department of Military Affairs Representative, Ms. Lynn Kimble. At the time of the site visit, there were no personnel employed at the installation. In addition, Barbara Young of the TETC visited regulatory agencies in Colorado, to obtain information not available at the installation. A complete list of the agencies visited or contacted and interviewees is provided in Table 2-2.

2.4 VISUAL INSPECTIONS

During the site visit, visual inspections were conducted throughout the facility and at adjacent properties. The purpose was to confirm findings reported in previous studies and information collected through interviews, as well as to identify new areas of concern. The visual inspection consisted of automobile drive-through and walk-through surveys of areas in which CERCLA-regulated and non-regulated substances may be stored, released, or disposed. During the visual

TABLE 2-2
LIST OF PERSONNEL INTERVIEWED,
BENNETT ARMY NATIONAL GUARD FACILITY, COLORADO

Reference	Name/Phone Number	Location	Dates of Employment	Job Position
a	Lynn Kimble (303) 397-3273	Colorado Air National Guard		State Environmental Specialist
b	Julia Rodriquez (303) 692-3312	Colorado Department of Health - Hazardous Materials	Interviewed declined to provide information.	File Clerk
c	Charles Sanchez (303) 294-7048	U.S. Environmental Protection Agency Region VIII Superfund Technical Section	Interviewed declined to provide information.	Environmental Protection Agency Point of Contact
d	Ken Quirk (410) 671-1616	U.S. Army Environmental Center	1991-present	Task Manager, Bennett
e	Carmen Ross (303) 692-3597	Colorado Department of Health - Water	Interviewed declined to provide information.	File Clerk
f	Fred Epler (303) 366-2286	Private Citizen	1982-present	Volunteer; Local Historian
g	Debra Griffin (303) 294-1382	U.S. Environmental Protection Agency Region VIII Water Division	Interviewed declined to provide information.	

inspection, contamination sources were noted and leaks, spills, and other evidence of releases were observed and quantified; no samples were collected. The underground portion of the facility which had been sealed with concrete slabs to minimize trespassing, was not inspected during this site visit.

2.4.1 Inspection of Bennett Army National Guard Facility

Evidence was gathered regarding current or past contamination with the following substances:

Asbestos-containing material: An asbestos survey was not conducted at the facility. Presence of underground asbestos-containing material was determined from previous reports and video tape. Limited sampling for asbestos-containing material was performed in preparation of the Remedial Investigation/Feasibility Study Draft Technical Plan; results tested positive for asbestos-containing material.

Lead-based paint: Lead-based paint was assumed to be present in those facilities which were constructed prior to 1978.

Polychlorinated biphenyls: Presence of PCBs has not been documented. There are no in-use transformers on the site.

Radon: A radon survey has never been conducted at the facility. No mention of radon was noted in any of the documents.

Unexploded ordnance: A June 1963 Certificate of Clearance states that Bennett Army National Guard Facility grounds have been thoroughly searched and are cleared of all explosives ordnance possible to detect.

Radionuclides: Installation personnel were interviewed and installation files searched to obtain data on radioactive material storage and use. In addition, the U.S. Army Environmental Hygiene Agency Health Physics Division provided the contractor with information obtained from installation files and U.S. Army Environmental Hygiene Agency archival report files. This information included Nuclear Regulatory Commission licenses and Department of the Army Radioactive Material Authorizations, and U.S. Army Environmental Hygiene Agency reports on radioactive material decommissioning.

Petroleum release or disposal: Areas of past petroleum releases identified in the records search were visually inspected where possible. Any new evidence of release was documented (i.e., stains, stressed vegetation, etc.).

Petroleum storage: Information on petroleum storage tanks and/or drums was initially gathered from the records search. Where possible (i.e., for the aboveground complex), this information was verified during the site visit. Any additional evidence of petroleum storage facilities was noted during the site visit (i.e., cut fuel lines, vent pipes, fill pipes, etc.).

Hazardous substance release or disposal: Areas of past hazardous releases that were identified in the records search were visually inspected if possible. Evidence of discoloration or spills was noted. Areas of potential past release were inspected from the ground surface (i.e., the chemical waste clarifier, the seal chambers).

Hazardous substance storage: Information on past hazardous substance storage was initially gathered from the records search. Where possible (i.e., for the aboveground complex), this information was verified during the site visit. Any additional evidence of past or present hazardous substance storage was noted during the site visit.

2.4.2 Inspection of the Adjacent Property

A visual inspection of the adjacent property was conducted. Prior to the site visit, a data base search was performed for the area adjacent to Bennett Army National Guard Facility within a 1-mile radius to identify small and large quantity waste generators, underground storage tanks, and leaking underground storage tanks. Both Federal and State data bases were searched (see part 2.2 of this report). Information obtained from the search was verified through visual inspections. Possible areas of environmental concern were visually inspected to determine their potential for contamination.

2.5 TITLE DOCUMENTS

TETC conducted a review of tract maps and transfer documents to identify the prior property owners of the Bennett Army National Guard Facility installation at the time of its transfer to the Army. The purpose of this review was to collect additional information concerning the property's prior use and environmental condition at the time of its transfer to the Army. Based on this review, no additional information was collected. Previous ownership and the dates of transfer to the Army are indicated on Figure 5-2.

2.6 NEWSPAPER ARTICLES AND MEDICAL RECORDS

A search of Bennett Army National Guard Facility, USEPA, and State records revealed one relevant article, publishing in the *Denver Post* on November 27, 1968. The article describes the closing of the missile silo doors. The doors had been left open by a salvage contractor who removed the hydraulic equipment used to open and close the doors. Reportedly, the doors had been left open for about 3 years. This article is relevant because the open doors may partially account for the accumulation of standing water in the underground complex.

No medical records were found during the file search.

3.0 PROPERTY BACKGROUND INFORMATION

This section presents an overview of past and current operations at Bennett Army National Guard Facility and a discussion of environmental changes associated with the facility. It addresses activities relevant to waste management practices and significant environmental incidents that occurred since the Enhanced PA was conducted.

3.1 GENERAL BACKGROUND

On 18 November 1940, the city and county of Denver donated land to the Department of War to establish an area suitable for an aerial gunnery and bombing range. This area was known as the Lowry Air Force Bombing Range. Bombing practice on the Lowry Air Force Bombing Range was discontinued in 1958 in part to permit construction of four separate launch complexes for the Titan ICBM. One of these launch complexes in the southeastern corner of the former Lowry Air Force Bombing Range is the Bennett Army National Guard Facility, initially known as Lowry Air Force Base Titan Missile Site 1, Complex 2A by its civilian designation or 5A by its military designation.

Construction of the complex began in September 1958 and completed in June 1961. The facility was built of heavily reinforced concrete and was buried underground. This construction provided the facility with the ability to withstand the high explosive pressures that would be experienced during a "near-miss" nuclear detonation.

In May 1963, lands comprising the Bennett Army National Guard Facility were cleared of all explosive ordnance and ordnance residue which was reasonably possible to detect. The Bennett Army National Guard Facility was closed and the missiles removed in May 1965. In July 1971, the General Services Administration assumed responsibility for the facility. The equipment in the complex was offered for bid on salvage rights and the contract was awarded to Desert Salvage, Inc. Before the salvage operation could be completed, Desert Salvage, Inc. entered bankruptcy and the project was closed. Much of the salvageable equipment remained. Ownership of the property was transferred to the Army in January 1978.

Since 1975, the Colorado Army National Guard has used the property for unit training including helicopter drop training and routine field exercises. The latest lease between the Department of Army and the State of Colorado was signed on November 15, 1982, and commenced on January 1, 1983. It grants use of the property for 25 years. Weapons training has not been allowed, and no helicopter maintenance or refueling activities have occurred at the site. Colorado Army National Guard was authorized to use only the surface of the property; no official activities were allowed in the underground complex.

There is evidence that since 1983 vandals have entered the underground complex. In March 1987, a compliance inspection of the property by the Corps of Engineers revealed that:

"Cover to the entrance port on the main silo was pried open and the silo entered by unknown persons. Inspection of the main silo revealed drawings (satanic words and symbols) on the walls and trash deposited at the bottom of the silo (cans, bottles, and paper containers). It appears that a cult . . . are using the silo . . . The open shaft next to the stairs represents a dangerous hazard."

"The area surrounding the silos are littered with trash (cans, bottles, broken glass and waste paper products)."

"The adjacent property owners . . . that groups of people came out to the site every weekend and at other times during the week to party. The trespassers are rowdy and sometimes destroy private property."

Response units from Colorado Army National Guard searched accessible sections of the Titan Complex and subsequently blocked all entry ways.

3.1.1 Past Activities

Past activities in the underground complex can be summarized by three operational subgroups associated with three building areas: Powerhouse, Control Center, and Launch Areas. Also included are the past waste disposal and training activities.

Powerhouse: The powerhouse provided electric power, heat, air conditioning, and water for the facility. This dome-shaped structure, with walls from 12 inches to 30 inches thick, is 120 feet in diameter and 46 feet high. To strengthen the concrete structure, over 190 miles of prestressed wire was wrapped around the base of the powerhouse.

Four large diesel generators, each capable of producing approximately 1,000 kilowatts of electric power, were located on the first level. The powerhouse had two large air conditioning units, each with a 250-ton capacity to provide the necessary air to cool these generators. Three supplemental ice banks were installed on the first floor as a backup for this equipment, with each bank holding 30,000 pounds of ice. The resulting cool air was used to reduce the temperature within the powerhouse and in the guidance equipment in the launch control center. Heat produced by the generators was used to provide hot water throughout the complex and to heat various facilities. Also included on this first level were the water filtration equipment and water and fuel pumps.

The domestic water facilities consisted of chlorinators, tanks, and pumps. Located beneath the powerhouse are two wells, each about 1,800 feet deep. These wells provided water for the entire complex.

Adjacent to the powerhouse were a number of storage tanks. These included two diesel fuel tanks, each with a capacity of 67,000 gallons for operating the generators, water storage tanks with a total capacity of 60,000 gallons, and one fuel tank holding 40,000 gallons of RP-1 missile fuel. RP-1 is a kerosene-alcohol based propellant. There was also one 5,000-gallon diesel fuel tank, called the "start tank," that provided the fuel to start the generators.

Control Center: The launch control center was the command center of the entire missile complex. It is a two level, dome-shaped structure, slightly smaller than the powerhouse. Its inside dimensions are 105 feet in diameter at the first floor level and 85 feet at the upper level. The lower level housed the living and working areas and was divided into ready rooms, dining hall and kitchen, air conditioning and electrical equipment rooms, and an equipment maintenance ready room. The top level contained various consoles, time display and status boards, and electronic and communications equipment. This equipment controlled and monitored the operations within the complex and was capable of giving an immediate visual status of the weapon system's State of readiness.

Associated with the control center, yet separated from the rest of the complex, are two antenna silos 27 feet in diameter and 71 feet high. The equipment in each silo was identical, with one used as backup for the other in the event one was destroyed or rendered inoperative.

Launch Areas: The Titan Complex was equipped with three identical launch areas. Each launch area can be divided into three subareas: the propellant terminal, the equipment terminal, and the missile silo.

The propellant terminal is a two-level, silo-type structure 47 feet high and 40 feet in diameter. Liquid nitrogen and helium were stored here to provide the pressure to load the fuel and liquid oxygen aboard the missiles. Also located within this terminal were the liquid oxygen and helium subcoolers and the liquid oxygen sump. The liquid oxygen subcooler was a large tank through which the liquid oxygen passed and was cooled by the colder liquid nitrogen prior to being loaded into the missiles. The purpose of the helium cooler was to cool the helium, which was then pumped into the liquid oxygen tanks to provide the necessary pressure to prevent fuel sloshing in the tanks.

The first level of the propellant terminal contained the liquid oxygen sump pumps and a drainage facility for the liquid oxygen overflow. In addition, there were nine clusters of nitrogen and helium tanks that extended upwards into the second level and one 3,500-gallon tank that contained sulfuric acid. No other major equipment was present on the second level.

Adjacent to the propellant terminal was a 26,000-gallon liquid oxygen storage tank. During the salvage operations, all liquid oxygen storage tanks and the other miscellaneous tanks found on the first floor of the three propellant terminals were removed. All that remains are the three tanks that contained sulfuric acid.

Like the propellant terminal, the equipment terminal is a silo-shaped structure located next to the missile silo. This structure stored much of the equipment used to prepare and launch the missiles. It consists of four levels and is 62 feet high and 43 feet in diameter. The first was called the powerpack room and contained the launcher logic racks, which provided automatic checkout of the launcher equipment and the hydraulic equipment used to raise and lower the missile launch platform. The second level contained the air conditioning unit which maintained proper temperature and humidity in the silo. The third level distributed electric power for the ground operating equipment, missile electrical system, ground hydraulic power unit, and the missile air conditioning system. Also located on this third level were the fuel loading and unloading equipment. On the fourth level, the power produced by the four diesel generators in

the powerhouse was stepped down from 2,400 volts to 480 volts. The electrical transformers were reportedly removed during the salvage operation.

The missile silo is that portion of the launch complex in which the missile was housed during its prelaunch period. It measures 163 feet from ground level to the base of the foundation and has an inside diameter of 40 feet. The foundation is 8 feet; the walls vary in thickness from 2 feet to 11 feet. On top of the missile silo are two 116-ton doors that were raised and lowered hydraulically.

Since all of the facilities that make up the missile launch complex were spread out underground, a series of personnel and utility tunnels was necessary to permit movement of personnel and to provide access to all parts of the site. These tunnels were built of corrugated steel sections 9.5 feet in diameter. Located above 45 feet underground, they provide almost 2,100 feet of passageways. Another purpose of the tunnels was to provide a passageway for about 3 miles of utility pipes and over 3 million feet of power lines and electrical cables.

Waste Disposal Activities: No onsite waste disposal was reported to have occurred from Colorado Army National Guard activities. The only waste produced since 1975 has been as a result of routine training activities. Any waste generated during these training sessions has been removed and disposed offsite.

During operation of the Titan Complex, sanitary wastewater was discharged into two sewage stabilization ponds located in the southeastern corner of the property. The effluent was conveyed by a drainage ditch that discharged to an intermittent stream which led to Kiowa Creek.

A chemical waste clarifier was installed to handle an unknown waste stream from the complex. The effluent from the clarifier was conveyed by a trench that drained to an intermittent stream. This stream ultimately discharged into Kiowa Creek.

The solid waste disposal practices at this facility during operation of the Titan Complex and the subsequent salvage operation are not known. In aerial photograph analysis of the facility, a possible fill area and pits were detected; therefore, it is possible that onsite solid waste disposal was practiced.

Bombing practice took place from 1940 to 1958 throughout the Lowry Air Force Bombing Range, prior to the building of the missile launch complex. The aboveground portion of the facility is currently being used for routine field training.

3.1.2 Current Activities

The underground Titan Complex has been closed since 1965. The entrances to the Titan Complex have been blocked with concrete slabs, and much of the underground tunnels and rooms have been infiltrated with water. The Colorado Army National Guard uses the surface of the property for tactical aviation training including command post, field training, and airborne exercises. Recent activity has been infrequent.

3.2 Environmental Changes at Bennett Army National Guard Facility

There have been no environmental changes at the Bennett Army National Guard Facility since the Enhance PA was prepared.

4.0 INVESTIGATION RESULTS

This section describes the results of the CERFA investigation. The first part describes all areas within the BRAC property that have been addressed in reports prior to the CERFA investigation, and the second part describes all areas within the BRAC property that have not been addressed in previous reports. The third part identifies adjacent properties that may be potential sources of contamination. The fourth part describes areas containing items not regulated by CERCLA, and the fifth part describes areas where remediation has occurred. Part six describes real property within the BRAC property that will be retained by the Army.

4.1 PREVIOUSLY IDENTIFIED AREAS REQUIRING ENVIRONMENTAL EVALUATIONS

This part describes both existing areas requiring environmental evaluations and those that have undergone change.

4.1.1 Existing Areas Requiring Environmental Evaluations

Table 4-1 lists all areas within the BRAC property addressed prior to the CERFA investigation. These areas requiring environmental evaluation were identified in the Enhanced PA and the Draft Technical Plans for the Bennett Army National Guard Facility. The Enhanced PA identified sources of contamination (i.e., locations of storage or release of hazardous substances) through document review and a site visit. For the Enhanced PA, the underground facility was not assessed. For the preparation of the Draft Technical Plans, a portion of the underground facility was inspected, and additional areas requiring environmental evaluations were identified. The identified areas requiring environmental evaluations can be divided into two groups: the underground complex and the aboveground complex. Below is a brief description of each areas requiring environmental evaluation. In addition, existing areas requiring environmental evaluations which have undergone change are described.

ABOVEGROUND COMPLEX:

Sewage Stabilization Ponds and Runoff Trench. According to the Enhanced PA, during the operational stage of the Titan Complex, two sewage stabilization ponds were used to receive sanitary wastewater from the facility. The ponds were operated on a semicontinuous basis. A drain line was opened daily and the water level was drawn down 6 to 12 inches. Each pond is clay-lined, approximately 5 feet deep, and has a surface area of 1,000 feet. The ponds were still present, although the area was overgrown and there was no standing liquid present. The wastewater drained through a ditch, east, off the property, and into an offsite arroyo that leads to the Kiowa Creek. No sampling has been conducted. During the CERFA site visit, the ponds were still empty.

TABLE 4-1
PREVIOUSLY IDENTIFIED AREAS REQUIRING ENVIRONMENTAL EVALUATION IN BRAC PROPERTY, BENNETT ARMY NATIONAL GUARD FACILITY, COLORADO

Name	Coordinate Location (x,y) Figure 5-1	Parcel Number	Source of Information	
			Enhanced Preliminary Assessment (1990)	Draft Technical Plans (1990)
ABOVEGROUND				
Sewage Stabilization Ponds and Run-off Trench	13, 7	3D	✓	✓
Transformers	10,10	3D	✓	✓
Chemical Waste Clarifier	9, 10	3D	✓	✓
Seal Chambers	Multiple	3D	✓	✓
Ordnance	Not mapped	Not mapped	✓	
Potential Waste Sites (called Surface Disturbances in Draft Technical Plans)	Multiple	3D, 5D	✓	✓
UNDERGROUND				
Control Center: Pools of Standing Water, Tanks	10, 9	3D	✓	✓
Powerhouse Area: Pools of Standing Water, Tanks	10, 10	3D	✓	✓
Launch Areas: Pools of Standing Water, Tanks	8, 11; 9, 13; 10, 12	3D	✓	✓
Asbestos	Multiple	3D	✓	✓

Transformers. During the Enhanced PA, there were two pole-mounted transformers at the site. Both units were severely damaged and were marked with numerous bullet holes. Presumably, most of the dielectric fluid had escaped. Given the age of the facility, it was presumed that both may have contained PCBs. During the CERFA site visit, the Point of Contact located two transformer platforms on the northern edge of the aboveground complex. These units had been blown down during a storm and are no longer visible.

Chemical Waste Clarifier. A chemical waste clarifier was installed to treat wastes from the underground complex. The materials processed in the clarifier remain unknown. The Enhanced PA identifies solvents, fuels, and metals as possible concerns for the chemical waste clarifier. The effluent was conveyed by a trench to an intermittent stream. There were no visible remnants of the chemical waste clarifier at the time of the Enhanced PA survey. The concrete top of the unit was noted during the CERFA site visit. The draining ditch was also evident.

Seal Chambers. The concrete tops of five, 4 feet by 4 feet seal chambers, were visible at the time of the Enhanced PA site visit. Initially, the function of these units was uncertain. Recent reports (Reference 7) indicate that these units were used to treat and eject wastewater from underground complex into the surrounding soil. Engineering drawings show that marble, dolomite, or limestone chips were used in the systems to track discharge from the seal chambers. There was standing liquid adjacent to each of the seal chambers and drainage channels flowing away from each unit in a 1969 aerial photograph of the facility, reinforcing the likelihood of their use as catchments for wastewater. The nature and quality of the wastewater and effluent is unknown.

Ordnance. The Bennett Army National Guard Facility is located near land that was used for air-to-ground gunnery and precision bombing practice. Live and practice rounds were used. According to the interview of the Point of Contact, the nearest impact area is 1 mile northwest of Bennett Army National Guard Facility. Although the Bennett Army National Guard Facility was located within the former Lowry Air Force Bombing Range, no records exist to indicate that the Bennett Army National Guard Facility was a designated target area. Bombing activities in the 1940s, however, were not well documented. The land immediately surrounding the facility was cleared 6 June 1963 of all unexploded ordnance and ordnance residue and was certified for unrestricted uses. The site of the Bennett Army National Guard Facility was removed from the designated impact areas in 1958.

Few, if any, bombs would have impacted the property because it was separated from the impact areas. Although the documentation has not been found, it is probable that the entire property was swept to clear the area of any unexploded ordnances prior to construction between 1959 and 1961. Given the large amount of excavation work involved during construction of the Titan Complex, it is unlikely that any unexploded ordnance would remain.

Potential Waste Sites. The aerial photograph analysis identified 23 areas where wastes could have been disposed. From 1963 to 1985, mounded material, ground stains, containers, trenches, tanks, a fill area, an impoundment, a pool of standing liquid, and pits were detected at several locations throughout the facility. These locations ranged from areas less than 10 square feet in size to a fill area of almost 100,000 square feet.

The Potential Waste Sites were referred to as "surface disturbances" in the Draft Technical Plan. Information collected from interviews conducted during the CERFA investigation verified that two potential waste sites were not areas requiring environmental evaluations; two areas identified as pits in the Enhanced PA are actually pull boxes for service of utilities.

Past waste disposal practices at the facility are not well documented. None of the potential waste sites in the aerial photograph analysis were evident during the CERFA site visit; therefore, it was not possible to identify the materials disposed, if any, at these locations. Because solid waste disposal practices are not documented, the surface disturbances may represent solid waste disposal locations. Given the lack of information on the types of waste materials generated and the manner of waste disposal at Bennett Army National Guard Facility, the potential contaminants at these locations were not assessed.

UNDERGROUND COMPLEX:

Control Center. The control center housed much of the command equipment needed to operate the ICBM complex. The center is a two-level concrete-domed underground structure 105 feet in diameter. An equipment maintenance room was located on the lower level as were living quarters. Associated with the control center were partially underground, concrete, antennae silos. The technical plan reported that there was no standing water present in this part of the Bennett facility. The control center was strewn with refuse including discarded insulation that could contain asbestos. No other hazardous materials were readily visible in this part of the complex.

Powerhouse Area. The powerhouse produced electric power, heat, air conditioning, and water for the entire Titan Complex. This concrete, underground dome is 46 feet high and 120 feet in diameter and has walls that vary in thickness from 12 inches to 30 inches. During operation, this area housed an extensive array of equipment including tanks, pumps, air compressors, air dryers, and transformers. Two 67,000-gallon diesel tanks have been removed. These two tanks were located in concrete vaults adjacent to the powerhouse. A 5,000-gallon diesel tank is still in place in an adjacent concrete vault. Two 30,000-gallon water tanks and a 40,000-gallon RP-1 tank also are present. Steel fuel lines carried the RP-1 fuel via personnel tunnels to the three launch silos. There was one 300-gallon sulfuric acid tank. Although the sulfuric acid tank was empty, it had a hole in it where the metal tank had been dissolved and the sulfur had crystallized. It is uncertain whether the hole has formed since the tank has been out of service. All tanks are located in separate concrete vaults and are reportedly empty. During the technical plan survey, much of this area was covered with 1 foot to 3 feet of water. A noticeable diesel odor existed in the area of an open manhole, indicating a possible release.

All electrical transformers were reportedly removed during the salvage operation, but much of the equipment apparently remains. The area was filled with refuse, including discarded insulation, which may contain asbestos. Approximately 1 gallon of an oily substance was splattered around the area on equipment surfaces.

Launch Areas. There are three launch areas; each consists of a propellant terminal, an equipment terminal, and a missile silo. The propellant terminals are concrete, underground silos

47 feet high and 40 feet in diameter. Within each propellant terminal are nine clusters of tanks that were used to store helium and nitrogen. These tanks are reportedly still in place, but are empty. Additionally, in each propellant terminal there is a 3,500-gallon sulfuric acid tank. A 26,000-gallon liquid oxygen tank formerly was present in a concrete vault adjacent to each propellant terminal. Only Launch Area 1 was described in detail during the technical plan survey. The areas are scattered with debris, including insulation, which could potentially contain asbestos. The propellant terminals contained water to a depth of 3 feet.

Like the propellant terminals, the equipment terminals are concrete, underground silos. The equipment terminals have four levels and are 62 feet high and 43 feet in diameter. During operation, these areas housed an extensive array of equipment including tanks, pumps, air compressors, air dryers, and transformers. All electrical transformers were removed during the salvage operation. The status of other equipment is uncertain. Each equipment terminal contains an ethylene glycol tank; steel pipe lines carried ethylene glycol from the equipment terminal to the missile silos. The entire lower level of the equipment terminals was submerged in water during the technical plan survey.

The missile silos are concrete, underground structures, 163 feet high and 43 feet in diameter. An armed nuclear missile was kept in each silo from 1961 to 1965. The missiles have been removed. During the technical plan survey, Missile Silos 1 and 3 were filled with standing water.

Standing Water. The Enhanced PA and the Draft Technical Plans indicate that standing water was observed in each of the launch complex structures during the facility inspection. The quality and source of the standing water are unknown; potential contaminants were identified in the Draft Technical Plan to include fuel and propellant products, fuel additives such as lead, solvents, and metals.

Asbestos. During the Draft Technical Plans survey, several samples of insulating material were collected. Laboratory analysis of these samples indicated that the samples contained 50 to 75% total asbestos. The majority of insulating material which appeared to contain asbestos was located in the powerhouse. Asbestos-containing material was probably used for pipe insulation in various portions of the underground facility. Photographs taken during construction of the Titan Complex show asbestos covering being installed for diesel engine exhaust pipes.

4.1.2 Existing Areas Requiring Environmental Evaluations That Have Expanded in Size

The aerial photograph analysis identified pits as features found at Bennett Army National Guard Facility that needed further study. During the site visit and interviews, it was confirmed that these pits were part of the complex infrastructure. Thus, these have been deleted from further investigation.

4.2 ADDITIONAL AREAS IDENTIFIED BY THE CERFA INVESTIGATION

This section describes new environmental concerns identified in preparation of this report.

Aboveground Complex. A Quonset hut was located in the south-central portion of the fenced Bennett Army National Guard Facility; although the Quonset hut has been demolished, the foundation still exists. The foundation has the remains of some cut fuel lines; the Quonset hut was probably heated with No. 2 fuel oil that was probably stored in tanks at the Quonset hut. The tanks have been removed. In addition, there are several stain marks on the surface of the Quonset hut foundation that imply past 55-gallon drum storage.

Underground Complex. A drum storage area was identified in the powerhouse, according to the Lowry Area History. The contents of the drums was not known, and the drum storage area was inactive. An ethylene glycol aboveground tank was identified in Equipment Terminal 1; it was assumed that similar aboveground storage tanks were to be found in Equipment Terminals 2 and 3.

4.3 ADJACENT AND SURROUNDING PROPERTIES

Bennett Army National Guard Facility is bounded on the east by Brick-Center Road and on the south, west, and north largely by farming or ranching operations and a scattering of suburban type houses.

4.3.1 Existing or Potential Pathways of Contamination Migration

The following discussion of migration pathways is summarized from the Enhanced PA report. There are no environmental significant operations on adjacent properties. Thus, contaminant migration from adjacent property onto the Bennett Army National Guard Facility is not considered likely.

Groundwater. Groundwater in the area is used as a domestic water supply and for irrigation and livestock. The depth of the shallow aquifer in the region ranges from 7 feet to 30 feet. Shallow groundwater in this area is found mainly as perched water. The primary source of drinking water in the region is the Denver Aquifer, which is 420 feet deep according to the well history at the site. Given the high water table in the area, it is likely that some of the mobile contaminants (e.g., solvents, fuels, and metals, if present) would eventually reach perched groundwater unless contaminated materials are removed. The rate of percolation is expected to be slow, given net rainfall conditions.

The nearest identified active well is 0.25 miles from the site. There are approximately 75 registered wells within a 2-mile radius, with one-quarter of these serving as the domestic water source. If the groundwater were contaminated, the population affected would depend on the direction of the plume. Site-specific groundwater flow characteristics were not available. The groundwater in the region generally flows to the northeast.

Surface Water. There are no surface water bodies onsite. During periods of high rainfall or snowmelt, water might pond and be available for use by fauna. It is highly unlikely that any contamination will reach the Kiowa Creek, which is an intermittent stream one-half mile from the site. In the past, however, effluent from the sewage stabilization ponds and the chemical waste clarifier was directed through ditches and arroyos toward Kiowa Creek. Contaminants

(if present) from these discharges, may have Kiowa Creek water and sediments. Significant attenuation would be expected, however, due to the distance between the site and the creek.

Soil. Contaminated surface soils, if present, may present a direct contact or ingestion hazard to wildlife. This land is sometimes used for grazing by cattle. Contaminants that are persistent in soil, such as PCBs and metals, would present the greatest exposure hazard among the identified site contaminants. There was no evidence of vegetation stress at the time of the Enhanced PA or the CERFA investigation.

4.3.2 Environmental Concerns From Adjacent and Surrounding Properties

In order to identify potential offsite contamination sources for the Bennett Army National Guard Facility, a records search of Federal and State data bases (see Section 2.2) was conducted. The results of this search are provided in Appendix B. The search indicated the following:

- There are no National Priority List or CERCLA sites within a 1-mile radius
- There have been no reported toxic, hazardous substances, or petroleum releases within a 1-mile radius
- There are no large or small Resource Conservation and Recovery Act (RCRA) waste generators within a 1-mile radius
- There are no RCRA treatment, storage, or disposal facilities within a 1-mile radius.

In addition to the data base search completed for the installation, adjacent property visual site inspections and owner/operator interviews were also conducted. During the site inspection, there was no visible evidence of adjacent property operations that represented a potential contamination migration source. The closest National Priorities Site is the Lowry Superfund site, which is located in the northwest corner of the former Lowry Bombing Range.

4.4 Related Environmental, Hazards, and Safety Issues

A number of environmental hazards not regulated by CERCLA exist on the BRAC property. The following discussion addresses the presence of asbestos-containing material, lead-based paint, PCB storage, radon, unexploded ordnance, and radionuclides.

4.4.1 Asbestos

An asbestos survey has not been conducted for the facility. Asbestos-containing material has been found in the powerhouse. Photographs taken during construction show asbestos covering being installed for diesel engine exhaust pipes. Asbestos-containing material is assumed to be found as insulating material throughout the underground complex.

4.4.2 Lead-based Paint

There has been no lead-based paint survey of the facility. Chipped paint was observed underground during the 1990 site visit. In order to quantify those areas potentially containing lead-based paint, those structures constructed prior to 1978 were considered to contain this

hazardous material. It is therefore assumed that the entire underground facility contains lead-based paint.

4.4.3 Polychlorinated Biphenyls

Two pole-mounted transformers that may have contained PCBs appear to have leaked. These are the only transformers mentioned in the file material. Two transformer platforms were located on the northern portion of the property. They are no longer present because they were destroyed by a storm.

4.4.4 Radon

A radon survey has not been conducted at the facility. Radon may potentially accumulate in underground facilities. Radon would only be of concern if the underground complex were to be occupied in the future.

4.4.5 Unexploded Ordnance

The Bennett Army National Guard Facility is located near land that was used for air-to-ground gunnery and precision bombing practice. Although the Bennett Army National Guard Facility was located within the former Lowry Air Force Bombing Range, no records exist to indicate that the Bennett Army National Guard Facility was a designated target area. The nearest known impact area is located approximately 1 mile northwest of the Bennett Army National Guard Facility. Live and practice rounds were used. The land immediately surrounding the facility was cleared 6 June 1963 of all unexploded ordnance and ordnance residue, "reasonably possible to detect" and was certified for unrestricted uses. The Bennett Army National Guard Facility was well removed from the designated impact areas used in the 1950s; the edge of the nearest impact area is 1 mile. Bombing activities in the 1940s, however, were not well documented.

Few, if any, bombs would have impacted the property because it was separated from the impact areas. Although the documentation has not been found, it is probable that the entire property was swept to clear the area of any unexploded ordnance prior to the construction between 1959 and 1961. Given the large amount of excavation work involved during construction of the Titan Complex, it is unlikely that any unexploded ordnance would remain.

4.4.6 Radionuclides

There are no records indicating that radioactive materials were ever licensed, used, stored, or disposed at the Bennett Army National Guard Facility. Titan Missiles, when on site, were equipped with nuclear warheads. These were removed in approximately 1965.

4.5 REMEDIATION EFFORTS

There have been few remediation efforts conducted at the Bennett Army National Guard Facility. Two 67,000-gallon diesel tanks have been removed from the powerhouse. Two other tanks that contained diesel and RP-1 missile fuel have not been removed. None of the hazardous substance tanks within the walls of the underground complex have been removed. Five other tanks within

the walls of the underground complex containing ethylene glycol and an unknown substance have not been removed.

A Draft Technical Plan has been prepared to conduct a Remedial Investigation/Feasibility Study. To date, no final plan has been generated or implemented.

4.6 CERFA-EXCLUDED PARCELS

CERFA-Excluded parcels consist of those parcels to be retained by the Army or other Department of Defense agency or property that will be transferred to another Federal agency with restrictions by statute. At present, the Army does not have plans to retain any portion of Bennett Army National Guard Facility.

5.0 SITE PARCELIZATION

After reviewing investigation documents, regulatory records, personnel interviews, and visual inspections, TETC identified parcels on the installation as CERFA Parcels, CERFA Parcels with Qualifiers, CERFA Disqualified parcels, or CERFA-Excluded parcels in accordance with the definitions in Section 1.2. The parcels are delineated on a map of the BRAC portion of the installation using a 1-acre square grid for boundary definition. The Army chose a 1-acre grid system to aid in the presentation of data gathered during the CERFA report investigation, and to facilitate use of the document by reuse groups and others. The 1-acre grid provided a consistent method to report and locate environmental or other concerns. In the many cases where the concerns are much smaller than 1-acre, the grid system simplifies the depiction of the concern. Accordingly, the areal extent of many small areas of concern, such as underground storage tank sites, are liberally depicted in the CERFA report. Additionally, the 1-acre grid size was chosen as a generally redevelopable parcel size for either industrial or residential uses. However, the grid does not drive reuse nor restrict it. Reuse decisions should be made irrespective of the grid. The entire 1-acre grid square is colored or shaded to indicate the applicable parcel category on the basis of the history of storage or release for any portion of that square. Parcels are labelled according to a system outlined in Section 1.2 of this report to indicate the applicable parcel category and the contaminating circumstances. Parcel labels are connected to the respective parcel boundaries by a line or are located within the parcel boundaries.

Where CERFA Disqualified parcels and CERFA Parcels with Qualifiers have coincided, the overlapped area has been designated CERFA Disqualified. Labels for any such overlapped parcels also indicate the presence of the qualifying hazards. CERFA-Excluded parcels have been excluded from this investigation of contaminant locations and therefore do not overlap with CERFA Disqualified parcels or CERFA Parcels with Qualifiers. Structures within CERFA Disqualified parcels that contain qualifying safety hazards are designated with the applicable qualifying label, where map scale permits this level of detail.

TETC's investigation and subsequent parcelization of Bennett Army National Guard Facility determined that approximately 212 acres of the facility fall within the CERFA Parcel category. No portions of the facility are categorized as CERFA Parcels with Qualifiers. Thirty-one (31) acres constitute the CERFA Disqualified portion of the installation. The CERFA Parcels are located predominantly in the center of the installation.

In determining the applicable parcel categories for the installation property, TETC observed the following guidelines provided by the USAEC for specific circumstances:

- ★ Buildings constructed prior to 1978 are assumed to contain lead-based paint. A similar assumption is made for asbestos in buildings constructed prior to 1985.

- ★ Storage of petroleum products, petroleum derivatives, and CERCLA-regulated hazardous substances will prevent an area from becoming a CERFA Parcel as

TABLE 5-1. Parcel Descriptions Bennett Army National Guard

PARCEL NUMBER	APPROX. SIZE (ACRES)	COORD (X,Y) ON FIG 5-1	LOCATION	CATEGORY	BASIS	APP. A REF(S)	REMEDIATION OR MITIGATION
1P	53	9,15		CERFA Parcel	No hazardous substances or petroleum products have been stored, released or disposed in this area.		
2P	43	4,10		CERFA Parcel	No hazardous substances or petroleum products have been stored, released or disposed in this area.		
3D-/A/L(P)/PR(P)/PS/HR/HS	30	9,10	Chemical Waste Clarifier	Disqualified, Hazardous Substance Release (P) Qualified, Asbestos (P) Qualified, Lead (P)	1960s -- Release of solvents, fuels, metals associated with seal chamber Asbestos Containing Material Lead-based paint associated with structure built in ~1960	1, 6 6	No longer in use.
		9,9	Control Center	Disqualified, Hazardous Substance Release (P) Qualified, Asbestos (P) Qualified, Lead (P)	Release of fuel, propellant, solvents in standing water associated with Control Center Asbestos Containing Material Lead-based paint associated with structure built in ~1960	1 6	
		8,11	Equipment Terminal 1	Disqualified, Hazardous Substance Release Qualified, Asbestos (P) Qualified, Lead (P) Disqualified, Petroleum Storage	1990 -- Release of orange liquid associated with Missile Silo Asbestos Containing Material Lead-based paint associated with structure built in ~1960 Ethylene Glycol stored in tank within terminal - First used in ~1960	6 6 6	Release occurred inside a tunnel. Tank is no longer used.
		9,13	Equipment Terminal 2	Qualified, Asbestos (P) Qualified, Lead (P) Disqualified, Petroleum Storage (P)	Asbestos Containing Material Lead-based paint associated with structure built in ~1960 Ethylene Glycol stored in tank within terminal - First used in ~1960	6 6	 Tank is inactive.
		10,12	Equipment Terminal 3	Qualified, Asbestos (P) Qualified, Lead (P) Disqualified, Petroleum Storage (P)	Asbestos Containing Material Lead-based paint associated with structure built in ~1960 Ethylene Glycol stored in tank within terminal - First used in ~1960	6 6	 Tank is inactive.
		7,10	Fill Area	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,11	Impoundment 1	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		9,10	Missile Fuel Storage Tank	Disqualified, Petroleum Storage	Kerosene-alcohol fuel (RP-1 Missile Fuel) stored in 40,000 gal Tank - First used in ~1960	1, 20	Tank is empty.
		8,11	Missile Silo 1	Disqualified, Hazardous Substance Release (P)	Release of fuel, propellant, solvents in standing water associated with Missile Silo	1	
		9,13	Missile Silo 2	Disqualified, Hazardous Substance Release (P)	Release of fuel, propellant, solvents in standing water associated with Missile Silo	1	
		10,12	Missile Silo 3	Disqualified, Hazardous Substance Release (P)	Release of fuel, propellant, solvents in standing water associated with Missile Silo	1	
		10,8	Mounded Material 1 Mounded Material 2	Disqualified, Hazardous Substance Release (P) Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance Release of unknown material associated with surface disturbance	1, 3, 6 1, 3, 6	

TABLE 5-1. Parcel Descriptions Bennett Army National Guard

PARCEL NUMBER	APPROX. SIZE (ACRES)	COORD (X,Y) ON FIG 5-1	LOCATION	CATEGORY	BASIS	APP. A REF(S)	REMEDIATION OR MITIGATION
3D-/A/L(P)/PR(P)/PS/HR/HS	30	10,9	Mounded Material 4	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,10	Power House	Disqualified, Petroleum Release (P)	Release of Diesel odor associated with open manhole	1	All diesel tanks are out of service.
				Disqualified, Hazardous Substance Release (P)	Release of fuel, propellant, solvents in standing water associated with Power House	1	
					Release of Sulfuric Acid crystals associated with AST with hole in it	8	No longer in use.
				Qualified, Asbestos	Asbestos Containing Material	6	
				Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
				Disqualified, Petroleum Storage	Diesel stored in 67,000 gal tank within concrete vault -- Used from ~1960 to ~1971	1, 13, 20	Removed during salvage.
					Diesel stored in 67,000 gal tank within concrete vault -- Used from ~1960 to ~1971	1, 13, 20	Removed during salvage.
					Diesel stored in 5,000 gal Tank - First used in ~1960	1, 7	Tank is inactive. Liquids observed in tank.
					Unknown stored in drums - First used in ~1960	13	Drum storage area is inactive.
				Disqualified, Hazardous Substance Storage	Acid stored in ~500 gal Tank - First used in ~1960	6, 7	No longer in use.
					Material labeled "Danger" stored in ~500 gal Tank - First used in ~1960	6, 7	No longer in use.
					Sulfuric Acid stored in ~300 gal Tank - First used in ~1960	6	No longer in use.
					Unknown Material stored in Drums - First used in ~1960	13	No longer in use.
			Power House Air Filtration Facility	Qualified, Asbestos (P)	Asbestos Containing Material	6	
				Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
				Disqualified, Petroleum Storage	UA stored in ~500 gal Tank - First used in ~1960	6	Tank is no longer used and in good condition.
		11,9	Power House Exhaust System	Qualified, Asbestos (P)	Asbestos Containing Material	6	
				Qualified, Asbestos	Asbestos Containing Material	13,14	
				Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
		8,10	Propellant Terminal 1	Qualified, Asbestos (P)	Asbestos Containing Material	6	
				Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
				Disqualified, Hazardous Substance Storage	Sulfuric Acid stored in 3,500 gal tank within terminal - First used in ~1960	1, 7	No longer in use. May contain residual acid.
		9,12	Propellant Terminal 2	Qualified, Asbestos (P)	Asbestos Containing Material	6	
				Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
				Disqualified, Hazardous Substance Storage	Sulfuric Acid stored in 3,500 gal tank within terminal - First used in ~1960(Sulfuric Acid Tank)	1, 7	No longer in use. May contain residual acid.
		10,11	Propellant Terminal 3	Qualified, Asbestos (P)	Asbestos Containing Material	6	
				Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
				Disqualified, Hazardous Substance Storage	Sulfuric Acid stored in 3,500 gal tank within terminal - First used in ~1960	1, 7	No longer in use. May contain residual acid.
		10,7	Quonset Hut	Disqualified, Petroleum Storage	Fuel oil (P) stored in ~250 gal AGT - First used in ~1960	3, 12	Tank has been removed.
					Fuel oil (P) stored in ~250 gal AGT - First used in ~1960	3, 12	Tank has been removed.
				Disqualified, Hazardous Substance Storage (P)	Unknown material stored in >150 gal Drums - First used in ~1960	12	No longer in use.
		11,7	Seal Chamber 1	Disqualified, Hazardous Substance Release (P)	1960s -- Release of waste water associated with seal chamber	1, 6	No longer in use.
		9,11	Seal Chamber 2	Disqualified, Hazardous Substance Release (P)	1960s -- Release of waste water associated with seal chamber	1, 6	No longer in use.
		8,11	Seal Chamber 3	Disqualified, Hazardous Substance Release (P)	1960s -- Release of waste water associated with seal chamber	1, 6	No longer in use.
		10,13	Seal Chamber 4	Disqualified, Hazardous Substance Release (P)	1960s -- Release of waste water associated with seal chamber	1, 6	No longer in use.
		9,13	Seal Chamber 5	Disqualified, Hazardous Substance Release (P)	1960s -- Release of waste water associated with seal chamber	1, 6	No longer in use.

TABLE 5-1. Parcel Descriptions Bennett Army National Guard

PARCEL NUMBER	APPROX. SIZE (ACRES)	COORD (X,Y) ON FIG 5-1	LOCATION	CATEGORY	BASIS	APP. A REF(S)	REMEDIATION OR MITIGATION
3D/A/L(P)/PR(P)/PS/HR/HS	30	13,7	Sewage Stabilization Ponds/Trenches	Disqualified, Hazardous Substance Release (P)	1960s -- Release of solvents, fuels, TPH, metals associated with seal chamber	1	No longer in use. Ponds are clay lined.
		10,10	Stain 1	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,9	Stain 10	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
			Stain 2	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		11,8	Stain 3	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,9	Stain 4	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,13	Stain 5	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		9,10	Stain 6	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
			Stain 7	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,9	Stain 8	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
			Stain 9	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		9,9	Standing Liquid 1	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,9	Trench 1	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		11,9	Trench 2	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
		10,10	Two Pole-mounted Transformers	Disqualified, Hazardous Substance Release (P)	Release of PCBs associated with two pole-mounted transformers	1	No longer in use.
		9,13	Underground Tunnel	Qualified, Asbestos (P)	Asbestos Containing Material	6	
		10,9	Underground Tunnel	Qualified, Asbestos (P)	Asbestos Containing Material	6	
		9,13	Underground Tunnel	Qualified, Asbestos (P)	Asbestos Containing Material	6	
		10,12	Underground Tunnel	Qualified, Asbestos (P)	Asbestos Containing Material	6	
		8,11	Underground Tunnel	Qualified, Asbestos (P)	Asbestos Containing Material	6	
		10,10	Underground Tunnel	Qualified, Asbestos (P)	Asbestos Containing Material	6	
		11,9	Underground Tunnel	Qualified, Asbestos (P)	Asbestos Containing Material	6	
		9,13	Underground Tunnel	Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
		10,9	Underground Tunnel	Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
		9,13	Underground Tunnel	Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		

TABLE 5-1. Parcel Descriptions Bennett Army National Guard

PARCEL NUMBER	APPROX. SIZE (ACRES)	COORD (X,Y) ON FIG 5-1	LOCATION	CATEGORY	BASIS	APP. A REF(S)	REMEDIATION OR MITIGATION
3D-/A/L(P)/PR(P)/PS/HR/HS	30	10,12	Underground Tunnel	Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
		8,11	Underground Tunnel	Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
		10,10	Underground Tunnel	Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
		11,9	Underground Tunnel	Qualified, Lead (P)	Lead-based paint associated with structure built in ~1960		
4P	37	15,10		CERFA Parcel	No hazardous substances or petroleum products have been stored, released or disposed in this area.		
5D-/HR(P)	1	8,7	Mounded Material 3	Disqualified, Hazardous Substance Release (P)	Release of unknown material associated with surface disturbance	1, 3, 6	
6P	79	9,4		CERFA Parcel	No hazardous substances or petroleum products have been stored, released or disposed in this area.		

D=CERFA DISQUALIFIED PARCEL
E=CERFA EXCLUDED PARCEL
P=CERFA PARCEL
Q=CERFA PARCEL WITH QUALIFIERS

A=ASBESTOS
L=LEAD-BASED PAINT
P=PCB STORAGE
R=RADON
RD=RADIONUCLIDES
X=UNEXPLODED ORDNANCE

PR=PETROLEUM RELEASE
PS=PETROLEUM STORAGE
HR=HAZARDOUS SUBSTANCE RELEASE
HS=HAZARDOUS SUBSTANCE STORAGE

(P)=POSSIBLE QUALIFIER

FIGURE 5-1
PARCEL DESIGNATION MAP, BENNETT ARMY NATIONAL GUARD FACILITY, BENNETT, COLORADO

REVISION	DATE
0	12/08/93
1	03/10/94
2	04/04/94

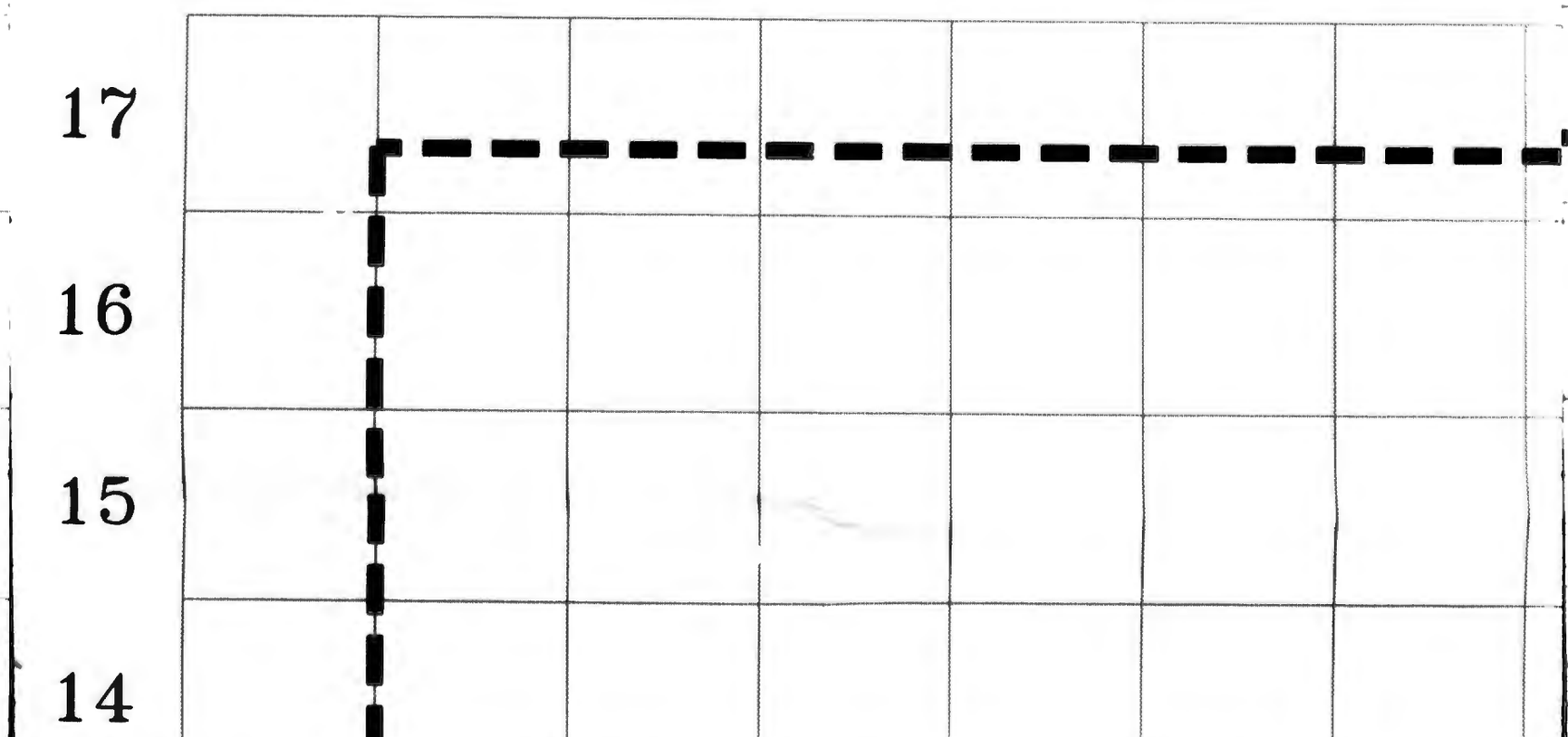
17

16

15

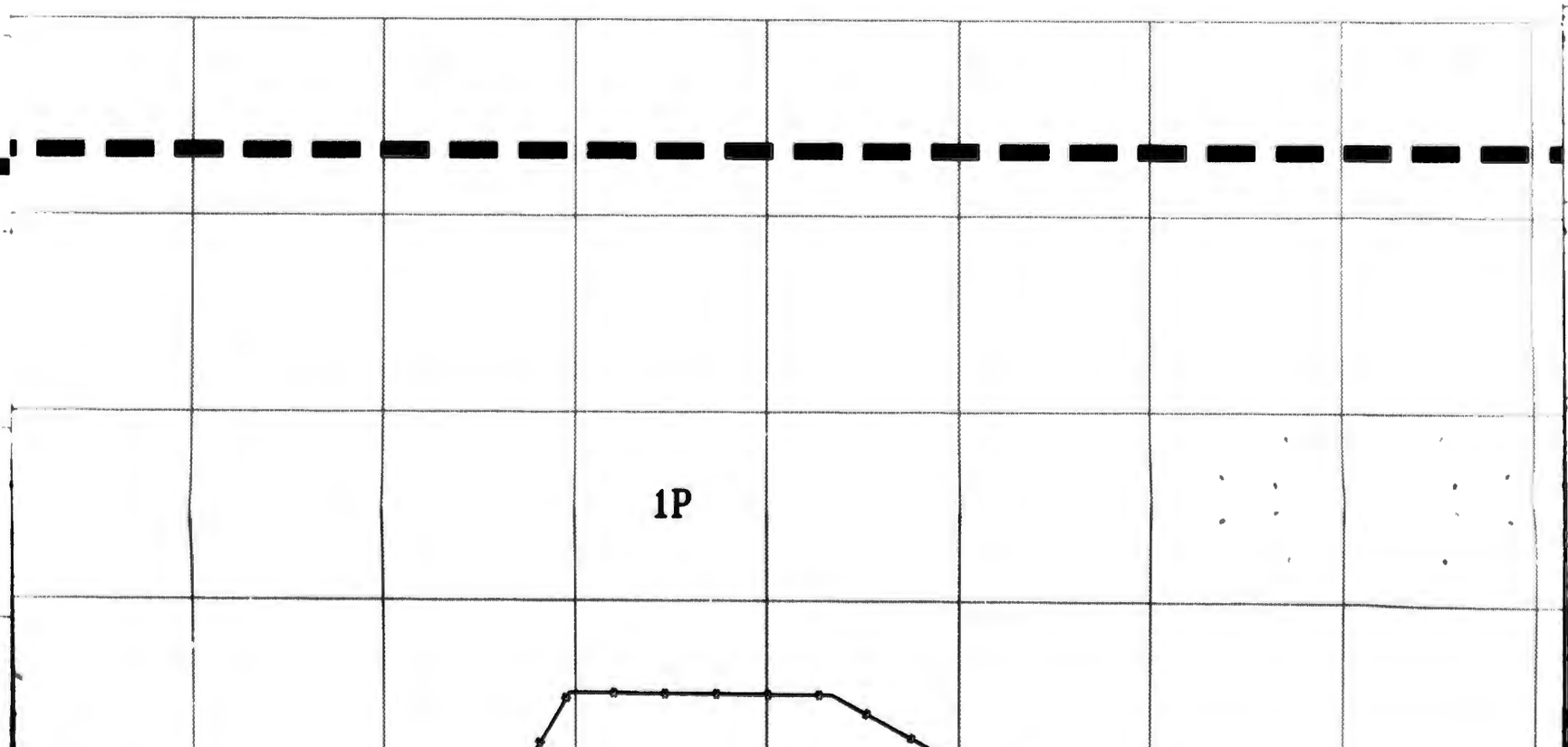
14

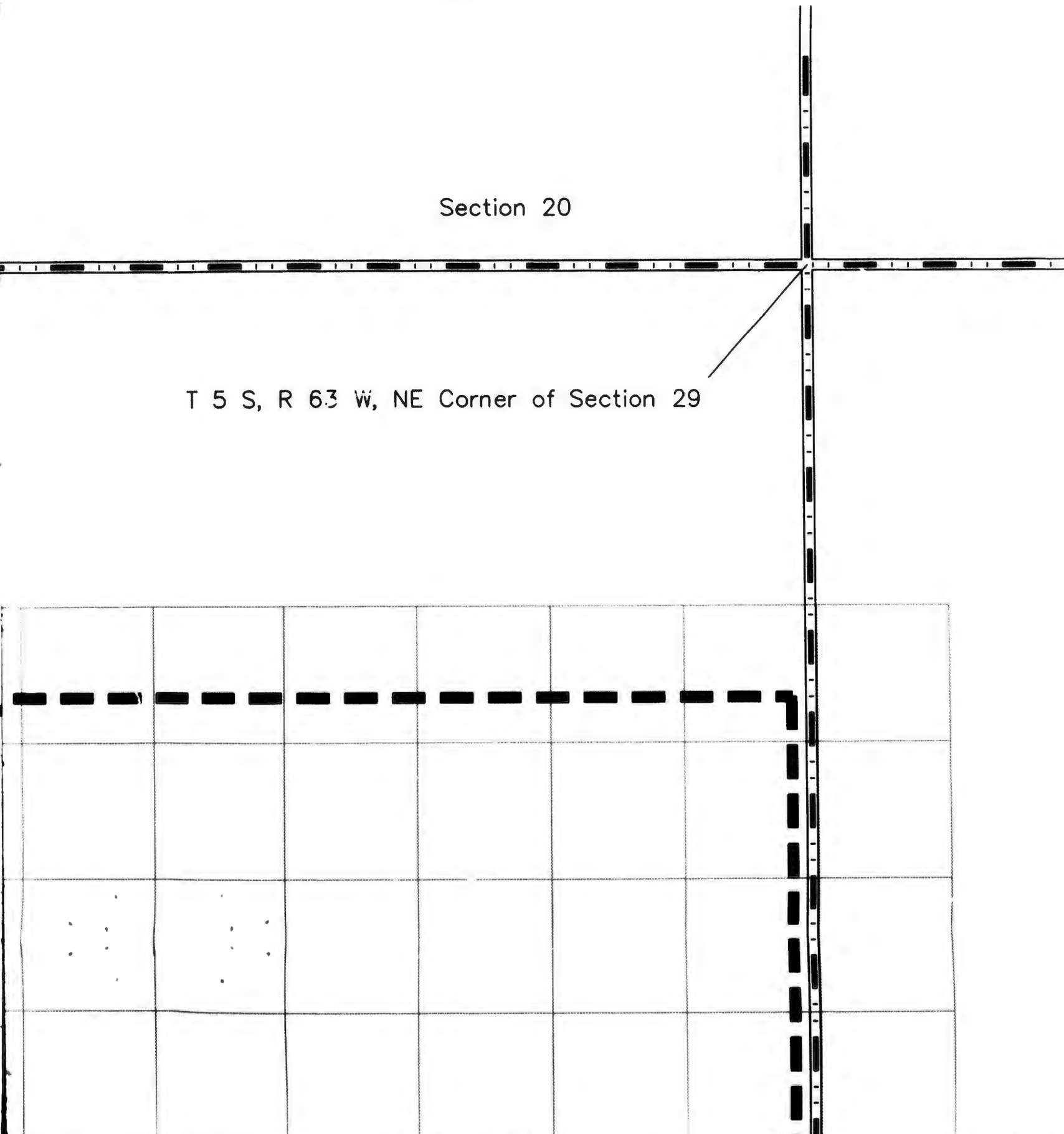
QUINC



QUINCY ROAD

T 5 S, R

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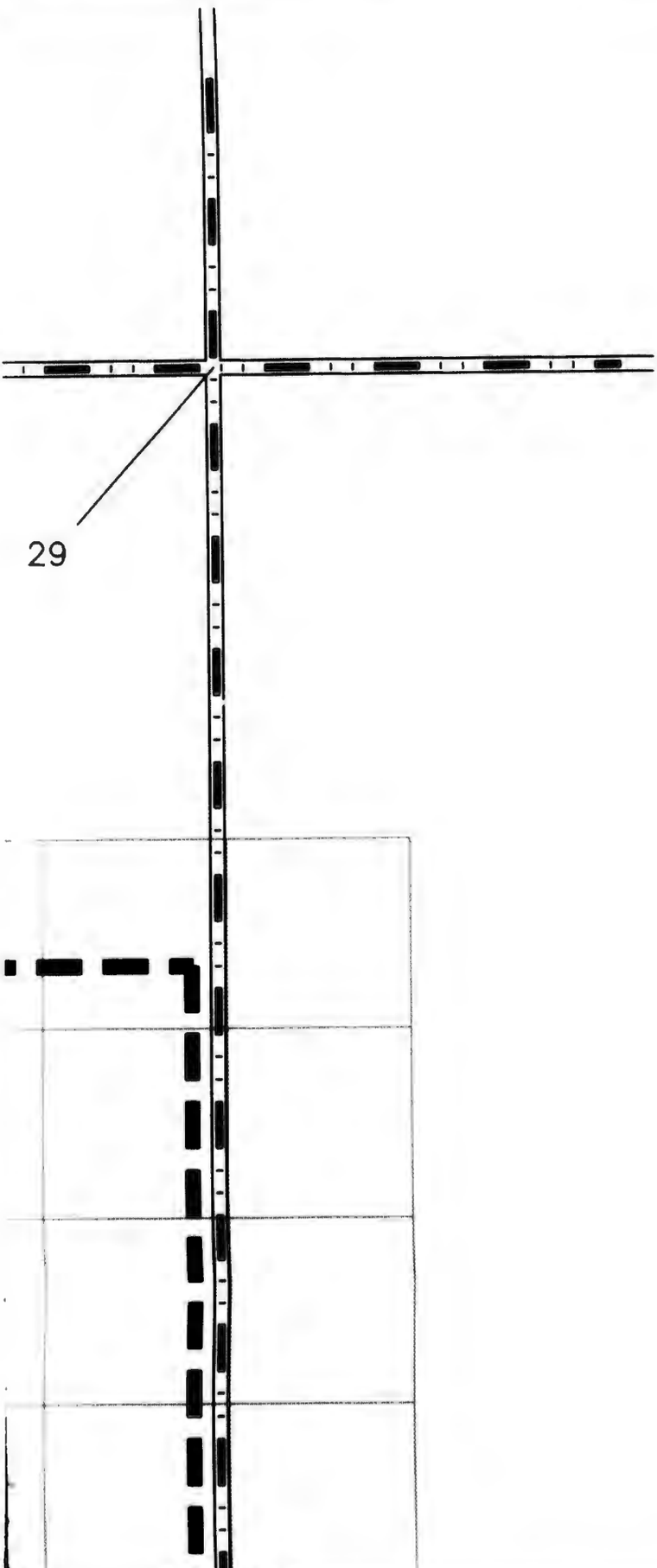
T 5 S, R 63 W, NE Corner of Section 29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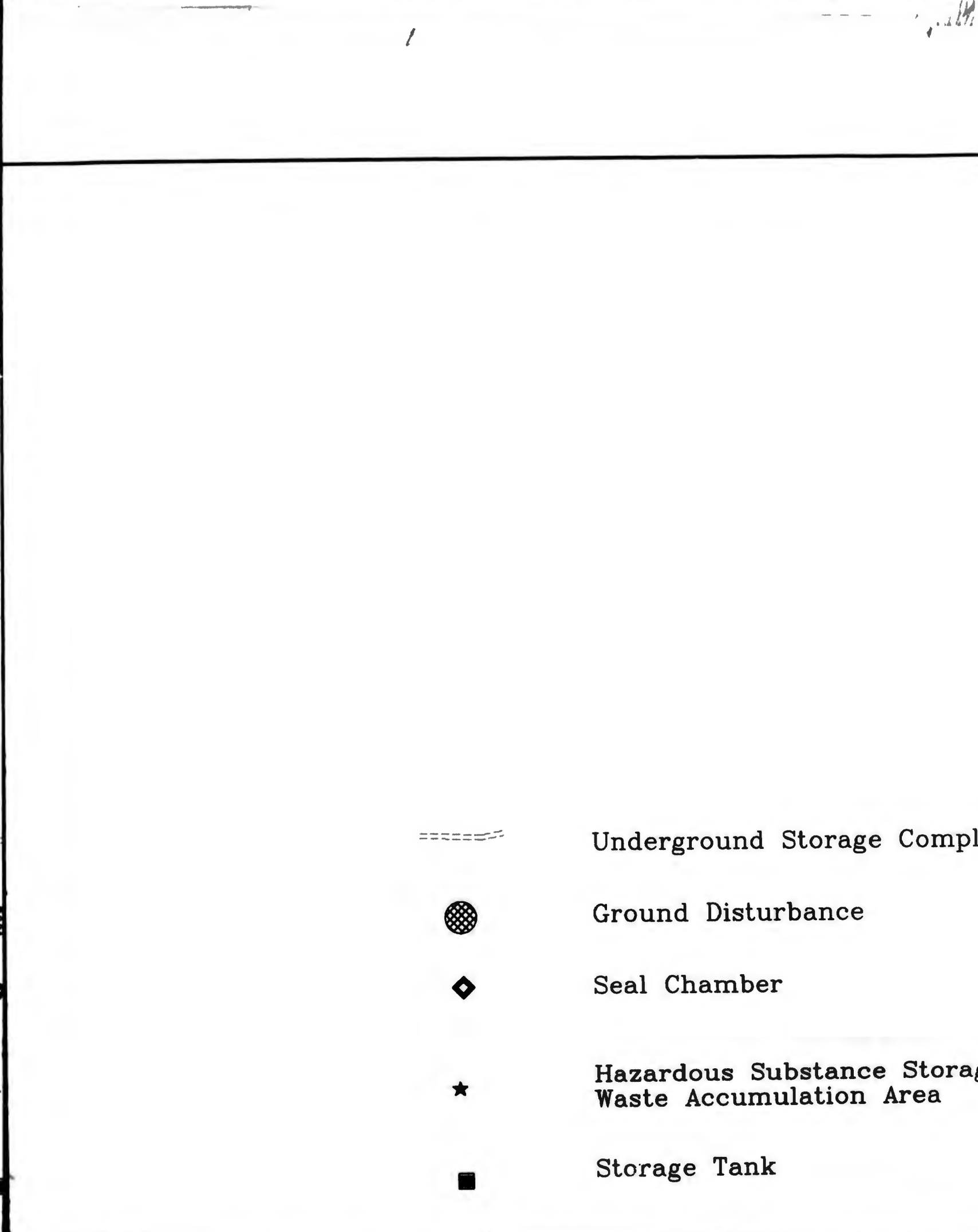
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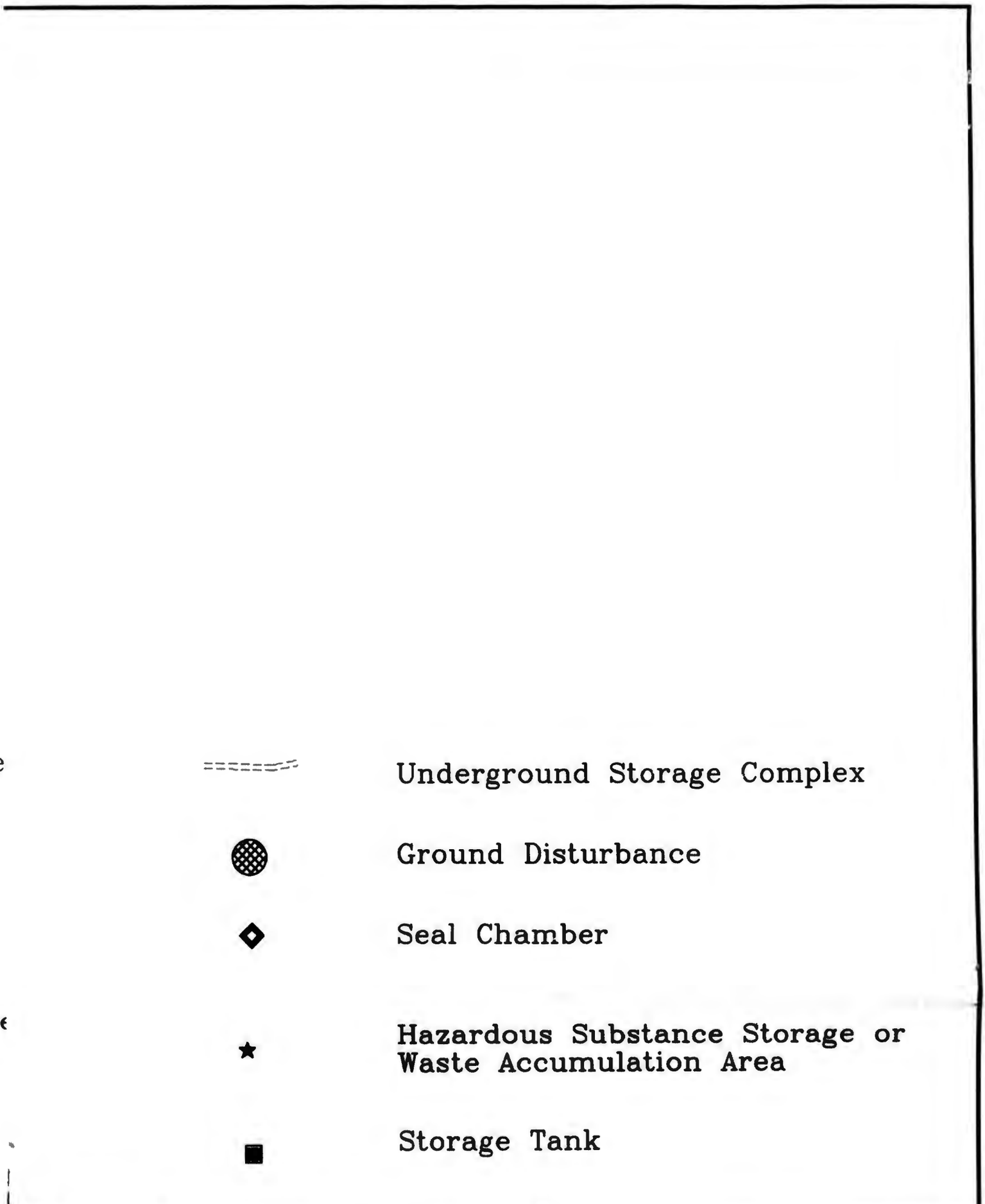
Ground Disturbance
Seal Chamber
Hazardous Substance Storag
Waste Accumulation Area
Storage Tank


Underground Storage Complex
Ground Disturbance
Seal Chamber
Hazardous Substance Storage or Waste Accumulation Area
Storage Tank

17

16

15

14

13

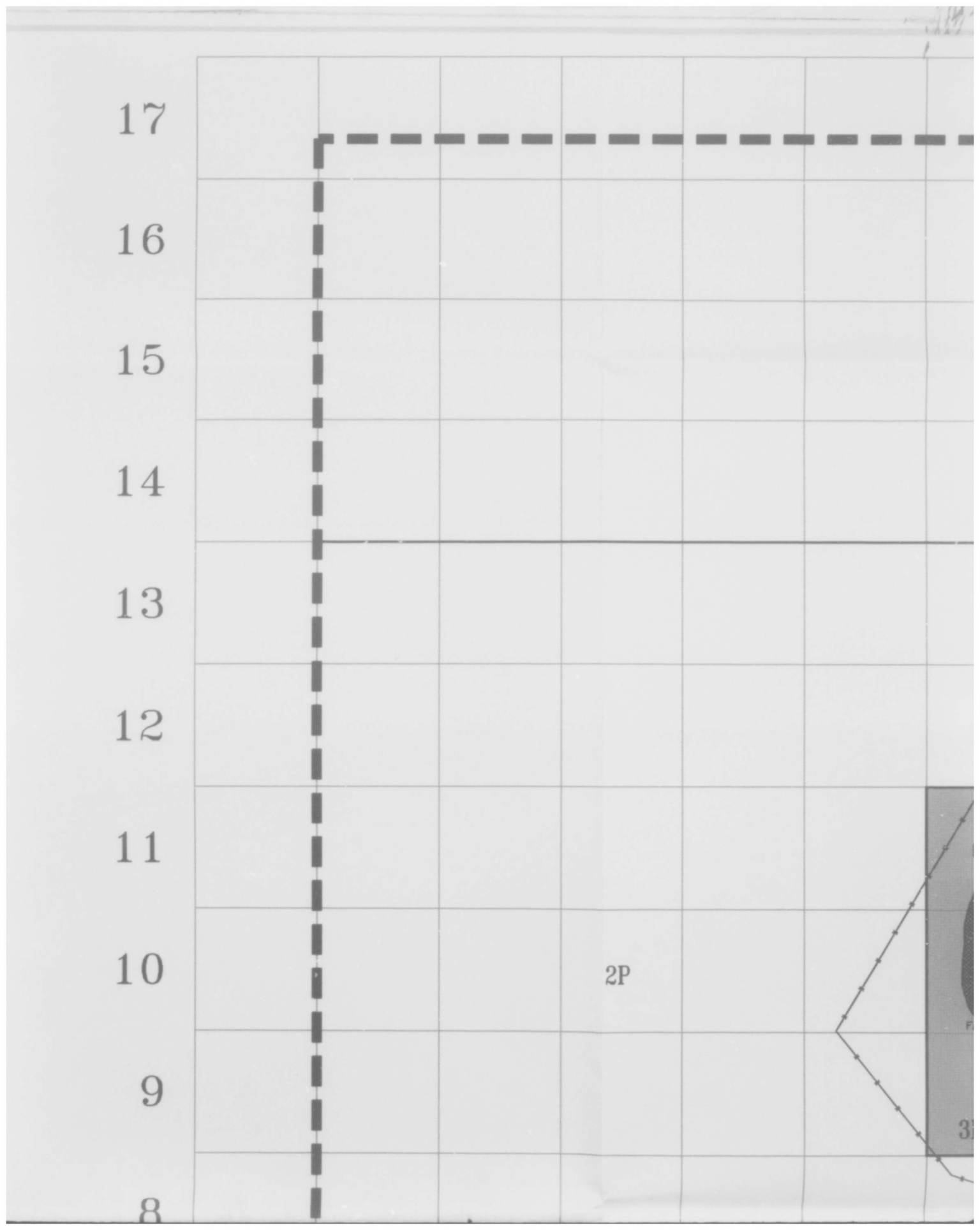
12

11

10

9

8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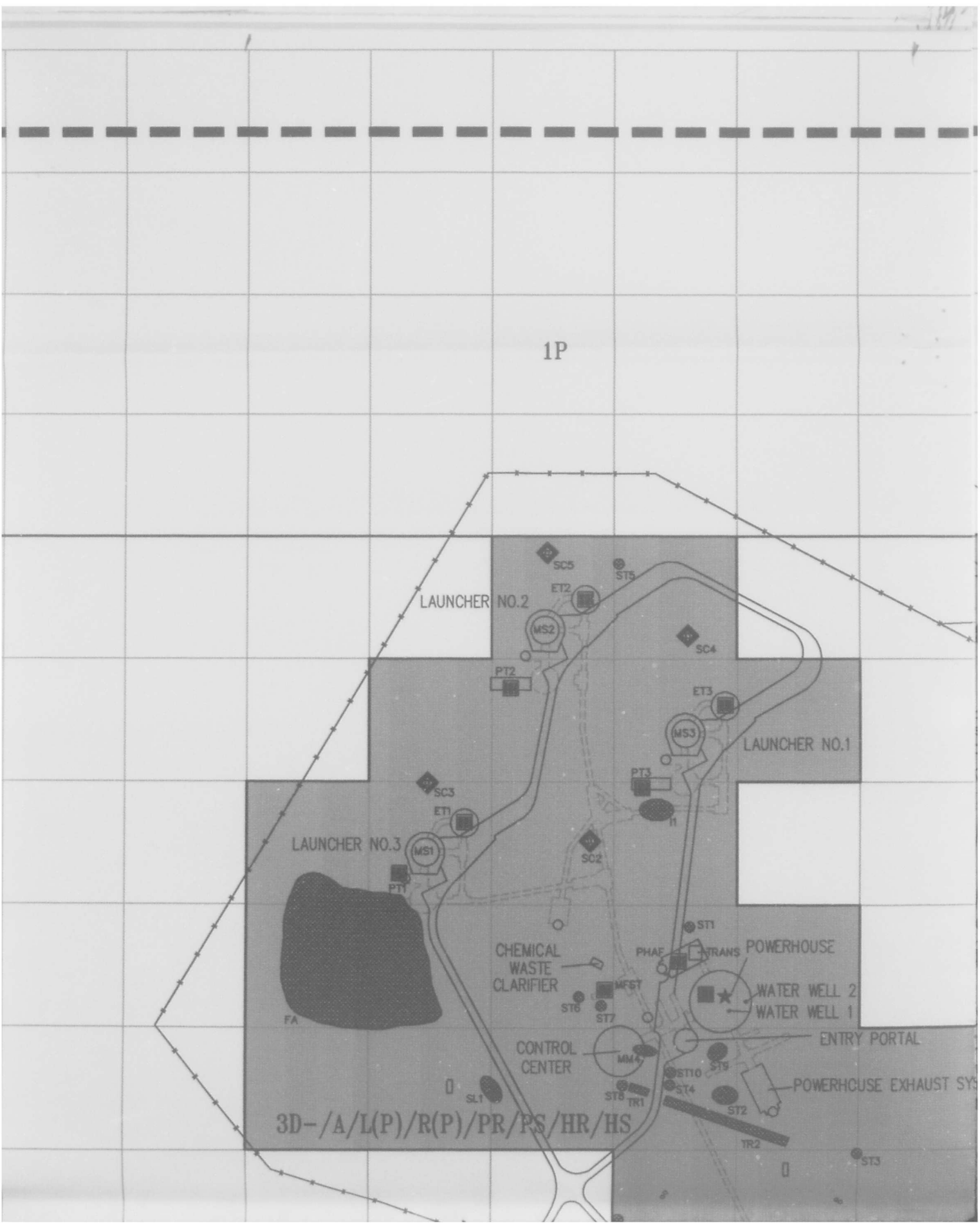
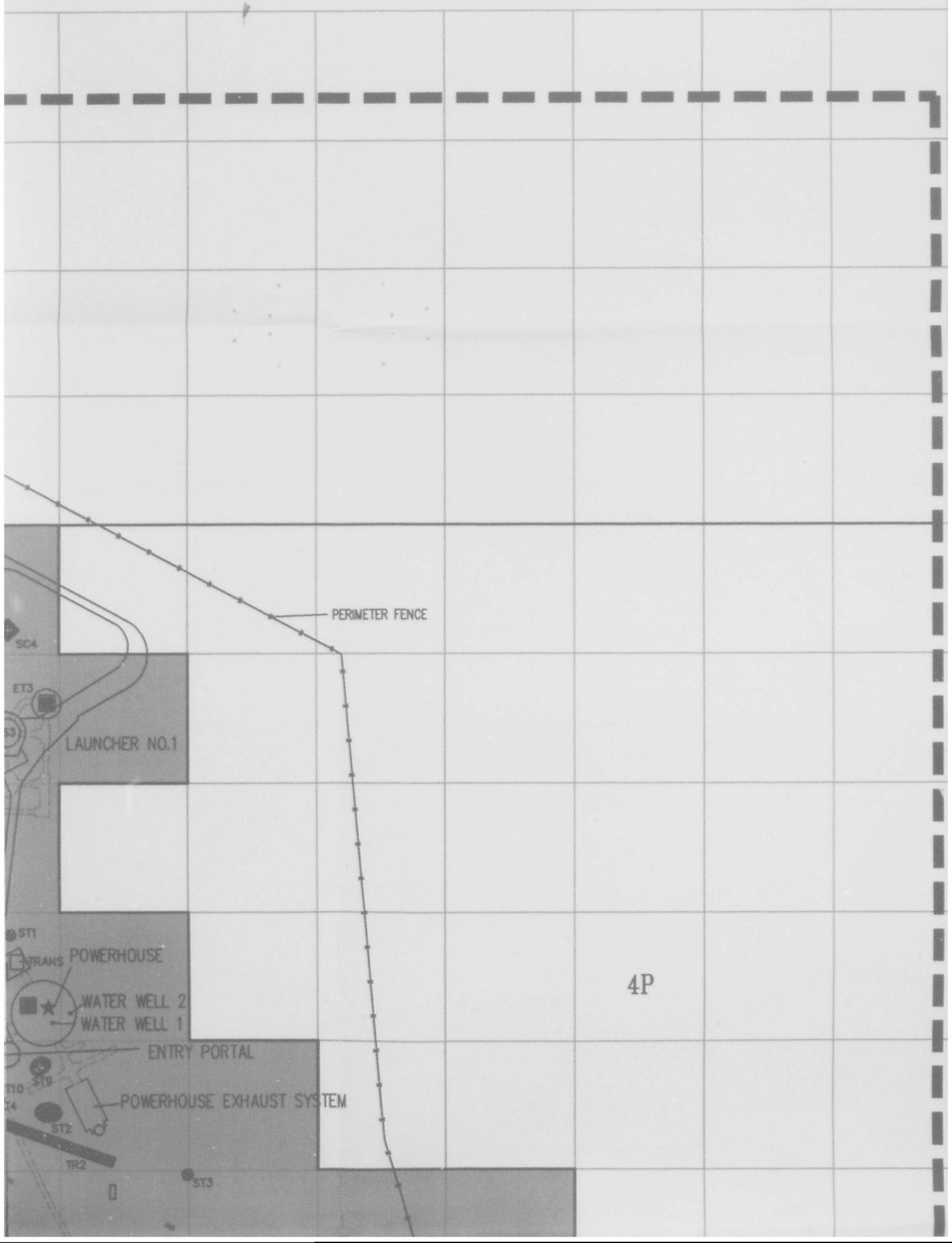
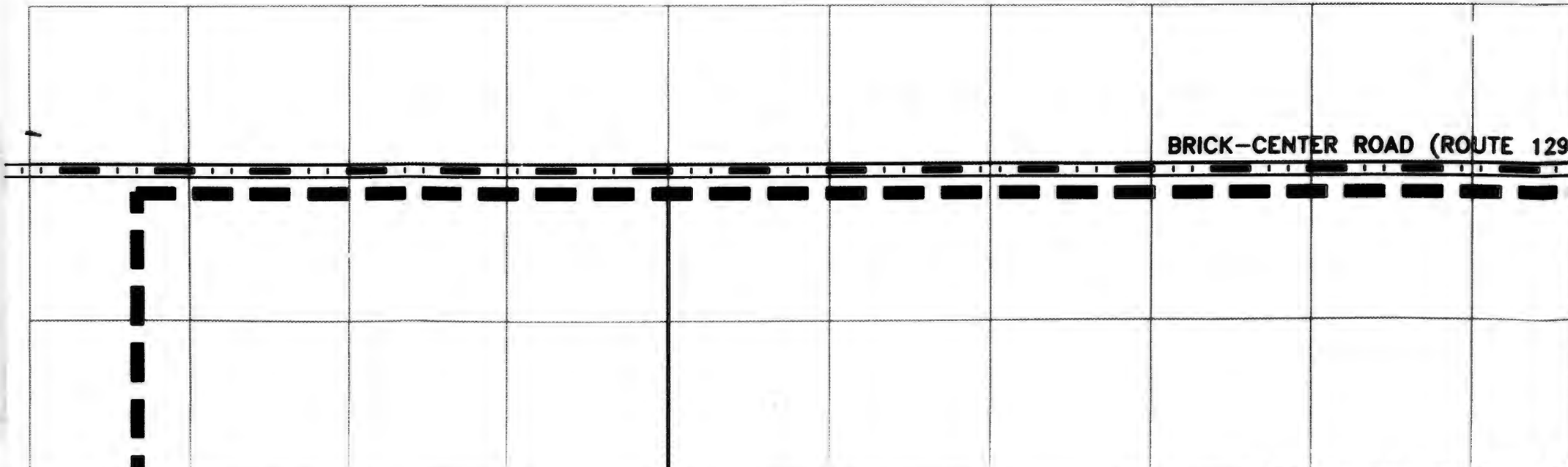
2P


1P
LAUNCHER NO.2
LAUNCHER NO.1
LAUNCHER NO.3
SC5
ST5
ET2
MS2
SC4
PT2
ET3
MS3
PT3
SC3
ET1
MS1
SC2
PT1
FA
ST1
CHEMICAL
WASTE
CLARIFIER
PHAE
TRANS
POWERHOUSE
MFST
ST6
ST7
WATER WELL 2
WATER WELL 1
ENTRY PORTAL
CONTROL
CENTER
MM4
ST9
ST10
ST4
ST8
TR1
SL1
ST2
TR2
ST3
POWERHOUSE EXHAUST SYS
3D-/A/L(P)/R(P)/PR/PS/HR/HS


PERIMETER FENCE
SC4
ET3
LAUNCHER NO.1
ST1
TRANS
POWERHOUSE
WATER WELL 2
WATER WELL 1
ENTRY PORTAL
ST9
T10
T4
POWERHOUSE EXHAUST SYSTEM
ST2
TR2
ST3
4P


BRICK–CENTER ROAD (ROUTE 129

Underground Storage

Ground Disturbance

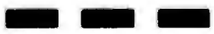
Seal Chamber

Hazardous Substance
Waste Accumulation A

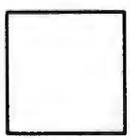
Storage Tank

Above Ground Storage

Section Boundary



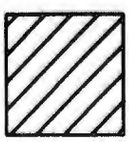
BRAC Property Bound



CERFA Parcel

CERFA Parcel with Qu

CERFA Disqualified Pa



CERFA Excluded Parc

Underground Storage Complex

Ground Disturbance

Seal Chamber

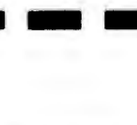
Hazardous Substance Storage or Waste Accumulation Area

Storage Tank

Above Ground Storage Tank

Section Boundary

BRAC Property Boundary



CERFA Parcel

CERFA Parcel with Qualifiers

CERFA Disqualified Parcel

CERFA Excluded Parcel

12

11

10

9

8

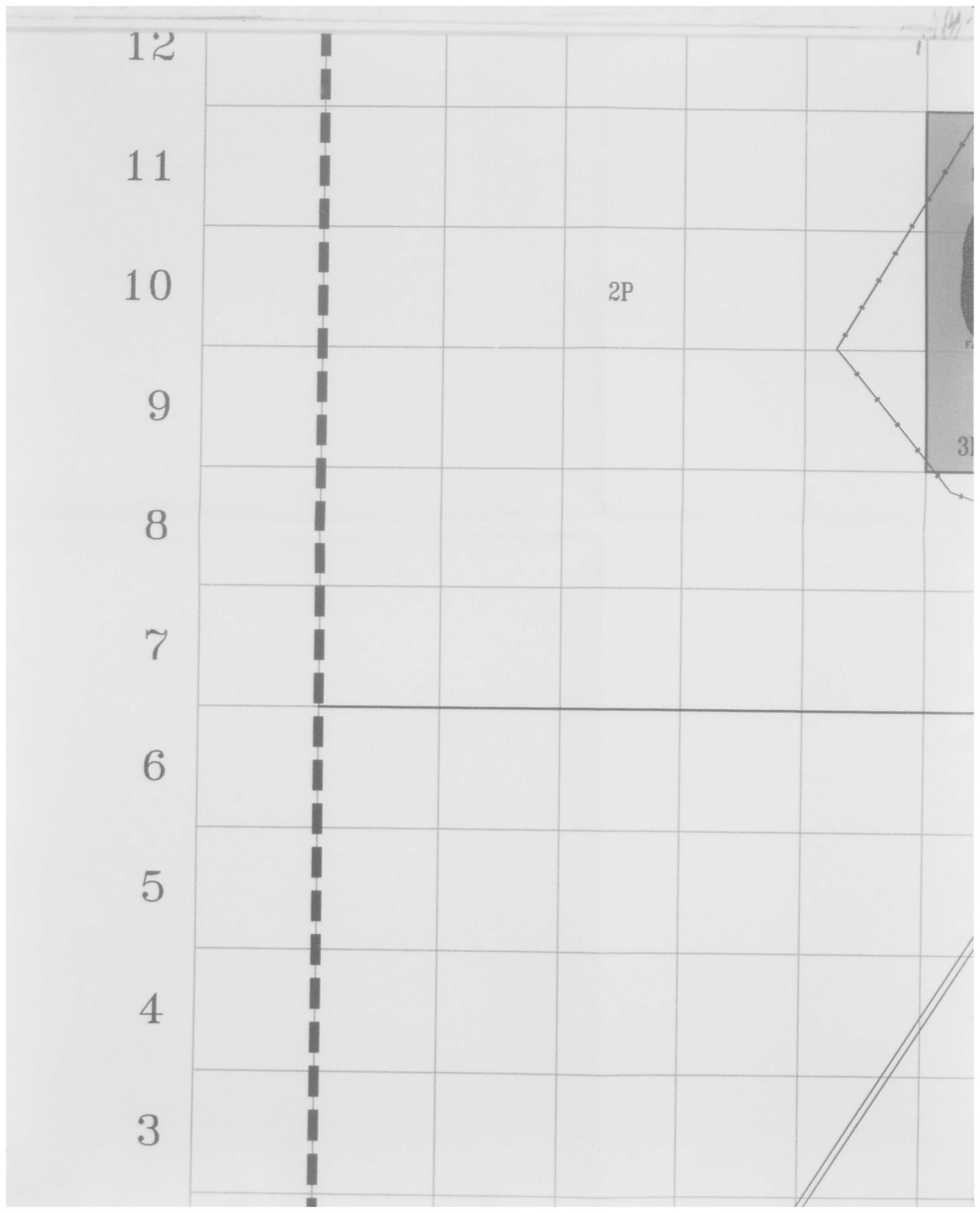
7

6

5

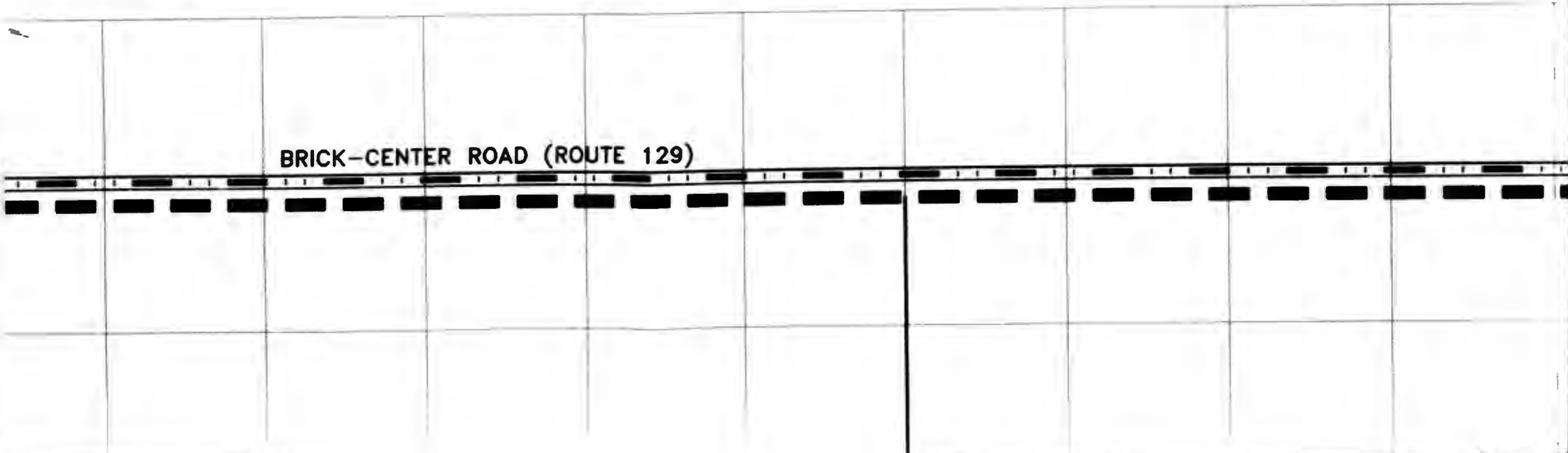
4

3


12
11
10
9
8
7
6
5
4
3
2P


LAUNCHER NO.1
MS3
PT3
I1
SC3
ET1
LAUNCHER NO.3
MS2
PT2
SC2
ST1
CHEMICAL
WASTE
CLARIFIER
PHAF
TRANS
POWERHOUSE
MFST
WATER WELL 2
WATER WELL 1
ST6
ST7
FA
ENTRY PORTAL
CONTROL
CENTER
MM4
ST9
ST10
ST4
POWERHOUSE EXHAUST SYSTEM
SL1
ST8
TR1
ST2
3D-/A/L(P)/R(P)/PR/PS/HR/HS
TR2
ST3
MM1
MM2
MM3
5D-/HR(P)
SC1
QUONSET HUT
WATER WELL 3


CHER NO.1
RHOUSE
ER WELL 2
ER WELL 1
ENTRY PORTAL
POWERHOUSE EXHAUST SYSTEM
ST3
SC1
WATER WELL 3
SEWAGE
STABILIZATION
PONDS
4P


BRICK–CENTER ROAD (ROUTE 129)

BRAC Property Boundary

CERFA Parcel

CERFA Parcel with Qualifi

CERFA Disqualified Parcel

CERFA Excluded Parcel

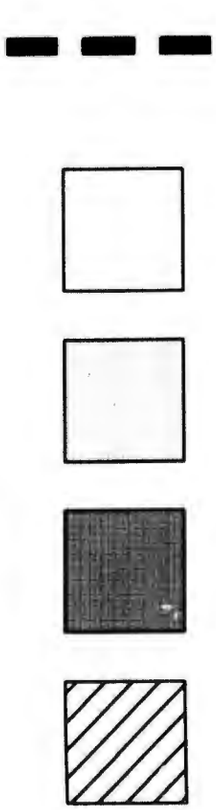
PARCEL LABEL DEFINITIONS

13P-/A/L

- A = ASBESTOS
- L = LEAD-BASED PAINT
- P = PCB
- R = RADON
- X = UNEXPLODED ORDNANCE
- RD = RADIONUCLIDES
- PR = PETROLEUM RELEASE
- PS = PETROLEUM STORAGE
- HR = HAZARDOUS SUBSTANCE RELEASE
- HS = HAZARDOUS SUBSTANCE STORAGE
- (P) = POSSIBLE QUALIFIER

- P = CERFA PARCEL
- Q = CERFA PARCEL WITH QUALIFIER(S)
- D = CERFA DISQUALIFIED PARCEL
- E = CERFA EXCLUDED PARCEL

- PARCEL NUMBER



PARCEL LABEL DEFINITIONS

13P-/A/L

- A = ASBESTOS
- L = LEAD-BASED PAINT
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- HR = HAZARDOUS SUBSTANCE RELEASE
- HS = HAZARDOUS SUBSTANCE STORAGE
- (P) = POSSIBLE QUALIFIER

- P = CERFA PARCEL
- Q = CERFA PARCEL WITH QUALIFIER(S)
- D = CERFA DISQUALIFIED PARCEL
- E = CERFA EXCLUDED PARCEL

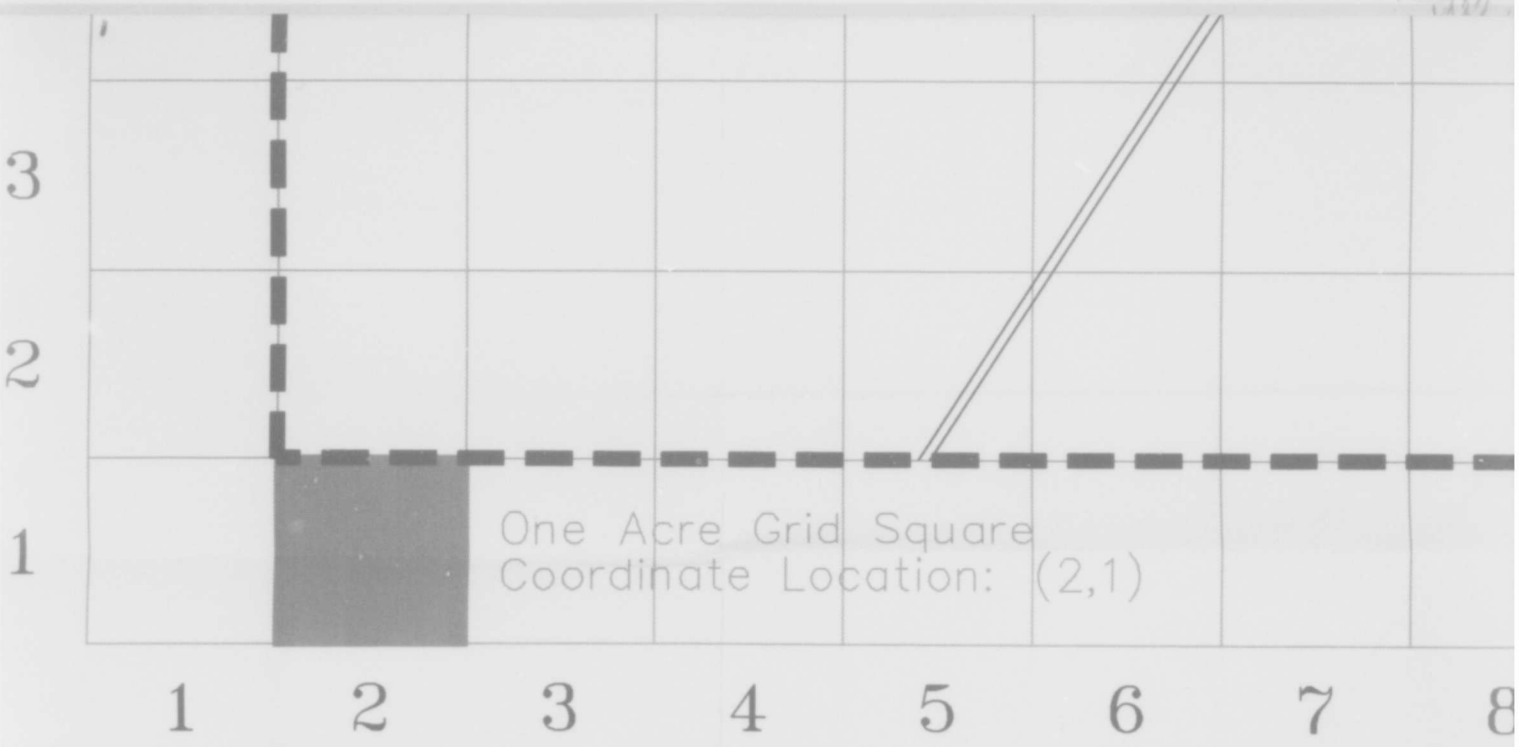
- PARCEL NUMBER

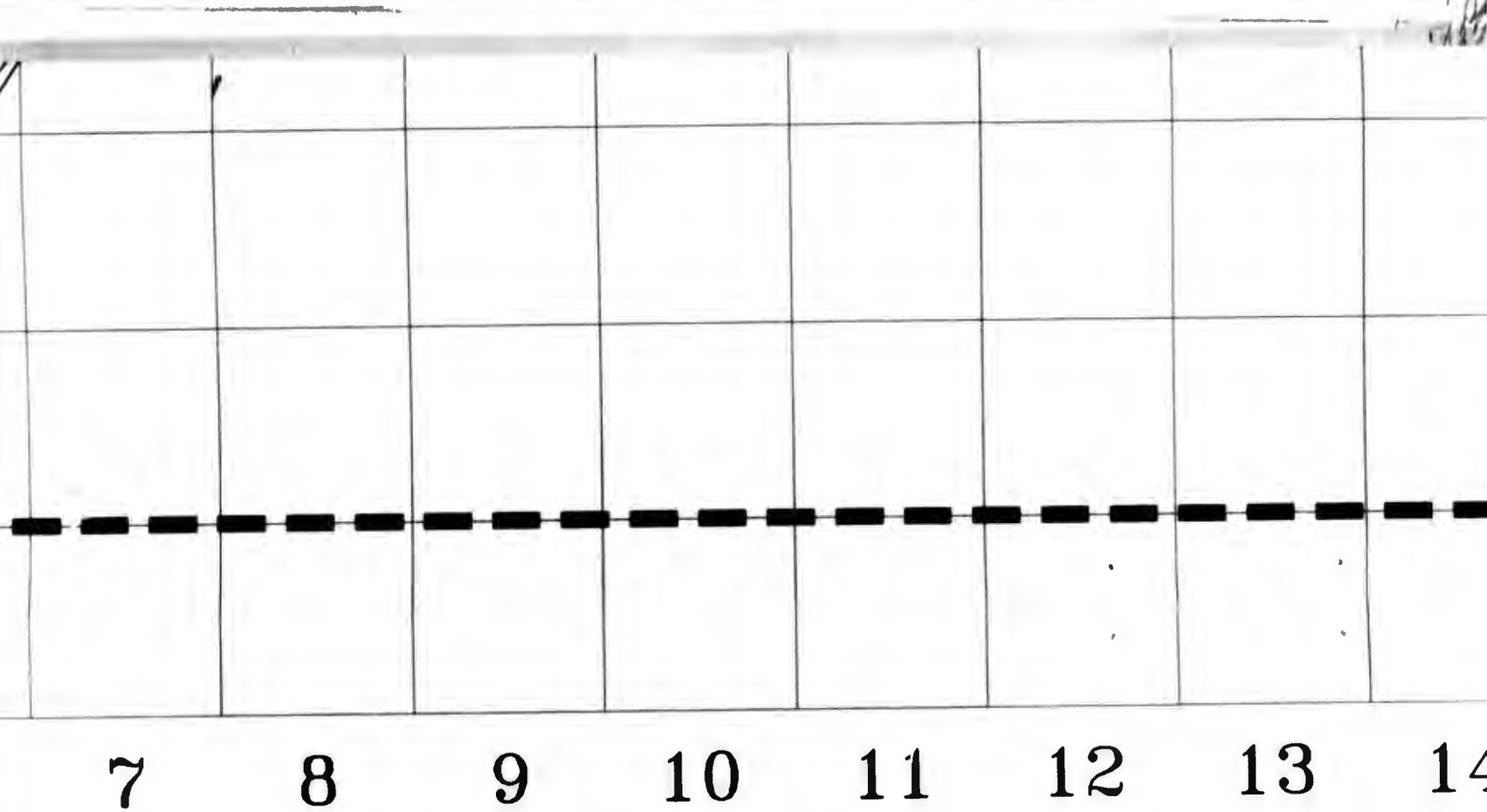
3

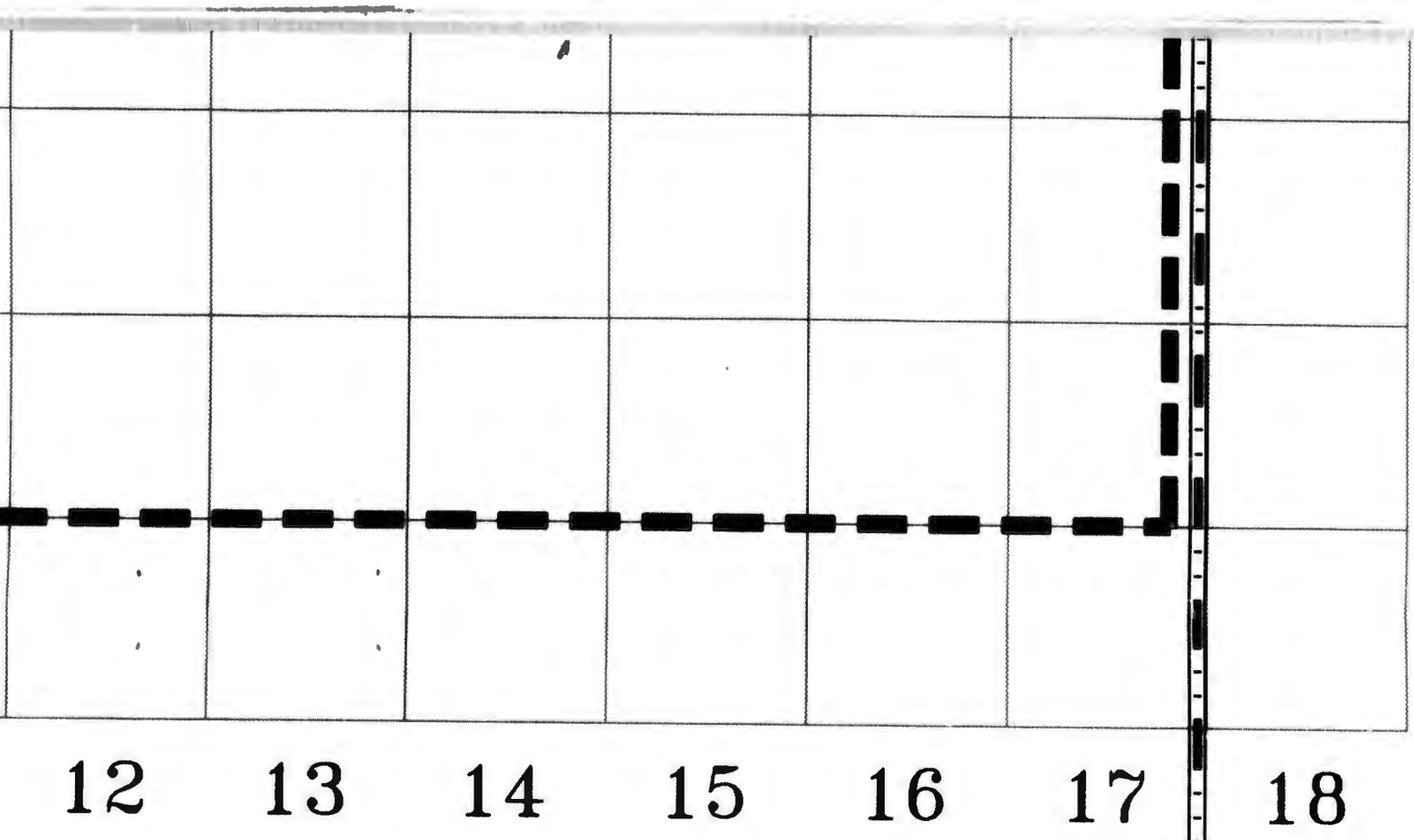
2

1

Source: CERFA Investigation, April 1994


3
2
1
One Acre Grid Square
Coordinate Location: (2,1)
1
2
3
4
5
6
7
8


7
8
9
10
11
12
13
14

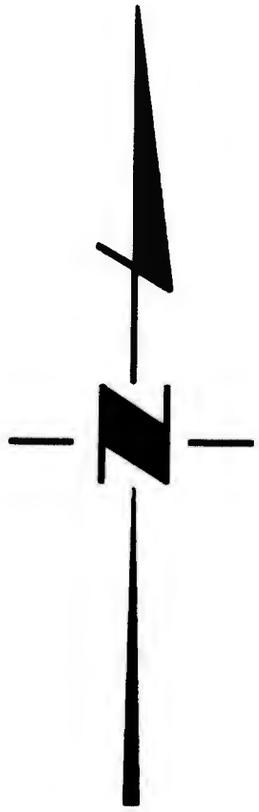

12
13
14
15
16
17
18

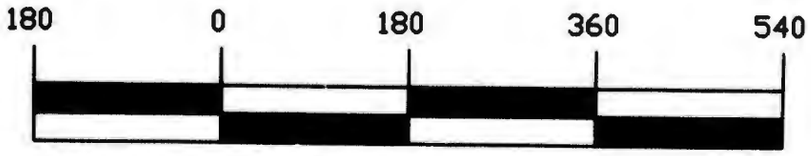
7 18

180

KEY

ET = EQUIPMENT TERMINAL
FA = FILL AREA
I1 = IMPOUNDMENT
MFST = MISSILE FUEL STORAGE TANK
MM = MOUNDED MATERIAL
MS = MISSILE SILO
PHAF = POWER HOUSE AIR FILTRATION FACILITY
PT = PROPELLANT TERMINAL
SC = SEAL CHAMBER
SL = STANDING LIQUID
ST = STAIN
TR = TRENCH
TRANS = TWO POLE MOUNTED TRANSFORMERS





SCALE IN FEET

KEY

ET = EQUIPMENT TERMINAL
FA = FILL AREA
I1 = IMPOUNDMENT
MFST = MISSILE FUEL STORAGE TANK
MM = MOUNDED MATERIAL
MS = MISSILE SILO
PHAF = POWER HOUSE AIR FILTRATION FACILITY
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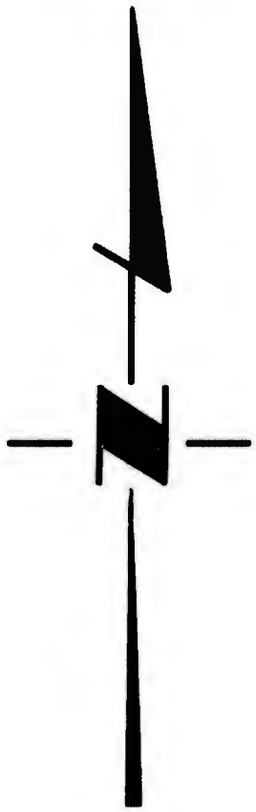
SL = STANDING LIQUID
ST = STAIN
TR = TRENCH
TRANS = TWO POLE MOUNTED TRANSFORMERS

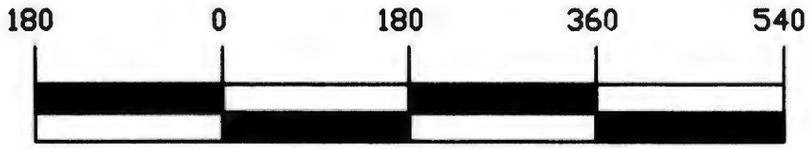
The Earth Technology Corporation

1420 KING STREET SUITE 600, ALEXANDRIA, VIRGINIA 22314

FIGURE 5-1
PARCEL DESIGNATION MAP
BENNETT ARMY NATIONAL GUARD FACILITY
BENNETT, COLORADO

DRAWN BY: MTM	DESIGNED BY: N/A	SCALE: 1" = 180'
CHECKED BY: JS	APPROVED BY: BY	DATE: 04/04/94
TETC PROJECT NUMBER 931977-03	DRAWING NUMBER SHEET 1 OF 1	REV. NO. 2





SCALE IN FEET

NT TERMINAL
EA
MENT
E FUEL STORAGE TANK
D MATERIAL
SILO
R HOUSE AIR FILTRATION FACILITY
LANT TERMINAL
HAMBER
G LIQUID

POLE MOUNTED TRANSFORMERS

The Earth Technology Corporation

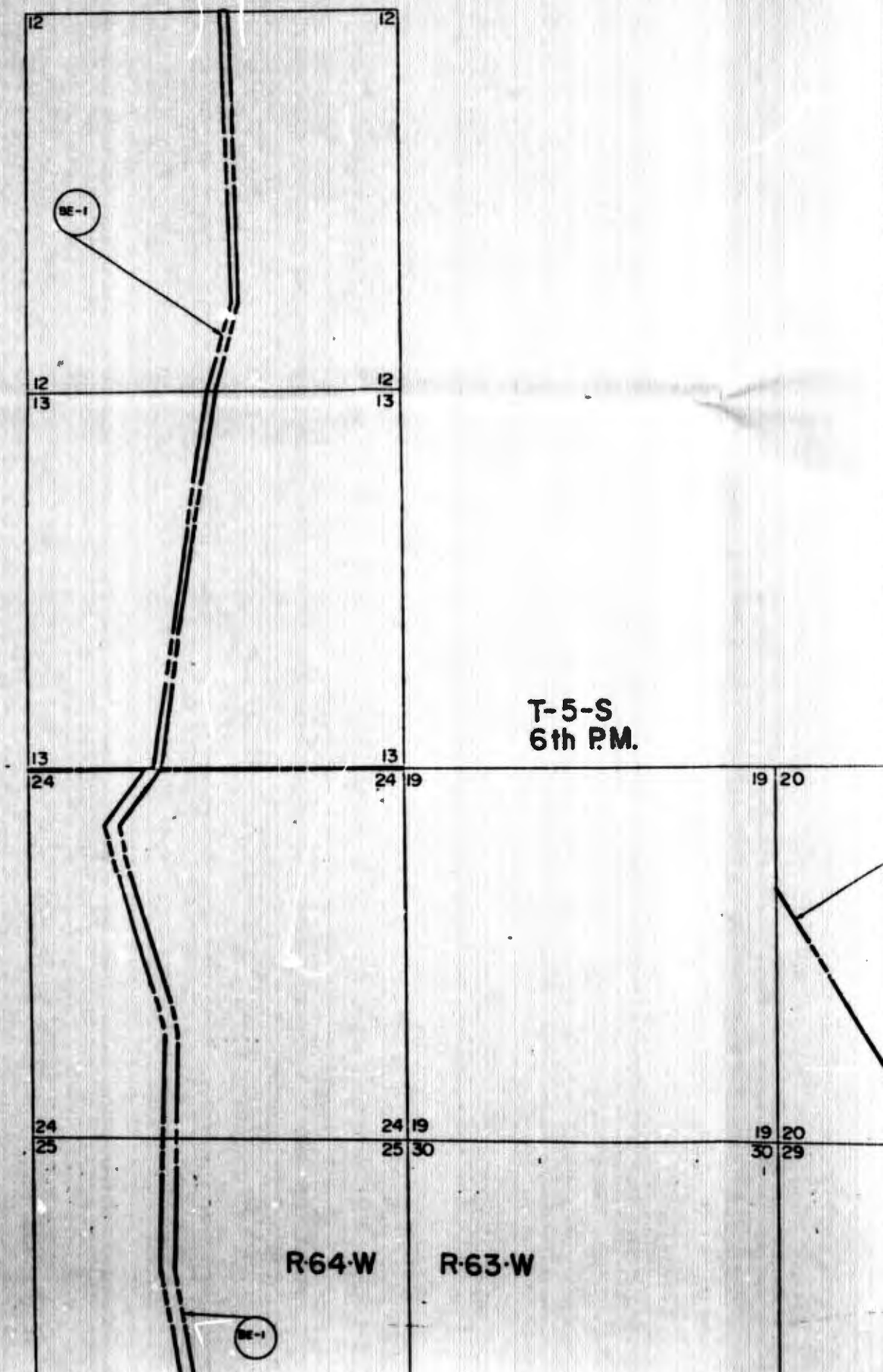
1420 KING STREET SUITE 600, ALEXANDRIA, VIRGINIA 22314

FIGURE 5-1
PARCEL DESIGNATION MAP
BENNETT ARMY NATIONAL GUARD FACILITY
BENNETT, COLORADO

DRAWN BY: MTM	DESIGNED BY: N/A	SCALE: 1" = 180'
CHECKED BY: JS	APPROVED BY: BY	DATE: 04/04/94
TETC PROJECT NUMBER 931977-03	DRAWING NUMBER SHEET 1 OF 1	REV. NO. 2

FIGURE 5-2
TRACT MAP, BENNETT ARMY NATIONAL GUARD FACILITY, BENNETT, COLORADO

CORPS OF ENGINEERS

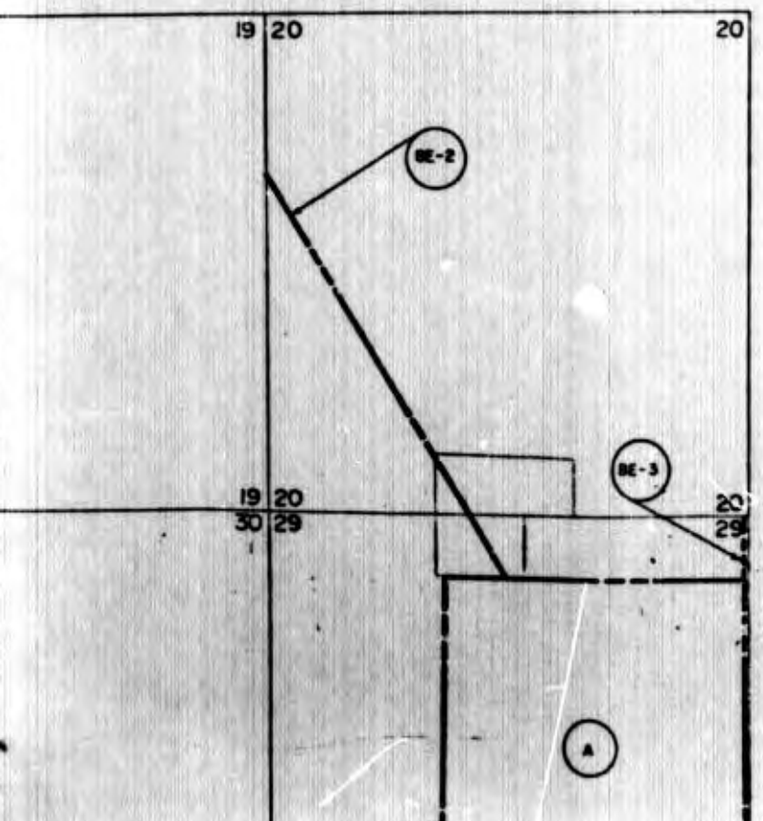


TRACT REGISTER

	TRACT NO	LAND OWNER	ACREAGE FEE	ACREAGE LEASE	ACREAGE Transfer	
①②	A	DEPARTMENT OF THE AIR FORCE	242.42			Transferred fm. Dept o
③	BE-1	DEPARTMENT OF THE AIR FORCE (GEORGE K. ANDERSON, VINCENT MURPHY CHEVROLET CO. INC. Adrienne A. Smeltzer, Rolland L. Graves)		104.57		Transferred fm. Dept o Perm access road eas
	BE-2	DEPARTMENT OF THE AIR FORCE (Rolland L. Graves)		1.26		Transferred fm. Dept o Perm telephone line e
	BE-3	DEPARTMENT OF THE AIR FORCE (Rolland L. Graves)		0.30		Transferred fm. Dept o Perm utility line ease -2

* Formerly acquired as T
S-I-137E, S-I-140E, S-

-S
P.M.



VICINITY MAP

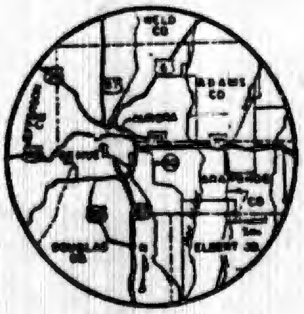
STATE INDEX

U. S. ARMY

TRACT REGISTER

TRACT NO	LAND OWNER	ACREAGE FEE	EASE	Transfer	REMARKS
A	DEPARTMENT OF THE AIR FORCE	242.42			Transferred fm. Dept. of the Air Force by Memo dtd 10-12-77
BE-1	DEPARTMENT OF THE AIR FORCE (George [illegible] Anderson, Vincent [illegible] Chevrolet Co. Inc., [illegible], Rolland L. Graves)		104.67		Transferred fm. Dept of the Air Force by Memo dtd 10-12-77 Perm access road ease fm 10-12-77 *
BE-2	DEPARTMENT OF THE AIR FORCE (Rolland L. Graves)		1.26		Transferred fm. Dept. of the Air Force by Memo dtd 10-12-77 Perm telephone line ease fm. 10-12-77 Formerly acq'd as Tr S-1-132E-3
BE-3	DEPARTMENT OF THE AIR FORCE (Rolland L. Graves)		0.30	.	Transferred fm. Dept of the Air Force by Memo dtd 10-12-77 Perm utility line ease fm 10-12-77 Formerly acq'd as Tr S-1-130E-2

* Formerly acquired as Tracts S-1-120E-2, S-1-124E, S-1-134E, S-1-137E, S-1-140E, S-1-156E and S-1-130E-4



VICINITY MAP

SCALE IN MILES

0 5 10 20

STATE INDEX

FINAL

PROJECT MAP

DEPT. OF THE ARMY

USING SERVICE ARMY NAT'L GUARD

LOCATION OF PROJECT

STATE COLORADO

COUNTY ARAPAHOE

DIVISION MISSOURI RIVER

DISTRICT DENVER

ARMY AREA SIXTH

24 MILES SE OF DENVER

MILES OF

TRANSPORTATION FACILITIES

RAILROADS UNION PACIFIC

STATE ROADS 87 & 30

FEDERAL ROADS 70

AIR LINES UNITED, FRONTIER & WESTERN

ACQUISITION

TOTAL ACRES ACQUIRED 348.65

FEE

PUBLIC DOMAIN: WITHDRAWAL / USE PERMIT

USE PERMIT (OTHER THAN P. D.)

TRANSFER: FEE 242.42 / EASE. 106.23

LEASE

LESSER INTERESTS

DISPOSAL

TOTAL ACRES DISPOSED OF

SOLD

PUBLIC DOMAIN: WITHDRAWAL / USE PERMIT

USE PERMIT (OTHER THAN P. D.)

TRANSFERRED

LEASES TERMINATED

LESSER INTERESTS TERM.

REASSIGNED

OTHER

LEGEND

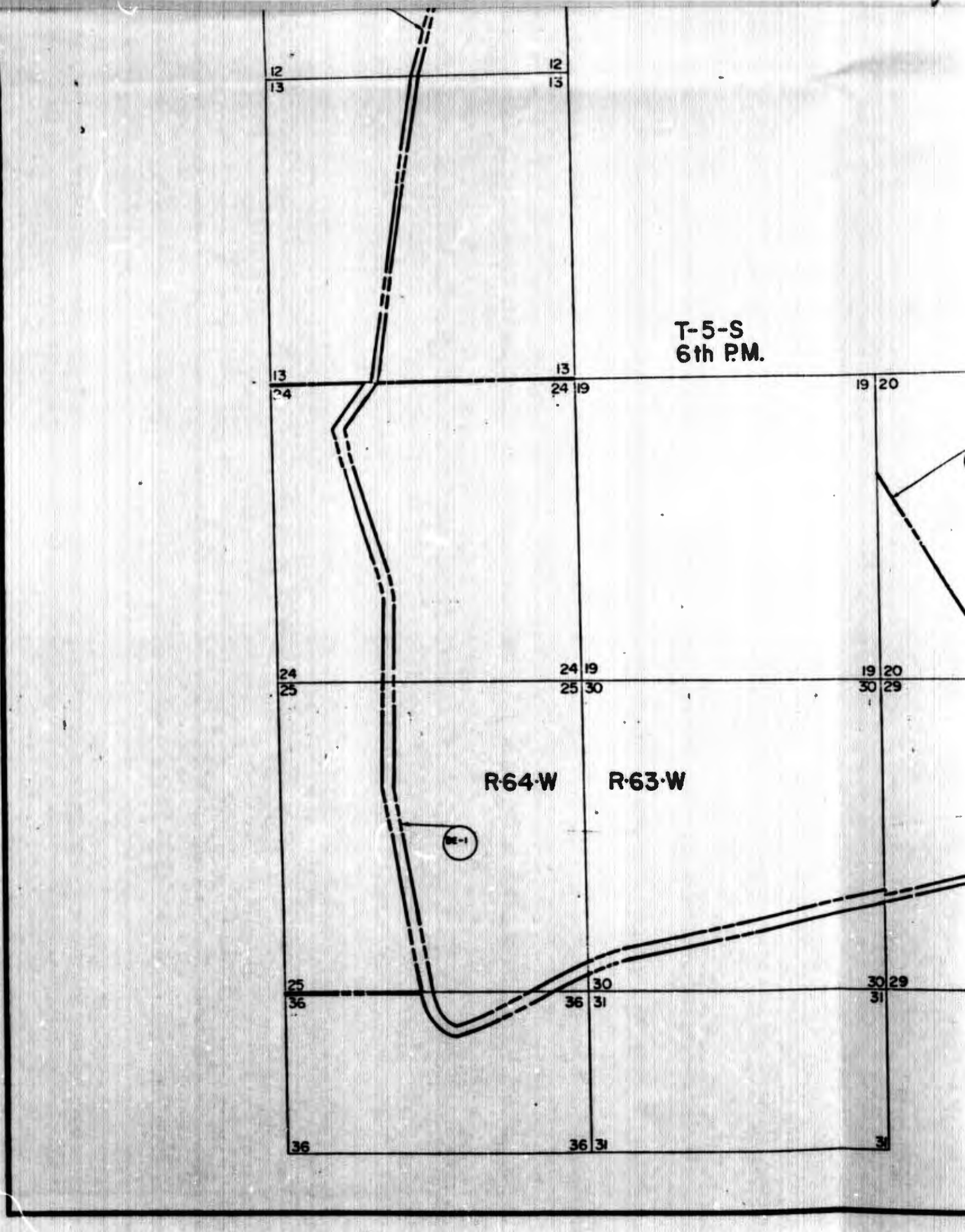
EXCEPT FOR THE SPECIAL SYMBOLS SHOWN BELOW MAP SYMBOLS ARE STANDARD TO ARMY MAP SERVICE TECHNICAL MANUAL NO. 23.

RESERVATION LINE

RESERVATION LINE (Actual Survey)

TRACT BOUNDARY LINE

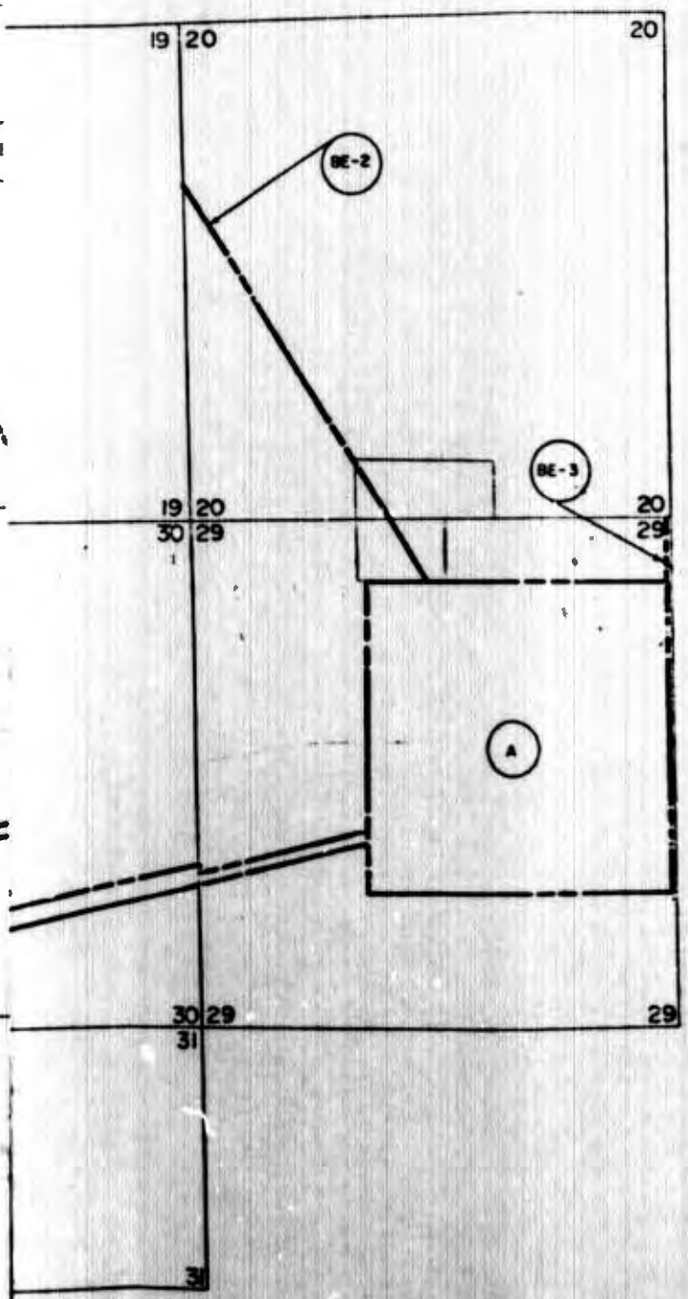
TRACT NUMBER


T-5-S
6th P.M.
R·64·W
R·63·W
12
13
24
25
36
19
20
29
30
31

VICINITY MAP

SCALE IN MILES
0 5 10 20

N

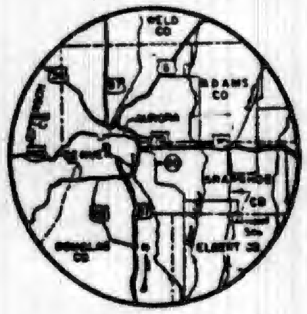


STATE INDEX

NOTE:
The boundary of the installation was compiled from deed descriptions from Lowry AF Missile Site I.

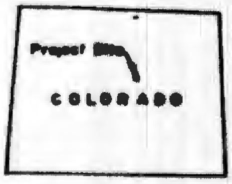
. P	12-2-72	2-2-73	Prop Audit	
REDRAFTING	DATE PLANT APPVD	DATE	REVISIONS	BY

5 Memo fm
2 RE-D
1 RE-D
ACQUISI
DRAWN BY
TRACED BY
CHECKED
SUBMITTED
RECOMMEND
OFFICE C
AU
INSTALLATI



VICINITY MAP

SCALE IN MILES



STATE INDEX

NOTE:
Boundary of the installation was compiled from deed descriptions
Lowry AF Missile Site L

RAILROADS UNION PACIFIC

STATE ROADS 87 & 30

FEDERAL ROADS 70

AIR LINES UNITED, FRONTIER & WESTERN

ACQUISITION

TOTAL ACRES ACQUIRED 348.85

FEE

PUBLIC DOMAIN { WITHDRAWAL / USE PERMIT

USE PERMIT (OTHER THAN P. D.)

TRANSFER { FEE 242.42 / EASE. 106.23

LEASE

LESSER INTERESTS

DISPOSAL

TOTAL ACRES DISPOSED OF

SOLD

PUBLIC DOMAIN { WITHDRAWAL / USE PERMIT

USE PERMIT (OTHER THAN P. D.)

TRANSFERRED

LEASES TERMINATED

LESSER INTERESTS TERM.

REASSIGNED

OTHER

LEGEND

EXCEPT FOR THE SPECIAL SYMBOLS SHOWN BELOW MAP SYMBOLS ARE STANDARD IN ARMY MAP SERVICE TECHNICAL MANUAL NO. 22.

RESERVATION LINE

RESERVATION LINE (Actual Survey)

TRACT BOUNDARY LINE

TRACT NUMBER

CONTOUR LINE

DISPOSAL

EXTENDED OWNERSHIP LINE

③	Memo for Dept of AF	dtd 12 Oct 1977
②	RE-D 8092A	dtd 1 March 1977
①	RE-D 8092	dtd 1 Oct 1975

ACQUISITION AUTHORIZATION

DEPARTMENT OF THE ARMY
OFFICE OF THE OMAHA DISTRICT ENGINEER
MISSOURI RIVER DIVISION

DRAWN BY R.L.R.
TRACED BY R.L.R.
CHECKED BY R.E.P.
SUBMITTED BY:
RECOMMENDED BY:

REAL ESTATE
BENNETT ARMY NATIONAL GUARD FACILITY
COLORADO
MILITARY RESERVATION

APPROVED BY: DATE 12 June 1978

OFFICE, CHIEF OF ENGINEERS, WASHINGTON 25, D. C.

AUDITED

INSTALLATION OR PROJECT NO. OMAH-1-0101

Scale in Feet

SHEET 1 OF 1 DRAWING NO.

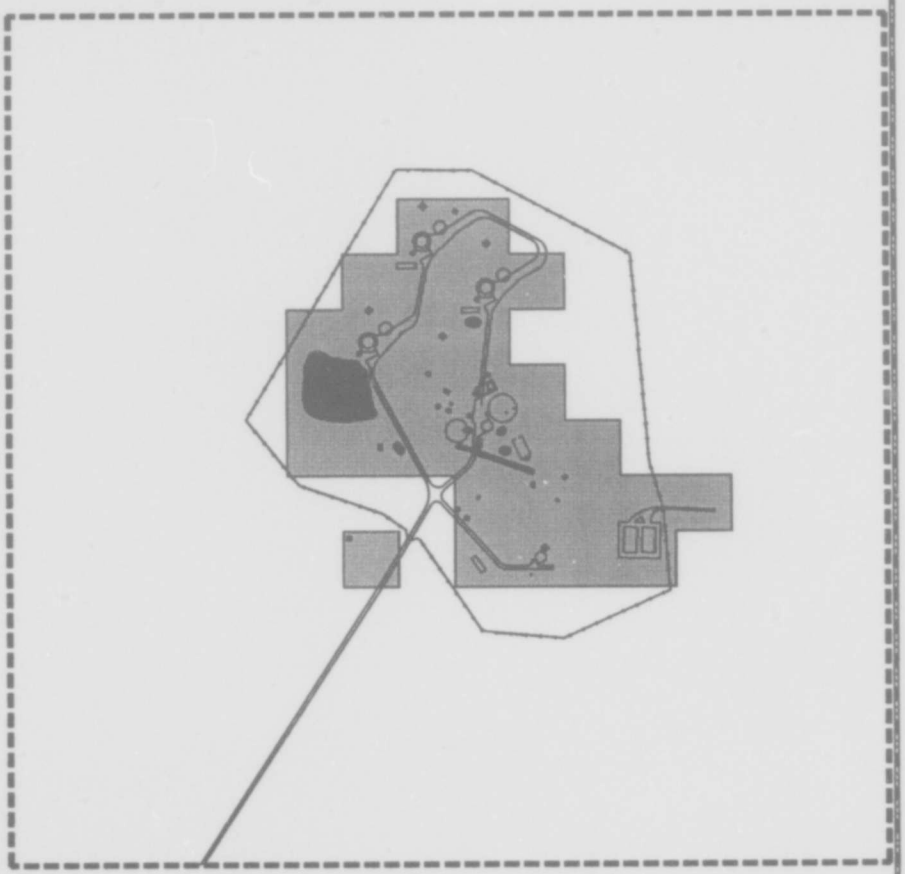
	12-6-78	6-8-78	Final Audit	
SYMBOL/CODE	DATE AUDIT APPVD	DATE	REVISIONS	BY

FIGURE 5-3
SUMMARY CERFA MAP, BENNETT ARMY NATIONAL GUARD FACILITY, BENNETT, COLORADO

REVISION	DATE
0	11/24/03
	04/04/94

Section 20

T 5 S, R 63 W, NE Corner of Section 29



0 500

SCALE IN FEET

- BRAC Property Boundary
- CERFA Parcel
- CERFA Parcel with Qualifiers
- CERFA Disqualified Parcel
- CERFA Excluded Parcel

Source: CERFA Investigation, April 1994

The Earth Technology Corporation

1420 KING STREET SUITE 600, ALEXANDRIA, VIRGINIA 22314

FIGURE 5-3
SUMMARY CERFA MAP
BENNETT ARMY NATIONAL GUARD FACILITY
BENNETT, COLORADO

DRAWN BY: MTM	DESIGNED BY: N/A	
CHECKED BY: JS	APPROVED BY: BY	DATE: 04/04/94
TETC PROJECT NUMBER: 931977-03	DRAWING NUMBER: SHEET 1 OF 1	REV. NO. 1

APPENDIX A

REFERENCE LIST FOR BENNETT ARMY NATIONAL GUARD FACILITY

APPENDIX A
REFERENCE LIST FOR BENNETT ARMY NATIONAL GUARD FACILITY

	Document	Date	Source
1.	Enhanced Preliminary Assessment Report: Bennett Army National Guard Facility Denver, Colorado	January 1990	USAEC
2.	Draft Final Remedial Investigation/Feasibility Study Work Plans	January 1991	USAEC
3.	Installation Assessment, Army Base Closure Program, U.S. Environmental Protection Agency (Aerial Photographs)	April 1990	USAEC
4.	Draft Health and Safety Plan	October 1990	USAEC
5.	Installation Fact Sheet	April 1993	USAEC
6.	Draft Technical Plan, Bennett Army National Guard Facility Remedial Investigation/Feasibility Study	October 1990	USAEC
7.	Draft Sample Design Plan and Draft Quality Assurance Program Plan	October 1990	USAEC
8.	Bennett Army National Guard Facility Site Inspection (Video Cassette)	1990	USAEC
9.	Transfer of Former Titan Missile Site No. 725 A Lowry Air Force Base, Colorado to the Department of Army	May 1993	USAEC
10.	Real Estate Transfer Register	June 1978	USAEC
11.	Real Estate Tract Map	June 1978	USAEC
12.	Site Visit	October 5, 1993	TETC
13.	Lowry Area History	September 29, 1958 - December 16, 1961	Colorado Army National Guard
14.	Titan Missile Base Construction. Lowry Air Force Base	January 1961	Colorado Army National Guard
15.	The 451st Strategic Missile Wing and the Titan Launch Complexes	October 15, 1961	Colorado Army National Guard
16.	Support Plan for Phase-out and Disposition of Titan I Operational Systems at Lowry Air Force Base	March 22, 1965	Colorado Army National Guard
17.	Chronology: 451st Strategic Missile Wing for the Period 25 September 1958 to 30 June 1962	Approximately 1962	Colorado Army National Guard
18.	Miscellaneous Memos in Regard to Salvage-related Equipment Transfer	Miscellaneous	Colorado Army National Guard

APPENDIX A
REFERENCE LIST FOR BENNETT ARMY NATIONAL GUARD FACILITY

Document	Date	Source
19. Environmental Assessment and Finding of No Significant Impact, Closure of Bennett Army National Guard Facility, Arapahoe County, Colorado	May 1990	USAEC
20. Preliminary Assessment, Missile Silo Sites, Arapahoe County, Colorado (COD983777848)	September 4, 1991	Colorado Department of Health

Key: USAEC = U.S. Army Environmental Center

APPENDIX B
ERIIS DATA BASE SEARCH REPORT

ENVIRONMENTAL RISK INFORMATION & IMAGING SERVICES REPORT

PERTAINING TO:

BENNETT ARMY NATIONAL GUARD
, CO

ON BEHALF OF:

THE EARTH TECHNOLOGY CORP.
1420 KING ST., STE. 600
ALEXANDRIA, VA 22314

PREPARED ON:

August 23, 1993

ERIIS REPORT NUMBER:

28668

ERIIS DISCLAIMER

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ERIIS Report Overview

The ERIIS Report consists of five (5) basic sections:

* Digital Custom Plotted Map
* Database Records
* Statistical Profile
* Sanborn Fire Insurance Map(s)
* Topographical Map

Digital Custom Map

Each site-specific Digital Custom Map is plotted using U.S. Census TIGER Files. The cross in the center of the map represents the study site. The red circle represents the study radius, usually one mile. Reported federal/state hazardous waste and toxic chemical sites are plotted on the map and are easily distinguished by different symbols.

Statistical Profile

The Statistical Profile is an at-a-glance numeric summary of the data included in the ERIIS Report.

Database Records

This section presents detailed federal and state database information for each site within the study radius. Sites are easily located on the digital map by using the number in the MAP ID column of the report.

Note: Many of the sites reported in federal/state databases cannot be plotted due to inaccurate or incomplete addresses (e.g., PO Box number, street name with no number). Still, they are potentially within the study radius. ERIIS reports these sites using progressively broader search criteria to ensure that all potentially relevant hazardous sites are included. All zip codes within and intersected by the study radius are searched, as well as records that simply report the relevant city or county. Where applicable, federal and state database information is further subdivided.

Sanborn Fire Insurance Maps

ERIIS has assembled a collection of Historical Sanborn Fire Insurance Maps covering 14,000 cities and towns. In some cases, however, the ERIIS Report will include a notice that no maps were found. This notice should serve as evidence of due diligence.

Topographic Map

ERIIS provides a topographic map with each report which accurately depicts the natural and man-made features of the land. The shape and elevation of the terrain are represented by contour lines and specific features, such as roads, towns, and vegetation, are portrayed by map symbols and colors. Standard topographic maps are produced at a 1:24,000 scale, or one inch represents 2000 feet.

ENVIRONMENTAL RISK INFORMATION & IMAGING SERVICES

RADIUS REPORT

REPORT NUMBER: 28668

STATE: CO
LATITUDE: 39.585550
LONGITUDE: -104.463886
ZIP CODES SEARCHED: 80102

		RADIUS REPORTED SITES					NOT RADIUS REPORTED		TOTAL
DATABASE	RADIUS (MILES)	Property	Property-1/16	1/16-1/2	1/2-1	>1	ZIP CODE	CITY/COUNTY	SITES
NPL	1.000	NO	0	0	0		0	0	0
CERCLIS	1.000	NO	0	0	0		1	0	1
TRI	1.000	NO	0	0	0		0	0	0
RCRIS_TS	1.000	NO	0	0	0		0	0	0
RCRIS_LG	1.000	NO	0	0	0		1	0	1
RCRIS_SG	1.000	NO	0	0	0		0	0	0
DOCKET	1.000	NO	0	0	0		0	0	0
ERNS	1.000	NO	0	0	0		0	1	1
FINDS	1.000	NO	0	0	0		5	0	5
NUCLEAR		NR	NR	NR	NR	NR	0	0	0
OPENDUMP		NR	NR	NR	NR	NR	0	0	0
UST	1.000	NO	0	0	0		9	0	9
LUST	1.000	NO	0	0	0		0	2	2
SWF		NR	NR	NR	NR	NR	0	30	30
			0	0	0	0	16	33	49

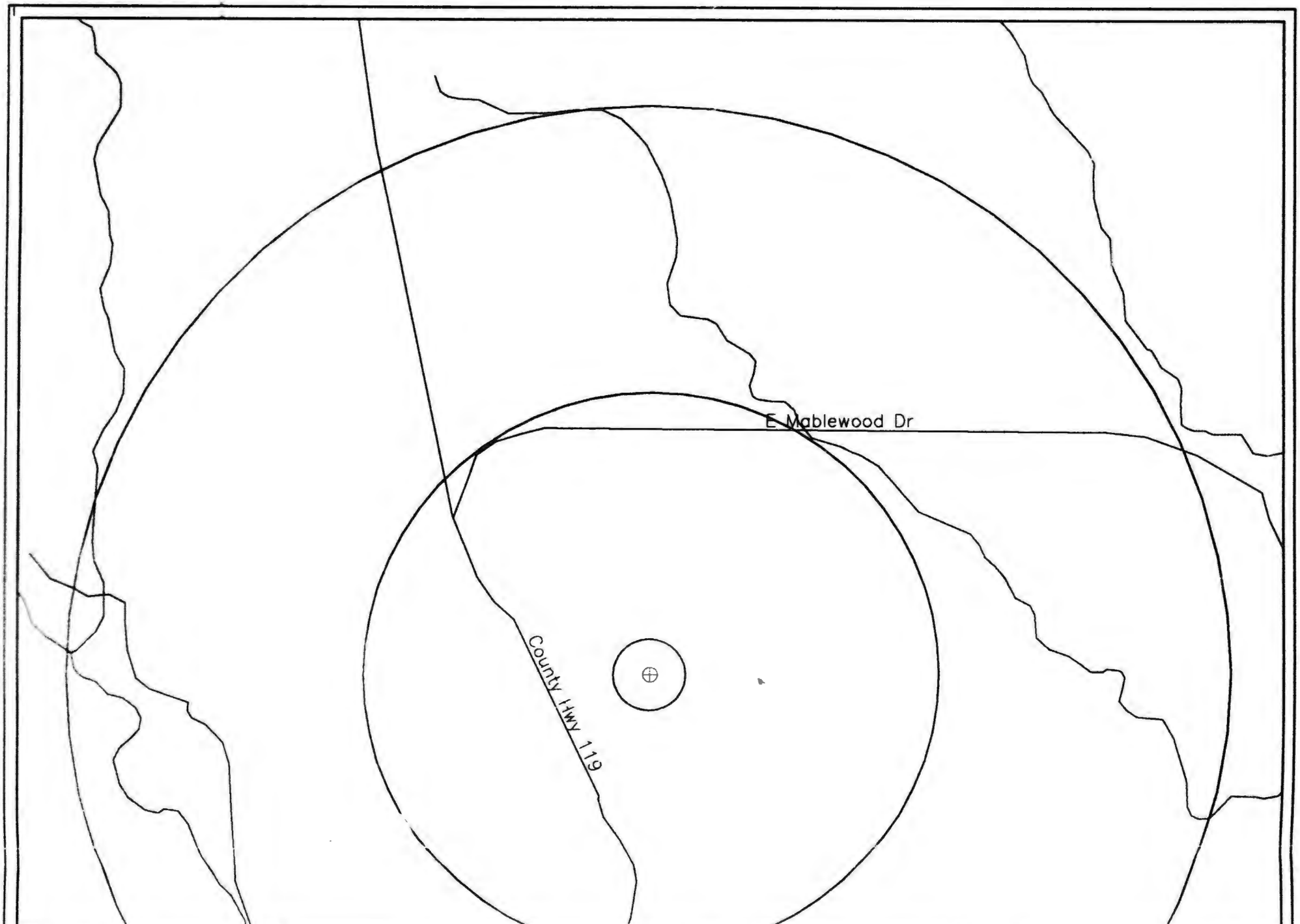
Selection of PROPERTY records requires an accurate street address in the ERIIS job order.

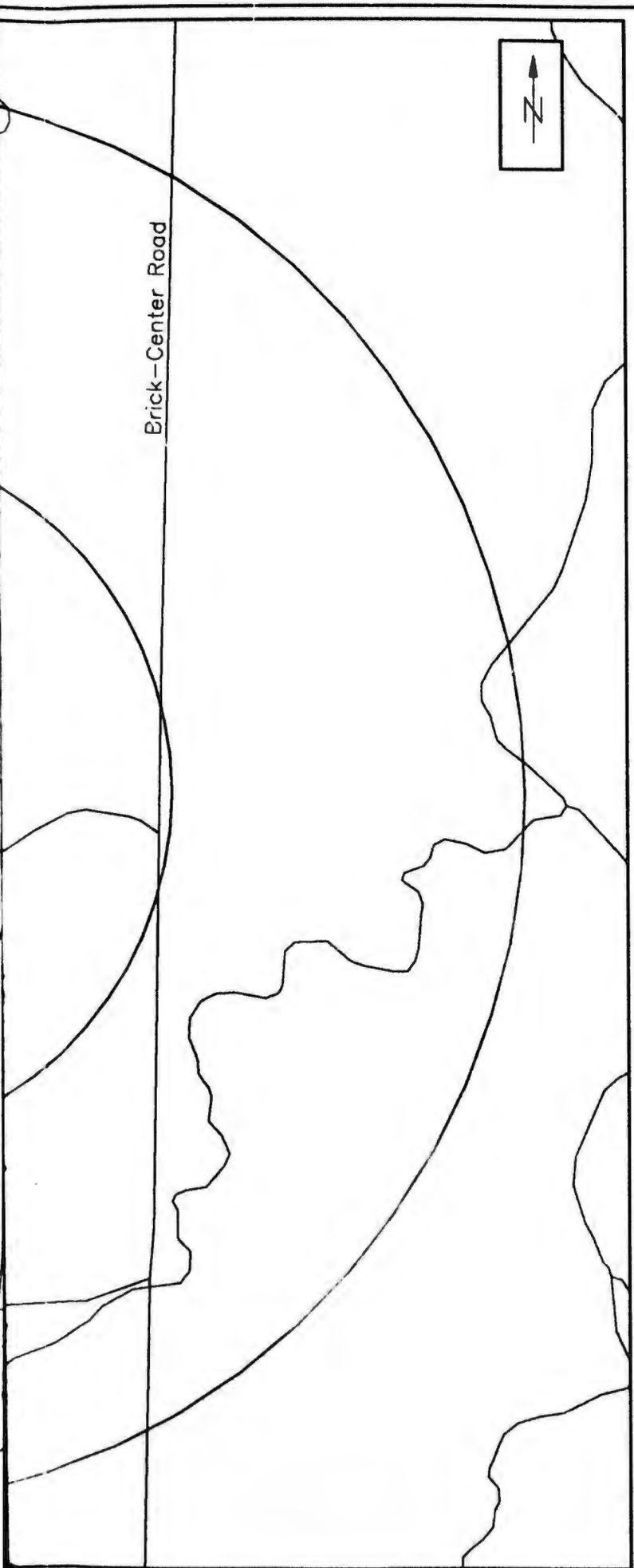
ZIP CODE and CITY/COUNTY sites are not radius reportable due to insufficient and/or inaccurate addresses reported by federal/state agency. These sites are reported within the study site zip code(s) and/or city/county and may be within the study site radius. These sites require further investigation to accurately assess proximity to the study site.

A blank radius count indicates that the database was not searched by this radius per client instructions.

NR in a radius or zip code count indicates that the database cannot be reported by this search criteria due to insufficient and/or inaccurate addresses reported by a federal/state agency.

State data in paper format is sorted using the most specific secondary search criteria available (zip code, city, or county).


E Mablewood Dr
County Hwy 119



ERIIS

1421 Prince Street, Ste 330
Alexandria, VA 22314
(703)836-0402 (800)989-0402
FAX: (703)836-0468

SITE INFORMATION

Bennett Army National Guard
Bennett, CO
Arapahoe County
Job Number: 28668
Map Plotted: Aug 23, 1993

MAP LEGEND

- Hydrography
- Railroads
- Roads
- Highways
- CERCLIS 0 Site(s)
- LUST 0 Site(s)
- NPL 0 Site(s)
- RCRIS_LG 0 Site(s)
- RCRIS_SG 0 Site(s)
- RCRIS_TS 0 Site(s)
- TRI 0 Site(s)
- UST 0 Site(s)

Miles

0 0.25 0.5

APPENDIX C

REGULATORY COMMENTS TO DRAFT BENNETT ARMY NATIONAL GUARD FACILITY CERFA REPORT

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH
Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80222-1530
Phone (303) 692-2000

Laboratory Building
4210 E. 11th Avenue
Denver, Colorado 80220-3716
(303) 691-4700

Roy Romer
Governor

Patricia A. Nolan, MD, MPH
Executive Director

March 22, 1994

Mr. Paul E. Wojciechowski
Department of the Army
U.S. Army Environmental Center
Arberdeen Proving Ground, Maryland 21010-5401

Re: Draft Community Environmental Response Facilitation Act Report, Bennett Army National Guard Facility

Dear Mr. Wojciechowski:

As the Bennett BRAC Coordinator for the Colorado Department of Health (CDH), I have been designated as the appropriate state official to concur in the identification of "clean parcels" as defined in the Community Environmental Response Facilitation Act (CERFA) Section 120 (h)(4). In response to your request of December 13, 1993 for concurrence on the Army's "uncontaminated" parcel determination for Bennett Army National Guard Facility (BANGF) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 120(h)(4), as amended by PL 102-426, CERFA, CDH advises you that the State is unable to concur at this time.

Our position reflects concerns that ground water has not been adequately characterized. As defined under CERCLA Section 120 (h)(4)(A), parcels overlying subsurface contamination cannot be identified as "uncontaminated". The Enhanced Preliminary Assessment, the CERFA report, and the Preliminary Assessment done by the State of Colorado for the EPA CERCLA program indicate a potential for groundwater contamination. Groundwater has not been sampled and basic information such as direction of ground water movement, depth to bedrock, lithologic descriptions and aquifer characteristics have not been described in sufficient detail to understand the pathways of potential ground water contamination.

Additionally, there is a concern that drainage from the sewage settling ponds and chemical clarifiers may drain through parcels that are designated as CERFA parcels. The drainage pathways must be characterized and sampled to determine the type and extent of contamination if present.

It is our understanding that the Army is planning to obtain data to further characterize the BANGF site. The Scope of Work for the Site Investigation, received February 15, outlines the sampling and additional data requisition planned by the Army. It is our hope that we

will be able to concur with the release of some or all parcels after review of the additional information and environmental data. We look forward to continuing to work with the Army to complete a thorough investigation of the environmental concerns at BANGP and to expedite the remedial actions deemed appropriate to protect human health and the environment.

Thank you for your willingness to consider our concerns. Please contact Lynn Olson at (303) 692-3391 if you have any questions.

Sincerely,

Jeff Edson
Hazardous Materials and
Waste Management Division

cc: Mr. David Duster, U.S.E.P.A.
The Honorable Roy Romer, Governor of Colorado
Mr. Glen Boldt, U.S.A.E.C.
Ms. Lynne Kimble, Colorado Army National Guard
Mr. Rob Eber, Colorado AGO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

MAR 9 1994

Ref: 8HWM-FF

Jeff Edson, Unit Leader (HMWMD-RP-B)
Hazardous Materials and Waste Management Division
4300 Cherry Creek Drive S.
Denver CO 80222-1530

Subject: Request for CDH Concurrence on Army Section 120(h)(4) Determination for Bennett Army National Guard Facility, Colorado

Dear Mr. Edson:

EPA recommends that you do not concur with the Department of Army Section 120(h)(4) "uncontaminated" determination for parcels located north of the southern edge of the defunct missile silo site at the above referenced site, until additional site information is collected to confirm this determination. The Army's determination is presented in Figure 5-1 of the December 8, 1993, "Bennett Army National Guard Facility, Community Environmental Response Facilitation Act (CERFA) Report." All parcels located north of the vertical coordinate #5 (i.e. coordinates (1 - 18, 6-17) should be categorized as disqualified CERFA parcels.

Based on concerns related to releases of hazardous substances, Bennett Army National Guard Facility has been listed on the Federal Facilities Hazardous Waste Docket (published November 10, 1993). We are concerned that releases of hazardous substances from this facility may have migrated into the underlying ground water and downgradient from the missile silo. Since ground-water flows generally in a northern direction, we concur with the Army's "uncontaminated" parcel determination for parcels located south (i.e. upgradient) of the missile silo.

During the upcoming site investigation (SI) additional site information will collected. This information should be extremely useful in classifying Bennett parcels. I suggest that the we re-visit the Army's determination as soon as data from the SI is available.

If you have any questions, please call me at 294-1076.

Sincerely yours,

David Duster
BRAC Remedial Project Manager

cc: Lynn Olsen
Glenn Boldt
Steve Moores
Marshall Fischer
Jay Silvernale

DEPARTMENT OF THE ARMY
U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND 21010-5401

April 5, 1994

REPLY TO ATTENTION OF

Base Closure Division

Mr. Jeffrey Edson
Colorado Department of Health
4300 Cherry Creek Drive, South
Denver, Colorado 80222-1530

Dear Mr. Edson:

Thank you for your letter of March 22, 1994, regarding the review of the draft Community Environmental Response Facilitation Act (CERFA) Report for Bennett Army National Guard Facility. Your response within the 90-day review period is appreciated. Your letter indicates that the Colorado Department of Health (CDH) is unable to concur at this time with the draft CERFA document until sampling results, specifically those to be obtained under the planned site inspection, are available to more adequately characterize the groundwater. In response to this letter, I am providing the following comments to clarify the U.S. Army's position on what is required to fulfill CERFA and, specifically, this Center's position on the need for sampling to support a parcel's CERFA categorization:

a. The Army has undertaken to fulfill the requirements of Public Law 102-426 which amended provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 120(h), by identifying real property on BRAC installations "on which no hazardous substances and no petroleum products, or their derivatives, were stored for one year or more, known to have been released, or disposed of." To achieve this, an investigation was performed following the requirements specifically outlined in CERCLA § 120(h)(4). These statutorily-mandated requirements consist of a seven-step protocol to comprehensively review sources of information concerning the current and previous uses of the real property (see highlighted section in enclosure). All CERFA reports prepared by the U.S. Army Environmental Center's (USAEC's) contractors followed the seven-step protocol as defined in CERCLA § 120(h)(4).

b. Upon completion of this seven-step protocol, the USAEC contractors were directed to employ a conservative approach in categorizing the environmental condition of the installation. As explained in the CERFA report, four categories of parcels were selected to represent the environmental condition of the property:

(As revised for the final draft) 1.2 DEFINITION OF TERMS

(1) CERFA Parcel - A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives, and no evidence of being threatened by migration of such substances. CERFA parcels include areas where polychlorinated biphyenl (PCB)-containing equipment is in operation, but there is no evidence of release. CERFA parcels also include any portion of the installation which once contained related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, stored (not in-use) PCB-containing equipment, asbestos contained within building materials, and lead-based paint applied to building material surfaces, but which have since been fully remediated or removed.

(2) CERFA Parcel with Qualifier(s) - A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives, and no evidence of being threatened by migration of such substances. Parcel does, however, contain related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, radionuclides contained within products being used for their intended purposes, asbestos contained within building materials, lead-based paint applied to building material surfaces, or stored (not in-use) PCB-containing equipment.

(3) CERFA Disqualified Parcel - A portion of the installation real property for which investigation reveals evidence of a release, disposal, or storage for more than one year of a CERCLA hazardous substance, petroleum, or petroleum derivative, or a portion of the installation threatened by such a release or disposal. CERFA Disqualified Parcels also include any portion of the installation where PCB, asbestos-containing material, lead-based paint residue, or any ordnance has been disposed of, and any locations where chemical ordnance has been stored. Additionally, CERFA Disqualified Parcels include any areas in which CERCLA hazardous substances or petroleum products have been released or disposed of and, subsequently, fully remediated.

(4) CERFA Excluded Parcel - A portion of the installation real property retained by the Department of Defense and, therefore, not explicitly investigated for CERFA. CERFA Excluded Parcels also include any portions of the installation which have already been transferred by deed to a party outside the federal government, or by transfer assembly to another federal agency.

The designation of a parcel as either a CERFA Parcel or a CERFA Parcel with Qualifiers, is not a certification that these parcels are conclusively free of contamination, but rather a determination, based on the statutorily-mandated investigation, that these parcels are not contaminated as defined by CERCLA § 120(h)(4). If any of the investigation's seven steps discloses evidence of a storage, release, or disposal, regardless of reportable quantities or completed remediation efforts, the area is designated "CERFA Disqualified."

Following the outline for the seven-step protocol of the investigation, CERCLA § 120(h)(4) allows for "sampling if appropriate under the circumstances." The Army determined that it would not be appropriate to undertake sampling of environmental media where ambiguity or uncertainty existed over the environmental condition of the property. This kind of sampling effort, to prove the absence of contamination on all square acres designated "CERFA Parcels," would be cost prohibitive and wasteful of taxpayer funds. Regardless of the resulting waste from such an effort, it was not the intent of CERFA to require verification sampling, since the statutory deadline for completion of CERFA documents precludes the possibility of conducting such an effort. As a result, where doubt existed, the USAEC contractors were instructed to categorize questionable areas as "CERFA Disqualified." The Army may undertake to sample environmental media at these locations in the future based on reuse interests, or in the case of Bennett Army National Guard Facility (BANGF), to fulfill site inspection requirements.

CERCLA § 120(h)(4)(B) states, "The identification required under subparagraph (A) is not complete until concurrence in the results of the identification is obtained...from the appropriate State official." As indicated by this section, the concurrence which is being sought is the agreement by the applicable regulatory agency that the investigation was thoroughly conducted in accordance with subparagraph (A) (the seven-step protocol), and not a certification that a "CERFA Parcel" or a "CERFA Parcel with Qualifier" is free of contamination. As explained above, the Army believes that it has fulfilled the requirements of Public Law 102-426 and, in fact, exceeded them by identifying

areas (CERFA Parcels with Qualifiers) that pose additional environmental, hazard, or safety concerns that the Army believes are not explicitly regulated under CERCLA.

It is important to note that the CERFA report represents a picture of the environmental condition of the installation at the time of the CERFA investigation. As such, upcoming investigation efforts, additional data, or anecdotal evidence may change parcel designations made in the report. Regardless of the property characterization represented in the CERFA Report, it is important to note that pursuant to CERCLA § 120(h), the Army remains responsible for any response or corrective action found to be necessary after transfer of property is effected. Finally, it should be remembered that determinations made in the CERFA report are in no way intended to usurp the existing regulatory authority.

If you have any questions regarding this Center's CERFA investigation, or would like to meet to discuss any areas which you consider are inappropriately categorized, please contact Mr. Glen Boldt at (410) 671-1614.

Sincerely,

Paul E. Wojciechowski
Lieutenant Colonel, U.S. Army
Acting Chief
Base Closure Division

Enclosure

Copies Furnished (without enclosure):

Ms. Lynne Olson, Colorado Department of Health, 4300 Cherry Creek Drive South, Denver, Colorado 80222-1530
Mr. David Duster, U.S. Environmental Protection Agency, Region VIII, 1 Denver Place, Suite 1300, 999 18th Street, Denver, Colorado 80202-2413

APPENDIX D

DETAILED DATA BASE

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BENNETT ARMY NATIONAL GUARD
CERFA CATEGORY MATRIX

	CERFA PARCEL WITH QUALIFIERS CATEGORIES						CERFA DISQUALIFIED CATEGORIES			
LOCATION	ASBESTOS	LEAD	RADON	RADIO-NUCLIDES	UNEXPLODED ORDNANCE	PCBs STORAGE	PETROLEUM RELEASE	PETROLEUM STORAGE	HAZARDOUS SUBSTANCE RELEASE	HAZARDOUS SUBSTANCE STORAGE
Control Center	P	P							P	
Chemical Waste Clarifier	P	P							P	
Equipment Terminal 1	P	P						Y	Y	
Equipment Terminal 2	P	P						P		
Equipment Terminal 3	P	P						P		
Fill Area									P	
Impoundment 1									P	
Missile Fuel Storage Tank								Y		
Mounded Material 1									P	
Mounded Material 2									P	
Mounded Material 3									P	
Mounded Material 4									P	
Missile Silo 1									P	
Missile Silo 2									P	
Missile Silo 3									P	
Power House	Y	P					P	Y	P	Y
Power House Air Filtration Facility	P	P						Y		
Power House Exhaust System	Y	P								
Propellant Terminal 1	P	P								Y
Propellant Terminal 2	P	P								Y
Propellant Terminal 3	P	P								Y
Quonset Hut								Y		P
Seal Chamber 1									P	
Seal Chamber 2									P	
Seal Chamber 3									P	
Seal Chamber 4									P	
Seal Chamber 5									P	

LOCATION	CERFA PARCEL WITH QUALIFIERS CATEGORIES						CERFA DISQUALIFIED CATEGORIES			
	ASBESTOS	LEAD	RADON	RADIO-NUCLIDES	UNEXPLODED ORDNANCE	PCBs STORAGE	PETROLEUM RELEASE	PETROLEUM STORAGE	HAZARDOUS SUBSTANCE RELEASE	HAZARDOUS SUBSTANCE STORAGE
Standing Liquid 1									P	
Sewage Stabilization Ponds/Trenches									P	
Stain 1									P	
Stain 10									P	
Stain 2									P	
Stain 3									P	
Stain 4									P	
Stain 5									P	
Stain 6									P	
Stain 7									P	
Stain 8									P	
Stain 9									P	
Trench 1									P	
Trench 2									P	
Two Pole-mounted Transformers									P	
Underground Tunnel	P		P							
Underground Tunnel	P		P							
Underground Tunnel	P		P							
Underground Tunnel	P		P							
Underground Tunnel	P		P							
Underground Tunnel	P		P							
Underground Tunnel	P		P							

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 49

ASBESTOS-CONTAINING MATERIAL

LOCATION	STATUS	LOCATION COMMENTS	REMEDIATION OR MITIGATION	APPENDIX A REFERENCE(S)
Control Center	P			6
Chemical Waste Clarifier	P			6
Equipment Terminal 1	P			6
Equipment Terminal 2	P			6
Equipment Terminal 3	P			6
Power House	Y			6
Power House Air Filtration Facility	P			6
Power House Exhaust System	P			6
Power House Exhaust System	Y			13,14
Propellant Terminal 1	P			6
Propellant Terminal 2	P			6
Propellant Terminal 3	P			6
Underground Tunnel	P			6
Underground Tunnel	P			6
Underground Tunnel	P			6
Underground Tunnel	P			6
Underground Tunnel	P			6
Underground Tunnel	P			6
Underground Tunnel	P			6

STATUS=Y - ASBESTOS CONTAINING MATERIAL PRESENT
STATUS=P- POSSIBLE ASBESTOS CONTAINING MATERIAL PRESENT

Records printed: 19

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LEAD-BASED PAINT

LOCATION	STATUS	LOCATION COMMENTS	YEAR BUILT	REMEDIATION OR MITIGATION	APPENDIX A REFERENCE(S)
Control Center	P		~1960		
Chemical Waste Clarifier	P		~1960		
Equipment Terminal 1	P		~1960		
Equipment Terminal 2	P		~1960		
Equipment Terminal 3	P		~1960		
Power House	P		~1960		
Power House Air Filtration Facility	P		~1960		
Power House Exhaust System	P		~1960		
Propellant Terminal 1	P		~1960		
Propellant Terminal 2	P		~1960		
Propellant Terminal 3	P		~1960		
Underground Tunnel	P		~1960		
Underground Tunnel	P		~1960		
Underground Tunnel	P		~1960		
Underground Tunnel	P		~1960		
Underground Tunnel	P		~1960		
Underground Tunnel	P		~1960		
Underground Tunnel	P		~1960		

STATUS=Y - LEAD-BASED PAINT PRESENT
STATUS=P - POSSIBLE LEAD-BASED PAINT PRESENT

Records printed: 18

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HAZARDOUS SUBSTANCE RELEASE

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE RELEASE	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
Control Center	P	Control Center	Soil/SW	fuel, propellant, solvents in standing water			1	
Chemical Waste Clarifier	P	seal chamber	Surface	solvents, fuels, metals		1960s	1, 6	No longer in use.
Equipment Terminal 1	Y	Missile Silo	Surface	orange liquid		1990	6	Release occurred inside a tunnel.
Fill Area	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Impoundment 1	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Mounded Material 1	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Mounded Material 2	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Mounded Material 3	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Mounded Material 4	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Missile Silo 1	P	Missile Silo	Soil/SW	fuel, propellant, solvents in standing water			1	
Missile Silo 2	P	Missile Silo	Soil/SW	fuel, propellant, solvents in standing water			1	
Missile Silo 3	P	Missile Silo	Soil/SW	fuel, propellant, solvents in standing water			1	
Power House	P	Power House	Soil/SW	fuel, propellant, solvents in standing water			1	
Power House	P	AST with hole in it	Surface	Sulfuric Acid crystals			8	No longer in use.
Seal Chamber 1	P	seal chamber	Soil	waste water		1960s	1, 6	No longer in use.
Seal Chamber 2	P	seal chamber	Soil	waste water		1960s	1, 6	No longer in use.
Seal Chamber 3	P	seal chamber	Soil	waste water		1960s	1, 6	No longer in use.
Seal Chamber 4	P	seal chamber	Soil	waste water		1960s	1, 6	No longer in use.
Seal Chamber 5	P	seal chamber	Soil	waste water		1960s	1, 6	No longer in use.
Standing Liquid 1	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE RELEASE	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
Sewage Stabilization Ponds/Trenches	P	seal chamber	Surface	solvents, fuels, TPH, metals		1960s	1	No longer in use. Ponds are clay lined.
Stain 1	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 10	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 2	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 3	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 4	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 5	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 6	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 7	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 8	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Stain 9	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Trench 1	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Trench 2	P	surface disturbance	Soil/SW	unknown material			1, 3, 6	
Two Pole-mounted Transformers	P	two pole-mounted transformers	Soil	PCBs			1	No longer in use.

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 34

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HAZARDOUS SUBSTANCE STORAGE

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE START	DATE INACTIVATED	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
Power House	Y	Tank	Tank	Acid	~500 gal	~1960		6, 7	No longer in use.
Power House	Y	Tank	Tank	Material labeled "Danger"	~500 gal	~1960		6, 7	No longer in use.
Power House	Y	Sulfuric Acid Tank	Tank	Sulfuric Acid	~300 gal	~1960		6	No longer in use.
Power House	Y	Drum Storage	Drums	Unknown Material		~1960		13	No longer in use.
Propellant Terminal 1	Y	Sulfuric Acid Tank	tank within terminal	Sulfuric Acid	3,500 gal	~1960		1, 7	No longer in use. May contai residual acid.
Propellant Terminal 2	Y	Sulfuric Acid Tank	tank within terminal	Sulfuric Acid	3,500 gal	~1960		1, 7	No longer in use. May contai residual acid.
Propellant Terminal 3	Y	Sulfuric Acid Tank	tank within terminal	Sulfuric Acid	3,500 gal	~1960		1, 7	No longer in use. May contai residual acid.
Quonset Hut	P	Drum Storage	Drums	Unknown Material	>150 gal	~1960		12	No longer in use.

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 8

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PETROLEUM RELEASE

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE RELEASE	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
Power House	P	open manhole		Diesel odor			1	All diesel tanks are out of service.

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 1

PETROLEUM STORAGE

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE INACTIVATED	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
Equipment Terminal 1	Y	Tank	tank within terminal	Ethylene Glycol			6	Tank is no longer used.
Equipment Terminal 2	P	Tank	tank within terminal	Ethylene Glycol			6	Tank is inactive.
Equipment Terminal 3	P	Tank	tank within terminal	Ethylene Glycol			6	Tank is inactive.
Missile Fuel Storage Tank	Y	Missile Fuel Tank	Tank	Kerosene-alcohol fuel (RP-1 Missile Fuel)	40,000 gal		1, 20	Tank is empty.
Power House	Y	Diesel Tank	tank within concrete vault	Diesel	67,000 gal	~1971	1, 13, 20	Removed during salvage.
Power House	Y	Diesel Tank	tank within concrete vault	Diesel	67,000 gal	~1971	1, 13, 20	Removed during salvage.
Power House	Y	Diesel Tank	Tank	Diesel	5,000 gal		1, 7	Tank is inactive. Liquids observed in tank.
Power House	Y	Drum Storage	DRUM	unknown			13	Drum storage area is inactive.
Power House Air Filtration Facility	Y	Tank	Tank	UA	~500 gal		6	Tank is no longer used and in good condition.
Quonset Hut	Y	Tank	AGT	Fuel oil (P)	~250 gal		3, 12	Tank has been removed.
Quonset Hut	Y	Tank	AGT	Fuel oil (P)	~250 gal		3, 12	Tank has been removed.

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 11