ESHID-603487

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ERID-055865

55865

University of California
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U. S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

Date: April 23, 1997
Refer to: EM/ER:97-108

Mr. Benito Garcia
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

SUBJECT: IA REPORT FOR TA-33, PRS 33-006(a) ACTIVITIES (FORMER OPERABLE UNIT 1122)

Dear Mr. Garcia:

Enclosed please find an informational copy of the Interim Action Report for Technical Area 33, Potential Release Site 33-006(a) stabilization activities completed in Fiscal Year 1997. The Department of Energy has reviewed and approved this report. The approval form is attached to the report.

If you have any questions, please call Roy Michelotti at (505) 665-7444 or Joe Mose at (505) 667-5808.

Sincerely,

Jorg Jansen, Program Manager
LANL/ER Project

Sincerely,

Theodore J. Taylor, Program Manager
DOE/LAAO

JJ/TT/ss

Enclosures: (1) Interim Action Report for TA-33, PRS 33-006(a)

APR 3 0 1997

Cy (w/ encs.):
D. Griswold, AL-ERD, MS A906
J. Harry, EES-5, MS M992
R. Michelotti, CST-18, MS E525
J. Mose, LAAO, MS A316
N. Naraine, DOE-HQ, EM-453
D. Neleigh, EPA, R.6, 6PD-N (2 copies)
C. Rodriguez, CIO, MS M769
T. Taylor, LAAO, MS A316
J. White, ESH-19, MS K498
RPF, MS M707
S. Dinwiddie, NMED-HRMB
M. Leavitt, NMED-GWQB
J. Parker, NMED-OB
G. Saums, NMED-SWQB
S. Yanicak, NMED-AIP, MS J993

Cy (w/o encs.):
T. Baca, EM, MS J591
D. Bradbury, EM/ER, MS M992
T. Glatzmaier, DDEES/ER, MS M992
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Los Alamos National Laboratory

UNIVERSITY OF CALIFORNIA

Environmental Restoration

Environmental Restoration Project
MS M992
Los Alamos, New Mexico 87545
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Date: April 21, 1997
Refer to: EM/ER:97-105

Mr. Ted Taylor
US Department of Energy
Los Alamos Area Office, MS A316
Los Alamos, NM 87544

SUBJECT: IA REPORT FOR TA-33, PRS 33-006(a) ACTIVITIES (FORMER OPERABLE UNIT 1122)

Dear Ted:

Enclosed for your review and approval please find a copy of the Interim Action Report for Technical Area 33, Potential Release Site 33-006(a) cleanup activities completed in Fiscal Year 1997. Also enclosed is the Approval/Disapproval Form for your signature indicating your approval or disapproval of the report. If you do not approve this report, please include a brief description of the reason(s) for disapproval.

Once we have received your approval of this report, we will submit it to the regulators for their information. Your Field Project Coordinator participated in developing and reviewing this report.

If you have any questions, please call Roy Michelotti at (505) 665-7444 or Joe Mose at (505) 667-5808.

Sincerely,

Jorg Jansen, Program Manager
Environmental Restoration

JJ/ss

Enclosures: (1) Interim Action Report for TA-33, PRS 33-006(a)
(2) Approval/Disapproval Form

Cy (w/o encs.):
T. Baca, EM, MS J591
D. Bradbury, EM/ER, MS M992
T. Glatzmaier, DDEES/ER, MS M992
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Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

Date: April 23, 1997
Refer to: EM/ER:97-108

Mr. Benito Garcia
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

SUBJECT: IA REPORT FOR TA-33, PRS 33-006(a) ACTIVITIES (FORMER OPERABLE UNIT 1122)

Dear Mr. Garcia:

Enclosed please find an informational copy of the Interim Action Report for Technical Area 33, Potential Release Site 33-006(a) stabilization activities completed in Fiscal Year 1997. The Department of Energy has reviewed and approved this report. The approval form is attached to the report.

If you have any questions, please call Roy Michelotti at (505) 665-7444 or Joe Mose at (505) 667-5808.

Sincerely,

Jorg Jansen, Program Manager
LANL/ER Project

Sincerely,

Theodore J. Taylor, Program Manager
DOE/LAAO

JJ/TT/ss

Enclosures: (1) Interim Action Report for TA-33, PRS 33-006(a)

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EM/ER File, MS M992

Interim Action Report for Potential Release Site

33-006(a)

Operable Unit 1122
Technical Area 33

Field Unit 3

Environmental Restoration Project

March 1997

A Department of Energy
Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY
LA-UR-97-641

INTERIM ACTION REPORT FOR SHRAPNEL PICKUP AT PRS 33-006(a)

1.0 INTRODUCTION

The interim action (IA) for potential release site (PRS) 33-006(a), a shot pad at South Site in Technical Area (TA) 33, included picking up large items and pieces of shrapnel scattered over a wide area of TA-33 and Bandelier National Monument.

Implosion tests were conducted at PRS 33-006(a) between 1950 and 1956. The shot pad was situated on top of TA-33-26, a vault that contained electronic equipment. Test shots contained copper, aluminum, lead, and uranium. Shots were detonated with 275 to 5 000 lb of high explosives. Detonation of these shots spread debris and shrapnel over a wide area surrounding South Site and across Chaquehui Canyon into Bandelier National Monument. A 1996 radiological survey of debris in Chaquehui Canyon indicated that as much as 50% of material may be radioactively contaminated. Activities ranged from just above background to 200 000 counts per minute.

Debris from implosion experiments was scattered over a half-mile from the shot pad and had washed along channels that drain into Chaquehui Canyon. Historical records from Bandelier National Monument indicate that shrapnel was found at the fire lookout tower and in the horse stables on monument property. Reconnaissance visits conducted in 1995 confirmed that debris had been deposited in the monument.

From September through November 1996, debris was removed from Bandelier National Monument and Chaquehui Canyon within a half-mile radius of the shot pad as specified in the IA plan (Environmental Restoration Project 1996, 02-119). The two objectives of the IA for PRS 33-006(a) at South Site, TA-33 at Los Alamos National Laboratory (LANL), were to

- reduce potential exposure to radioactively contaminated debris from implosion experiments that had been conducted at the shot pad, and
- prevent off-site movement and migration of contaminated debris from Chaquehui Canyon to the Rio Grande and to Cochiti Lake.

2.0 INTERIM ACTION

An IA at PRS 33-006(a), Chaquehui Canyon, and Bandelier National Monument was carried out in 1996 on September 4, 5, 6; October 8, 9, 10, 11, 15; and November 8, 11. Debris was removed from Bandelier National Monument and from channels in Chaquehui Canyon within a half-mile radius of the implosion pad (Fig. 1-1). This area was most impacted by implosion experiments of the 1950s.

The IA activities were designed to prevent off-site migration of contaminated debris to the Rio Grande and to meet the requirements set by New Mexico State Water Quality Control Commission regulations, which prohibit "refuse in a natural watercourse or in a location or manner where there is a reasonable probability that the refuse will be moved into a natural watercourse by leaching or otherwise." This IA also removed the potential for visitor and worker exposure to experimental debris within Bandelier National Monument and the drainages around PRS 33-006(a).

Field personnel walked and searched the areas of concern for debris according to LANL methods for surveying DOE sites. Procedures followed the draft Cultural Resources Management Team Survey Procedure (LANL 1994, 02-116). To assure that all debris was sighted, field personnel walked along a transect at moderate speeds. The ground was searched from left to right. Field personnel did not lose sight of each other or stray out of the transect. Two slightly different procedures were used for scanning. Which procedure was used depended on the character of the area.

- One procedure was used in the open areas typical of Bandelier National Monument. Four field personnel walked along equidistant blocks of land and surveyed in linear transects with personnel spaced 16 to 33 ft apart. Smaller intervals were used in dense vegetation; larger intervals were used in open areas.

- The other procedure was used in channels and in heavily vegetated areas of Chaquehui Canyon. Two field personnel, spaced 16 to 33 ft apart, walked in zigzag transects across the center of the channel and on either end of the channel cuts. Smaller intervals were used in dense vegetation and channels with small or no bank cuts. Larger intervals were used in open channels. The team walked down one channel and up the adjacent channel. All debris found in the channels was removed. Debris that was obvious and visible, but not within a channel or its cut, was also removed.

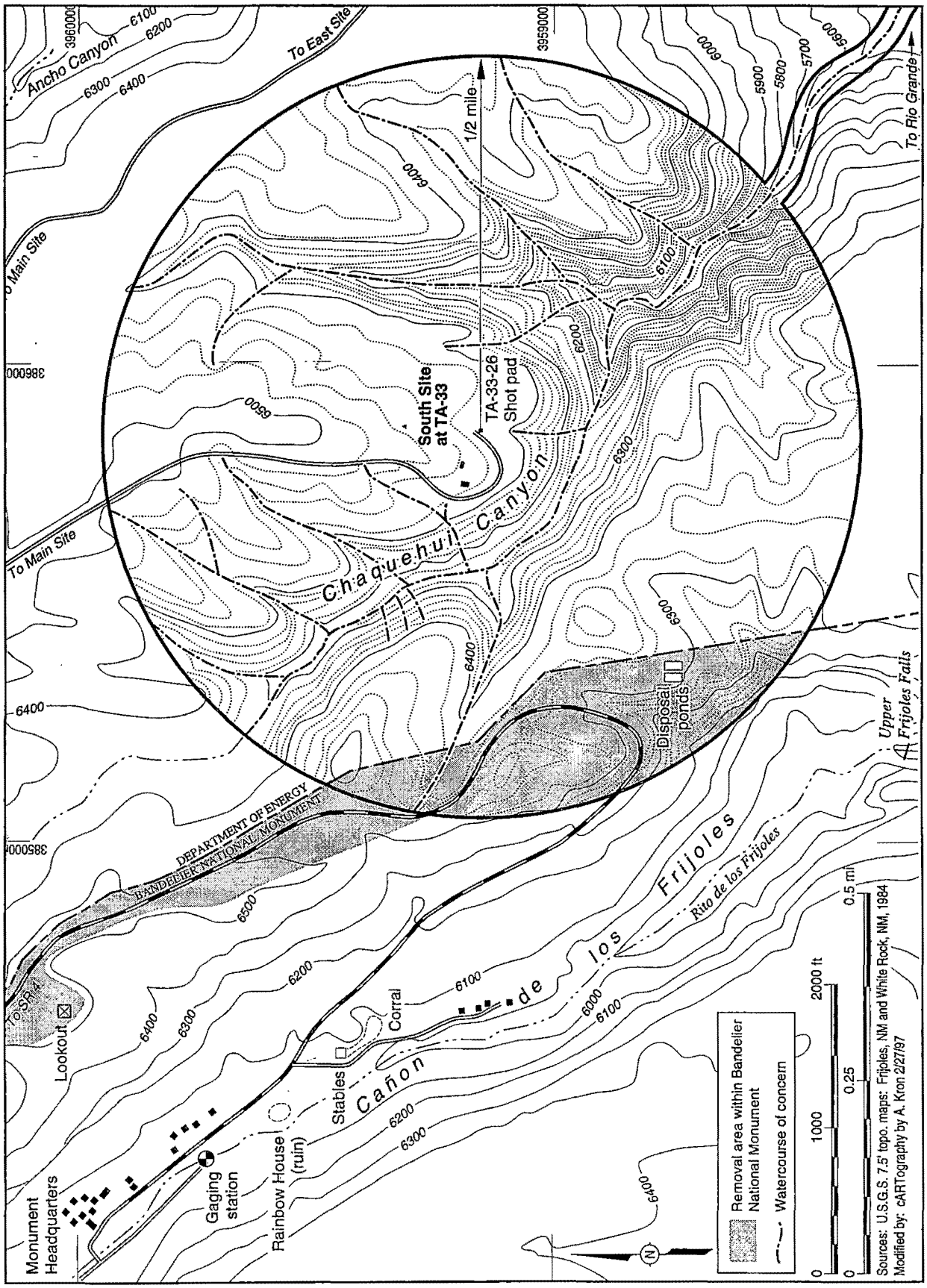

Fig. 1-1. Debris removal area at TA-33 and Bandelier National Monument.

Debris was screened, in place, for radioactivity using the Ludlum ESP-1 with beta/gamma probe. A metal detector was used to find metal debris in stream channel sediments.

2.1 Bandelier National Monument

Activities at Bandelier National Monument were coordinated with National Park Service personnel. A field support zone was set up in an area excluded from public access by a locked gate. Prior to the pickup, the field team was briefed by a National Park Service archaeologist regarding the nature and appropriate treatment of artifacts located in the monument.

Pickup took place September 4 through 6, 1996. Activities included briefing, set up, and actual pickup, which took one and one-half days. Four field team members surveyed the area specified in the IA plan on foot. As metal debris was found on the ground, it was screened for radioactivity using a direct reading instrument. Old cans and pieces of pottery that were scattered throughout the area were not disturbed by field personnel.

Debris from Bandelier National Monument consisted of one 3-in. diameter piece of nonhazardous/ nonradioactive steel. This piece of metal was found on the east side of the road, north of the sewage disposal ponds.

2.2 Chaquehui Canyon

Activities in Chaquehui Canyon included picking up debris in nine of the channels draining the canyon slopes. Pickup took place from October 9 though 15, 1996. Survey and pickup extended through the area 1 mile in diameter as specified in the IA plan and continued toward the Rio Grande until debris was no longer detected on slopes leading to the river. Field personnel worked in pairs within the drainages and adjacent banks. One member of each pair used a metal detector to located buried pieces. Obvious and visible debris outside a channel was removed; however, the team did not employ archaeological search techniques to locate debris outside of channels.

Debris from TA-33 consisted of

- neutron detectors,
- metal scrap from implosion devices,
- wire,
- cable, and
- industrial debris.

Twelve neutron detectors were found in Chaquehui Canyon and on the north-facing slopes and channels draining into the canyon. The detectors are approximately 3 ft long and weigh 65 lb each. No oil remained in any detector. Metal scrap from implosion devices consisted of aluminum, metal alloys, copper, and iron steel. These pieces ranged in size from 1 in. to 3 ft and were found in many shapes and dimensions. Wire and cable ranged up to 3 ft in length. Industrial debris consisted of metal buckets, plastic, foam, and metal parts.

Small and light debris was carried out of the drainages and canyons in heavy bags and/or in a backpack. Large and heavy debris was gathered in holding areas in Chaquehui Canyon and later carried out of the canyon using an all-terrain vehicle (ATV).

A total of 1 496 pieces of debris were picked up and removed from TA-33 during the IA. Of this debris, 72% was found in the channel that drains the shot pad, and which directly drains a large pile of debris from the implosion experiments [PRS 33-010(c)]. Seventy-three percent of the debris at TA-33 is nonhazardous/nonradioactive. Twenty-six percent of the debris is radioactive. Less than 1% is hazardous and less than 1% is mixed. Table 2-1 and Figure 2-1 present the distribution of the debris at PRS 33-006(a) and at Bandelier National Monument.

TABLE 2-1

DISTRIBUTION OF DEBRIS FROM PRS 33-006(a)

DRAINAGE NUMBER	NONHAZ/ NONRAD	RADIO-ACTIVE	HAZARD-OUS	MIXED	TOTAL PIECES	MAXIMUM (cpm)
0	100	19	1	0	120	9 000
1	7	1	1	3	12	30 000
2	12	10	0	1	23	30 000
3	2	1	0	0	3	1 400
4	820	250	3	1	1 074	45 000
5	0	0	0	0	0	NA
6	3	0	0	0	3	NA
7	0	0	1	1	2	850
8	47	29	2	12	90	200 000
9	42	31	2	1	76	20 000
10	3	0	0	0	3	NA
11	8	5	0	0	13	1 100
12	0	0	0	0	0	NA
13	0	0	0	0	0	NA
14	5	5	0	1	11	30 000
15	40	20	0	0	60	40 000
16	0	2	0	2	4	1 000
17	0	0	0	0	0	NA
18	2	0	0	0	2	NA
19	0	0	0	0	0	NA
20	0	0	0	0	0	NA
TOTALS	1 091	373	10	22	1 496	NA

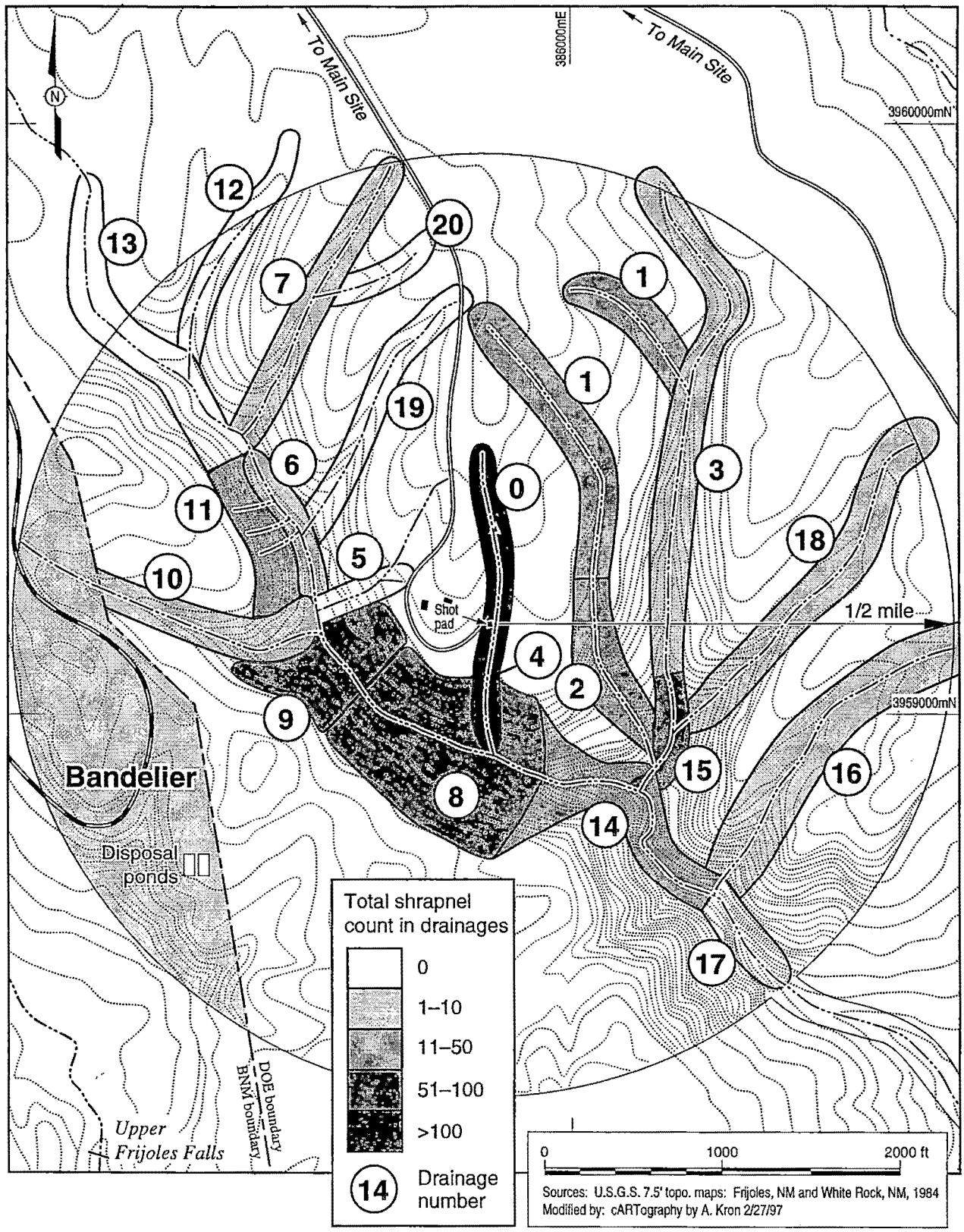

Fig. 2-1. Distribution of shrapnel found at TA-33 and Bandelier National Monument.

Results from radiation screening indicate that radioactivity of the metal debris ranges from just above background to 200 000 cpm beta/gamma. A neutron detector contained the highest counts of radioactivity. Off the 12 detectors, 10 are radioactive. The mixed pieces of metal contain radioactivity up to 55 000 cpm beta/gamma. Swipes were taken from 10% of the radioactive debris to analyze for removable surface contamination. Results from this survey indicate very little removable surface radioactivity on the debris.

Suspected hazardous and mixed debris was screened using X-ray fluorescence. The debris contained up to 1.2 % lead. A sample of the potential hazardous metal submitted for Toxicity Characteristic Leaching Procedure analysis indicated that the metal is Resource Conservation and Recovery Act hazardous waste. The leachable lead concentration is 7 mg/kg.

During pickup, debris was held in several places pending removal. Radioactive debris was stored in a radioactive material holding area (RMHA) near shot pad TA-33-26 at South Site. Nonhazardous/nonradioactive waste was held in a King bag at the same location. Mixed and hazardous wastes were held in a satellite accumulation area at East Site. Temporary holding areas were set up in Chaquehui Canyon for items too heavy to be hand-carried out of the canyon. During the weeks of November 4 and November 11, 1996, debris remaining in Chaquehui Canyon was transported to a central location, then removed from the canyon using the ATV. Ten ATV trips were made.

3.0 MONITORING AND CONFIRMATORY SAMPLING

A purpose of this IA was to permanently remove material that may have migrated into a watercourse for possible transport to the Rio Grande. Because the goal was accomplished, no long-term monitoring is recommended in Chaquehui Canyon.

No confirmatory sampling was performed following pickup. Soil contamination at levels of concern is not expected because the implosion shots deposited metallic pieces, principally copper and aluminum, that are resistant to weathering and decomposition. In addition, the pieces were too widely spread to concentrate any contaminants that may have been released by weathering.

This IA concludes work in Chaquehui Canyon and Bandelier National Monument. In a future report, recommendations on further action at PRS 33-006(a) will be based on mesa top sampling data.

4.0 INSPECTION AND MAINTENANCE

Material removed from the canyon was inspected prior to disposition. PRS 33-010(c), located on the mesa near the main channel draining the shot pad, contains debris removed from the shot pad during the 1950s operations. The PRS has been stabilized with mesh to prevent debris from recontaminating Chaquehui Canyon. The mesh is inspected periodically.

No maintenance is required for any activity associated with this IA.

5.0 WASTE MANAGEMENT

5.1 Waste Storage

Waste picked up from Bandelier National Monument was placed directly into an area posted for nonhazardous/nonradioactive waste at Main Site. At the completion of the pickup, it was moved to the centralized storage location at Area 6.

Waste from TA-33 was temporarily stored in four centralized waste areas during the remedial activities. The waste areas and their locations are listed below:

- Waste area 1, located at the end of the paved road at South Site, consisted of one Radiological Waste Holding Area (RWHA) for radioactive waste and one posted area for nonhazardous/nonradioactive waste.
- Waste area 2, located in Chaquehui Canyon directly below the drainage from PRS 33-010(c), consisted of one RWHA and one posted area for nonhazardous/nonradioactive waste.
- Waste area 3, located in Chaquehui Canyon approximately 200 yards up canyon from waste area 2, consisted of one RWHA and one posted area for nonhazardous/nonradioactive waste.
- Waste area 4, a permitted satellite accumulation area adjoining the Field Unit 3 trailer at Main Site, consisted of hazardous and mixed waste areas.

At the completion of the pickup, all radioactive and nonhazardous/nonradioactive waste was consolidated to one centralized storage location at Area 6.

5.2 Waste Volumes

Actual volumes of waste generated during the IA, compared with the estimated waste volumes, are shown in Table 5-1. Weights of the waste are also listed in the table.

TABLE 5-1

ESTIMATED AND ACTUAL WASTE VOLUMES

SITE LOCATION	WASTE TYPE	ESTIMATED VOLUME	ACTUAL VOLUME	ACTUAL WEIGHT
TA-33	Nonhazardous/ nonradioactive	1 yd^3	1 yd^3	450 lb
	Radioactive	1 yd^3	1.5 yd^3	770 lb
	Hazardous	0 yd^3	<0.25 yd^3	20 lb
	Mixed	0 yd^3	<0.25 yd^3	20 lb
Bandelier National Monument	Nonhazardous/ nonradioactive	<0.1 yd^3	<0.01 yd^3	1 lb
	Radioactive	<0.1 yd^3	0 yd^3	-0-

5.3 Waste Disposal

Waste streams were disposed of as follows:

- Radioactive waste was stored in four 55-gal drums and one King bag within RWHAs. On February 12, 1997, the waste was sent to Area G, TA-54.
- Nonhazardous/nonradioactive waste is being stored in two 55-gal drums and one King bag in posted areas adjacent to the RWHAs. The material is held pending accumulation from other TA-33 activities of a sufficient quantity for collection by a commercial recycler.
- Hazardous and potentially-mixed waste remain in a satellite accumulation area at Main Site.
- Mixed waste may be used in treatability studies to evaluate techniques to separate radioactive from hazardous components.

6.0 COST AND SCHEDULE

Estimated and actual costs are given in Table 6-1. Estimated and actual schedules are given in Table 6-2.

TABLE 6-1

ESTIMATED AND ACTUAL COSTS

TYPE ACTION	TASK	ESTIMATED COSTS	ACTUAL COSTS
Chaquehui pickup	Administrative	Not estimated	$7 700
	Field removal work	$7 200	$26 465
	Report writing	$1 200	$2 520
	Waste management	$675	$675
	Radioactive waste disposal fees	$300	$300
	Mixed-waste disposal fees	Not estimated	$5 000*
		Subtotal	$42 660
Bandelier pickup	Administrative	Not estimated	$330
	Field removal work	$3 600	$6 620
	Report writing	$600	$800
	Waste management	$450	$450
		Subtotal	$8 200
		TOTAL	**$50 860**

* Costs are unknown if the mixed waste is incorporated into a technology demonstration project. Cost shown is for waste disposal to a mixed-waste permitted facility (Envirocare).

TABLE 6-2

ESTIMATED AND ACTUAL SCHEDULE

TYPE ACTION	TASK	SCHEDULE	ESTIMATED TIME	ACTUAL TIME
Chaquehui Canyon pickup	Field removal work	10/9/96-11/11/96	96 man hours	192 man hours
	Report writing	2/28/97	16 man hours	50 man hours
	Waste management	8/30/96-2/28/97	9 man hours	9 man hours
	Radioactive waste disposal	3/97	N/A	N/A
Bandelier pickup	Field removal work	8/30/96-8/31/96	48 man hours	48 man hours
	Report writing	2/28/97	8 man hours	16 man hours
	Waste management	8/30/96-2/28/97	6 man hours	6 man hours

REFERENCES

Environmental Restoration Project, July 1996. "Interim Action Plan for Shrapnel Pickup at PRS 33-006(a), Field Unit 3, Los Alamos National Laboratory, Los Alamos, New Mexico. **(Environmental Restoration Project 1995, 02-119)**

LANL, (Los Alamos National Laboratory), January 6, 1994. Cultural Resources Management Team Survey Procedure Draft. ESH-20, Los Alamos, New Mexico. **(LANL 1994, 02-116)**

INTERIM ACTION REPORT
APPROVAL/DISAPPROVAL FORM

PRS(s) 33-006(a)

The undersigned have reviewed the Interim Action Report and believe that the intent and goals of the Interim Action Plan have been met.

FPL Roy Mitchell Date 4/8/97

FPC Joseph H. Moss Date 04/09/97

.....

I, Theodore J. Taylor, DOE-LAAO, **APPROVE** ✓, **DISAPPROVE** _____ the accompanying Interim Action Report for PRS(s) 33-006(a), TA-33.

The following reasons reflect the decision for disapproval:

_____

_____

_____

_____

_____

_____

_____

Signed: T. J. Taylor Date: 4/10/97