

Sandia National Laboratories

**PROPOSAL FOR ADMINISTRATIVE
NO FURTHER ACTION
ENVIRONMENTAL RESTORATION
SITE 20, SCHOOLHOUSE MESA BURN SITE
OPERABLE UNIT 1334**

August 1994

Environmental
Restoration
Project



United States Department of Energy
Albuquerque Operations Office

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Prepared by
Sandia National Laboratories/New Mexico
Environmental Restoration Project
Albuquerque, New Mexico

Prepared for the
United States Department of Energy

TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	ER Site Identification Number and Name	1-1
1.2	SNL/NM Administrative NFA Process	1-1
1.3	Local Setting	1-2
2.0	HISTORY OF THE SWMU	2-1
2.1	Previous Audits, Inspections, and Findings	2-1
2.2	Historical Operations	2-1
2.3	Discussion of Information Conflicts	2-4
3.0	EVALUATION OF RELEVANT EVIDENCE	3-1
3.1	Unit Characteristics	3-1
3.2	Operating Practices	3-1
3.3	Presence or Absence of Visual Evidence	3-1
3.4	Results of Previous Sampling/Surveys	3-1
3.4.1	Unexploded Ordnance/High Explosives Survey	3-1
3.4.2	Gamma Radiation Survey	3-1
3.5	Assessment of Gaps in Information	3-2
3.6	Rationale for Pursuing an Administrative NFA Decision	3-2
4.0	CONCLUSION	4-1
5.0	REFERENCES	5-1
5.1	ER Site References	5-1
5.2	Reference Documents	5-2
5.3	Aerial Photographs	5-3

LIST OF FIGURES

Figure		Page
1-1	Location of ER Site 20, Schoolhouse Mesa Burn Site	1-3
2-1	Site Map of ER Site 20, Schoolhouse Mesa Burn Site	2-2
2-2	ER Site 20 Photograph	2-3

1.0 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 20, Schoolhouse Mesa Burn Site, Operable Unit (OU) 1334. ER Site 20, formerly included in OU 1293, was identified as the "Uranium Burn Site (Schoolhouse Mesa)" 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 1992). SNL/NM is proposing that the name on the HSWA Module IV be changed to "Schoolhouse Mesa Burn Site" to reflect newly obtained historical information presented in this proposal.

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 there are no releases of hazardous waste (including hazardous constituents) from solid waste management units (SWMU) at the facility 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 20, Schoolhouse Mesa Burn Site, this proposal is using existing administrative/archival information 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 20 is being proposed for an administrative NFA decision because the SWMU had design and operating characteristics that prevented the release of hazardous constituents to the environment (Criterion B).

1.3 Local Setting

SNL/NM occupies 2,829 acres (ac) of land owned by the Department of Energy (DOE), with an additional 14,920 ac 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. Sandia Corporation (a subsidiary of AT&T) operated SNL/NM for DOE from the time of its opening in 1945 until September 1993, when Martin Marietta Corporation undertook operation. SNL/NM has been involved in nuclear weapons research, component development, assembly, testing, and other nuclear activities since 1945.

ER Site 20 (Figure 1-1) is owned by KAFB (unassigned) and located on SNL/NM south of Demolition Range Road and west of the USFS Withdrawn Area. The location of the SWMU is approximately 100 feet (ft) directly south of the Schoolhouse Building (Bldg. 9850) (20-11) in the active KAFB Explosive Ordnance Disposal (EOD) range. The site lies on approximately 0.1 ac of land at a mean elevation of 5,802 ft above sea level (SNL/NM April 1994).

This inactive site is located on alluvial deposits correlated to the Tesajo-Millett stony sandy loams (IT May 1994), with permeabilities ranging from 0.6 to 20.0 inches per hour (USDA 1977). The geologic and hydrologic conditions at ER Site 20 are expected to be similar to those measured at the Schoolhouse well (approximately 100 ft northwest of the site). A lithologic log for the Schoolhouse well is unavailable, but the well is thought to be completed in clastic rocks of the Sandia Formation (IT May 1994). When the Schoolhouse well was video surveyed in 1990, the depth to groundwater was approximately 100 ft. Depth to groundwater at ER Site 20 is estimated to be 95 ft (DOE July 1994).

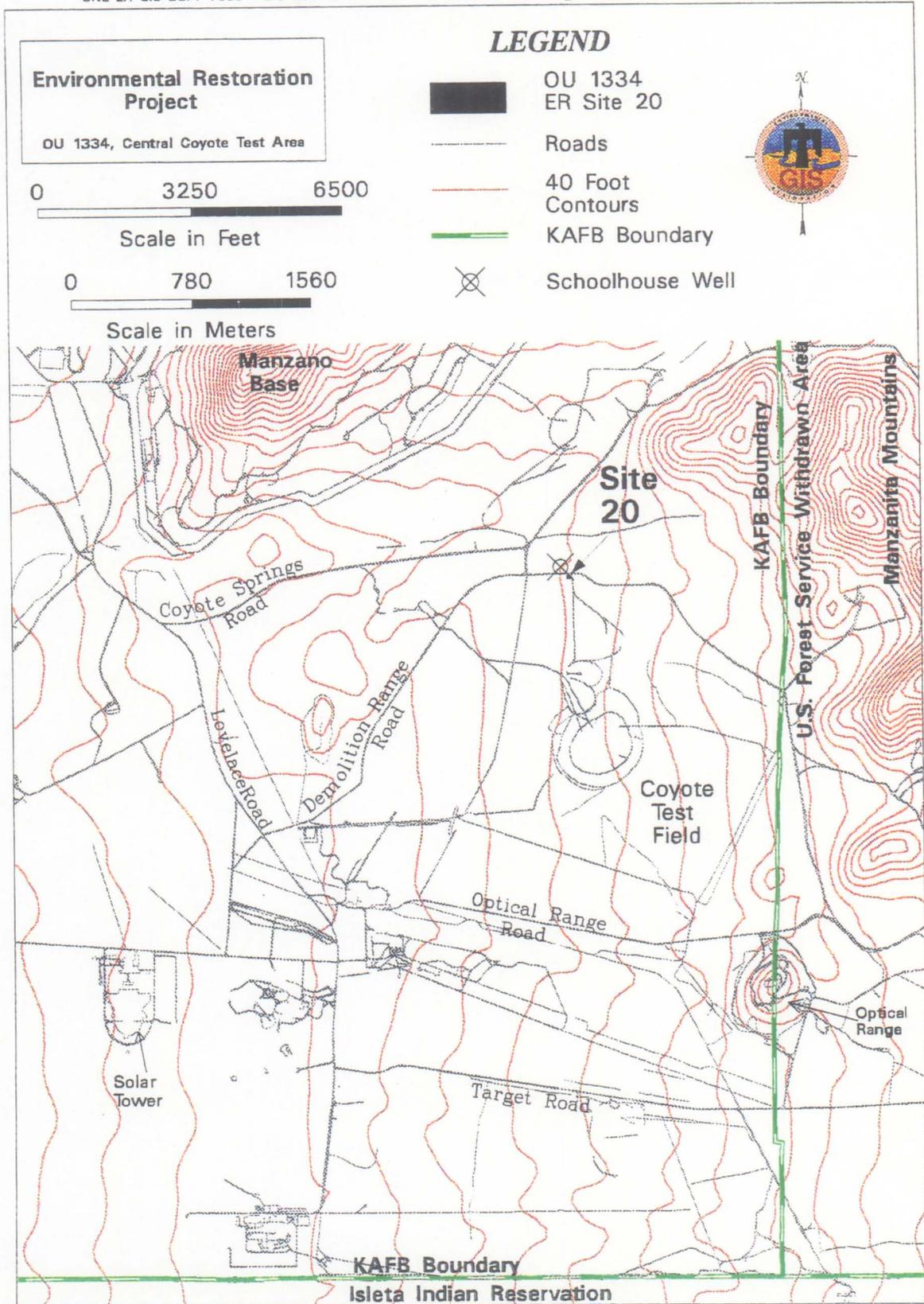


Figure 1-1
Location of ER Site 20, Schoolhouse Mesa Burn Site

2.0 HISTORY OF THE SWMU

2.1 Previous Audits, Inspections, and Findings

ER Site 20 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 noted that depleted uranium (DU) was burned at this SWMU. The regulatory disposition and location of the SWMU remained uncertain, however, because of a lack of information regarding possible waste generation or disposal activities at the site. Insufficient information also prevented calculating a Hazard Ranking System score for the SWMU. The CEARP reports stated that more data were needed to evaluate the SWMU for further action.

Subsequent to the CEARP inspection, the Environmental Protection Agency (EPA) conducted a RCRA Facility Assessment (RFA). This SWMU was not included in the RFA report (EPA April 1987).

2.2 Historical Operations

ER Site 20 was used to conduct small-scale pool fire tests in the summer of 1957 at the approximate site location indicated on Figure 2-1 and Figure 2-2. Tests were conducted with a Polaris missile reentry vehicle containing a beryllium heat shield case, and no DU was used in the tests (20-7, 20-9). The objective of the tests was to simulate an aircraft crash or fire to determine whether a thermal battery in the reentry vehicle would sense a fire or whether a "squib" would enable earlier detection. A "squib" is an electrical device containing a propellant (e.g., gunpowder) that provides enough force to close a switch. A "squib" is also known as a "Bellows Motor." An official SNL/NM report was not generated regarding these testing activities (20-11, 20-12).

Testing was conducted in a metal pan approximately 4 ft in diameter. The pan was filled with water and a 6-in. layer of JP-4 fuel. After the reentry vehicle was placed on a metal grate over the pan, the fuel was ignited and allowed to burn until all of the fuel was consumed. The estimated amount of fuel used for each test was less than 50 gallons (20-11). Three tests (all performed in the summer of 1957) occurred at the SWMU: One involved the reentry vehicle, and the other two were performed as trial burns. Upon completion of the tests, the water was left in the pan to evaporate. The pan and all residue components were removed from the site. A test participant indicated that metal dispersion did not occur during the burn test, because the vehicle integrity was unaffected by the testing (20-11).

Aerial photographs are unavailable for the year 1957 when operations at ER Site 20 were conducted. However, an aerial photograph taken of the area in 1961 (USGS 1961) shows no visual evidence of the tests.

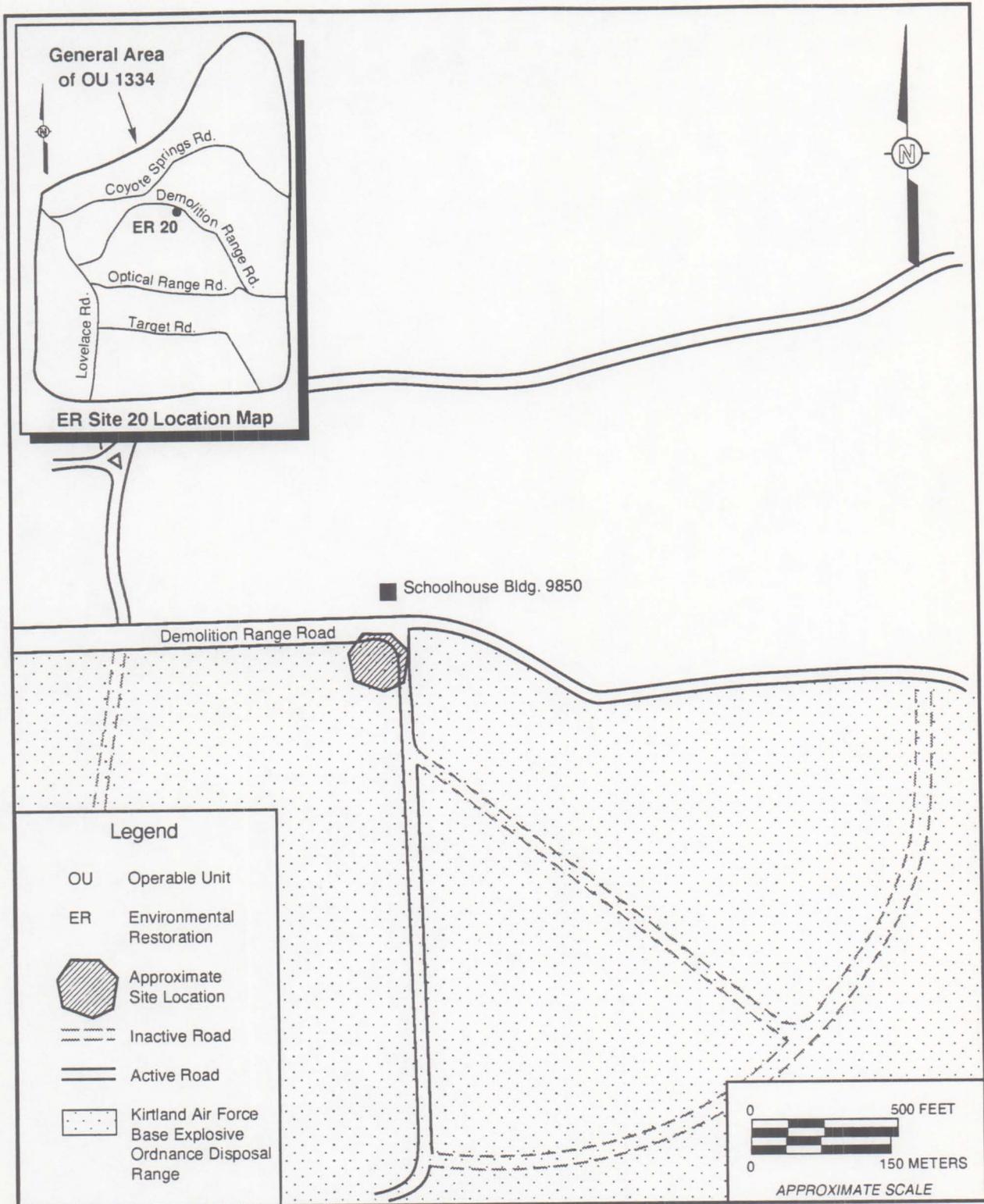


Figure 2-1
Site Map of ER Site 20, Schoolhouse Mesa Burn Site



Area used for burn testing in 1957, ER Site 20. Test equipment was removed after the 3 tests. View to the south.

Figure 2-2
ER Site 20 Photograph

2.3 Discussion of Information Conflicts

The original CEARP (DOE September 1987) interpretation of site activities indicated that DU was used in the burn tests, but the investigation reached no conclusion on the location of the site other than to state it was in the Schoolhouse Mesa area. This interpretation is in conflict with information provided by personnel who participated in the tests and reported that DU was never used in the burn tests (20-7, 20-9, 20-11, and 20-13). ER Project interviews state that three small-scale pool fire tests were conducted about 100 ft south of the Schoolhouse building with JP-4 fuel and a Polaris reentry vehicle containing a beryllium heat shield. The conflict with the CEARP report is now thought to arise from confusing ER Site 20 with DU tests that were carried out at ER Sites 57, 87, and possibly 61A. These sites are known to have DU present and are in the general vicinity of the Schoolhouse Mesa Area (Dan Sandhaus, personal communication).

3.0 EVALUATION OF RELEVANT EVIDENCE

3.1 Unit Characteristics

The portable metal burn pan used at ER Site 20 was approximately 4 ft in diameter. The pan was used to contain JP-4 fuel during the burn tests. Use of this pan would have prevented the release of JP-4 fuel to the environment during testing. Upon completion of the tests, the pan was removed from the site (20-11).

3.2 Operating Practices

Burn tests were conducted by floating a 6 in. layer of JP-4 fuel on water, placing the reentry vehicle on a metal grate over the pan, and igniting the fuel. After the tests, the water was allowed to evaporate and the pan was removed from the site (20-11).

3.3 Presence or Absence of Visual Evidence

There is no physical evidence of activities associated with the 1957 burn tests at ER Site 20, because the burns were contained in a metal pan, and the pan was removed after completing the tests. This is supported by a 1961 aerial photograph that shows no sign or trace of any activities associated with the burn tests (USGS 1961). Additionally, there is no documented evidence that hazardous waste or constituents were ever released into the environment.

3.4 Results of Previous Sampling/Surveys

3.4.1 Unexploded Ordnance/High Explosives Survey

In November 1993, a surface unexploded ordnance (UXO)/high explosives (HE) survey of the Schoolhouse Mesa was conducted by KAFB EOD. ER Site 20 was surveyed with ER Site 9 and ER Site 61. Line ordnance found included one groundburst simulator and two pounds of HE. Ordnance debris found included six expended M18 screening smoke grenades, two empty slap flare illuminating cartridges, and three empty 40mm white star parachute cartridges.

3.4.2 Gamma Radiation Survey

In April 1994, RUST Geotech Inc. conducted a surface radiation survey of a portion of ER Site 20 as part of the ER Site 61C survey. The survey used a scintillometer containing a sodium-iodide detector to measure gamma radiation and covered the area south of Demolition Range Road down to the KAFB EOD Range fence. No detections were found above the background readings of 10 to 13 microrentgen per hour (RUST Geotech Inc. 1994).

3.5 Assessment of Gaps in Information

There is an absence of records documenting the burn tests, and there are no analytical data on soil samples to verify that a release did not occur. However, the lack of physical evidence for release, a 1961 aerial photograph that shows no indication of the burn tests, and recent ER Project interviews fill the data gap arising from insufficient documentation and a lack of soil sampling. The recent information provided by a test participant on operational procedures at the site (20-11) highlighted that all tests were contained in a metal burn pan, and all materials were removed from the site after the test. This information indicates that site activities never released hazardous waste or constituents into the environment (Criterion B).

3.6 Rationale for Pursuing an Administrative NFA Decision

SNL/NM is proposing an administrative NFA decision for ER Site 20 because the SWMU was designed and operated to prevent the release of hazardous waste or constituents to the environment (Criterion B). No visual evidence remains at this site, because trial and test burns carried out in the summer of 1957 were contained in a metal burn pan that was removed after completing the tests. The JP-4 fuel used in these tests was completely combusted, and the water was allowed to evaporate, leaving a residue in the bottom of the burn pan which was removed with the pan. A 1961 aerial photograph reveals no signs or traces of the burn tests (USGS 1961).

Twenty-eight years after the site was abandoned, an investigation conducted under the CEARP indicated that DU was burned at this site (DOE September 1987), but the use of DU in the burn tests is unsubstantiated in ER Project interviews (20-7, 20-9, 20-11). An interview with the individual who conducted the testing indicates that the site was used to conduct a burn test on a Polaris missile reentry vehicle (20-11). Only two trial burns and one test burn were conducted. The reentry vehicle had a beryllium heat shield case that was not affected by the test, and it was removed from the site with all other test materials after completion of the test. It is now thought that the DU tests discussed in the CEARP report were associated with ER Sites 57, 87, and possibly 61A, which are in the vicinity of Schoolhouse Mesa.

In April 1994, a surface gamma radiation survey of ER Site 20 was conducted as part of the ER Site 61C survey. No detections were found above background levels (RUST Geotech 1994). Therefore, based on recent surveys and newly obtained historical information, ER Site 20 is recommended for an administrative NFA decision because the SWMU was designed and operated to prevent the release of hazardous waste or constituents to the environment (Criterion B).

4.0 CONCLUSION

Based upon the evidence cited above, no potential remains for a release of hazardous waste (including hazardous constituents) which may pose a threat to human health or the environment.

5.0 REFERENCES

5.1 ER Site References

Section 5.1 contains a comprehensive bibliographical list of the documents relating to ER Site 20. This list is arranged numerically by the numbers assigned to each document.

ER Site Reference Number	Reference
20-1.	Sandia National Laboratories, August 1993. Schoolhouse Mesa Uranium Burn Site/Schoolhouse Mesa Test Site, OU 1293 SWMU Descriptions, Sandia National Laboratories, Albuquerque, New Mexico.
20-2.	Sandhaus, D. Memorandum to C. Lojek, Sandia National Laboratories, Albuquerque, New Mexico. August 13, 1993.
20-3.	Sandia National Laboratories, November 1993. Environmental Restoration Program Information Sheet, Uranium Burn Site, Sandia National Laboratories, Albuquerque, New Mexico.
20-4.	Sandia National Laboratories, September 1987, draft. CEARP Table Ex-1, Phase I—Future Action Table plus attachments, Sandia National Laboratories, Albuquerque, New Mexico.
20-5.	Sandia National Laboratories, April 1988. Environmental Survey Preliminary Report, Sandia National Laboratories, Albuquerque, New Mexico.
20-6.	Sandia National Laboratories/New Mexico, September 1993, Environmental Operations Records Center Record Number ER/1334 020/INT/94-001.
20-7.	Sandia National Laboratories/New Mexico, September 1993, Environmental Operations Records Center Record Number ER/1334 020/INT/94-002.
20-8.	Sandia National Laboratories/New Mexico, October 1993, Environmental Operations Records Center Record Number ER/1334 020/INT/94-003.
20-9.	Sandia National Laboratories/New Mexico, October 1993, Environmental Operations Records Center Record Number ER/1334 020/INT/94-004.
20-10.	Sandia National Laboratories/New Mexico, December 1993, Environmental Operations Records Center Record Number ER/1334 020/INT/94-005.
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- 20-13. Sandia National Laboratories/New Mexico, February 1994, Environmental Operations Records Center Record Number ER/1334 020/INT/94-008.
- 20-14. Sandia National Laboratories/New Mexico, Environmental Operations Records Center Record Number ER/1334 020/INT/94-009.
- 20-15. Sandia National Laboratories/New Mexico, July 1992, Environmental Operations Records Center Record Number ER/1334 020/INT/94-010.
- 20-16. Reference removed/not applicable to site.
- 20-17. ER Program Site Tour Notes, Sandia National Laboratories, Albuquerque, New Mexico. July 1992.
- 20-18. Sandia National Laboratories/New Mexico, January 1994, Environmental Operations Records Center Record Number ER/1334 020/INT/94-011.

5.2 Reference Documents

Department of Energy (DOE), July 1994, draft. "RFI Workplan for Operable Unit 1334, Sandia National Laboratories, Albuquerque," Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico.

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DOE, see Department of Energy.

EPA, see Environmental Protection Agency.

IT Corporation (IT), May 1994. "Hydrogeology of the Central Coyote Test Area OU 1334," IT Corporation, Albuquerque, New Mexico.

IT, see IT Corporation.

RUST Geotech Inc., July 1994. "Sandia Surface Radiological Surveys Report," RUST Geotech Inc. Technical Support Program for Sandia National Laboratories.

Sandia National Laboratories/New Mexico (SNL/NM), April 1994. "Mean Elevation and Acreage Computation Report," Sandia National Laboratories, GIS Group, Environmental Restoration Department, Albuquerque, New Mexico.

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SNL/NM, see Sandia National Laboratories/New Mexico.

USDA, see U.S. Department of Agriculture.

U.S. Department of Agriculture (USDA), 1977, "Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico," Soil Conservation Service, U.S. Department of Agriculture, 101 pp.

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

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U.S. Department of Agriculture (USDA), 1977, "Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico," Soil Conservation Service, U.S. Department of Agriculture.

5.3 Aerial Photographs

United States Geological Survey (USGS), 1961. Aerial Photograph, EJA-2-135, Albuquerque, New Mexico.

USGS, see United States Geological Survey.