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Direct

# Los Alamos National Laboratory

ENVIRONMENTAL RESTORATION

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*Date:* February 26, 1996
*Refer to:* EM/ER:96-078

RECEIVED
FEB 28 1996

Mr. Steve Yanicak
New Mexico Environment Department
DOE-Oversight Bureau
P.O. Box 1663, MS J993
Los Alamos, New Mexico, 87545

**SUBJECT: SUBMITTAL OF POTENTIAL RELEASE SITES (PRSs) 33-007(c) AND 33-010(c) INTERIM ACTION FINAL REPORTS**

Dear Mr. Yanicak:

In coordination with the Los Alamos National Laboratory's Water Quality group (ESH-18), the New Mexico Environment Department, and the Los Alamos Area Office, Field Unit 3 is formally submitting the final report for the interim actions that took place at PRSs 33-007(c) and 33-010(c). As specified in a letter to you dated February 6, 1996, all the suggested best management practices were implemented.

If you have any questions, please call Brad Martin at (505) 667-6080 or Joe Mose at (505) 667-5808.

Sincerely,

Jorg Jansen, Program Manager
Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager
Los Alamos Area Office

JJ/TT/bp

Enclosures: Interim Action Reports for PRSs 33-007(c) and 33-010(c)

Cy (w/enc.):
M. Alexander, ESH-18, MS K497
P. Bussolini, NIS/FM, MS E522
B. Driscoll, EPA
B. Garcia, NMED-HRMB
D. Griswold, ERD, AL, MS A906
J. Harry, EM/ER, MS M992
B. Hoditschek, NMED-HRMB
R. Kern, NMED-HRMB
B. Martin, CST-18, MS E525
J. Mose, LAAO, MS A316
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G. Real, ERD, AL, MS A906
W. Spurgeon, EM-453, DOE-HQ
J. Vozella, LAAO, MS A316

# Interim Action Report for

## Potential Release Site 33-007(c)

**Field Unit 3**

**Environmental Restoration Project**

February 1996

A Department of Energy
Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY

LA-UR-96-710

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## 1.0 OBJECTIVE

Solid Waste Management Unit (SWMU) 33-007(c) includes two catcher boxes located south of TA-33-16 that contain uranium and uranium-contaminated soil. This area has undergone an interim action to stabilize the soil and prevent further migration of contaminants. This action was conducted at the request of the New Mexico Environment Department and the Department of Energy Los Alamos Area Office (see Attachment 1). The associated fact sheet can be found in Attachment 2.

## 2.0 SITE TYPE AND DESCRIPTION

SWMU 33-007(c) is the firing site at Area 6 and surrounds structure TA-33-16 on three sides, constructed in March 1949 (Fig. 1). TA-33-16 housed an air gun and electronic equipment used to measure neutron production in "gun-type" initiators containing beryllium and polonium-210. South of TA-33-16, catcher boxes were built of timbers in two sections, each about 6 ft on a side. The catcher boxes were filled with soil, wood chips, and vermiculite. Military guns were also stationed on concrete pads around TA-33-16. Projectiles were fired at targets that were placed in front of barricades. Targets may have contained uranium and beryllium. Compressed air or propellants were used to fire the guns. Projectiles often cracked open, contaminating the pads and surrounding area with polonium-210. Firing crews repeatedly painted contaminated parts of the guns and pad with lead paint to reduce surface contamination. Shots were discontinued at Area 6 in 1955 (Environmental Restoration Project 1995, 1265).

## 3.0 CONTAMINANTS

Trenching the catcher boxes during the 1994 sampling season uncovered chunks of corroded uranium metal that was oxidized to hydrated uranyl hydroxides. At that time nine soil samples were collected and analyzed for uranium and inorganics as stated in the 1995 RCRA Facility Investigation Report (Environmental Restoration Project 1995, 1265). Radiation was detected during routine field screening of soil in backhoe buckets. Radioactive soil was segregated during trenching and reburied during demobilization. The concentrations of uranium found above screening action level (SAL) were 6 770 and 218 mg/kg (Appendix A of this interim action report). No other contaminants were detected above SAL. Appendix A also lists inorganics detected above LANL and TA-33 background upper tolerance limits.

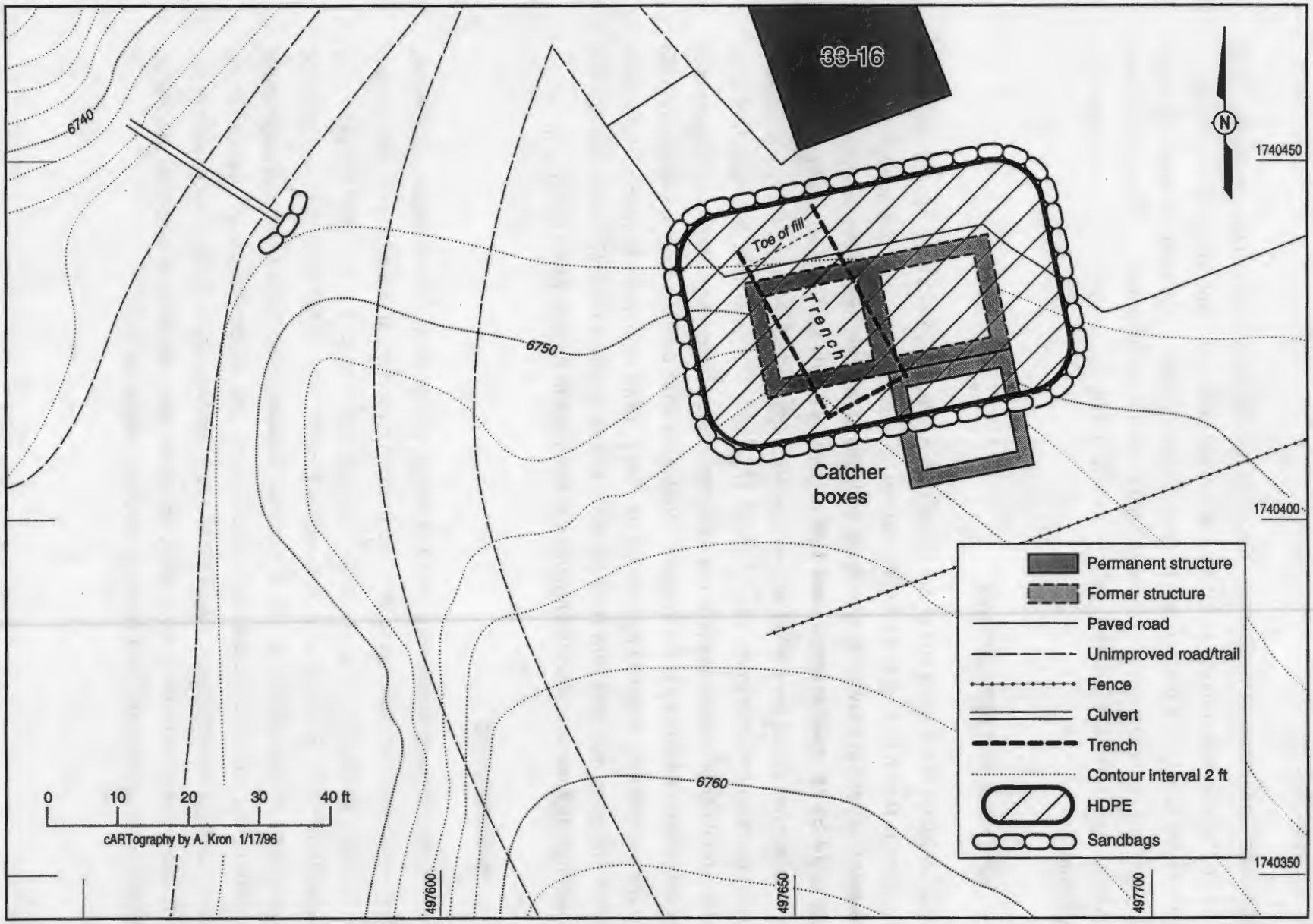


**Fig. 1. Area 6, PRS 33-007(c).**

## 4.0 INTERIM ACTION

An interim action was conducted at the catcher boxes December 14, 1995 to prevent migration of contaminants from the site. This was accomplished using the following two methods.

- A 12 mil high density polyethylene (HDPE) cover was secured over the top of the catcher boxes to prevent runon and runoff of precipitation.
- The culvert located 70 ft to the west of building TA-33-16 was dammed with sandbags to prevent water from entering the culvert.

The HDPE was placed on top of the catcher boxes and secured with sandbags (see Fig. 1). Sandbags were placed on top of the HDPE, one high and side-by-side around the edges of the cover. The dam for the culvert was constructed using three sandbags. The bags were stacked in front of and inside the culvert.

Figures 2, 3, and 4 are photographs taken before, during, and after the interim action.

## 5.0 CONFIRMATORY ACTIVITIES

No confirmatory activities will be necessary at this site because the HDPE cover is impermeable and is secured by sandbags; therefore, no soil transport will occur.

## 6.0 MAINTENANCE AND INSPECTION

A heap leaching pilot study will be performed on the catcher boxes in fiscal year 1996 that will require the liner and sandbags to be removed; therefore, maintenance of the HDPE and sandbags will not be necessary because the HDPE and sandbags will not have deteriorated significantly in six months.

The heap leaching pilot study will be performed to remediate uranium-contaminated soils at SWMU 33-007(c). After the heap leaching study, any remaining contaminated soil will be covered again pending a final decision for a remedy of the site. If the heap leaching pilot study is completely successful, no contaminated soil will remain.

Fig. 2. PRS 33-007(c), before interim action.

Fig. 3. PRS 33-007(c), during interim action.

Fig. 4. PRS 33-007(c), after interim action.

## 7.0 WASTE MANAGEMENT

No waste was generated during installation of the liner and sandbags. The HDPE that is covering the catcher boxes will be screened for radioactivity. If the liner is contaminated, then it will be decontaminated and reused. Any soil or water resulting from decontamination of the HDPE will be disposed of as radioactive waste. The sandbags were placed on top of the HDPE, so they should not be contaminated; however If any sandbags are contaminated, they will be disposed of as radioactive waste.

## 8.0 ESTIMATED SCHEDULE AND COST TO COMPLETE

The interim action at 33-007(c) was performed December 14, 1995.

**TABLE 8.1**

**INTERIM ACTION COST**

| MATERIALS AND LABOR | COST |
|---|---|
| Materials (HDPE and sandbags) | $ 2 500 |
| Labor | $ 1 500 |
| **Total** | **$ 4 000** |

## 9.0 REFERENCES

Environmental Restoration Project, September 29, 1995. "RFI Report for TA-33, PRSs 33-003(a), 33-004(a), 33-007(c), 33-009, 33-011(d), 33-013, 33-016, 33-017 and Revised Sampling Plans for PRSs 33-003(b), 33-004(k), 33-008(a), 33-008(b), C-33-001, C-33-002," Los Alamos National Laboratory Report LA-UR-95-3625, Los Alamos, New Mexico. **(Environmental Restoration Project 1995, 1265)**

## APPENDIX A SAMPLING DATA

### INORGANICS DETECTED ABOVE LANL AND TA-33 BACKGROUND UTLs AT SWMU 33-007(c) CATCHER BOXES

| ANALYTE | SAMPLE ID | DEPTH (ft) | MEDIUM | CONCEN-TRATION (mg/kg) | LANL UTL[a] (mg/kg) | TA-33 UTL (mg/kg) | SAL[b] (mg/kg) |
|---|---|---|---|---|---|---|---|
| Lead | AAA9846 | 4 | Soil | 160 | 39 | 39 | 400 |
| Nickel | AAA9843 | 0-0.5 | Soil | 51.5 | 26.7 | 17 | 1 534[c] |
| | AAA9844 | 0-0.5 | Soil | 31.8 | 26.7 | 17 | 1 534[c] |
| | AAA9848 | 0-0.5 | Soil | 104 | 26.7 | 17 | 1 534[c] |
| | AAA9916 | 2 | Soil | 48 | 26.7 | 17 | 1 534[c] |
| Silver | AAA9846 | 4 | Soil | 1 | ND[d] | ND | 383[c] |
| | AAA9847 | 4 | Soil | 2 | ND | ND | 383[c] |
| Uranium | AAA9844 | 0-0.5 | Soil | 6 770[e] | 2.8 | 4.8 | 29[c] |
| | AAA9848 | 0-0.5 | Soil | 218[e] | 2.8 | 4.8 | 29[c] |
| Zinc | AAA9846 | 4 | Soil | 1 200 | 101 | 62.3 | 23 004[c] |

[a] UTL = Upper tolerance limit.
[b] SAL = Screening action level.
[c] This SAL is different from that used in the 1995 RFI Report for TA-33 **(Environmental Restoration Project 1995, 1265).**
[d] ND = Not determined.
[e] Constituent above SAL.

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**ATTACHMENT 1 CORRESPONDENCE**

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State of New Mexico
ENVIRONMENT DEPARTMENT
DOE OVERSIGHT BUREAU
2044 A Galisteo Street
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Santa Fe, New Mexico 87502

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

October 23, 1995

Ivan Trujillo DOE/AIP/POC
Dept. of Energy
Los Alamos Area Office
MS: A316
Los Alamos, NM 87545

Re: Storm Water Pollution Prevention Best Management Practices (BMPs) at TA-33, Solid Waste Management Units (SWMUs) 33-007(b), 33-010(c), and 33-008(a).

Dear Mr. Trujillo:

On October 20, 1995, New Mexico Environment Department (NMED), Department of Energy Oversight Bureau (DOE OB) personnel visited several TA-33 SWMUs in conjunction with Los Alamos National Laboratory (LANL) Environmental Restoration (ER) staff. The purpose of this visit was to discuss storm water BMPs associated with various SWMUs. Several sites were visited and the DOE OB recommend that the following BMPs be put in place:

* SWMU 33-007(b) This site has yellow cake exposed on the surface of the ground and buried in the bunker. The bunker has very little vegetative cover and appears to be actively eroding.

(1) Sand bags should be placed to divert surface runoff from the bunker area into the ditch below the bunker.
(2) The ditch below the bunker has a culvert that runs beneath the road. This culvert should be plugged or a silt fence should be installed on the upstream side.
(3) Polymer should be applied to the surface of the bunker to stabilize the exposed ground.

* SWMU 33-010(c) is a site where refuse from past detonations was placed into a watercourse which drains directly into Chaquehui canyon. The base of the refuse pile is in the stream course and subject to mobilization and transport during storm runoff events.

(1) A silt fence should be placed at the base of the refuse pile and reinforced with sand bags to prevent washout from the active storm drainage channel.

(2) Polymer should be applied to the surface of the waste pile to stabilize the exposed ground.

* SWMU 33-008(a) is a burial site for debris from a variety of sources. In the channel which drains this SWMU there is exposed yellow cake in the arroyo bottom and the contamination extends several hundred feet down the arroyo.

(1) At least one silt fence should be installed in this arroyo at the furthest extent of detectable contamination. This would reduce further contamination of the arroyo and reduce ultimate clean-up costs.

DOE OB personnel feel that the implementation of these BMPs would significantly reduce contaminant migration due to storm water runoff into Chaquehui canyon.

If you have any questions regarding this matter do not hesitate to call Ralph Ford-Schmid at 827-1536.

Sincerely,

Stephen Yanicak

Steve Yanicak
NMED/DOE OB/POC

SY:rfs
cc:
Neil Weber, Chief, NMED/DOE OB
Jim Piatt, Chief, NMED/SWQB
Benito Garcia, Chief, NMED/HRMB
Brad Martin, LANL, ER/FPL/FU3, MS-E525
Everett Trollinger, DOE/FPC/FU3, MS-A316
Roy Michelotti, LANL/ER, MS-E525
Don Hickmott, LANL/ER, MS-D462
Steve Rae, Group Leader, UC-LANL/ESH-18, MS K497
File/LANL/Look

COPY

United States Government

Department of Energy

# memorandum

Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

DATE: DEC 14 1995

REPLY TO ATTN OF: LAAO:EP:TJT:1.4.2.6.1.16.2

SUBJECT: Interim Measure at TA-33, SWMUs 33-007(b), 33-010(c), and 33-008(a) for Storm Water Pollution Prevention

TO: J. Jansen, EM/ER, UC-LANL, MS M992

Attached is a letter from Steve Yanicak, New Mexico Environment Department, dated October 23, 1995, in which Mr. Yanicak expresses a concern regarding the potential release of contaminants from the solid waste management units (SWMUs) 33-007(b), 33-010(c), and 33-008(a). Please review the attached letter and ask your staff to initiate an Interim Measure Plan that will address storm water pollution best management practices (BMPs) for the SWMUs listed above.

If you have any questions concerning this action, please contact Joe Mose at 667-5808.

TJT

Theodore J. Taylor
Program Manager
Environmental Restoration Program

Attachment

cc w/ attachment:
D. Griswold, ERD, AL, MS A906
T. Taylor, EP, LAAO, MS A316
J. Mose, EP, LAAO, MS A316
K. Zamora, EP, LAAO, MS A316
N. Naraine, EM-452, HQ
J. White, ESH-19, MS K498
RPF, UC-LANL, MS M707

cc w/o attachment:
J. Vozella, AAMEP, LAAO
G. Rael, ERD, AL9
W. Spurgeon, EM-452, HQ
T. Baca, EM, UC-LANL, MS J591

# Los Alamos National Laboratory

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505-665-7203
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*Date:* February 6, 1996
*Refer to:* EM/ER:96-037

Mr. Steve Yanicak
New Mexico Environment Department
DOE-Oversight Bureau
P.O. Box 1663, MS J993
Los Alamos, NM 87545

**SUBJECT: STABILIZATION OF SOLID WASTE MANAGEMENT UNITS (SWMUs) 33-007(b,c), 33-008(a), AND 33-010(c)**

This letter is in response to the New Mexico Environment Department (NMED) letter dated October 23 and the US Department of Energy's (DOE's) request dated December 14 that interim measures be implemented at the subject SWMUs to prevent or reduce contaminant migration.

In coordination with NMED, DOE, and the Water Quality Group (ESH-18) at the Los Alamos National Laboratory, Field Unit 3 implemented the approved best management practices (BMP), as described in the enclosed fact sheets, for SWMUs 33-007(c) and 33-010(c). These BMPs consisted of sandbags for run-on diversion, hay-bale check dams to collect sediments, and matting to prevent mobilization of contaminants.

SWMU 33-007(c) is a site that was not originally listed as an interim action candidate; however, after discussions with NMED and DOE, it was agreed that Field Unit 3 personnel should implement an interim action for this SWMU. On December 14, 1995, SWMU 33-007(c) was stabilized with a liner and sandbags to reduce contaminant mobilization and migration, as discussed in the enclosed fact sheet.

Field Unit 3 is in the process of implementing BMPs at a berm and a drainage channel which are part of SWMU 33-007(b). The NMED requested that action be taken at SWMU 33-008(a); however, the uranium chunks identified in the drainage are attributed to 33-007(b) and not to 33-008(a). The interim action at 33-007(b) was started but could not be completed due to snow; activities will resume as soon as practical. Field Unit 3 will continue to inform DOE and NMED of their progress.

Final interim action reports for 33-007(c) and 33-010(c) will be submitted to DOE and NMED by February 29, 1996. The final interim action report for 33-007(b) will be submitted on May 30, 1996. If you have any questions, please call Brad Martin at (505) 667-6080 or Joe Mose at (505) 667-5808.

Sincerely,

Jorg Jansen, Program Manager
Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager
Los Alamos Area Office

JJ/TT/bp

Enclosure: Fact Sheets

Cy (w/enc.):
P. Bussolini, NIS/FM, MS E522
B. Driscoll, EPA
B. Garcia, NMED-HRMB
D. Griswold, ERD, AL, MS A906
B. Hoditschek, NMED-HRMB
R. Kern, NMED-HRMB
B. Martin, CST-18, MS E525
R. Michelotti, CST-18, MS E525
J. Mose, LAAO, MS A316
N. Naraine, EM-453, DOE-HQ
T. Taylor, LAAO, MS A316
N. Weber, Bureau Chief, NMED-AIP
J. White, ESH-19, MS K490
EM/ER File, MS M992
RPF, MS M707

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T. Baca, EM, MS J591
T. Glatzmaier, DDEES/ER, MS M992
D. McInroy, EM/ER, MS M992
G. Rael, ERD, AL, MS A906
W. Spurgeon, EM-453, DOE-HQ
J. Vozella, LAAO, MS A316

**ATTACHMENT 2 FACT SHEET**

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**Los Alamos National Laboratory**
**Environmental Restoration Project**
**PRS Fact Sheet for Interim Action**

## Description

Potential Release Site (PRS) 33-007(c) is the firing site at Area 6 and surrounds structure TA-33-16, constructed in March 1949. TA-33-16 housed an air gun and electronic equipment used to measure neutron production in "gun-type" initiators containing beryllium and polonium-210. Military guns were also stationed on concrete pads around TA-33-16. Projectiles were fired at targets that may have contained uranium and beryllium and were placed in front of barricades. Compressed air or propellants were used to fire the guns. Projectiles often cracked open, contaminating the pads and surrounding area with polonium-210. Firing crews repeatedly painted contaminated parts of the guns and pad with lead paint to reduce surface contamination. Shots were discontinued at Area 6 in 1955.

## Contaminants

Trenching during the 1994 sampling season uncovered chunks of corroded uranium metal that was oxidized to hydrated uranyl hydroxides. At that time nine soil samples were collected and analyzed for uranium and inorganics. Radiation was detected during routine field screening of soil in backhoe buckets. Radioactive soil was segregated during trenching and reburied during demobilization. The concentrations of uranium in two samples were 6 770 and 218 mg/kg.

## Interim Action

An interim action was conducted at the catcher boxes to prevent the migration of contaminants from the site. This was accomplished using the following two methods.

- A 12 mil high density polyethylene (HDPE) cover was secured over the top of the catcher boxes to prevent run-on and run-off of precipitation.
- The culvert located to the west of building TA-33-16 was dammed with sand bags to prevent water from entering the culvert.

The HDPE was placed on top of the catcher boxes and secured with sandbags (See Figure 1). The bags were placed on top of the HDPE, one high and side-by-side around the edges of the cover. The dam for the culvert was constructed using three or four sandbags. The bags were stacked in front of and inside the culvert.

## Estimated Cost

| | |
|---|---|
| Materials (HDPE and sandbags) | $2 500 |
| Labor | $1 500 |
| Total | $4 000 |

## Schedule:

The interim action at 33-007(c) was performed on December 14, 1995.

# Interim Action Report for

## Potential Release Site 33-010(c)

Field Unit 3

Environmental Restoration Project

February 1996

A Department of Energy Environmental Cleanup Program

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Los Alamos
NATIONAL LABORATORY

LA-UR-96-711

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Table A-1 Inorganics with Concentrations Greater than Background Upper Tolerance Limits for PRS 33-010(c) ..... A-1

Table A-2 Uranium with Concentrations Greater than Background Upper Tolerance Limits for PRS 33-010(c) ..... A-2

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Fig. 3. PRS 33-010(c), during interim action. ..... 5

Fig. 4. PRS 33-010(c), after interim action. ..... 6

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## 1.0 OBJECTIVE

Solid Waste Management Unit (SWMU) 33-010(c) is a debris pile located due south of TA-33-26. This area has undergone an interim action to stabilize the soil and debris to prevent further migration of contaminants. This action was conducted at the request of the New Mexico Environment Department and the Department of Energy Los Alamos Area Office (see Attachment 1). The associated fact sheet can be found in Attachment 2.

## 2.0 SITE TYPE AND DESCRIPTION

SWMU 33-010(c) is a debris area located at South Site and is spread along the rim and west slope of the main arroyo. The debris pile consists of commercial (road grade) gravel, shrapnel (primarily copper and aluminum), shattered pieces of electronic cable, and pieces of wood that were associated with shots from TA-33-26, an x-unit vault. SWMU 33-010(c) is approximately 100 ft x 50 ft in extent and approximately 2 ft to 4 ft deep.

TA-33-26 was the location of implosion studies conducted in the early 1950s. Two to three shots per week were detonated, a few containing in excess of 1 000 lb of trinitrotoluene (TNT). Experimental apparatus and high explosives (HE) were encased in a uranium container and surrounded by neutron detectors on aluminum stands. This assemblage was put in a large copper can to electrically isolate the experiment. A wooden shack was built over the can, and the HE was detonated. Debris from the shots covered a wide area, but much of it remained near the shot pad. This debris was scraped away to clean the area for the next shot and deposited at SWMU 33-010(c). The area was abandoned when activities ceased at the shot pad in 1954.

## 3.0 CONTAMINANTS

In 1989 three composite soil samples, consisting of four subsamples each, were taken across the base of the pile. The samples were analyzed for radionuclides and inorganics. Elevated levels of uranium (150 to 380 mg/kg) and copper (1 500 to 7 900 mg/kg) were detected in the debris pile (LANL 1989, 0425).

As stated in a 1995 RCRA Facility Investigation Report, six soil samples were collected on the base of the disposal pile. An additional six samples were analyzed for inorganics, uranium, and cesium-137. Two samples were analyzed for pesticides and herbicides. No debris was sampled (Environmental Restoration Project 1995, 1288).

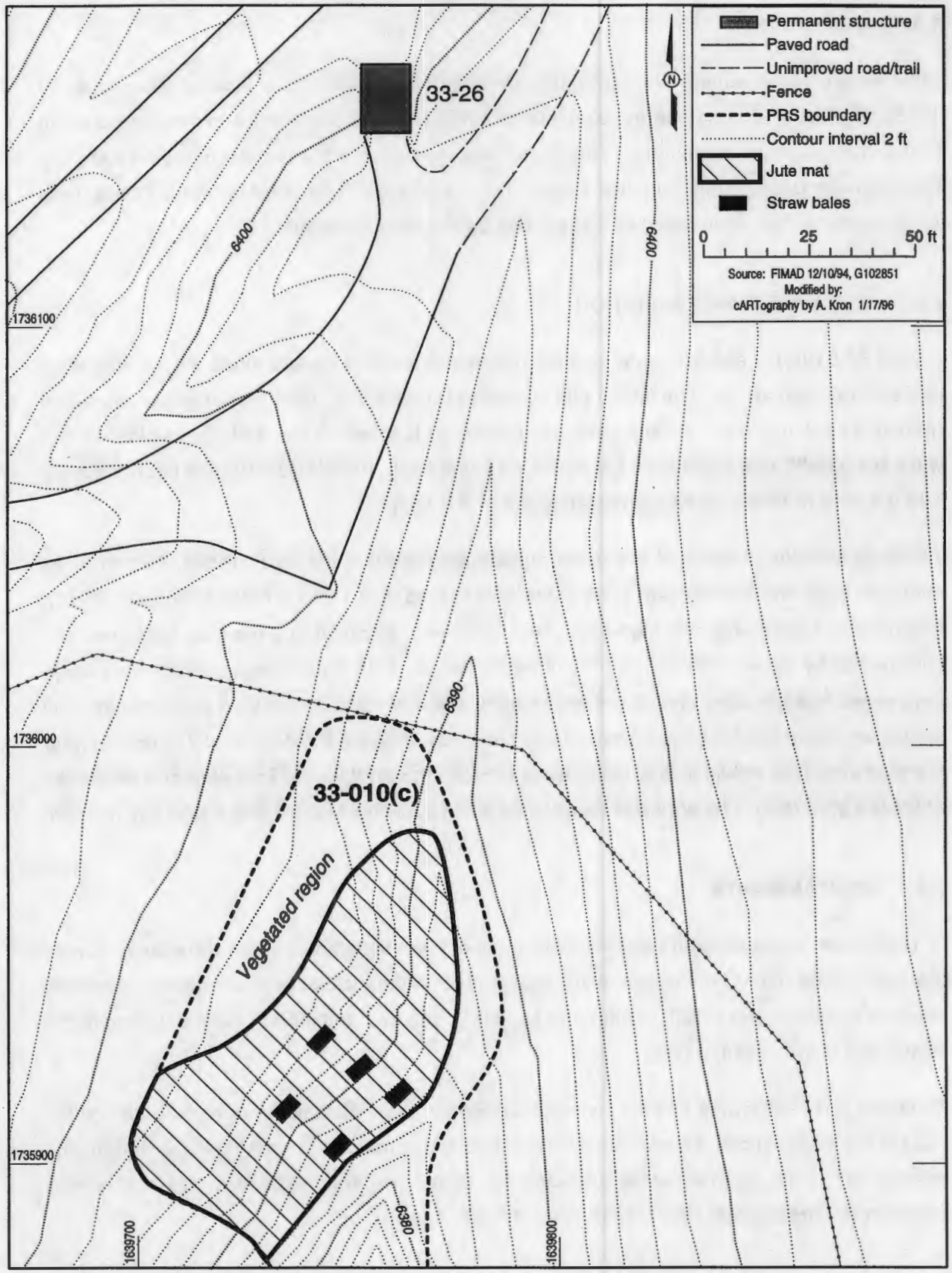


**Fig. 1. South Site, PRS 33-010(c).**

Copper was detected at high levels in most samples. Large chunks of copper shrapnel are visible on the pile. Other inorganics, including low levels of silver, were detected above LANL upper tolerance limits (UTLs) but below screening action levels (SALs) (Environmental Restoration Project 1995, 1288).

Uranium above the UTL was detected in all samples at this SWMU and above SAL in five samples (Environmental Restoration Project 1995, 1288). Tables listing inorganics and uranium are included as Appendix A. Uranium-contaminated shrapnel is present in the debris pile and pieces have been found in Chaquehui Canyon near the confluence of this drainage and the main Chaquehui channel.

## 4.0 INTERIM ACTION

An interim action was implemented at SWMU 33-010(c) using the following measures to reduce off-site migration of contaminants from the unvegetated slope of this disposal area.

- Straw bale dams were constructed in the two erosion channels. This will reduce migration of contaminants and debris within the SWMU boundary and the total volume of runoff that discharges from the SWMU.
- A combination of straw and Poly-Jute™ was used to stabilize the unvegetated area of the slope, reduce migration of contaminants and debris, and enhance natural revegetation.

The region of SWMU 33-010(c) that will not be treated during this operation is presently vegetated with grasses and chamisa. The existing natural vegetation stabilizes the slope and reduces migration of contaminants and debris from the SWMU.

The straw dams consist of straw bales, Poly-Jute™, and rebar placed perpendicular to runoff flow (see Fig. 1). The dams were constructed by placing the Poly-Jute™ on the ground extending past the width of the drainage channel, then placing the straw bales end-to-end upon the Poly-Jute™. The Poly-Jute™ was pulled over the top of the bales and tucked under, thus completely covering the straw. Rebar was driven through the bales at places where reinforcement is needed.

Stabilization of the unvegetated slope consisted of straw and Poly-Jute™. The exposed area of the slope was covered evenly with a thin layer of straw, then Poly-Jute™ was laid over the area, and anchored with rebar and sandbags.

Figures 2, 3, and 4 are photographs taken before, during, and after the interim action.

Fig. 2. PRS 33-007(c), before interim action.

Fig. 3. PRS 33-007(c), during interim action.

Fig. 4. PRS 33-007(c), after interim action.

## 5.0 CONFIRMATORY ACTIVITIES

Visual evaluation will be the only activity to confirm the effectiveness of the interim action. The dams will be inspected for debris.

## 6.0 MAINTENANCE AND INSPECTION

An inspection of the Poly-Jute™ matting, straw bales, and sandbags will be made once every three months and after major storm water runoff events (Federal Register 1992, 02-111). If it becomes necessary to move or replace these materials, ICF Kaiser engineers will take the required actions to restore the site. Inspection and maintenance reports will be submitted to the field project leader and placed in the project file.

## 7.0 WASTE MANAGEMENT

No waste was generated during implementation. The Poly-Jute™ matting and the straw bales will eventually deteriorate. This interim action will need to be maintained until a final remedy is performed. At this time any remaining materials will be managed in the same manner as the waste generated from the final remedy.

## 8.0 ESTIMATED SCHEDULE AND COST TO COMPLETE

The interim action at 33-010(c) was performed between December 21 and 22, 1995.

**TABLE 8.1**

**INTERIM ACTION COST**

| MATERIALS AND LABOR | COST |
|---|---|
| Materials (Poly-Jute™, sandbags, and straw bales) | $ 1 000 |
| Labor | $ 5 000 |
| **Total** | **$ 6 000** |

## 9.0 REFERENCES

Federal Register, September 9, 1992. "Final NPDES General Permits for Storm Water Discharges from Construction Sites, Section IV, Storm Water Pollution Prevention Plan, D,2a," Federal Register, Vol. 57, No. 175. **(Federal Register 1992, 02-111)**

LANL (Los Alamos National Laboratory), November 1989. "Los Alamos National Laboratory Sampling and Analysis Data Document, Volume 1 (Draft) EGG-ES-8204 prepared for the Department of Energy under Contract No. DE-AC07-761DO1570 by DOE Environmental Survey and Idaho National Engineering Laboratory, Idaho Falls, Idaho. **(LANL 1989, 0425)**

LANL (Los Alamos National Laboratory), December 1995. "RFI Report for TA-33," Los Alamos National Laboratory Report LA-UR-95-4439, Los Alamos, New Mexico. **(Environmental Restoration Project 1995, 1288)**

## TABLE A-1

## INORGANICS WITH CONCENTRATIONS GREATER THAN BACKGROUND UPPER TOLERANCE LIMITS FOR PRS 33-010(c)

| SAMPLE ID | DEPTH (ft) | ANTIMONY (mg/kg) | BARIUM (mg/kg) | COPPER (mg/kg) | LEAD (mg/kg) | SELENIUM (mg/kg) | SILVER (mg/kg) | ZINC (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| LANL UTL[a] | N/A[b] | 1 | 315 | 30.7 | 23.3 | 1.7 | NA[c] | 50.8 |
| TA-33 UTL | N/A | 0.17 | 139 | NA | 25.2 | 0.92 | ND[d] | 57.3 |
| SAL[e] | N/A | 31 | 5 340 | 2 848 | 400 | 380 | 383 | 23 004 |
| AAA9713 | 1 | <1.2 | 89 | NA | 24 | 1 | <4 | 50 |
| AAA9714 | 1 | 2 | 54 | NA | 14 | 0.6 | <4 | 33 |
| AAA9715 | 0.5 | 1.3 | 140 | NA | 21 | 0.4 | <4 | 48 |
| AAA9716 | 1 | <1.2 | 48 | NA | 26 | 0.6 | <4 | 36 |
| AAA9717 | 1 | 10.4 | 460 | NA | 39 | 3 | <4 | 71 |
| AAA9718 | 1 | 1.9 | 340 | NA | 38 | 2 | <4 | 100 |
| AAA9744 | 0-0.5 | <4.2 | 57.1 | NA | 6.1 | <0.51 | <0.85 | 18.5 |
| AAA9745 | 0-0.5 | <4.2 | 102 | 5 760 | 31.5 | <0.51 | <0.75 | 1 160 |
| AAA9748 | 0.5 | <4.3 | 66 | 1 380 | 5.7 | <0.51 | 0.8 | 43.1 |
| AAA9749 | 0.5 | <4.2 | 67.1 | 494 | 6.7 | <0.5 | <1.7 | 21.8 |
| AAA9750 | 0.5 | <4.3 | 49.6 | 60.1 | 4.9 | <0.51 | <0.76 | 18.3 |
| AAA9751 | 0.5 | <4.3 | 69.2 | 1 270 | 8.3 | <0.51 | <0.76 | 50.7 |

[a] UTL = Upper tolerance limit.
[b] N/A = Not applicalble.
[c] NA = Not analyzed.
[d] ND = Not detected.
[e] SAL = Screening action level.

**TABLE A-2**

**URANIUM WITH CONCENTRATIONS GREATER THAN BACKGROUND UPPER TOLERANCE LIMITS FOR PRS 33-010(c)**

| SAMPLE ID | DEPTH (ft) | URANIUM (mg/kg) |
|---|---|---|
| LANL UTL[a] | N/A[b] | 4.45 |
| TA-33 UTL | N/A | 4.12 |
| SAL[c] | N/A | 29 |
| AAA9713 | 1 | 54.8 |
| AAA9713D[d] | 1 | 56.3 |
| AAA9714 | 1 | 18.7 |
| AAA9715 | 0.5 | 74.8 |
| AAA9716 | 1 | 11.6 |
| AAA9717 | 1 | 215 |
| AAA9718 | 1 | 185 |
| AAA9744 | 0.5 | 21.48 |
| AAA9744D | 0.5 | 31.78 |
| AAA9745 | 0.5 | 16.68 |
| AAA9748 | 0.5 | 22.74 |
| AAA9749 | 0.5 | 20.93 |
| AAA9750 | 0.5 | 6.24 |
| AAA9750D | 0.5 | 7.55 |
| AAA9751 | 0.5 | 21.43 |

[a] UTL = Upper tolerance limit.
[b] N/A = Not applicable.
[c] SAL = Screening action level.
[d] D = Analyzed in duplicate.

**ATTACHMENT 1 CORRESPONDENCE**

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State of New Mexico
ENVIRONMENT DEPARTMENT
DOE OVERSIGHT BUREAU
2044 A Galisteo Street
P.O. Box 26110
Santa Fe, New Mexico 87502

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

October 23, 1995

Ivan Trujillo DOE/AIP/POC
Dept. of Energy
Los Alamos Area Office
MS: A316
Los Alamos, NM 87545

Re: Storm Water Pollution Prevention Best Management Practices (BMPs) at TA-33, Solid Waste Management Units (SWMUs) 33-007(b), 33-010(c), and 33-008(a).

Dear Mr. Trujillo:

On October 20, 1995, New Mexico Environment Department (NMED), Department of Energy Oversight Bureau (DOE OB) personnel visited several TA-33 SWMUs in conjunction with Los Alamos National Laboratory (LANL) Environmental Restoration (ER) staff. The purpose of this visit was to discuss storm water BMPs associated with various SWMUs. Several sites were visited and the DOE OB recommend that the following BMPs be put in place:

* SWMU 33-007(b) This site has yellow cake exposed on the surface of the ground and buried in the bunker. The bunker has very little vegetative cover and appears to be actively eroding.

(1) Sand bags should be placed to divert surface runoff from the bunker area into the ditch below the bunker.
(2) The ditch below the bunker has a culvert that runs beneath the road. This culvert should be plugged or a silt fence should be installed on the upstream side.
(3) Polymer should be applied to the surface of the bunker to stabilize the exposed ground.

* SWMU 33-010(c) is a site where refuse from past detonations was placed into a watercourse which drains directly into Chaquehui canyon. The base of the refuse pile is in the stream course and subject to mobilization and transport during storm runoff events.

(1) A silt fence should be placed at the base of the refuse pile and reinforced with sand bags to prevent washout from the active storm drainage channel.

(2) Polymer should be applied to the surface of the waste pile to stabilize the exposed ground.

* SWMU 33-008(a) is a burial site for debris from a variety of sources. In the channel which drains this SWMU there is exposed yellow cake in the arroyo bottom and the contamination extends several hundred feet down the arroyo.

(1) At least one silt fence should be installed in this arroyo at the furthest extent of detectable contamination. This would reduce further contamination of the arroyo and reduce ultimate clean-up costs.

DOE OB personnel feel that the implementation of these BMPs would significantly reduce contaminant migration due to storm water runoff into Chaquehui canyon.

If you have any questions regarding this matter do not hesitate to call Ralph Ford-Schmid at 827-1536.

Sincerely,

Stephen Yanicak

Steve Yanicak
NMED/DOE OB/POC

SY:rfs
cc:
Neil Weber, Chief, NMED/DOE OB
Jim Piatt, Chief, NMED/SWQB
Benito Garcia, Chief, NMED/HRMB
Brad Martin, LANL, ER/FPL/FU3, MS-E525
Everett Trollinger, DOE/FPC/FU3, MS-A316
Roy Michelotti, LANL/ER, MS-E525
Don Hickmott, LANL/ER, MS-D462
Steve Rae, Group Leader, UC-LANL/ESH-18, MS K497
File/LANL/Look

COPY

United States Government

Department of Energy

# memorandum

Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

DATE: DEC 14 1995

REPLY TO ATTN OF: LAAO:EP:TJT:1.4.2.6.1.16.2

SUBJECT: Interim Measure at TA-33, SWMUs 33-007(b), 33-010(c), and 33-008(a) for Storm Water Pollution Prevention

TO: J. Jansen, EM/ER, UC-LANL, MS M992

Attached is a letter from Steve Yanicak, New Mexico Environment Department, dated October 23, 1995, in which Mr. Yanicak expresses a concern regarding the potential release of contaminants from the solid waste management units (SWMUs) 33-007(b), 33-010(c), and 33-008(a). Please review the attached letter and ask your staff to initiate an Interim Measure Plan that will address storm water pollution best management practices (BMPs) for the SWMUs listed above.

If you have any questions concerning this action, please contact Joe Mose at 667-5808.

TJT

Theodore J. Taylor
Program Manager
Environmental Restoration Program

Attachment

cc w/ attachment:
D. Griswold, ERD, AL, MS A906
T. Taylor, EP, LAAO, MS A316
J. Mose, EP, LAAO, MS A316
K. Zamora, EP, LAAO, MS A316
N. Naraine, EM-452, HQ
J. White, ESH-19, MS K498
RPF, UC-LANL, MS M707

cc w/o attachment:
J. Vozella, AAMEP, LAAO
G. Rael, ERD, AL9
W. Spurgeon, EM-452, HQ
T. Baca, EM, UC-LANL, MS J591

# Los Alamos National Laboratory

ENVIRONMENTAL RESTORATION

Environmental Restoration

***University of California***
Environmental Restoration, MS M992
Los Alamos, New Mexico 87545
505-665-4557
FAX 505-665-4747

***U. S. Department of Energy***
Los Alamos Area Office, MS A316
Los Alamos, New Mexico 87544
505-665-7203
FAX 505-665-4504

*Date:* February 6, 1996
*Refer to:* EM/ER:96-037

Mr. Steve Yanicak
New Mexico Environment Department
DOE-Oversight Bureau
P.O. Box 1663, MS J993
Los Alamos, NM 87545

**SUBJECT: STABILIZATION OF SOLID WASTE MANAGEMENT UNITS (SWMUs) 33-007(b,c), 33-008(a), AND 33-010(c)**

This letter is in response to the New Mexico Environment Department (NMED) letter dated October 23 and the US Department of Energy's (DOE's) request dated December 14 that interim measures be implemented at the subject SWMUs to prevent or reduce contaminant migration.

In coordination with NMED, DOE, and the Water Quality Group (ESH-18) at the Los Alamos National Laboratory, Field Unit 3 implemented the approved best management practices (BMP), as described in the enclosed fact sheets, for SWMUs 33-007(c) and 33-010(c). These BMPs consisted of sandbags for run-on diversion, hay-bale check dams to collect sediments, and matting to prevent mobilization of contaminants.

SWMU 33-007(c) is a site that was not originally listed as an interim action candidate; however, after discussions with NMED and DOE, it was agreed that Field Unit 3 personnel should implement an interim action for this SWMU. On December 14, 1995, SWMU 33-007(c) was stabilized with a liner and sandbags to reduce contaminant mobilization and migration, as discussed in the enclosed fact sheet.

Field Unit 3 is in the process of implementing BMPs at a berm and a drainage channel which are part of SWMU 33-007(b). The NMED requested that action be taken at SWMU 33-008(a); however, the uranium chunks identified in the drainage are attributed to 33-007(b) and not to 33-008(a). The interim action at 33-007(b) was started but could not be completed due to snow; activities will resume as soon as practical. Field Unit 3 will continue to inform DOE and NMED of their progress.

Final interim action reports for 33-007(c) and 33-010(c) will be submitted to DOE and NMED by February 29, 1996. The final interim action report for 33-007(b) will be submitted on May 30, 1996. If you have any questions, please call Brad Martin at (505) 667-6080 or Joe Mose at (505) 667-5808.

Sincerely,

for Allyn Praet

Jorg Jansen, Program Manager
Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager
Los Alamos Area Office

JJ/TT/bp

Enclosure: Fact Sheets

Cy (w/enc.):
P. Bussolini, NIS/FM, MS E522
B. Driscoll, EPA
B. Garcia, NMED-HRMB
D. Griswold, ERD, AL, MS A906
B. Hoditschek, NMED-HRMB
R. Kern, NMED-HRMB
B. Martin, CST-18, MS E525
R. Michelotti, CST-18, MS E525
J. Mose, LAAO, MS A316
N. Naraine, EM-453, DOE-HQ
T. Taylor, LAAO, MS A316
N. Weber, Bureau Chief, NMED-AIP
J. White, ESH-19, MS K490
EM/ER File, MS M992
RPF, MS M707

Cy (w/o enc.):
T. Baca, EM, MS J591
T. Glatzmaier, DDEES/ER, MS M992
D. McInroy, EM/ER, MS M992
G. Rael, ERD, AL, MS A906
W. Spurgeon, EM-453, DOE-HQ
J. Vozella, LAAO, MS A316

**ATTACHMENT 2 FACT SHEET**

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**Los Alamos National Laboratory**
**Environmental Restoration Project**
**PRS Fact Sheet for Interim Action**

## Description

Potential Release Site (PRS) 33-010(c) is a debris pile located due south of TA-33-26. Debris from the PRS is spread along the rim and west slope of the main arroyo draining South Site. The debris pile consists of commercial (road grade) gravel, shrapnel (primarily copper and aluminum), shattered pieces of electronic cable, and pieces of wood. The PRS is approximately 100 ft x 50 ft in extent and approximately 2 ft to 4 ft deep.

The PRS lies 230 ft south of the shot pad, TA-33-26, and received debris associated with the shots. The shot pad was the location of implosion studies conducted in the early 1950s. Two to three shots per week were detonated, a few containing in excess of 1 000 lb of trinitrotoluene (TNT). Experimental apparatus and high explosives (HE) were encased in a uranium container and surrounded by neutron detectors on aluminum stands. This assemblage was put in a large copper can to electrically isolate the experiment. A wooden shack was built over the can, and the HE was detonated. Debris from the shots covered a wide area, but much of it remained near the shot pad. This debris was scraped away to clean the area for the next shot and deposited at PRS 33-010(c). The area was abandoned when activities ceased at the shot pad in 1954.

## Contaminants

In 1989 three composite soil samples consisting of four subsamples each were taken across the base of the pile. The samples were analyzed for radionuclides and inorganics. Elevated levels of uranium (150 to 380 mg/kg) and copper (1 500 to 7 900 mg/kg) were detected in the debris pile (LANL 1989, 0425).

During Phase I RFI sampling in 1994, six soil samples were collected on the base of the disposal pile. An additional six samples were analyzed for inorganics, uranium, and cesium-137. Two samples were analyzed for pesticides and herbicides. No debris was sampled.

Copper was detected at high levels in most samples. Large chunks of copper shrapnel are visible on the pile. Other inorganics, including low levels of silver, were detected above LANL upper tolerance limit (UTLs) but below screening action level (SALs).

Uranium above the UTL was detected in all samples at this PRS and above SAL in five samples. Uranium-contaminated shrapnel is present in the debris pile and pieces have been found in Chaquehui Canyon near the confluence of this drainage and the main Chaquehui channel.

## Interim Action

As requested by the State of New Mexico and DOE, an interim action was implemented at PRS 33-010(c) using the following measures to reduce the off-site migration of contaminants derived from the unvegetated slope of this disposal area.

- Straw bale dams were constructed in the two erosion channels. This will reduce the migration of contaminants and debris within the PRS boundary as well as the total volume of runoff that discharges from the PRS.
- A combination of straw and Poly-Jute™ were used to stabilize the unvegetated area of the slope, reduce migration of contaminants and debris, and enhance natural re-vegetation.

The region of PRS 33-010(c) that will not be treated during this operation is presently vegetated with grasses and chamisa. The natural vegetation already stabilizes the slope and reduces migration of contaminants and debris from the PRS.

The straw dams consist of straw bales, Poly-Jute™, and rebar placed perpendicular to run-off flow (See Figure 1). The dams were constructed by placing the Poly-Jute™ along the ground extending past the width of the drainage channel, then placing the straw bales end-to-end upon the Poly-Jute™. The Poly-Jute™ was pulled over the top of the bales and tucked under, thus completely covering the straw. Rebar was driven through the bales at places where reinforcement is needed.

The stabilization of the unvegetated slope consisted of straw and Poly-Jute™. The exposed area slope was covered evenly with a thin layer of straw, then Poly-Jute™ was laid over the area, and anchored with rebar and sandbags.

**Estimated Cost**

| | |
|---|---|
| Materials (Poly-Jute™, sandbags, and straw bales) | $1 000 |
| Labor | $5 000 |
| Total | $6 000 |

**Schedule:**

The interim action for PRS 33-010(c) occurred between December 21 and 22, 1995.