

(Reference FSH 2509.13)

Q. Geologic Types Granite, ash, pumice

R. Miles of Stream Channels by Order or Class: 8.8 Ephemeral; 30 intermittent; 5 perennial

S. Transportation System

Trails: miles Roads: 6.7 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1,210 (low) 3,570 (moderate) 2,300 (high) 380 (Unburned)

B. Water-Repellent Soil (acres): 5,870

C. Soil Erosion Hazard Rating (acres):
743 (low) 1,101 (moderate) 5,570 (high)

D. Erosion Potential: 11 tons/acre

E. Sediment Potential: 660 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5-7 years: brush 100 years: Pinyon

B. Design Chance of Success, (percent): 80

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 1.8

F. Design Flow, (cubic feet / second/ square mile): 9

G. Estimated Reduction in Infiltration, (percent): 15

H. Adjusted Design Flow, (cfs per square mile): 12

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Background: The Sawmill Fire started on September 14, 2006 of unknown cause. It has burned a total of 7,434 acres with containment likely to occur on September 22. The fire was driven by strong winds. A large portion of the fire burned in steep, inaccessible terrain with old growth Pinyon Pine. Large expanses of sage and bitter brush along with stands of aspen were burned. Burn severity in the fire area includes: 2,300 acres (30%) of high soil burn severity; 3,570 acres (48%) moderate soil burn severity; 1,210 low (16%) soil burn severity; and 380 acres (5%) unburned.

Threats to Life and Property

Flooding, debris flows and sediment bulk flows are a threat to human life and property (vehicles crossing channels and culverts).

- **State Hwy. 120 and Sawmill Canyon Crossing** – There is a 48” culvert at the road/channel crossing of State Hwy. 120. Above the culvert the stream channel was diverted 90 degrees with a 6 foot berm. In addition the channel makes another 90 degree turn to enter the culvert. Approximately 20% of the Sawmill HUC 6 watershed burned with 18% of the burn at High and Moderate severity. This site poses a risk to vehicles and persons crossing the road when there is storm runoff from the burned area. Mud flows and debris can compromise the first berm as the channel makes a 90 degree turn. Debris can also clog the culvert potentially causing high flows to overtop the road. The BAER team believes that the greatest risk is during an intense thunderstorm event.
- **Benton Crossing Road** – There is a small risk of nuisance sediment on this road. Frazier Canyon the largest watershed that could affect the road had 20% high and moderate severity. There is a large unburned alluvial fan (2-3 miles) between the burned area and the road. Runoff has the opportunity to infiltrate into the intact vegetation. In addition there is a small berm on the fire side of the road. The risk of adverse flooding of the road endangering vehicles and persons is minor.
- **Forest Road 1S01** – There is a 36” culvert at the road/channel crossing of Forest Road 1S01. The fire burned the riparian and upland vegetation upstream of the culvert crossing. The soil is very loose in this area and a large amount of stored sediment was observed in this channel and side channels. This road is needed for fire and other emergency uses, as well as administration and recreational access. It also allows access to a popular campground and trail head. This site poses a risk to vehicles and persons crossing the road with high storm runoff from the burned area and can limit access if the culvert crossing fails.
- **Black Canyon road** – There is a risk of losing the road bed and the road causing greater post-fire watershed efficiency. Flooding and mud flows can compromise the road bed and multiple ephemeral channel crossings, especially on the upper sections of the road before the first perennial stream crossing. This road is used for emergencies, administration and recreational access.

Threats to Ecosystem stability and soil productivity

Noxious/Invasive weeds, Illegal OHV and Livestock grazing pose risks to Ecosystem stability and soil productivity. In addition these risks can prolong the increased watershed response expected from this fire.

- **Noxious/Invasive weeds** – There is a high risk of invasive/noxious weed invasion into the fire area. The BAER Team observed Cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola tragus*) in the unburned portions of lower Black Canyon. It is likely these species were present in the areas that did get burned. This fire contained approximately 3.5 miles of dozer line and 5 miles of hand line on National Forest System lands. Some of the equipment used for fire suppression was from out of the area and it is unknown if it was washed. Fire Suppression lines can act as invasive highways carrying noxious weeds and invasive plants into uninfested wildland area. Following fire, soil nutrient conditions are favorable toward noxious weeds and invasive species thus promoting their introduction over native plant species.
There is high likelihood that existent weed infestations will increase in the burn area, due to their accelerated growth, reproduction, and release from competition with native species. These weed populations could affect the structure and habitat function of native plant communities within the burn area and contribute to soil instability. An emergency does exist with respect to vegetative recovery due to the high potential for the Sawmill fire to increase the dominance of several invasive plant species.

- **OHV activity** –The fire burned vegetation along Black Canyon road. This makes it easy for vehicles to traverse off the road onto the alluvial fans and bottom areas adjacent to the road. There is also a risk of extending Black Canyon road further up the canyon past it's current closure point. Illegal OHV activity can adversely affect native vegetation recovery, spread noxious/invasive weeds, negatively affect soil productivity and prolong watershed recovery.
- **Livestock Grazing** – The Fence between Private lands and National Forest Lands in lower Black Canyon was damaged by the fire. Proper functioning of this fence is critical to ensure that livestock stay on Private and BLM lands and out of the fire area to allow proper vegetative recovery, prevent the spread of weeds and allow for watershed recovery. The maintenance of the fence is a Forest Service responsibility. The Forest is working with the BLM, and the Private land owner to determine future utilization of the allotment (BLM) and livestock plans on the private lands. A meeting is scheduled for October 18th to coordinate livestock management between the private landowner, BLM and Forest Service.

B. Emergency Treatment Objectives:

- Stabilize roads and downstream stream/road crossings
- Reduce the risk of noxious/invasive weed establishment
- Reduce the risk of degradation to ecosystem function and soil productivity; provide for rapid watershed recovery.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land 95 % Channel n/a % Roads/Trails 95 % Protection/Safety 95 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	95	95	100
Channel			
Roads/Trails	85	90	95
Protection/Safety	90	90	100

E. Cost of No-Action (Including Loss):_ **\$36,500**

F. Cost of Selected Alternative (Including Loss):_ **\$14,900**

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range	<input type="checkbox"/>
<input type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/>
<input type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS	

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H. **Treatment Narrative:**

The majority of high burn severity is inaccessible and/or on slopes over 60% so most of the burned area is too steep and/or rocky to meet site selection criteria for hillslope treatments. These factors plus the limited critical values at risk limit the scope and complexity of treatment prescribed.

Land Treatments:

1. *Natural Vegetative Recovery*

Objective and methods

This no cost treatment consists of allowing the on-site vegetative material to sprout or germinate to mitigate adverse post-fire conditions throughout the fire area.

Observe natural vegetative recovery during the first growing season.

2. *Noxious Weed Detection Surveys*

Objectives and Methods

Surveys will begin in 2007 during the flowering periods of weed species. Two visits may be necessary due to the elevational range of the fire. Surveys will focus on dozer line and handline in the low elevation valley bottom at the mouth of Black Canyon and the Wet Fork. Surveys will also include areas disturbed by suppression activities such as hand and dozerlines, safety zones, heli-spots and staging areas. Surveys of the general habitats in the upper parts of the water will be at lower intensity and priority. Detailed weed detection survey guidelines are attached in Appendix B.

Weed detection surveys to determine whether ground disturbing activities related to the Sawmill Incident and the fire itself have resulted in the expansion of noxious weeds is requested for the first year. Estimated costs are based on the assumption that two visits would be necessary because of the differences in flowering times. If timing is such that all the target species are detectable in one visit, the actual costs would be lower than displayed in Part IV.

Channel Treatments:

N/A

Roads and Trail Treatments:

1. *Culvert Replacement*

Objective and Methods

This treatment would allow passage of flood flows and debris through the culvert with less risk of the culvert plugging and overtopping and possibly degrading the road. Remove the existing culvert and replace with a 48" culvert according to standard engineering practices. Place riprap at critical locations both on the upstream and downstream side of the crossing.

2. Restore Drainage Function – Black Canyon Road

Objectives and Methods

This treatment would restore and enhance drainage function on the Black Canyon Road grading the road to drain properly and make existing drainage structures and features as effective as possible to protect the road grade and lessen the roads effect on increased watershed efficiency. Approximately 2.5 miles of road are affected by the fire on National Forest Lands.

Protection/Safety Treatments:

1. Fence

Objective and Methods

The purpose of this treatment is to ensure livestock do not enter the burned area through Private Lands. The fire burned parts of the fence that needs minor repair such as replacing H-braces, replacing damaged wire. A gate would be placed where the fence line meets the road.

2. OHV Patrol

Objective and Methods

Additional OHV patrol will help deter potential off-road use into the burned area. The bottom of Black canyon is flat with nothing to impede off-road use. Full Vegetative recovery, to help deter off-road use, will likely be 5-7 years in the bitterbrush/sagebrush vegetation type. This treatment will provide 10 days of additional OHV patrols in the fire area, emphasizing high use times such as holiday weekends and hunting season. This area receives a moderate amount of OHV use, especially during the deer hunting season. The OHV technician will provide the public with information about post-fire recovery and the importance of staying on existing roads throughout the fire area. The Forest has an OHV technician that can perform this work. The technician will document if incursions occur and take corrective action.

3. Advisory Sign

Objective and Methods

This treatment is preventative. Signs will be placed in the two access points encouraging visitors to stay on main roads to facilitate native plant recovery, decrease noxious/invasive weed vectors and protect soil productivity. Place 1 advisory /restricted vehicle use sign at the Forest Service/Private land boundary. Signs will be durable in nature, have two wooden posts.

4. Carsonite Signs

Objective and Methods

Signing will notify the public to stay on existing roads in sensitive areas such as the bottom of Black Canyon. Carsonite signs will be placed at strategic locations along the Black Canyon road and at the end of the road. Visibility will also be used to determine appropriate sign locations.

I. Monitoring Narrative:

Fence Effectiveness Monitoring

To ensure effectiveness of the fence to prevent livestock from entering the fire area monitoring funds are requested. Fenced area will be monitored on a monthly basis during the grazing season to check status of fence and ensure livestock are not trespassing on National Forest lands. The monitoring plan is attached in appendix A.

Estimated cost:

1 GS-9/5 days:	\$1,500
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Culvert Replacement Monitoring

Storm inspection/response monitoring for the culvert on 1S01 will be conducted through the first year after the fire to ensure the culvert is working properly. The Culvert monitoring plan is attached as appendix B.

Estimated cost:

1 GS-9/4 days:	\$1,200
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Dig out plugged culvert	\$1,500
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Total	\$2,700
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Part VI – Emergency Stabilization Treatments and Source of Funds
Interim #

A. Land Treatments										
Nx weed Detection	days	350	4	\$1,400	\$0		\$0		\$0	\$1,400
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$1,400	\$0		\$1,400		\$0	\$1,400
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
Culvert replacement	ea	5,000	1	\$5,000	\$0		\$0		\$0	\$5,000
Drainage features	mi	1,500	2.5	\$3,750	\$0		\$0		\$0	\$3,750
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$8,750	\$0		\$8,750		\$0	\$8,750
D. Protection/Safety										
fence repair	ea	2000	1	\$2,000	\$0		\$0		\$0	\$2,000
OHV patrol	days	250	10	\$2,500	\$0		\$0		\$0	\$2,500
Carsonite Signs	ea	50	20	\$1,000	\$0		\$0		\$0	\$1,000
Advisory sign	ea	750	1	\$750						\$750
<i>Subtotal Structures</i>				\$6,250	\$0		\$6,250		\$0	\$6,250
E. BAER Evaluation										
Salary +vehicles				\$6,500			\$6,500		\$0	\$6,500
BAER Imple. Leader	days	5	320	\$1,600			\$1,600			\$1,600
				---	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$8,100	\$0		\$8,100		\$0	\$8,100
F. Monitoring										
fence	days	5	250	\$1,250	\$0		\$1,250		\$0	\$1,250
culvert	days	4	250	\$1,000			\$1,000			\$1,000
equipment	ea	1,500	1	\$1,500			\$1,500			\$1,500
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$3,750	\$0		\$3,750		\$0	\$3,750
G. Totals				\$28,250	\$0		\$28,250		\$0	\$28,250
Previously approved										
Total for this request				\$28,250			\$28,250			\$28,250

PART VII - APPROVALS

1. /s/Jeffrey E. Bailey 09/27/2006
Forest Supervisor (signature) Date
2. /s/ Thomas Tidwell (for) 10/06/2006
Regional Forester (signature) Date

Appendix A

Sawmill Fire Fence Effectiveness Monitoring

The 2500-8 report requests funds to monitor the effectiveness of fencing to restrict livestock grazing. Native vegetative recovery could be impacted along with soil productivity and noxious/invasive weed invasion.

1. Monitoring Questions
 - a. Is the fence restricting livestock access in to the burned area?
2. Measurable Indicators
 - a. Livestock incursion into fire area.
 - b. Impact of damage to soil and vegetation
3. Data Collection Techniques
 - a. Photo documentation of site
 - b. Inspection Checklist (attached)
4. Analysis, evaluation, and reporting techniques

Evaluation would be completed monthly. It is expected that this treatment will be highly effective at retarding livestock grazing into the fire area. to. If the monitoring shows the treatment to be ineffective at restricting livestock grazing access and soil/vegetative damage, an interim report will be submitted. Emergency funding for other appropriate treatment may be required based on the monitoring findings.)

5. Monitoring report timeframes

The report will be evaluated monthly and if the treatment is effective, fence inspection checklist findings will be compiled monthly and summarized by the following:

- Livestock accessing the fire area
- Trees across the fence live compromising effectiveness

Fence Inspection Checklist

Date: _____
Time: _____

Inspector _____

Describe locations reviewed during inspection: _____

Were livestock found in the Fire area? _____. If so at what location
(GPS) _____

Photo taken of livestock _____

Photo taken of fence break or incursion _____

Native vegetation review findings: Signs of damage, , or other disturbance within
burn ____ Yes ____ No?

If so identify by GPS the location and note on sketch map. _____

Describe signs of soil/vegetative damage _____

Recommended repairs needed _____

Sawmill Fire Culvert Effectiveness Monitoring

The 2500-8 report requests funds to monitor the effectiveness of installation of a larger culvert on 1S01 at the bottom of Sawmill Canyon. Stabilization Treatments are designed to ensure passage of flood flows through the culvert to prevent damage to 1S01.

1. Monitoring Questions
 - a. Is the culvert passing flood flows efficiently?
 - b. Has the culvert plugged and needs cleaning out?
 - c. Is the integrity of the fill slope intact?
2. Measurable Indicators
 - d. Number of times culvert is are plugged, or filled,.
 - e. Loss of road bed.
3. Data Collection Techniques
 - f. Photo documentation of site
 - g. Inspection Checklist (attached)
4. Analysis, evaluation, and reporting techniques

Monitoring will be conducted after storm events. If the monitoring shows the treatment to be ineffective at stabilizing road and there is extensive loss of road bed or infrastructure an interim report will be submitted.

Road Inspection Checklist

Date: _____

Inspector _____

Time: _____

Forest Road _____

Describe locations reviewed during inspection: _____

Was there road damage?

Was Culvert plugged? _____.

GPS) _____

Describe damage and cost to repair? (GPS) _____

Photo taken of road damage _____

Recommended actions to repair: _____

