

Date of Report: July 24, 2002

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

- ☒ 1. Funding request for estimated WFSU-SULT funds
- ☐ 2. Accomplishment Report
- ☐ 3. No Treatment Recommendation

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)
- ☐ 2. Interim Report
 - ☐ Updating the initial funding request based on more accurate site data or design analysis
 - ☐ Status of accomplishments to date
- ☐ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

- A. Fire Name: Grizzly Gulch
- B. Fire Number: SD-SDS-H24159, P21322
- C. State: South Dakota
- D. County: Lawrence
- E. Region: Rocky Mountain
- F. Forest: Black Hills
- G. District: Northern Hills
- H. Date Fire Started: June 29, 2002
- I. Date Fire Contained: July 7, 2002
- J. Suppression Cost: ~6 million
- K. Fire Suppression Damages Repaired with Suppression Funds
 - 1. Fire line waterbarred (miles): 50
 - 2. Fire line seeded (miles): N/A due to season
 - 3. Other (identify):
- L. Watershed Numbers: 1012020202 and 1012020206
- M. Total Acres Burned: 11,589 acres
NFS Acres(3,315) BLM (1,982) State () Private 6,292)
- N. Vegetation Types: Ponderosa Pine Black Hills Spruce; Aspen/Birch; Ironwood/Bur Oak
- O. Dominant Soils: Virkula Association. Including: Grizzly, Vanocker, and Citadel soils.

P. Geologic Types: Schist, Slate, Igneous intrusion, Sandstone, Limestone, and Quartzite

Q. Miles of Stream Channels by Order or Class:

Order	1st	2nd	3rd	4th
Miles	28.8	18.6	4.9	0.8

R. Transportation System

Trail 0 miles Roads: 45 miles

PART III - WATERSHED CONDITION

NF Lands:

A. Burn Severity (acres): 1409 (low) 981 (moderate) 243 (high)

B. Water-Repellent Soil (acres): 100

C. Soil Erosion Hazard Rating (acres):

1409 (low) 981 (moderate) 243 (high)

Soils are similar across the burned area (High severity areas are at high risk of erosion, etc.)

D. Erosion Potential: Average of 40 tons/acre on all lands

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2-3

B. Design Chance of Success, (percent): 90

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

D. Design Storm Duration, (hours): 1

E. Design Storm Magnitude, (inches): 2.0

F. Design Flow, (cubic feet / second/ square mile): 4.2

This flow is an average of all "at-risk" watersheds, including those on Private and BLM land.

G. Estimated Reduction in Infiltration, (percent): 32%

This factor applies to all lands of all ownership

H. Adjusted Design Flow, (cfs per square mile): 18.4

This flow is an average of all "at-risk" watersheds, including those on Private and BLM land.

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Issues

- Potential threats to human life and property downstream of the Grizzly Gulch Fire from potential increases in storm flow runoff, flooding and debris flows.
- Threats to the life and property within the community of Deadwood, South Dakota that include the hospital, personal homes, a fun park, an R.V. park, a soccer field, rodeo grounds, a campground, and mine tailing piles.
- Ability of drainage structures to pass flood and debris flows.
- Potential loss of soil productivity and increased erosion.
- BAER cannot design treatments to protect against all scales of flood and debris flow events.

Rilling, gully erosion, and sheet erosion are expected to occur at increased rates due to the fire. Pre-fire vegetation provided protective groundcover and duff layers played an important role in infiltration, both factors in reducing pre-fire overland flow. Due to the fire, soils are now bare and susceptible to accelerated erosion and increased runoff rates. Soils within the fire occurring on steep slopes of Spruce Gulch, the unnamed watershed above the hospital, Whistler Gulch, Pecks Gulch, Deadwood Gulch, and Strawberry and Grizzly Creeks have very high erosion hazards and debris flow potential exists in these areas during intense short-duration thunderstorms. This type of storm is expected to occur between about July 15 and September 15 in any given year. It is most important to note the *relative* increase in erosion between pre and post-fire.

The primary watershed responses of the Grizzly Gulch Fire are expected to include: 1) an initial flush of ash; 2) gully and rill erosion in drainages and on steep slopes within the burn area; 3) debris flows and sediment deposition where stream gradients flatten or at tributary mouths; and 4) increases in peak flows. Elevated erosion, runoff, and stream flows are expected to occur for several years after the fire until the vegetation has recovered. Stream flow response to common rainfall events (with a recurrence interval of 10 years and duration of 1 hour) is expected to increase as a result of fire impacts. Storms of high intensity and short duration are of most concern and may result in flow increases that range from 7 cfs to 711 cfs (unbulked).

Noxious weeds were found to occur extensively within and near the burned area, which will create a high potential for further invasion, by these species. These invasive plant species readily out compete native species following a burn; therefore, it will also be necessary work to prevent this from occurring. Many of these species found within the burned area have already begun to sprout even without any rainfall occurring since the fire.

B. Emergency Treatment Objectives:

- Locate and stabilize, where feasible, severely burned slopes that pose a direct threat to human life or property.
- Recommend post-fire rehabilitation prescriptions that prevent irreversible loss of forest natural resources.
- As practical and necessary, identify natural conditions disturbed by fire suppression actions.
- Provide long-term monitoring recommendations intended to ensure the success of rehabilitation efforts.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land 95 % Channel % Roads 100 % Other %

Due to the small acreage of land proposed for watershed treatments, the probability of completing the work on NFS land before the first damage producing storm is high.

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	95	95	95
Channel			
Roads	100	100	100
Other			

E. Cost of No-Action (Including Loss): \$2,360,000

F. Cost of Selected Alternative (Including Loss): \$93,116

G. Skills Represented on Burned-Area Survey Team:

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

Team Leaders: T.J. Clifford, Boise National Forest, Don Murray (trainee), Black Hills National Forest, & Steve Eckart, Bureau of Land Management

Email: tjclifford@fs.fed.us

Phone: (208)373-4311

FAX: (208)373-4111

H. Treatment Narrative:

Land Treatments:

Aerial Seeding: Aerial seeding will be done in the severe burn areas on National Forest System Lands. The seeding will be done with the approved Northern Hills District seed mix. This mix consists of native grass species with some annual Ryegrass for quick ground cover. The seed mix is: 30% Canada Wildrye, 25% Slender Wheatgrass, 5% Prairie Junegrass, 10% Annual Ryegrass, 30% Western Wheatgrass with 40 PLS lbs/acre.

Contour Timber Felling: Contour felling should be applied to slopes not in excess of 60% to reduce runoff and erosion. Other treatments such as straw waddles may be substituted in sites not suitable for contour felling.

Noxious Weed Treatment: Aerial seeding will be done on the high severity burned areas to combat noxious weed invasion. Integrated pest management practices (herbicides, biological, mechanical, and cultural control methods) will be utilized on and around known noxious weed sites. These treatments will reduce or stop the establishment of noxious weeds along suppression roads and fuel breaks within the burn area. Treatments will be conducted over 3 years.

Road Treatments:

Hazard Tree Mitigation: Identify and remove trees damaged by fire that pose an immediate threat to public safety along roads that cannot be reasonably be closed.

Noxious Weed Treatment: Noxious weeds will be treated along the roads that were impacted by the fire and suppression activities. These weeds will be treated using the approved standard methods that the Northern Hills District uses in their noxious weed program. Application will be done by either contract or by District employees.

I. Monitoring Narrative:

Monitoring of contour timber felling areas will be conducted after significant rainfall or snowmelt events. Every third event will be checked for treatment effectiveness and upgrade or maintenance needs. The forest will submit a detailed monitoring plan at a later date, and again at the beginning of each fiscal year for 3 years.

NFS lands within the burn are will be monitored for 3 years for invasive weed establishment to determine if noxious weed control efforts are effective. The forest will submit a detailed monitoring plan at a later date, and again at the beginning of each fiscal year for 3 years.

Part VI – Emergency Rehabilitation Treatments and Source of Funds on NFS ownership

			NFS Lands			Other Lands				All
		Unit	# of	WFSU	Other	# of	Fed	# of	Non Fe	Total
Line Items	Units	Cost	Units	SULT \$	\$	units	\$	Units	\$	\$
A. Land Treatments										
Contour Timber Felling	acres	450	5	\$2,250			\$0			\$2,250
Aerial Seeding	acres	122	243	\$29,646			\$0		\$0	\$29,646
<i>Subtotal Land Treatments</i>				\$31,896			\$0		\$0	\$31,896
B. Channel Treatments										
<i>Subtotal Channel Treat.</i>				\$0			\$0		\$0	\$0
C. Road and Trails										
Noxious Weed Treatment	miles	60	45	\$2,700			\$0		\$0	\$2,700
Hazard Tree Identification	miles	3	17	\$51						\$51
<i>Subtotal Road & Trails</i>				\$2,751			\$0		\$0	\$2,751
D. Structures										
<i>Subtotal Structures</i>				\$0			\$0		\$0	\$0
E. BAER Evaluation										
Grizzly Gulch Plan	plan	45136	1	\$45,136			\$0		\$0	\$45,136
F. Monitoring										
Treatment Monitoring				\$4,765			\$0		\$0	\$4,765
Noxious Weed Monitoring	acres	7	1224	\$8,568						\$8,568
G. Totals				\$93,116			\$0		\$0	\$93,116

PART VII - APPROVALS

1. /s/ John C. Twiss
John C. Twiss
Forest Supervisor

8/8/02
Date

2. /s/ Karen L. Simpson for
Rick Cables
Regional Forester

8/12/02
Date