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Statement of Basis Approval of No Further Action Volume 2 of 30 January 2000 ER Site 23 Operable Unit 1309 Round 2

Sandia National Laboratories/NM

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Sandia National Laboratories

**Statement of Basis
Approval of No Further Action
Volume 2 of 30**

January 2000

**ER Site 23
Operable Unit 1309
Round 2**

(RCRA Permit No. NM5890110518)

NFA Originally Submitted August 28, 1995
NOD Originally Submitted October 1996

**Environmental
Restoration
Project**



**United States Department of Energy
Albuquerque Operations Office**

NFA

**Statement of Basis
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January 2000

**ER Site 23
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1. Introduction

1.1 ER Site Identification, Number, and Name

Sandia National Laboratories/New Mexico (SNL/NM) is proposing an administrative no further action (NFA) decision for Environmental Restoration (ER) Site 23, Disposal Trenches near Tijeras Arroyo, Operable Unit (OU) 1309. ER Site 23 is listed in the Hazardous and Solid Waste Amendment (HSWA) Module IV (EPA August 1993) of the SNL/NM Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Facility Permit (NM5890110518) (EPA August 1992).

1.2 SNL/NM Administrative NFA Process

This proposal for a determination of an administrative NFA decision has been prepared using the criteria presented in Section 4.5.3 of the SNL/NM Program Implementation Plan (SNL/NM February 1994). Specifically, this proposal will "contain information demonstrating that this SWMU has never contained constituents of concern that may pose a threat to human health or the environment" [as proposed in the Code of Federal Regulations (CFR), Section 40 Part 264.51(a) (2)] (EPA July 1990). The HSWA Module IV contains the same requirements for an NFA demonstration:

Based on the results of the RFI [RCRA Facility Investigation] and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/CMS [corrective measures study] process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c) (EPA August 1993).

In requesting an administrative NFA decision for ER Site 23, Disposal Trenches, this proposal is using existing administrative/archival information, recent (1994) interviews, and surface radiation and geophysical surveys to satisfy the permit requirements. This unit is eligible for an administrative NFA proposal based on one or more of the following criteria taken from the RCRA Facility Assessment Guidance (EPA October 1986):

- Criterion A: The unit has never contained constituents of concern
- Criterion B: The unit has design and/or operating characteristics that effectively prevent releases to the environment
- Criterion C: The unit clearly has not released hazardous waste or constituents into the environment

Specifically, ER Site 23 is being proposed for an administrative NFA decision because the SWMU has never contained constituents of concern (Criterion A).

1.3 Local Setting

SNL/NM occupies 2,829 acres of land owned by the Department of Energy (DOE), with an additional 14,920 acres of land provided by land-use permits with Kirtland Air Force Base (KAFB), the United States Forest Service (USFS), the State of New Mexico, and the Isleta Indian Reservation. SNL/NM has been involved in nuclear weapons research, component development, assembly, testing, and other nuclear activities since 1945.

Figure 1 shows the reported location of Site 23. This location is due west of the Tijeras Arroyo Golf Course, between the Eubank Extension and Pennsylvania Avenue.

2. History of the SWMU

2.1 Sources of Supporting Information

In preparing the request for an administrative NFA decision for ER Site 23, a background study was conducted to collect available and relevant site information. Interviews were conducted with Sandia National Laboratories/New Mexico (SNL/NM) staff and contractors familiar with site operational history.

The following information sources were available for use in the evaluation of ER Site 23:

- Interviews and personnel correspondence
- One surface radiation survey
- One unexploded ordnance/high explosive survey
- One surface geophysical survey

2.2 Previous Audits, Inspections, and Findings

ER Site 23 was first listed as a potential release site based on the Comprehensive Environmental Assessment and Response Program (CEARP) interviews in 1985 (DOE September 1987), which reported that burial activities occurred during the late 1950s or early 1960s. However, a surface radiation survey detected no radioactivity above background. The Comprehensive Environmental Response, Compensation, and Liability Act finding was uncertain. No Hazard Ranking System or Modified Hazard Ranking System migration mode score could be calculated due to insufficient information. Subsequent to the CEARP inspection, the U.S. Environmental Protection Agency (EPA) conducted a RCRA Facility Assessment (RFA). This SWMU was identified in the RFA report (EPA April 1987).

2.3 Historical Operations

An SNL/NM employee "...heard that men in white anti-C suits and heavy equipment were digging in the staked area of the arroyo near the golf course in the late 1950s or early 1960s."

The employee believes this area "should receive further study" (DOE 1985). Further hearsay reported by the employee indicated that the site was used in a training exercise in which one or more sealed, radioactive sources were buried and an attempt was made to find the source or sources. Sources may have been left in the ground after the exercise or may have been removed. These sources are suspected to contain thorium and lie buried in one of three trenches. The three former trench locations were reportedly marked at the surface near the center of each trench with yellow-painted metal posts. The trenches were estimated to be oriented roughly east-west, approximately 20 feet long and 5 feet wide.

Recent evidence indicates that water lines are buried in the locations reported as the thorium burial trenches. Also, further evidence indicates that if disturbances occurred at this site, they were not conducted by SNL/NM or any other party representing the Department of Energy (DOE).

3. Evaluation of Relevant Evidence

3.1 Unit Characteristics

This section does not apply to this site.

3.2 Operating Practices

Hazardous wastes were not managed or contained at ER Site 23

3.3 Presence or Absence of Visual Evidence

The soil is not discolored and no other visual evidence of disposal activities is present at Site 23.

3.4 Results of Previous Sampling/Surveys

No unexploded ordnance or high explosives were found during a visual surface survey (SNL/NM 1994a). A surface radiation survey also was conducted on the entire site. No surface anomalies were detected (SNL/NM 1994b). An electromagnetic surface geophysical survey was conducted on June 8, 9, and 10, 1994. Instead of identifying burial trenches, the surface geophysical survey indicated the presence of a buried metal water line. (Van Hart and Hyndman 1994).

3.5 Assessment of Gaps in Information

Additional information was obtained because no environmental sampling data existed for Site 23. This information is discussed in Sections 3.4 and 3.6.

3.6 Rationale for Pursuing an Administrative NFA Decision

Initial field investigation began in early 1994. No unexploded ordnance or high explosives were found during a visual surface survey. A surface radiation survey also was conducted on the entire site. No surface anomalies were detected. An electromagnetic surface geophysical survey was conducted on June 8, 9, and 10, 1994. The intention was to define the trench orientations and possibly locate the suspected radioactive source or sources. Instead of identifying burial trenches, the surface geophysical survey indicated the presence of a buried metal water line. The yellow metal posts mark a water line instead of trenches (Van Hart and Hyndman 1994). Surface survey information found no surface or shallow subsurface indications of radioactive or hazardous materials.

4. Conclusion

Based upon the evidence cited above, ER Site 23 has never contained constituents of concern. Therefore, ER Site 23 is recommended for an NFA determination.

5. References

5.1 ER Site References

Department of Energy (DOE), Albuquerque Operations Office, October 1985, interviews with current and retired SNL/NM personnel, conducted by personnel from the Los Alamos National Laboratory in support of the Comprehensive Environmental Assessment and Response Program.

Van Hart, D. and D.A. Hyndman, 1994, "Electromagnetic Surveys of Three Suspected Trenches, Environmental Restoration Site 23, Sandia National Laboratories," prepared for Department 7582, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1994a. "Unexploded Ordnance/High explosives (UXO/HE) Visual Survey of ER Sites Final Report, Albuquerque, New Mexico," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1994b. "Summary of Radiological Survey Results by SNL Dept. 7714 for ER Sites 23, 50, 227, 229, 230-234," Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), July 1990. "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities, Proposed Rule," *Federal Register*, Vol. 55, Title 40, Parts 264, 265, 270, and 271.

5.2 Reference Documents

Sandia National Laboratories/New Mexico (SNL/NM), February 1994. Draft "Program Implementation Plan for Albuquerque Potential Release Sites," Sandia National Laboratories, Albuquerque, New Mexico.

Department of Energy (DOE), Albuquerque Operations Office, Environmental Safety and Health Division, Environmental Program Branch, September 1987, draft "Comprehensive Environmental Assessment and Response Program (CEARP) Phase I: Installation Assessment, Sandia National Laboratories, Albuquerque, New Mexico."

Sandia National Laboratories/New Mexico (SNL/NM), August 1994. "Environmental Restoration Project Information Sheet for Site 23, Disposal Trenches (near Tijeras Arroyo)," Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), April 1987. "Final RCRA Facility Assessment Report of Solid Waste Management Units at Sandia National Laboratories, Albuquerque, New Mexico," Contract No. 68-01-7038, EPA Region VI.

U.S. Environmental Protection Agency (EPA), August 1993. "Module IV of RCRA Permit No. NM 5890110518, EPA Region VI," issued to Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), August 1992. "Hazardous Waste Management Facility Permit No. NM5890110518, EPA Region VI," issued to Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), October 1986. "RCRA Facility Assessment Guidance," EPA/530-86-053, PB87-107769, Washington, DC.

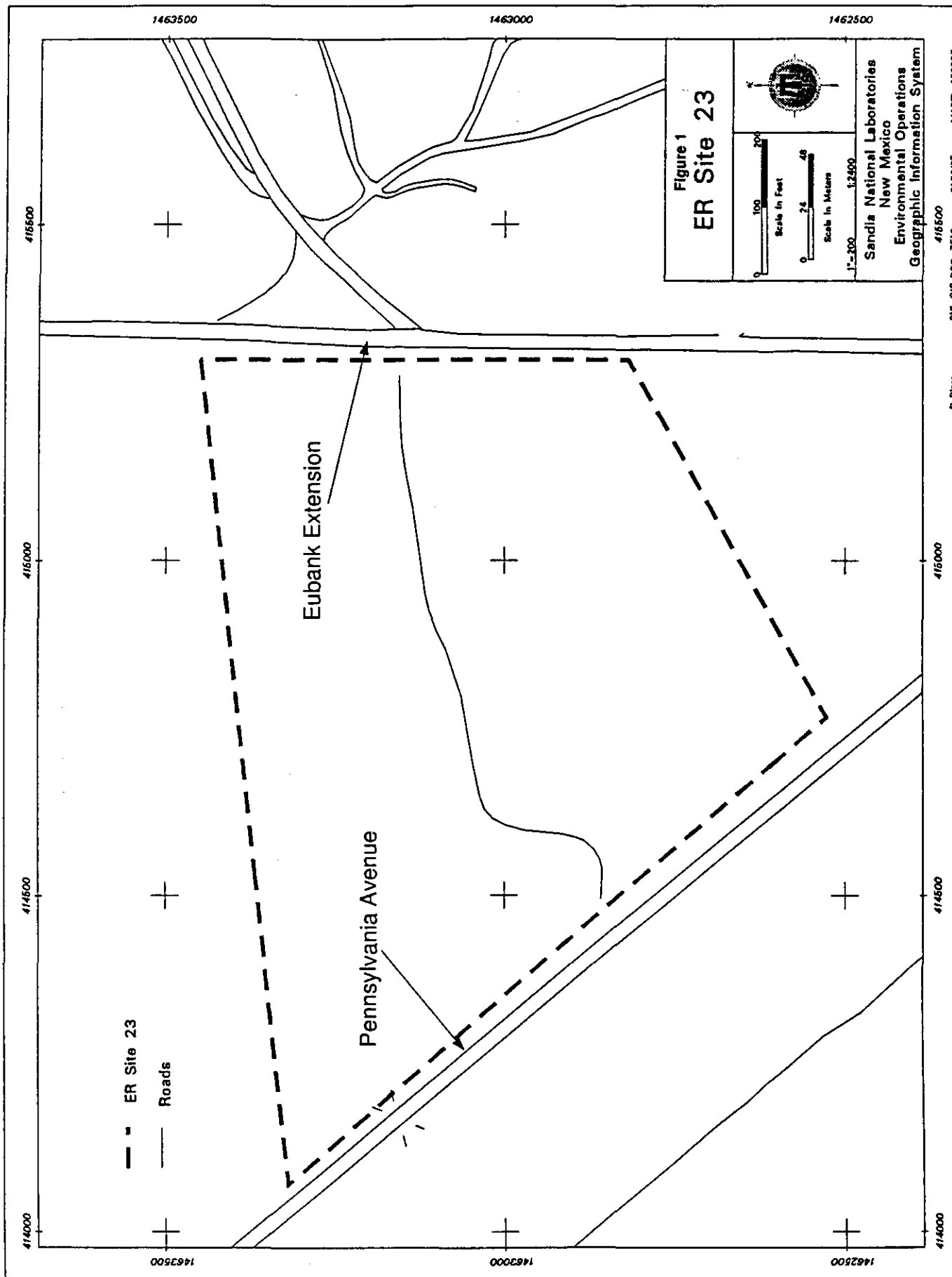


Figure 1. Disposal Trenches Site 23

NOD

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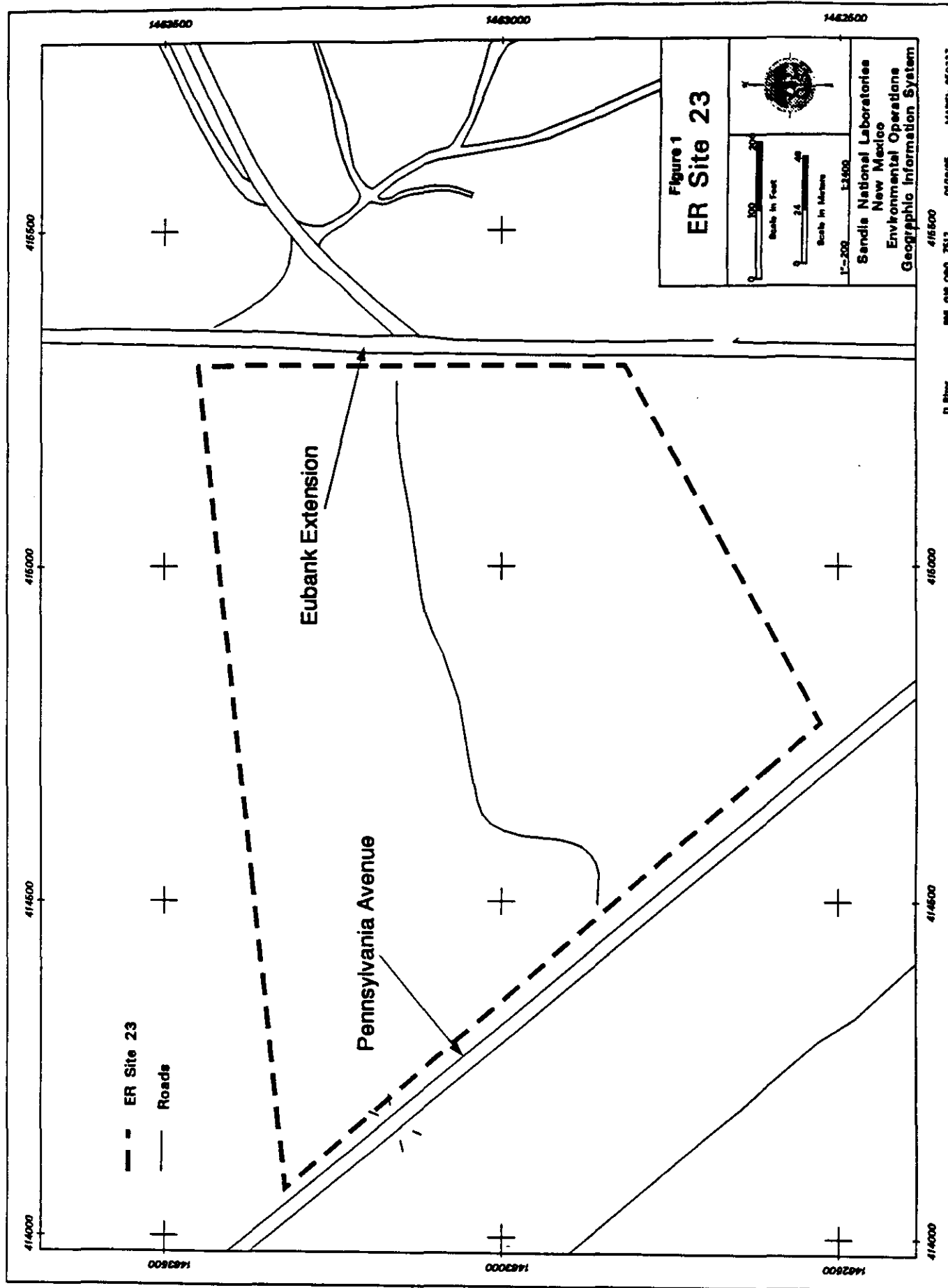
excavated the gas cylinders at ER Site 6A. (4) SNL/NM has already conducted an exhaustive (100%-coverage) radiological survey. A team of radiological technicians used Crutch Gamma Scintillometers to sweep the entire site. No areas of gamma activity that were 30 percent or greater than natural background were found at ER Site 7 (RUST Geotech, 1994). Based upon these four findings, SNL/NM does not plan to conduct any sampling at ER Site 7 and reiterates the request that the site be approved for NFA status.

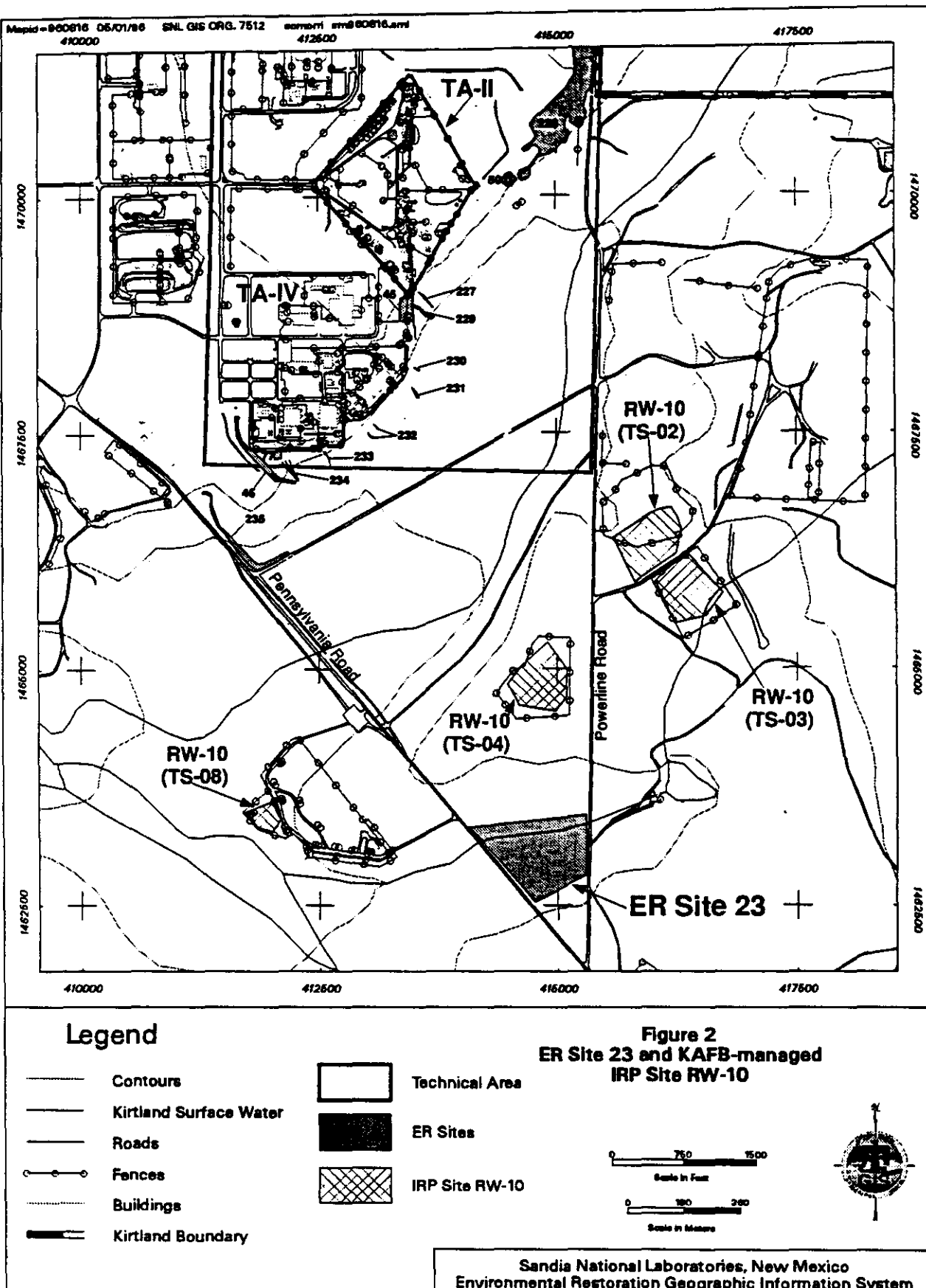
7. Site 23, OU 1309, Disposal Trenches

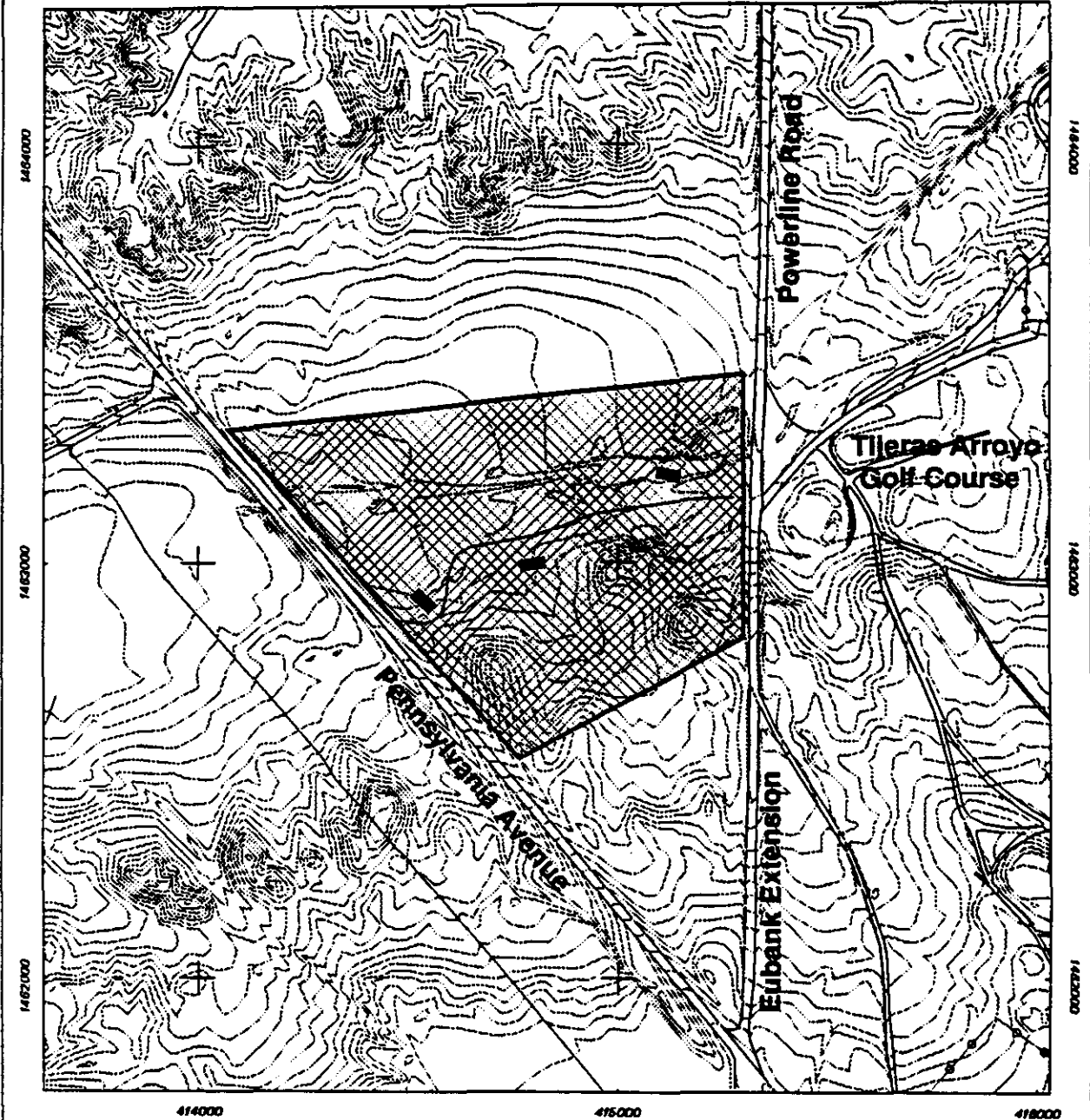
a. Unless additional information (e.g., which isotope of thorium, other radioactive materials, size and distribution of sources) becomes available, a more thorough and areally expanded radiation survey should be conducted.

Response: The clearest interpretation of the information gathered on this site is that SNL/NM did not disturb this site. No DOE, SNL/NM, or KAFB documents indicate that SNL/NM has ever conducted field operations at ER Site 23. The reason that ER Site 23 has been investigated was that an SNL/NM employee, who was interviewed during the CEARP investigation in 1985, had "... heard that men in white anti-C suits and heavy equipment were digging in the staked area of the arroyo near the golf course in the late 1950s or early 1960s." Subsequent phone conversations with this employee have cast doubts on the interviewee's recollection of the actual location. The most plausible conclusion is that the interviewee had attributed some Defense Nuclear Agency (DNA) training at the KAFB RW-10 sites to ER Site 23. The RW-10 training area known as TS-4 is located over a slight ridge and a mere 1,050 ft north of ER Site 23 (Figures 1, 2, and 3). According to KAFB Installation Restoration Program Chief Mr. Chris DeWitt, the DNA has used the RW-10 sites since the 1960s for training emergency-response teams that respond to transportation accidents involving nuclear weapons. Eight RW-10 sites are currently being investigated as part of the KAFB Installation Restoration Program (IRP), which is managed by the DoD. As shown on Figure 4, the locations of these sites have been documented since at least 1976; however, the DNA has not apparently used radiological material at ER Site 23. Sealed thorium-232 sources have been used at the RW-10 sites.

SNL/NM has already conducted an exhaustive (100%-coverage) radiological survey in the 'staked area' that was believed by the interviewee to be marked by faded-yellow, metal posts (Figure 3). The survey was conducted in 1994 as part of the ongoing Sandia Surface Radiological Survey project. A team of radiological technicians used Crutch Gamma Scintillometers to sweep a 100 ft by 100 ft grid surrounding each suspected trench location. Each Crutch Gamma Scintillometer was constructed of a Mount Sopris portable gamma scintillometer







Legend





-  2 Foot Contours
-  Roadways
-  Approximate Trench Location
-  ER Site 23

Figure 3
ADS 1309
Locations of Trenches
within ER Site 23



Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

(Model EL-0047A) and a Sodium-Iodide (NaI) detector (Model CE-975) mounted on a medical crutch. The NaI detector was capable of measuring the daughter products that are produced by thorium-232. The technicians walked the entire site four abreast while swinging the NaI detectors a few inches above ground level. No areas of gamma activity that were 30 percent or greater than natural background were found at ER Site 23 (RUST Geotech, 1994).

b. The proposal lacks sufficient detail concerning the results of the surface geophysical survey. Where was the detected water line located? The electromagnetic survey may have been impaired by the abundant power lines and utilities that cross the site. Another geophysical survey (e.g. ground penetrating radar) might be more appropriate to locate the alleged trenches of Site 23.

Response: The geophysical survey was conducted on July 8 - 10, 1994 (Van Hart and Hyndman, 1994). No electromagnetic interference problems from the overhead powerlines were encountered. The area of investigation was centered on three, faded-yellow, 2-inch diameter, metal posts that were suspected to have been markers for three DNA-training trenches (Figure 3). The smooth ground surface and native vegetation obscured any visible indication of past trenching. Two electromagnetic instruments, a Geonics EM-38 Ground Conductivity Meter and a Geonics EM-61 High Precision Metal Locator, were used to survey an initial series of 60 ft by 60 ft grids that were centered on the metal posts. A single linear, magnetic anomaly was measured at each grid. Each grid was subsequently enlarged an additional 20 ft in an east to west direction in an attempt to define the edge of each anomaly. The final grid dimensions at each post was 80 ft by 60 ft. However, each magnetic anomaly was found to extend beyond both the east and west edges of each grid. The magnetic signature of each anomaly was highly indicative of a buried water line. The accuracy of the geophysical survey was verified by excavating the vicinity of suspected-trench location #2. A 10-ft long by 5-ft wide test excavation was dug to a depth of 5 ft. Two items with a magnetic signature were present. A 4-inch, diameter water line was oriented north to south. A 1/2-inch diameter, telephone cable trended east to west.

Instead of being markers for the suspected DNA-training trenches, the faded-yellow posts are apparently markers for utilities such as buried water lines and telephone cables. Figures 4 and 5 are excerpts of 1976 to 1990 vintage KAFB maps that depict the U.S. Air Force sanitary-sewer and water-supply systems. A sanitary-sewer line and three water-supply lines are shown to cross ER Site 23. Other yellow posts at the site definitely mark a buried water line that is oriented approximately east to west toward a metal building located on the north edge of the Tijeras Arroyo Golf Course (Figure 3). The lack of radioactive or unexplained

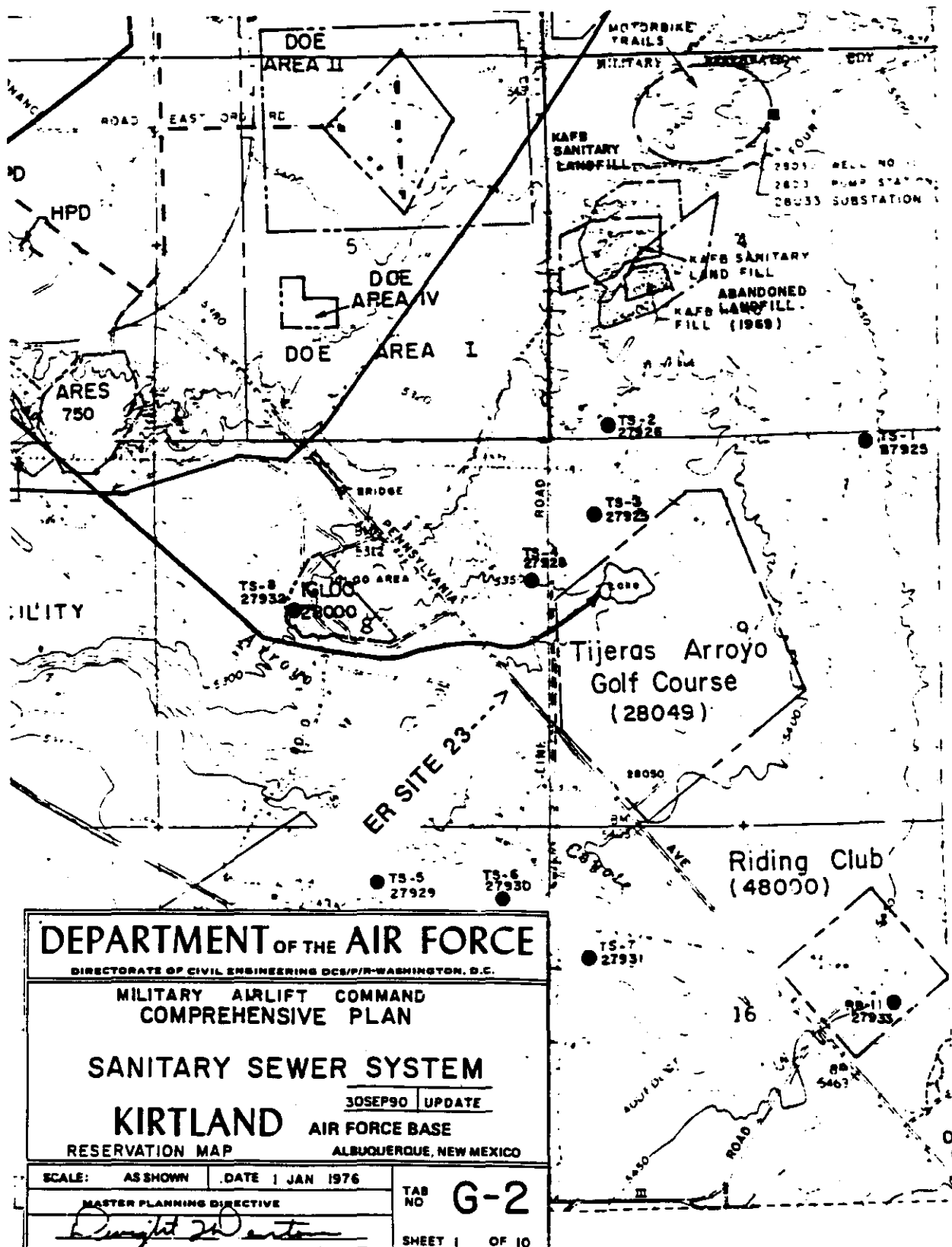


Figure 4. Excerpt of KAFB engineering map depicting the Sanitary-Sewer System and the Defense Nuclear Agency training sites (TS) in the vicinity of ER Site 23. [The 'ER Site 23' label was added by the SNL/NM ER Project.]

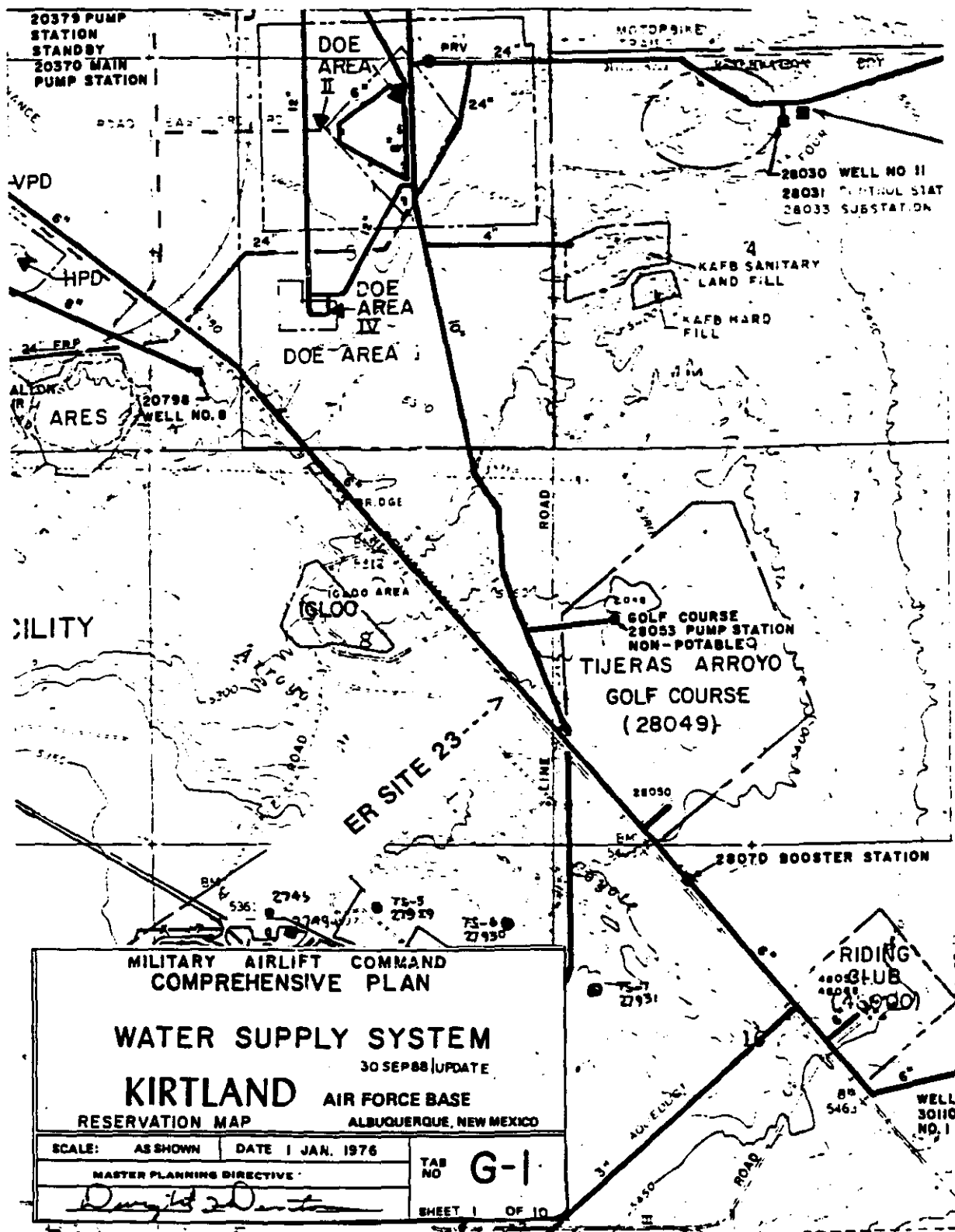


Figure 5. Excerpt of KAFB engineering map depicting the KAFB Water-Supply System and the Defense Nuclear Agency training sites (TS) in the vicinity of ER Site 23. [The 'ER Site 23' label was added by the SNL/NM ER Project.]

geophysical anomalies demonstrates that further field investigations are not necessary at ER Site 23.

c. **The map showing ER Site 23 does not show enough information to easily locate the site on the ground. Please provide a more complete map.**

Response: A more useful figure is attached as Figure 2. The site is located near the junction of Pennsylvania and Powerline (Eubank Extension) roads.

d. **There is a pit cut into a small hillside in the southeastern portion of the area marked as Site 23. Does SNL/NM know the purpose of this pit? Has the pit been sampled?**

Response: SNL/NM is not certain why a pit is located in the southeast portion of the site. The pit is approximately 50-ft long, 30-ft wide, and on average about 5-ft deep. Two piles of soil in the pit appear to be from dump-truck loads. The pit appears to be a 'borrow pit' and was probably used as a source of soil for building a dirt road that goes to a water-supply drop pipe near post #2. The pit may be associated with the numerous overhead and underground utilities that cross the site or may be a result of cut-and-fill activities. The lack of stained soil, stressed vegetation, and debris indicates that the pit does not represent an environmental concern. SNL/NM has not collected any samples from the pit.

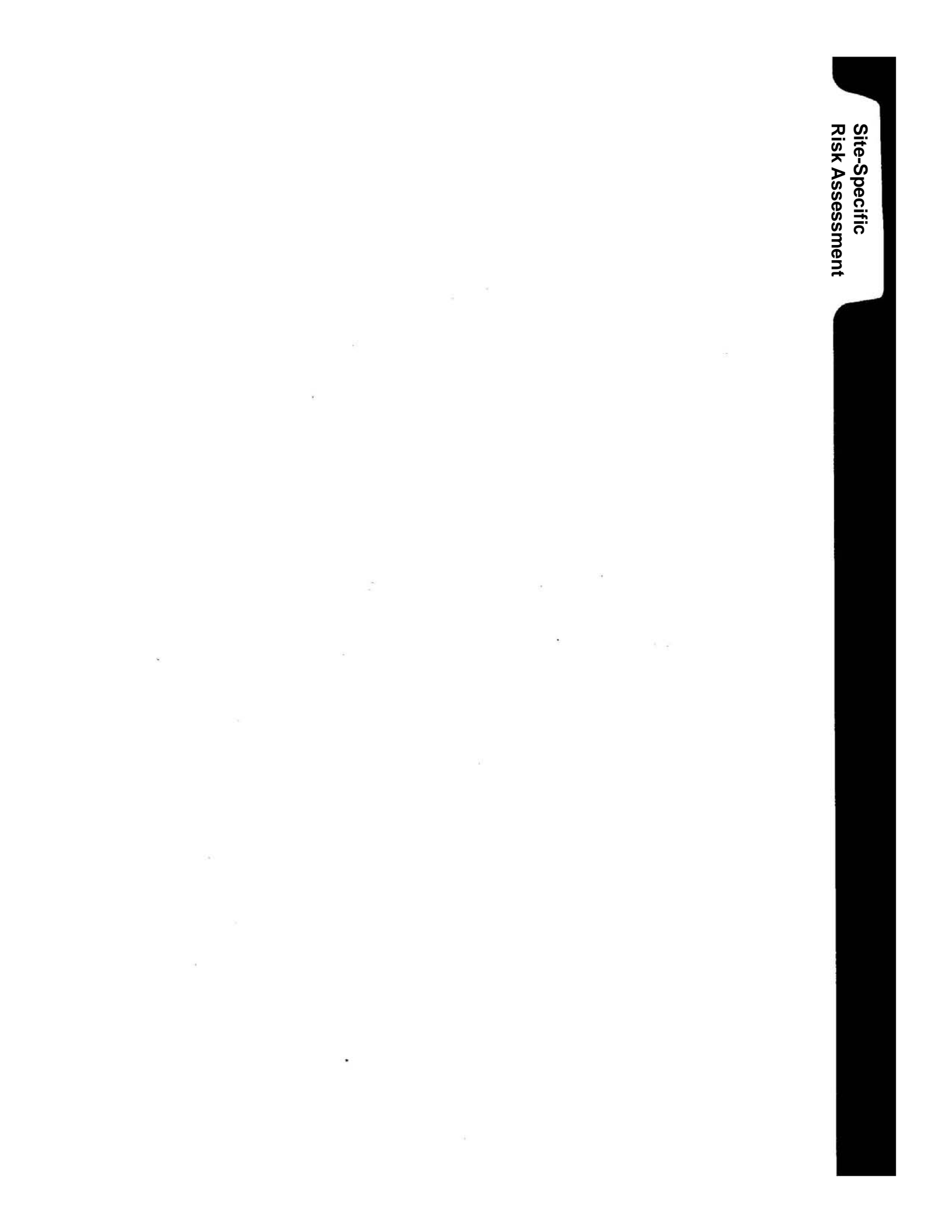
e. **RECOMMENDATION: Based upon SNL/NM's proposal, more information and field data (e.g. expanded radiation survey and sampling) are required to determine whether Site 23 is appropriate for NFA. Additionally, it should be clearly determined whether this is a SNL/NM or KAFB ER site.**

Response: The clearest interpretation of the information gathered on this site is that DOE/SNL/NM did not disturb this site. SNL/NM reiterates its proposal that ER Site 23 should be granted NFA status. The SNL/NM ER Project has no plans for conducting additional sampling at ER Site 23 because (1) no radiological or unexplained geophysical anomalies were detected, (2) Sandia did not conduct any radiological training or other operations at the site, and (3) the site is located on Air Force property. SNL/NM suggests that NMED contact KAFB if concerns still exist.

8. Site 40, OU 1309, Oil Spill Site

a. **NMED understands that this is an underground storage tank site (UST). Documentation included with the NFA proposal indicates that the UST Bureau of NMED made an April 5, 1995 determination that no further**

**Site-Specific
Risk Assessment**



6. Site 7, OU 1309, Gas Cylinder Disposal Site

This portion of the document does not contain risk assessment information for review.

Response: The need for a risk assessment is not applicable to ER Site 7 because no soil samples have been collected there. The collection of soil samples is not warranted. The section Site 7, OU 1309, Gas Cylinder Disposal Site in NMED Site-Specific Technical Comments discusses the findings that support the SNL/NM request for ER Site 7 to be granted NFA status.

7. Site 23, OU 1309, Disposal Trenches

This portion of the document does not contain risk assessment information for review.

Response: The need for a risk assessment is not applicable to ER Site 23 because no soil samples have been collected there. The collection of soil samples is not warranted. The section Site 23, OU 1309, Disposal Trenches in NMED Site-Specific Technical Comments discusses the findings that support the SNL/NM request for ER Site 23 to be granted NFA status.

8. Site 40, OU 1309, Oil Spill Site

Any value based on TPH does not allow for the evaluation of potential risk.

Response: The issue of a risk evaluation is not applicable because NMED has already granted NFA Status to ER Site 40 (Oil Spill Site) based upon NMED Underground Storage Tank regulations.

9. Site 46, OU 1309, Old Acid Waste Line Outfall Site

See general comment on risk analysis of radionuclides. [The sites with reported radionuclides above background levels were evaluated based on a DOE established acceptable dose. EPA Region 6 policy requires that the evaluation of risk to radionuclides include an estimation of potential carcinogenic risk. A revision to the risk evaluation is requested.]

Response: SNL/NM has recently completed, with EPA Region VI concurrence, a quantitative risk assessment for all contaminants, including cancer-causing radionuclides, in soil. The section Site 46, OU 1309, Old Acid Waste Line Site in NMED Site-Specific Technical Comments discusses the risk assessment.