

DRAFT MAIN LOOP TRAIL REHAB PLAN AND
ENVIRONMENTAL ASSESSMENT

BANDELIER NATIONAL MONUMENT
Los Alamos, New Mexico

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Prepared by: _____ Date: 12/15/95
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Recommended by: _____ Date: _____
Environmental Mgt Committee

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Executive Summary

The park "Main Loop Trail" (historically called the Ruins Trail) receives the highest use of any area in the park. Visitation has increased by 29 to 33% in 1994 and 1995, respectively; annual visitation now exceeds 440,000. Resource damage and safety problems caused by visitor violations and facility inadequacies are addressed in this environmental assessment.

The project is not controversial, but will have an affect upon visitor use patterns, vegetation and soils, and cultural resources. The no action alternative and a proposed alternative are presented. The proposed alternative was developed through extensive employee participation (Park Environmental Management Committee and the Management Staff) from June 1995 through December 1995. The public was not and will not be consulted since this action is not controversial.

DRAFT MAIN LOOP TRAIL REHAB PLAN AND ENVIRONMENTAL ASSESSMENT

Purpose and Need

The Main Ruins Loop Trail is the most heavily visited--and thus heavily impacted--section of Bandelier. This area preserves both large, stabilized surface pueblo sites as well as the cavates that drew Adolph Bandelier's attention when he visited the area in the 1800s. The area is also the primary experience objective for most visitors. While the presence of interpretive staff and volunteers help to encourage visitors to keep to established trails, the area is seriously impacted by visitors going off of the paved trails for a variety of reasons. The visible results of this behavior include trampling of vegetation around excavated and unexcavated archeological structures, destabilizing of structure walls and the establishment of "social trails" in a wide variety of places. While some signs and barriers are already in place, constructive changes/additions would keep visitors in desired areas and reduce the severe damage to resources now occurring.

Action Objectives

- 1) Stop and prevent future vegetation and soil damage.
- 2) Correct facility deficiencies to make it easy for visitors to stay on paved surfaces at all times.
- 3) Stop visitor's from using the alcove at Stop 10 as a toilet.

Scope of Analysis

Problems with the Main Loop Trail were first discussed at an Environmental Management Committee (EMC) meeting on April 12, 1995. The following park staff were present:

Eiko Adkisson - Budget Specialist
Kay Beeley - Biological Technician
Dale Coker - Resource Protection Ranger
Brian Jacobs - Vegetation Management Specialist
Chris Judson - Park Naturalist
Carl Newman - Chief Ranger
Elizabeth Mozzillo - Archeologist
Al Seidenkranz - Chief of Interpretation
Charisse Sydoriak - Chief, Resource Management
Archie Valdez - Buildings and Utilities Foreman

Results of the meeting were circulated to all committee members, including those not present (Elaine Jacobs - Secretary & Carlos Gonzales - Roads & Trails Foreman), and to the park superintendent (Roy Weaver). The park Superintendent responded

to the minutes of this meeting pointing out dilemmas faced with formalizing or ignoring the Stop 10 problem (visitors use it as a restroom).

Project objectives, issues, and action alternatives were defined by the Environmental Management Committee on May 10, 1995. The following park staff members participated.

Eiko Adkisson - Budget Specialist
Kay Beeley - Biological Technician
Dale Coker - Resource Protection Ranger
Brian Jacobs - Vegetation Management Specialist
Chris Judson - Park Naturalist
Carl Newman - Chief Ranger
Elizabeth Mozzillo - Archeologist
Charisse Sydoriak - Chief, Resource Management

Results of the meeting were circulated to all committee members, including those not present (Elaine Jacobs - Secretary, Carlos Gonzales - Roads & Trails Foreman, and Archie Valdez - Buildings and Utilities Foreman), and to the park superintendent (Roy Weaver). One comment was received. Elaine Jacobs expressed opposition to the concept of using rattlesnakes symbols or information as a Stop 10 deterrent. Elizabeth was asked to Draft recommendations upon a site visit.

Draft recommendations from the park archeologist were submitted to the EMC on May 30, 1995. Her recommendations addressed the type, style, content and location of signs, and the type, size, materials and location of barriers to discourage use of Stop 10 and off-trail use. These recommendations were reviewed by some committee members.

On July 25, 1995, members of the Environmental Management Committee walked the Main Loop Trail, to evaluate the signs and barriers proposed by the park archeologist, and to look at the Stop 10 problem. The park Facility Manager (Steve Gastellum) attended the early portion of this meeting to voice his concerns over the archeologist's recommendations dated May 30, 1995.

Eiko Adkisson - Budget Specialist
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The entire meeting was dedicated to the problems associated with off-trail use in the Archeological Sites Trail area (formerly known as the "Ruins Trail"). Discussions during the meeting resulted in consensus for action, including a decision not to convert Stop 10 into a formal resting area for visitors because

of the cost. Minutes from this meeting formed the foundation for this draft Plan and EA. The minutes were circulated to all EMC members and the park superintendent. No comments were received.

On September 13, 1995, members of the EMC agreed unanimously to accept the Main Loop Trail Plan as described in this document with one modification, which was to widen Stop 5 if a suitable place could be found.

At an August (1995) meeting, the Management Staff decided that this project had the highest priority in one of the funding categories. Later that month, the project was funded through Cyclic Rehab funds provided they are authorized by Congress. Since cost was no longer the limiting factor for Stop 10, the staff agreed to formalize that area. The details for Stop 10 were discussed and verbally agreed to at a special meeting on December 7, 1995. The design elements are included in this document. Attending were:

Steve Gastellum - Facility Manager
Carl Newman - Chief Ranger
Elizabeth Mozzillo - Archeologist
Charisse Sydoriak - Chief, Resource Management
Roy Weaver - Superintendent

Decision to be Made

Whether to implement the actions identified in the proposed alternative.

Major Issues

Visitors Damaging Resources Because of Trail Design Flaws

The park Main Loop Trail (historically called the Ruins Trail) receives the highest use of any area in the park. Visitation has increased by 29 to 33% in 1994 and 1995, respectively; annual visitation now exceeds 440,000. The trail is narrow forcing visitors to move off-trail when they pass each other. Elderly people, children, and the mobility impaired have few places to stop and safely allow traffic to pass. Existing signs to protect resources are commonly misunderstood and violated; enforcement actions are arguable. Persons who violate management direction are rewarded by better views of the resource. Arch structures are collapsing and eroding away.

The width of the paved trail is fine for moving foot traffic, but is causing problems in many spots where people stop to rest, to view features or vistas, etc. Congregating points need to be formalized and hardened. Since we ask the visitor to stay on pavement, we have to consider paving the surface (or an equivalent hardening) of these congregation points.

Asphalt has historically been the material used to create a flat, slip resistant, walking surface. However, asphalt is an

environmental toxin and should not be used if an alternative can be found. Cobbling or "paving" with stone has been done in some sections along the cavates. This technique could be a long-lasting and environmentally sensitive solution to the paving with asphalt concern.

A major problem has been that a park natural (Chris Judson) has provided most of the labor to create off-trail use barriers. She has had to be a persistent scrounge to get the vegetation needed.

Alternatives

No Action - Make no changes to the existing signs, do not erect any new barriers to direct traffic to stay on the paved route, and do not formalize a resting area in the alcove at Stop 10.

Proposed Action - Rehabilitate the Main Loop Trail

Hire or contract for day labor to work with park staff to correct health and safety, resource damage, "social trailing", and other problems associated with high public use of the extremely popular Main Loop Trail. Work includes formalizing resource damage resistant viewing platforms, passing areas, naturalist stops, and rest areas along the trail while simultaneously correcting health and safety problems (i.e., inappropriate use of areas for urinating/defecating, lack of rails, drop-offs), misleading visitor and resource protection signs, littering, and more.

Implement the following proposed actions:

Stop 10: Formalize the alcove as a resting place as follows:

- cut out all dead wood in the box elder tree
- build a 5 ft long stone & concrete bench under the box elder tree
- use stone to pave a path through the alcove, starting at the existing footpath and ending with stone and concrete steps (7" rise/step and 11" step platforms. The asphalt at the entry and exit points will have to smoothly transition into the stone paving. The section of trail with steps will have pipe railing installed. The railing materials must be identical to the railing used elsewhere along the Loop
- build a stone & concrete bench under an overhang along the existing "turn-out" at Stop 10.
- do not put any new signs at stop 10; put a general hazards warning sign at the beginning of the Main Loop Trail near the Visitor Center (VC)
- Stop 10: Remove the stone ashtray. This feature is non-historic (built in the 1970s or 1980s) and is used as a trash receptacle even though it is only a few inches deep. All stone ashtrays will be removed from the entire trail system.

Formalization would permit people to have a pleasant, shady, mildly riparian (unique in this environment) rest in a relatively

indestructible alcove. In addition, the problem with people urinating in the alcove could be solved (possibility of being caught in the act would be a powerful deterrent). Placing a bench in the grotto would signal to people that this is a public place. We agreed, however, that rock fall and flooding hazards must be adequately dealt with when the alcove rest area is constructed.

Other Paving

"Pave" (with stone and cement mortar) the following spots along the trail:

- Stop 6 (and add another bench)
- Stop 11 (provide a platform to view Tyuonyi; leaving existing vegetation in place)
- Stop 13--Snake Kiva (and add railing, stone wall barrier, fill holes, move rocks, etc. for safe viewing of the cavate features)
- Stop 20 (large barren area already exists)

Other Work

- Stop 9: replace the missing rocks from the ventilator in the excavated kiva at Tyuonyi.
- Stop 12: Add 5 feet of railing (and wrap across the drainage crossing) to extend existing railing. (Will effectively deter off-trail travel in the area)

Sign Changes

- (1) All of the existing vertical metal and wood signs that say "Do Not Stand or Lean on Walls" should remain, but an additional panel that says "Stay on Paved Trail" should be added to the same post. These signs occur between stops 6-10 and 18-20.
- (2) If any new "Do Not...." signs are constructed, the word "Sit" will be added so that the message becomes: "Do Not Stand, Sit or Lean on Walls."
- (3) The existing signs have the space for the word "Sit" to be added; time permitting, it would be appropriate to fix the existing signs as well.
- (4) Construct several prototype "low-profile" off-trail use deterrent signs. The signs should meet the needs of literate and illiterate visitors, English-speaking and international visitors, children, jerks, and the general public. Note that there are two primary constraints (1) aesthetics--the signs should not be evident to most visitors using paved trails correctly; and (2) the signs must be durable, non-toxic and easy to maintain.

Routinely monitor and report (to the EMC) on the effectiveness of the experimental signs.

Physical Barriers/Off-trail Use Deterrents

Duff, brush, dead juniper trees, etc. are effective off-trail use barriers. Junipers are especially good because they don't collapse readily and they are nasty looking. Raking to remove footprints in some areas has also been effective.

(1) Find dead juniper trees on the mesa and haul them to block locations identified on the attached map (project component already approved in CE-95-26); i.e., both sides of Big Kiva, 1 east of stop 6, 2 between stops 9 & 10, SE and NW of the boardwalk at Long House, and just past Stop 21 where the trail curves to the left).

(2) Maintenance will facilitate the transportation of vegetation trimmings for use as barriers along the archeological sites trail.

Affected Environment

Bandelier is located on the southern portion of the Pajarito Plateau in the Jemez Mountains at the southern edge of the Rocky Mountains in north-central New Mexico (see Figure 1). The area is composed of volcanic ash and lava flows that have been eroded into deep cañons. The park comprises 13,254 hectares (32,727.2 ac) and extends from the Rio Grande at 1,590 meters (5,300 ft) to the summit of Cerro Grande at 3,109 meters (10,199 ft) on the Valles Caldera rim for an elevational range of 1,519 meters (4,899 ft). The park's landforms and vegetation have been subjected to a variety of significant human influences, particularly grazing and fire suppression (Allen 1989).

Native Americans are believed to have lived in the region for the past 10,000 years. However, the "aboriginal ruins" noted in the enabling legislation were occupied by the ancestral Puebloans (often called the Anasazi) between A.D. 1100 and 1600. This is also the area of concern in this environmental assessment.

Frijoles Canyon Main Loop Trail

The prime resource and destination for most of Bandelier's 440,000 annual visitors is the Main Loop Trail in Frijoles Canyon. The actions proposed in this document directly affect the focal point of human impacts and resource appreciation.

Over centuries of abandonment, the archeological sites along the Main Loop Trail have filled with collapsed walls and debris blown or washed in. During excavation, this fill is removed to expose ancient wall foundations and floors. Bandelier has two types of excavated archeological sites: (1) frontcountry or "showpiece" archeological sites that have been subjected to early excavations (for data recovery and to open them up for interpretation), early stabilization efforts, and that continue to receive modest maintenance (e.g., Long House, Rainbow House, Cavates, Tyuonyi, Sterile House); and (2) remote sites where excavations have occurred for research data recovery alone.

Excavated and stabilized prehistoric structures currently maintained in the Project Area are Cavates and Tyuonyi. The following activities are required annually to maintain these structures: removing vegetation from walls and floors, resetting loose stones, and repointing mortar joints. Work performed on a

cyclic basis includes: replacing access ladders, sections of concrete caps on some floors, and mud plaster that falls off of the interior walls; replastering accessible cavate wall plaster; and resmoking walls to hide graffiti.

A complete history of stabilization efforts on excavated frontcountry archeological sites is not available. Park managers, however, have taken some aggressive actions as evidenced in the application of a subterrene constructed by the Los Alamos Scientific Laboratory/Atomic Energy Commission (1971 and 1973) to bore drainage holes in Rainbow House and the main kiva at Tyuonyi. Through the 1980s and early 1990s, the park archeologist prescribed stabilization actions needed; these were routinely carried out by trained masons funded in part by the Southwest Regional Office. After work was completed, the park archeologist would document repairs made. The documentation process was interrupted in 1993 and 1994 when there was no park archeologist on staff. The work prescription and documentation process needs to be reinstituted.

The Frijoles Cañon orchard area is visible from the Main Loop Trail. This area, established in 1913 by Judge Abbott, once included an extensive fruit tree orchard, a garden, and an irrigation ditch. Judge Abbott also procured water rights to maintain the orchard. After their purchase of the ranch in 1925, the Freys planted most of the extant orchard's fruit trees to feed guests of the Frijoles Cañon Lodge. The land and water rights were later transferred to the NPS.

Environmental Consequences

Environmental issues associated with the proposed action and/or the other alternatives are marked in the table below.

CRITICAL ELEMENTS	AFFECTED	
	Yes	No
Aesthetics	X	
Air Quality		X
American Indian Religious Uses		X
Cultural/Historical Resources	X	
Farmlands, Prime/Unique lands		X
Floodplain Development		X
Hazardous Materials		X
Health and Safety	X	
Socio-economics		X
T&E Species		X
Vegetation and Soils	X	
Water Quality and ↓	X	
Wetlands/Riparian Zones		X
Wild and Scenic Rivers		X
Wilderness		X
Wildlife		X

① Aesthetics

No Action - barren areas will continue to experience sheet erosion. The Stop 10 alcove will not be legally available for use by the public. Visitors will not encounter work crews and materials for an extended period.

Proposed Action - barren areas will be paved with stones or allowed to regenerate because people will be much less likely to go off trail. Visitors will encounter materials and work crews for about 4 weeks.

④ Vegetation

No Action - vegetation will continue to be trampled and lost by visitors going off-trail.

Proposed Action - juniper tree skeletons will be used to create obstacles for off-trail travel. These trees will come from the mesa in burned areas or in areas being treated by removal of juniper trees. Ground vegetation should reestablish in currently compacted and denuded areas once foot traffic is eliminated.

⑤ Water Quality and Soils

No Action - denuded soils will continue to erode at their present rate. Sedimentation of Frijoles Creek will continue to be unnaturally accelerated. Water quality will be adversely affected because of increased turbidity and continued use of the Stop 10 alcove for urination.

Proposed Action - sheet erosion will slow as vegetation becomes reestablished. Water quality will improve. It is possible that increased use of the Stop 10 alcove could adversely affect the quality of the run-off from this area. However, urine will probably be significantly reduced.

② Prehistoric Cultural Resources

See attached Assessment of Affect documentation.

③ ^{Health and}
Public Safety

No Action - Stop 13 safety hazards will remain unaddressed.

Proposed Action - Safety hazards noted by park staff that are a result of trail design flaws will be corrected. A general hazard warning sign will be installed at the trailhead.

List of Preparers/Consultants

This document was prepared by Charisse Sydoriak, Chief of Resource Management through the assistance and advice given to her by park staff at five meetings held between April 12 and December 7, 1995. The individuals involved are identified in the section above titled "Scoping Analysis."