

**Post Wallow Fire 2011 BAER Trails Assessment Report
Springerville, Alpine, and Clifton Ranger Districts
Apache-Sitgreaves N.F.**

Ground Assessment by Alpine District Trail Crew



Assessment Review Working Group:

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Introduction

The recreation trail system on the Apache-Sitgreaves (A-S) National Forests provides a wide range of opportunities for day-hikers, backpackers, hunters, and equestrian users. Experiences range from the easily accessible front-country to back country and wilderness, and the system has a reputation for being well maintained and accessible to the public. The trail system not only provides recreational opportunities to the public that contribute to local economies, but also access for range permittees, outfitter guides, and forest service personnel for administrative purposes.



Image 1: Profanity Ridge, Escudilla Wilderness, as viewed from the lookout tower area following the Wallow Fire

In of the summer of 2011, the Wallow Fire burned across 538,049 acres of the A-S, including 324 miles of the forest's trail system on the Alpine, Springerville, and Clifton Ranger Districts. Monsoon rains immediately following the fire brought hazardous flooding and erosion in multiple drainages with significant impacts to resources.

Following the fire, the A-S received Burned Area Emergency Response (BAER) funding to conduct an initial assessment of trail damage. Between September 15 and November 16, 2011 all but 44 miles of the 324 miles of trail affected were assessed by members of the Alpine District trail crew for hazards to life, health, safety, and both public and private property downstream due to the Wallow Fire. The remaining 44 miles will be assessed in the spring of 2012 as soon as conditions allow.

Following the initial field work, the trail crew documented their findings and presented the results of the assessment to Forest Leadership. The Forest Supervisor assigned a Trail Assessment Review team to develop an action plan for rehabilitation of the affected trails and areas. The team consisted of Eric Flood (Recreation Staff Officer), Myron Burnett (Wilderness and Trails Technician), Paul Schilke (Recreation Assistant), Micah Miller (Recreation Technician), and Marcia Pfeleiderer (District Ranger) as team Chair.

Findings of the BAER Trails Assessment

The fire affected a total of 324 miles of trail within fire perimeter; 195.8 miles (60%) are on the Alpine RD, 97.6 miles (30%) are on the Springerville RD, and 30.3 miles (10%) are on the Clifton RD. Approximately 26% of affected trails were in severely burned areas, 24% were in moderately burned areas, and 50% were within green or unburned areas (does not include the 44 miles yet to be assessed). Miles of trail within areas of burn severity were determined by ground assessment. Table 1 below shows a breakdown of trail miles located within the different areas of burn severity by district.

Table 1: Miles of trail within areas of burn severity by district			
District	Severe (Black)	Moderate (Brown)	Low/Unburned (Green)
Alpine RD	51.3	46.7	77.3
Springerville RD	20.5	17.7	56.5
Clifton RD	1.6	2.6	4
Totals	73.4	67.0	137.8

The first and most obvious impact to trail conditions as a result of the fire is burned deadfall trees. At the time of the Assessment, the number of deadfall trees on each district's trails were; Alpine 2000 deadfalls, Springerville 312 deadfalls, Clifton 73 deadfalls. Based upon past experiences of trails within fire-affected areas, it is well understood that currently standing dead trees will continue to fall for seven to ten years, and potentially beyond.



Image 2: Section of Bear Wallow Trail affected by a flooding event – example of trail damaged by a "blowout"

Significant post-fire flood damage was observed following the 2011 monsoon rain season and varied from light to torrential flows causing the following impacts:

- light flows caused some gullying of trail corridors, cross-draining and debris deposition
- moderate flows caused small “blowouts” that cut across trails, damaged creek crossings, and washed away some sections of tread
- torrential flows produced extensive damage caused by large blowouts. These blowouts, usually from steep side drainages, cut through trails and deposited large areas of gravel, boulders, debris, and deadfall that may be from 5 to 200 feet across.

The trail crew observed 35 small to moderate blowouts, and 15 large blowouts on the Alpine district trails. To date, they observed four moderate sized blowouts on the Springerville trails, and none on the Clifton trails pending completion of the survey.

The assessment crew documented a total of 18.2 miles of undefined trail, meaning that due to fire or post-fire flooding damage, for some distance there was no longer a recognizable trail to follow. Additionally 13.7 miles of trail were severely damaged and will require complete reconstruction or relocation out of the damaged area.

Table 2: Miles of Lost Trail By District			
District	Undefined Trail	Complete Reconstruction	Total Miles of Lost Trail
Alpine	12.6	12	24.6
Springerville	3.6	0	3.6
Clifton	2	1.7	3.7
Totals:	18.2	13.7	31.9

The trail assessment crew found that a number of existing trail drainage structures have been compromised by flooding and will need to be repaired. Many new drainage structures will also be required due to post-fire changes. These drainage structures include water bars, check dams, and grade dips that are designed to reduce and disburse flow off of trails and mitigate additional erosion. A total of 266 drainage structures either need to be added or repaired.

Table 3: Estimated drainage structures needed (new or repaired) by district	
District	# Trail Structures
Alpine	200
Springerville	60
Clifton	6
Total:	266



Image 3: Example of obliterated trail - the tread used to be where this gully was created by a post-fire flooding event



Image 4: Section of KP Trail obliterated by a flooding event “blowout”

Lost and damaged trail signs, blazes, and trailhead information kiosks were also assessed by the crew:

Table 4: Damaged and missing trail signs and information kiosks by district		
District	Kiosks	Signs
Alpine	4	40
Springerville	0	15
Clifton	1	1
Total	5	56

Based on the BAER trails assessment, the trail crew determined there is an estimated 36,874 labor hours required to repair current trail hazards. This estimate was based on an approximate 140 hours of work required per mile of damaged trail. The 44 miles of trail which have not yet been assessed could add an additional 6,000

labor hours of work to the total. These are rough estimates, not including flood damage that may occur outside the perimeter of the fire, or labor hours for sign and kiosk replacement. This estimate also does not include on-going maintenance needed as standing burned trees continue to fall for the next seven to ten years. The team used

information from the 2003 Thomas and Steeple Fires in the Blue Range Primitive Area to estimate the amount of deadfall expected over the next several years. Those fires had effects similar to those of the Wallow Fire. Records show that a high use section of trail in a black burn area required five work hitches¹ to keep 2.5 miles of trail open over time as standing dead trees fell.

Resources to Address the Current Situation

The A-S currently has a contract with the Coconino Rural Environmental Corps (CREC) to help repair trail damage as a result of the Wallow Fire.

Table 5: Estimated labor-hours required to repair hazards and bring trails back to standard	
District	Hours
Alpine	31,500
Springerville	2,267
Clifton	3,080
Subtotal (surveyed trails to date)	36,874
Estimated additional (un-surveyed trails)	6000
Estimated Total for all trails	42,874

Volunteers, both individuals wishing to contribute to maintaining their favorite trails as well as partnering organizations, will be an important tool to help with trail restoration projects. Training and supervision of volunteers requires a substantial investment of time and money and the Forest currently lacks the capacity to manage a large volunteer program. Volunteer labor is not well suited to all of the needed work, as specialized skills and extensive availability are needed in some cases.

The Forest will pursue grant opportunities, including Resource Advisory Committee (RAC) and state Recreation Trails Program (RTP) grant funds. There are limitations inherent in these funding sources such as the cost of administering grants and inspection of work. Grants are normally limited by ceiling caps, and are unlikely to provide adequate funding for all of the needs. Overhead costs and productivity loss with supervising contract crews are also concerns.

Refer to Appendix B for a list of potential partner and funding sources.

Conclusion

There will be profound consequences to public access and safety of the trail system if current maintenance needs are not addressed in a timely manner. Although signage with warnings of hazardous conditions and potential closures in some areas can address many safety issues, public use and enjoyment of the National Forest would be compromised to an unprecedented extent.

¹ For the purpose of this document a hitch is an 8-person crew on an 80 hour tour, totaling 640 labor hours.

It is critically important to both protect the public by stabilizing trails in high use areas, and to meet the expectations of the recreating public in the high priority front country trails system. There are inherent dangers to wilderness travel that are not present in front country setting. Wilderness and back country trails would be the second priority for repair.

The Trails Assessment Review Team estimates that 42,874 of labor hours are needed to address the initial damage. This does not include costs for replacement of signage, supplies and/or materials, or administration (i.e. oversight, vehicles, travel, fuel, etc.). Ongoing maintenance due to deadfall of fire-damaged trees will be required following initial restoration of trails. The Wallow Fire created 75 miles of “black” trail, which equates to 188 work hitches over an estimated seven year period. This translates to 27 work hitches per year needed to keep these areas cleared of deadfall and open for public use. An additional 26 trail crew hitches would be required to repair and maintain trail miles that are “brown” or moderately burned and likely to have as high a mortality rate. The team estimates a total of 53 hitches will be needed annually to keep affected trails open in the burn area.

We will continue to witness significant effects for the next seven to ten years (2013 –2021) due to the sheer size and severity of the Wallow fire. Efforts to mitigate hazards within the fire perimeter will continue to benefit both the resources and private property owners downstream from the affected area. This monumental task requires an approach that prioritizes the needed work and strategically utilizes the available funding and tools that can help restore and maintain the trails affected by the Wallow fire.

Communicating the status of the affected trails, internally and externally, is paramount to developing awareness that the trail situation is not “business as usual”. The Forest will need to make some difficult decisions about priority trails work, potential closures, and other important issues for safety and other reasons. Information about trail conditions and closures can be disseminated by video, the FS Website, press releases, public meetings, and presentations to local governments and other interested groups.

The Forest should take full advantage of any and all available outside resources including volunteers, partnerships, and grant opportunities, to accomplish the needed trail repair work. Adequate funding will be required to restore the trail system to a usable condition, continue maintenance as standing dead trees fall, and flooding events occur over the next seven to ten years.

List of Appendices

Appendix A: Priority Use Area Maps

Appendix B: Potential Partners and Funding Sources

Appendix C: Powerpoint presentation (see attached files: BAERTrailAssessmentFin.ppt and BAERTrailAssessmentFin.pdf)

APPENDIX B

Potential Partners and Funding Sources

American Conservation Experience

American Hiking Society**

AmeriCorps

Arizona Elk Society*

Arizona Game and Fish Department*

Arizona State Committee on Trails/State Parks* (grant opportunity for \$40k/maintenance, and \$150k/construction)

Arizona Wilderness Coalition**

Audubon Society

Backcountry Horsemen of America

Boy Scouts**

Coconino Rural Environmental Corp

Grazing Permittees

Jenny Lucier, (Charlie's Mountain Retreat, Outfitter Guide)

Land and Water Conservation Fund

National Community Conservation Corp

National Outdoor Leadership School

National Wild Turkey Foundation*

Off Highway Advisory Group

Outfitter Guides

Prescott College**

Rocky Mt. Elk Foundation

Rural Areas Counties, Title II*

Search and Rescue

Sheep Foundation

South Eastern Arizona Sportsmen Club

Student Conservation Association

Texas Trail Tamers**

TRACS

Trout Unlimited

Universities

White Mountain Conservation League**

Notes:

*Known past financial contributors

**Known past labor contributors