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Best Management Practices Report for Installation of Stabilization Measures at Potential Release Sites 49-001(b, c, d, and g)

Environmental Restoration Project
A Department of Energy Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY
Los Alamos, NM 87545

Best Management Practices Report for Installation of Stabilization Measures at Potential Release Sites 49-001(b, c, d, and g)

Produced by the Material Disposal Areas Focus Area

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FIGURES

TABLE

1.0 INTRODUCTION

This report provides as-built descriptions of stabilization activities implemented as best management practices (BMPs) to reduce the moisture content of near-surface soils at Material Disposal Area (MDA) AB, Areas 2, 2A, and 2B. These areas are also known as the asphalt pad site. This MDA is in Technical Area (TA) 49 of Los Alamos National Laboratory. A map of TA-49 showing Areas 2, 2A, and 2B is shown in Figure 1-1. For purposes of this report, Areas 2, 2A, and 2B will be collectively referred to as Area 2. BMPs implemented at the site include constructing a surface water run-on diversion channel upgradient of the site, installing a silt fence downgradient of the site, and placing straw bales in both upgradient and downgradient runoff channels. In addition to stabilization activities, abandoned power poles were also removed from the site. The plan for these stabilization activities is presented in Stabilization Plan for Implementing Interim Measures and Best Management Practices at Potential Release Sites 49-001 (b, c, d, and g) (LANL 1998, 59166). The diversion channel, silt fence, downgradient channel stabilization, and power pole removal were completed in June 1998. Following the recommendation of the New Mexico Environment Department's (NMED's) Surface Water Quality Bureau, straw bales were placed in the upgradient runoff channel, and the western bank of the diversion channel was stabilized with erosion control matting in August and September 1998.

2.0 STABILIZATION MEASURES

2.1 Silt Fence

A temporary silt fence was installed downgradient of the site, in accordance with the Storm Water Pollution Prevention Plan (Environmental Restoration Project 1998, 62910). This fence was located to capture sediments that could erode from the site during the diversion channel construction and the subsequent asphalt pad removal and site regrading. The silt fence is about 2 feet high and 610 feet long. It is constructed of heavy open weave fabric backed by a supporting wire mesh and is designed to allow water to flow through while trapping sediments. The as-built location of the silt fence is shown in Figure 2-1, and location coordinates are shown in Table 2-1. The fence crosses the two principal downgradient drainage channels north of the site and extends continuously between them. Continuing the fence around the east side of the site, as originally planned, was not necessary because drainage does not cross the road in that direction. A photograph of the silt fence is shown in Figure 2-2.

2.2 Downgradient Channel Stabilization

The two principal downgradient channels draining the site were each stabilized in several places with straw bales and by check dams constructed of tree trunks, branches, brush, and rocks. These materials provide energy dissipaters to slow storm water flow and retard sediment migration. The approximate locations of these runoff controls are shown in Figure 2-1. A photograph of a portion of one of the stabilized channels is shown in Figure 2-3.

Before stabilizing the downgradient channels, field surveys for low-level gamma radiation were performed for worker health and safety purposes using a FIDLER instrument. Radiation levels were found to be within the background range (<7500 cpm) at every location where channel stabilization activities were conducted. The detailed results of these surveys will be presented in an interim measures report providing as-built descriptions of asphalt removal and site regrading activities.

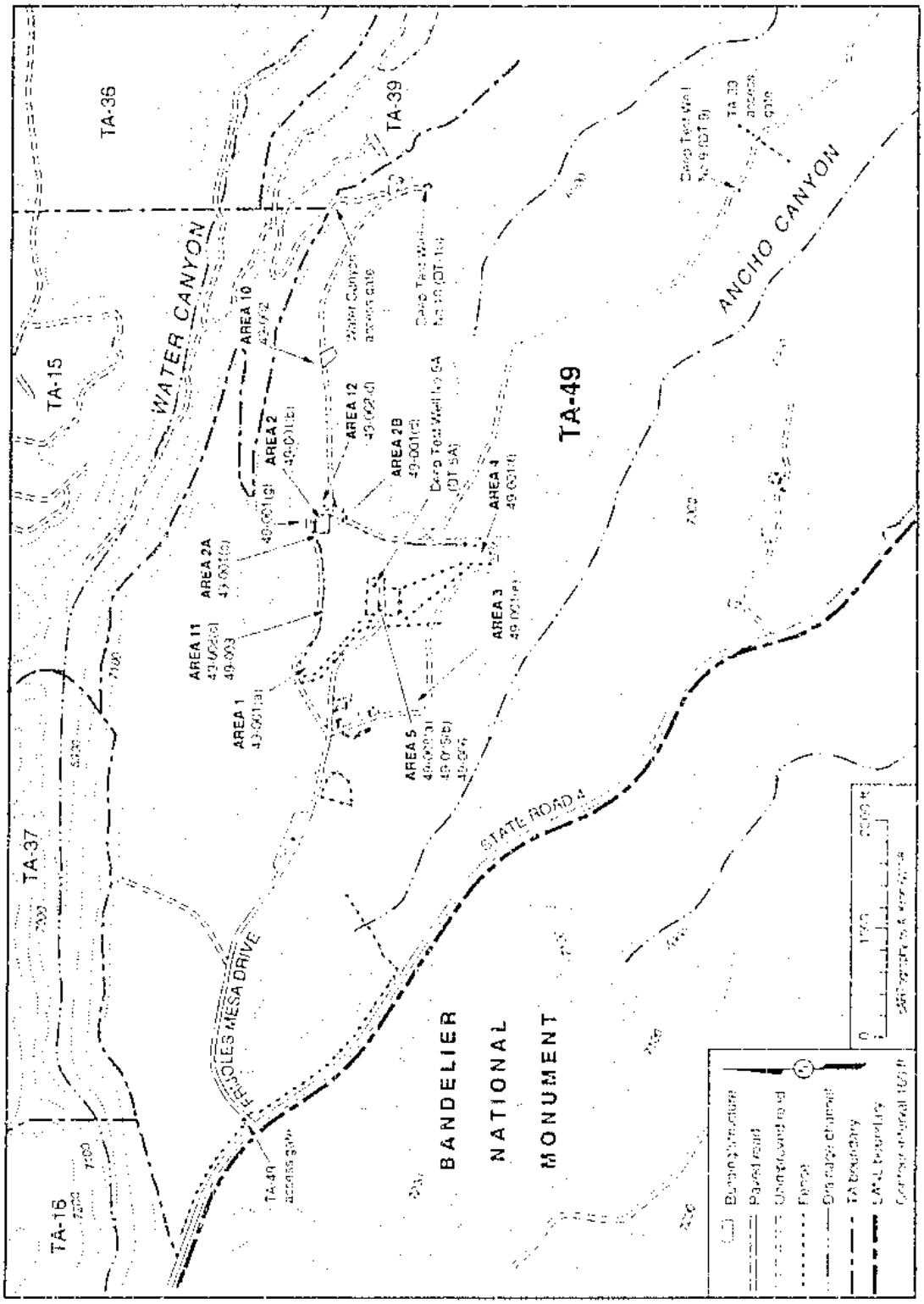

Figure 1-1. Map of TA-49.

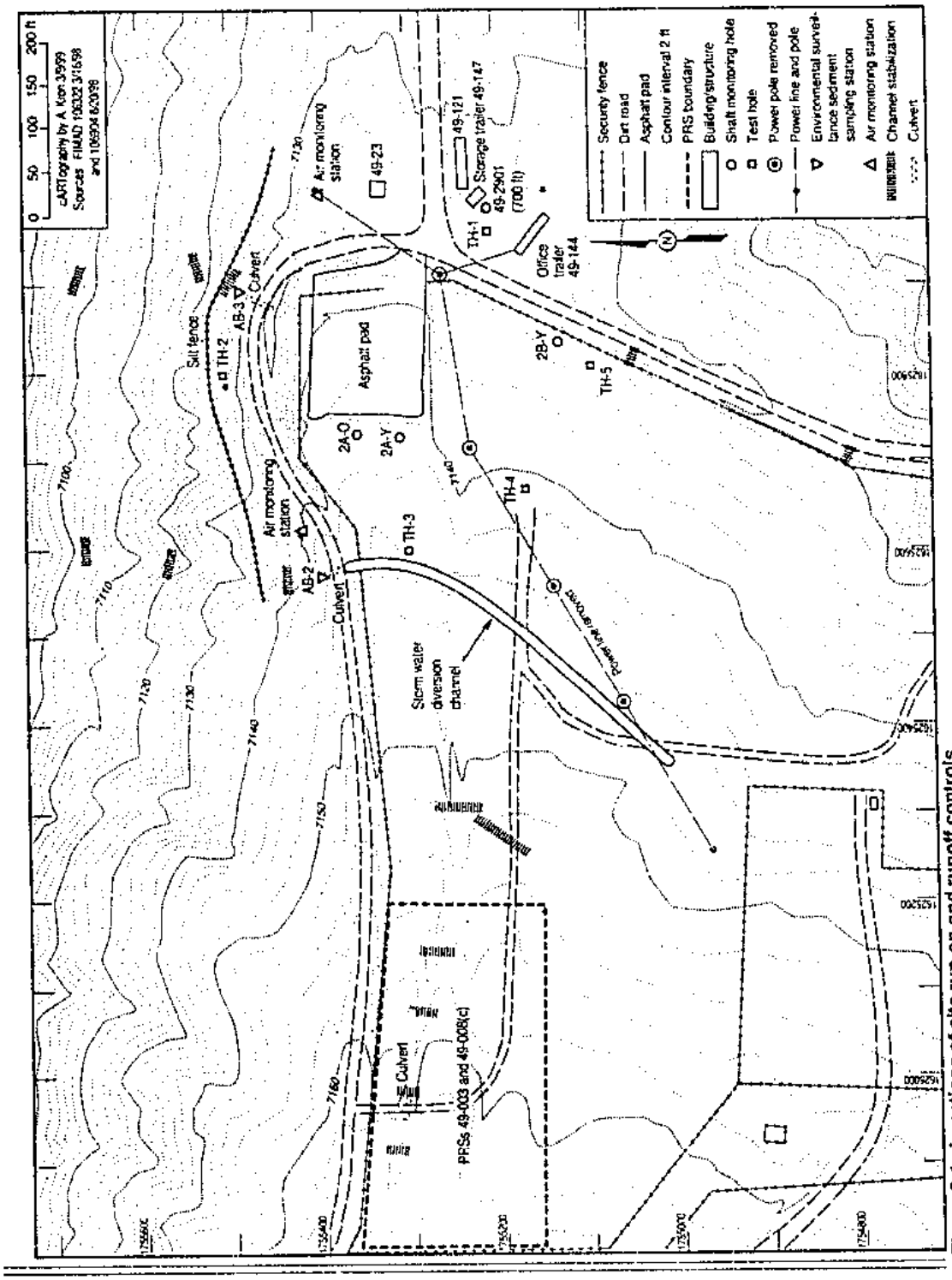

Figure 2-1 Locations of site run-on and runoff controls.

TABLE 2-1
LOCATION COORDINATES

Installation	State Plane Coordinates	
	Easting (ft)	Northing (ft)
Surface Water Diversion Channel		
South end	1625357	1755012
Middle	1625506	1755177
North end	1625580	1755368
Silt Fence		
West end	1625543	1755463
Middle	1625800	1755523
East end	1626055	1755444

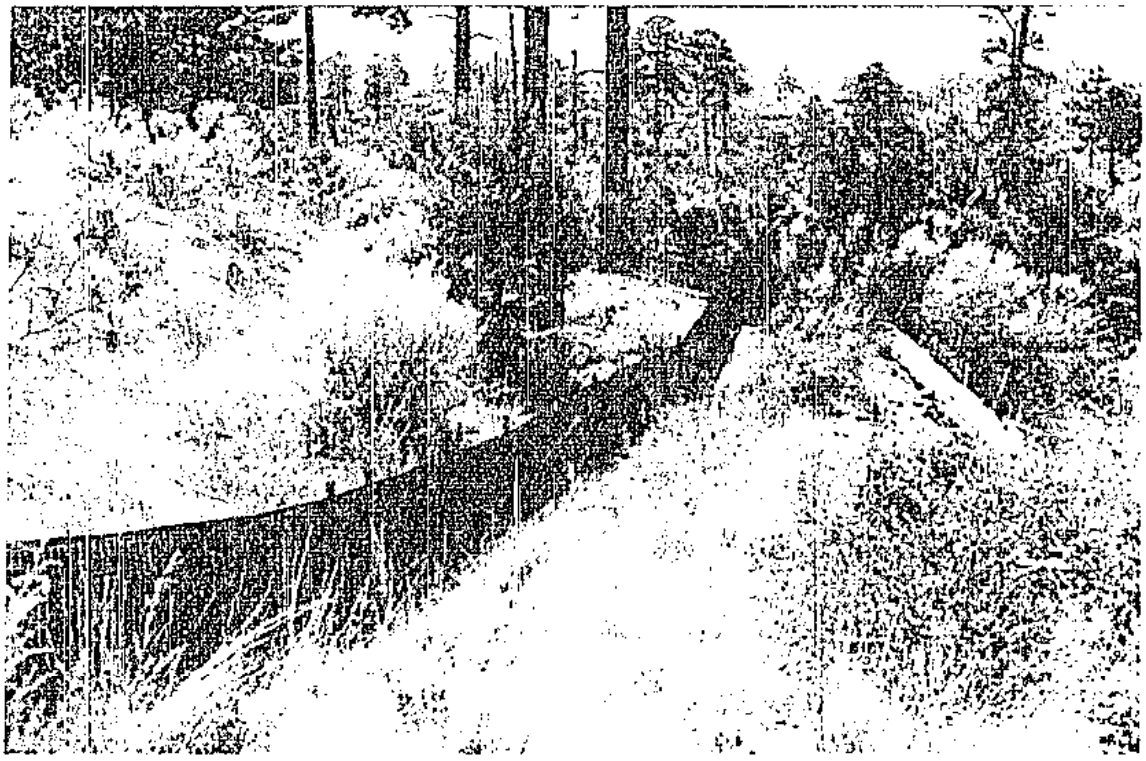

Figure 2-2. Silt fence (view is from the west).

Figure 2-3. Channel flow dissipaters downstream of the diversion channel.

2.3 Surface Water Diversion Channel

Before construction of the surface water diversion channel, ESH-1 personnel screened surface soils at the site and found no above background radiation. Access for construction was gained by temporarily breaching the site fence at the channel outlet. The channel was excavated by backhoe under field direction, and the excavated soil was used to construct a low berm on the downgradient (east) side of the channel. The northern part of the channel followed the trace of an earlier diversion channel, according to NMED's request, to minimize disturbance to the land. The southern part of the channel extended the earlier channel so that all surface water run-on moving toward Area 2 is now intercepted and diverted into a tributary to Water Canyon. The channel was constructed with a nominal bottom width of 4 feet and a depth of 1 foot. The berm was also constructed with a nominal top width of 4 feet and height of 1 foot above the original ground surface. The channel's outlet was located to allow drainage directly into an existing culvert, as shown in Figure 2-1. Except for the length, design and location specifications in the stabilization plan were followed for the surface water diversion channel (LANL 1998, 59166). A land survey conducted before construction indicated that to maintain a continuous grade of about 1 percent, it was necessary to lengthen the southern part of the channel by about 80 feet and move it farther to the west than originally planned. The as-built channel is 406 feet long, and its location is shown in Figure 2-1. State plane coordinates for locations along the length of the channel are presented in Table 2-1. A photograph of the channel is shown in Figure 2-4. A cross-section of the channel and berm is shown in Figure 2-5.

After construction, the surfaces of the channel and berm were compacted with a backhoe and vibraplate to improve erosion resistance. An organic mulch was placed on the berm and

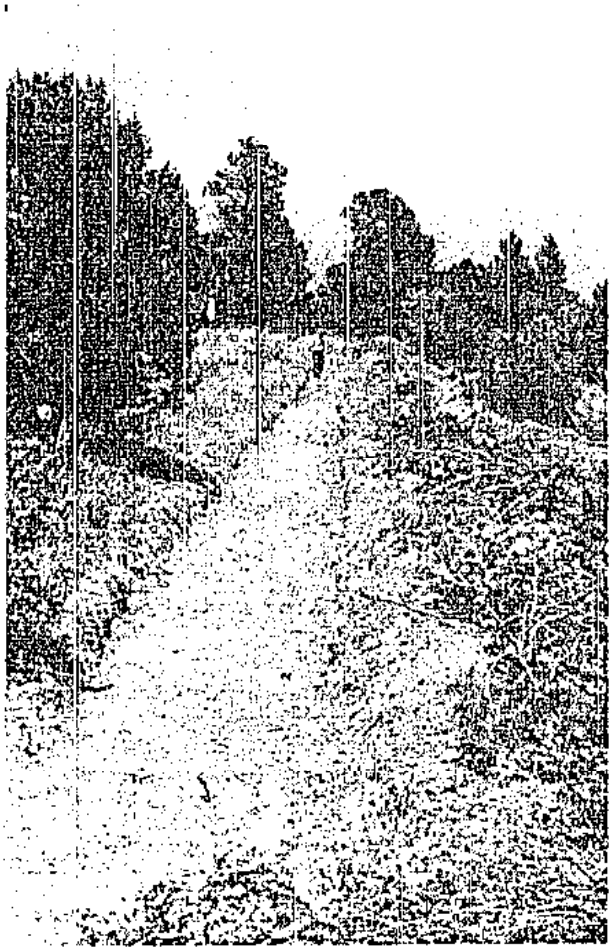

Figure 2-4. Surface water diversion channel (view is from the north).

channel sides to protect against erosion. Brush and limbs removed during construction were placed on top of the berm. Erosion control mats were placed along the entire length of the upgradient (west) bank of the channel and on the downgradient (east) bank across from locations where major drainages enter the channel. These mats are made primarily of biodegradable natural wood fiber. They immediately stabilize the soil by slowing surface water flow and aid in germination of vegetation. The mats were installed following the procedure presented in Storm Water Best Management Practice (BMP) Guidance Document (Merrick Engineers and Architects 1998, 58696, p. 54). Because of evidence from the storm water diversion channel that natural reseeding occurs quickly at the site, artificial reseeding of the matted area was not conducted. Work was completed by cleaning up the site and restoring the site perimeter fence.

The diversion channel will protect Area 2 from surface water run-on during asphalt pad removal and site regrading work, as required in the Storm Water Pollution Prevention Plan (Environmental Restoration Project, in progress). The channel will be left in place following asphalt pad removal and site regrading to provide long-term protection from surface water run-on.

2.4 Upgradient Channel Stabilization

The principal upgradient channel draining onto the site passes through Potential Release Sites 49-003 and 49-008(c). This channel was stabilized in four places (Figure 2-1) to control potential erosion and transport of sediment into Area 2. In addition, a smaller tributary channel was also stabilized (Figure 2-1), and potential erosion of an adjacent rutted road was controlled by diverting flow from the ruts into the main channel. Straw bales, which act as energy dissipaters to slow storm water flow and retard sediment migration, were used to stabilize the channels.

3.0 POWER LINE REMOVAL

A power line that could have posed a safety problem during diversion channel construction was removed in May 1998. This line supplied two air-monitoring stations and an office/field laboratory trailer. The power line was rerouted around Areas 2, 2A, and 2B to avoid safety problems during

the subsequent asphalt removal and site regrading phases. Four power poles on the site were decommissioned and cut about 4 feet above the ground when the line was removed. The pole stubs were pulled from the ground during diversion channel construction in June 1998. The original locations of these power poles are shown in Figure 2-1.

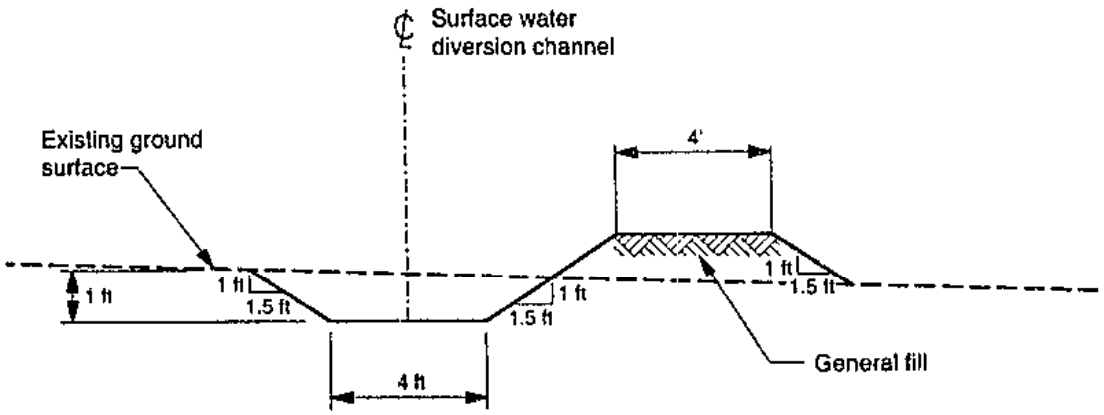

Figure 2-5. Schematic cross-section of surface water diversion channel.

4.0 MONITORING AND CONFIRMATORY SAMPLING

Construction equipment was screened for radioactive contamination when entering and leaving the work site, in accordance with the site-specific health and safety plan (Environmental Restoration Project 1998, 57912). Personnel were screened when leaving the site. No contamination was found at any time. In addition, the power poles, pole stubs, wire, and other waste materials generated during the work were screened and found to be free of above-background radiation before being removed from the site.

5.0 INSPECTION AND MAINTENANCE

The diversion channel and drainage channel energy dissipaters will be inspected and maintained as described in the Storm Water Pollution Prevention Plan (Environmental Restoration Project 1998, 62910) and Section 7.0 of the stabilization plan (LANL 1998, 59166).

6.0 WASTE MANAGEMENT

Wastes generated during fieldwork were neither radioactive nor hazardous. The power poles and wire were turned over to Johnson Controls for reuse or recycling.

7.0 COST AND SCHEDULE

The projected cost of implementation was conservatively estimated to be $39,400.00. The actual cost of implementing the BMP stabilization activities was $28,436.45. Implementation of the BMP activities began on June 1, 1998, and was completed on June 12, 1998. Supplemental upgradient BMP channel stabilization was conducted in August and September 1998, pursuant to a recommendation of NMED's Surface Water Quality Bureau.

8.0 REFERENCES

Environmental Restoration Project, in progress. "Storm Water Pollution Prevention Plan, Technical Area 49, Material Disposal Area AB," prepared for Los Alamos National Laboratory by ERM/Golder Los Alamos Project Team, Los Alamos, New Mexico. (Environmental Restoration Project 1998, ER ID 62910)

Environmental Restoration Project, May 26, 1998. "LANL ER Project Site-Specific Health and Safety Plan (SSHASP), Construction of the Surface Water Run-on Diversion Channel and Related Features," SSHASP No. 206, Los Alamos National Laboratory, Los Alamos, New Mexico (Environmental Restoration Project 1998, ER ID 57912)

LANL (Los Alamos National Laboratory), June 1998. "Stabilization Plan for Implementing Interim Measures and Best Management Practices at Potential Release Sites 49-001 (b, c, d, and g)," Los Alamos National Laboratory LA-UR-98-1534, Los Alamos, New Mexico. (LANL 1998, ER ID 59166)

Merrick Engineers & Architects, June 1998. "Storm Water Best Management Practice (BMP) Guidance Document," prepared for Los Alamos National Laboratory Water Quality & Hydrology Group ESH-18, Los Alamos, New Mexico. (Merrick Engineers & Architects 1998, ER ID 58695)

9.0 CERTIFICATION

"I hereby certify that all work pertaining to storm water pollution prevention and site run-on protection in support of stabilization activities at MDA AB Areas 2, 2A, and 2B has been completed, as described in Los Alamos National Laboratory's Best Management Practices Report for Installing Stabilization Measures at Potential Release Sites 49-001 (b, c, d, and g) dated September 1998. This certification is based on my personal involvement or inquiry of the person or persons who managed this work, a review of gathered data, and a visit to the site. I believe that the completion of this work is protective of both human health and the environment. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Signature Date

Deba Daymon
MDA Focus Area Leader
Environmental Restoration Project
Los Alamos National Laboratory

APPENDIX A
ACRONYMS

BMP	Best management practice
ESH	Environment, Safety, and Health (Division)
MDA	Material disposal area
NMED	New Mexico Environment Department
TA	Technical area