

Date of Report: 7/26/02

**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: Spring Creek

B. Fire Number: CO-WRF-339

P Code: P28386-0215

C. State: Colorado

D. County: Garfield

E. Region: 02

F. Forest: White River National Forest

G. District: Rifle Ranger District

H. Date Fire Started: 6/22/02

I. Date Fire Contained: 7/21/02

J. Suppression Cost: Est. 7.5 Million

K. Fire Suppression Damages Repaired with Suppression Funds

- 1. Fireline waterbarred (miles): 43 miles
- 2. Fireline seeded (miles): 25.8
- 3. Other (identify):

L. Watershed Number:

East Elk Creek 14010005020200

Hadley 14010005020304

Elk Creek 14010005020303

M. Total Acres Burned: in total perimeter

NFS Acres(13,493) Other Federal ( ) State ( ) Private ( )

N. Vegetation Types: Broad vegetation types that occur in the fire area include deciduous forest (aspen, cottonwood, and willows), mixed conifer forest (Englemann spruce, Subalpine Fir, and Douglas fir), grasslands with forbs, and shrublands (Gambel oak, snowberry, and serviceberry sagebrush).

O. Dominant Soils: Based on review of the Draft Flat Tops Soil Survey information (USDA, NRCS-FS, 1993), the 22 individual soil units soils in the burn area were grouped into four general soil groups based on soil textural families which reflect their runoff and erosional characteristics. These are families of a variety of Cryochrepts, Cryorthents and Cryoborolls. The four soil groups are:

Soil Group 1. Fine-loamy Soils group.

Soil Group 2. Loamy-skeletal Soils group.

Soil Group 3. Fine-loamy and Skeletal mix. (50% of each)

Soil Group 4. Rock outcrop and Lithic, & mod. Deep Soils group

P. Geologic Types: There are 6 dominate geologic units within the burn perimeter. These are:

~~M~~-Leadville-Gilman-Dyer-Parting-Fremont-Harding-Manitou-Dotsero-Peerless (limestones, sandstones with some dolomite and quartzite)

~~MD~~-Leadville Limestone-Gilman Sandstone-Dyer Dolomite-Parting Formation (limestones, sandstones, and some dolomite)

O-Various Ordovician formations, usually Dotsero-Peerless and Sawatch (various limestones, sandstones some dolomite and quartzite).

Xfh-Felsic and Hornblendic gneisses (gneisses)

Yg-Granites

&b-Belden Formation (shales)

Q. Miles of Stream Channels by Order or Class: (Crenulated)

Order 1. 39 miles

Order 2. 17 miles

Order 3. 9 miles

Order 4. 7 miles

R. Transportation System

Trails: 29.4 miles

Roads: 10.3 miles

### **PART III - WATERSHED CONDITION**

A. Burn Severity (acres): 10,875 (low) 958 (moderate) 1,660 (high)

B. Water-Repellent Soil (acres): 2,618

C. Soil Erosion Hazard Rating (acres):  
9,673 (low) 1,460 (moderate) 2,360 (high)

D. Erosion Potential: 8.95 tons/acre

E. Sediment Potential: 802 cubic yards / square mile

### **PART IV - HYDROLOGIC DESIGN FACTORS**

A. Estimated Vegetative Recovery Period, (years): 3-10 Years

B. Design Chance of Success, (percent):	<u>50%</u>
C. Equivalent Design Recurrence Interval, (years):	<u>25 yr.</u>
D. Design Storm Duration, (hours):	<u>1hr.</u>
E. Design Storm Magnitude, (inches)	<u>1.3 in.</u>
F. Design Flow, (cubic feet / second/ square mile):	<u>40</u>
G. Estimated Reduction in Infiltration, (percent):	<u>19%</u>
H. Adjusted Design Flow, (cfs per square mile):	<u>50-75 cfs/sq.mi.</u>

## **PART V - SUMMARY OF ANALYSIS**

### A. Describe Watershed Emergency:

The Spring Creek fire was a lightning ignited fire that started on June 22, 2002 in Western Colorado. A total of 13,493 acres are within the suppression perimeter, based on field observations and remote sensing techniques, there are 6735 acres that actually burned. Conditions were very dry in western Colorado, with below average snow pack and rainfall. The State has been declared in a drought emergency situation. The fire was most active between 6/29 to 6/30 with 80% to 90% of the moderate to high intensity burns occurring during that period of time. The burn started in a steep walled mountain canyon, about 7 miles north of the town of New Castle, Colorado and about 2 miles north of the National Forest boundary. The Canyon continues south out of the Forest, and widens out. Within a mile of the Forest boundary there are a number of dwellings. The density of development increases as it continues down stream and it gets closer to the town.

The initial watershed concerns were of flooding, debris flows, and possible impacts to the water quality. The town of New Castle's main water source is from the East Fork of Elk Creek.

Through the evaluation of a June 30 Landsat image (processed by the USDA Forest Service Remote Sensing Applications Center) interpreted for various burn intensities, numerous aerial observation flights by IDT members, discussions with the various Incident Command Teams and field observations of hydrophobic conditions and burn severity, it is estimated that in the burn perimeter of 13,493 acres, two main areas of high burn intensity will cause an increase in runoff and possible sediment production. This is the Hadley Gulch Area and a mid to upper portion of Spring Creek. This amounts to an estimated 9% of the whole perimeter area, or 442 acres in the Hadley Gulch Watershed and 704 acres in the Spring Creek/East Elk Watershed. The burn intensities in the rest of the perimeter range from moderate on 16% of the area, a low intensity situation on 21% of the area, with an estimated 54% of the area remaining unburned.

Of the areas that have a high burn severity impact, portions occur on steep canyon side slopes, in the Hadley Gulch area an estimated 100 acres are on slopes above 60% and in the Spring Creek area an estimated 300 acres are on slopes greater than 60%. These slopes, for all practical purposes, are considered untreatable. Within the Hadley Gulch high severity burn area the upper portion is a rolling dissected plateau with slopes generally <35%. This portion presents a hazard for increased runoff to the Clinetop road.

### Emergency situations identified by IDT during analysis that can reasonably be treated:

- Increased runoff and water concentration potentials along FSR 603 Clinetop Road
- Rather large continuous area of high burn intensities with hydrophobic soil conditions on the area between Hadley Gulch and East Elk Creek. (which drains into the Hadley Gulch drainage.)

-a greatly elevated potential for the introduction of noxious weeds throughout the burned area.(noxious weed species were observed on lower portions of the Clinetop road, and at least 10 species are known to be in the burn area or adjacent to the burn area.)

-Trail hazards now exist as a result of the fire. Rock fall, falling snags, downed logs, pose threats to trail users. Trails involved include Spring Creek Trail # 2068, Hadley Gulch Trail # 1840 and the Centennial Trail ( East Elk Creek portion) #1841.

#### Other potential emergency situations identified and discussed

The Baer IDT first evaluated the risk for flooding, debris flows and water quality impacts, especially in relation to risk to life, property and community water sources. The IDT feels there is no eminent danger from flooding or debris flows as a result of this fire. This conclusion is based on a review of the general area's geologic and geomorphic conditions and physical setting, as well as of the proximity of the burn area to homes and a public water intake. It is also based on consultations with Dennis Davidson (NRCS) and Sue Cannon (USGS) regarding the potential for debris flows and flooding impacts to downstream values. The downstream impacts to homes and property of the Spring Creek Fire are not expected to result in the potential for debris flows and flooding impacts as they do following the Coal Seam Fire. This is because no homes are located within the immediate influence of the narrow canyon areas burned under the Spring Creek Fire. Homes, a campground, and the Town of New Castle's water supply intake are located within a broad floodplain downstream of the Forest boundary. The floodplain here serves to dissipate streamflow energy with wider flow capacity and gentler streambed slopes.

Debris flows commonly occur downvalley of the Forest boundary, originating from areas of unstable geology and outside the burn. The Town of New Castle's public water supply intake, which is located about 7 miles downstream of the burned area, is within a stream reach impacted by these debris flows and is designed with these events in mind. As such, water quality impacts due to the fire are expected to be considerably less than those presented by debris flows that occur regularly in the lower portion of the drainage area.

#### **B. Emergency Treatment Objectives:**

-Prevent anticipated increased runoff and the resultant water concentrations from causing resource damage to roads and areas below or surrounding roads

-Improve soil infiltration rates, where treatment is possible, on areas where rates have been reduced by the formation of a hydrophobic layer on the and near the surface of the mineral soil.

Based on the effectiveness of a tracked feller-buncher and rubber tire skidder breaking up much of the hydrophobic layer along the Clinetop Road during hazard tree removal operations, the primary objective for the hillslope treatments in the Clinetop Mesa area is to help recover infiltration that was reduced by increased hydrophobicity created in the large high intensity portions of the fire. This recovery is expected to help reduce storm generated runoff, thereby reducing erosion, sedimentation and potential for localized (e.g., in Hadley Gulch) flooding.

-Prevent new establishment (to the extent possible), and spread of noxious weeds in the burned areas. Specifically; to allow natural regeneration of native plant communities affected by the burn and to prevent the loss of Biological diversity and ecological stability on both public and private lands that could occur as a result of weed infestations related to this burn.

-To identify and mitigate( by closing and signing )the risk to individuals using the trails and roads in the burned and affected areas.

-To document as much as possible, the historic features related to the Grayeagle Mine site within the East Elk canyon. Mitigation to prevent damage to this resource is not practical.

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

Land 30 % Channel NA % Roads 30 % Other 30 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	60 %	100%	100%
Channel	NA		
Roads	100	100	100
Other			

E. Cost of No-Action (Including Loss): \$182,500

F. Cost of Selected Alternative (Including Loss): \$167,737

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 checked="" 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	

Team Leader: Terry J. Hughes

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H. **Treatment Narrative:**

Land Treatments:

Ground scarification treatments have been proposed to help recover infiltration in the Clinetop Mesa area. These treatments will involve running a small tracked piece of equipment along the contour of severely burned slopes, with the intent of the track grousers/teeth partially breaking up the water repellent layer. Since most of the high intensity burn area exhibited strong water repellency during field review, treatments are recommended on all slopes up to 30 percent that can be safely maneuvered (with equipment). Most slopes will require a single pass every 100 to 200 feet, depending on site or topographic constraints. To help ensure sufficient scarification on slopes greater than 20 percent, up to 2 passes at 50 to 100 foot spacing may be required. The second pass will typically require the equipment partially splitting the original track to ensure sufficient depth while maximizing aerial scarification coverage.

#### Noxious weed control:

Treatments to prevent the establishment and possible spread of noxious weeds will include monitoring of burned areas and areas impacted by the fire suppression activities in a systematic manner to identify the areas showing increases in invasive weeds or areas that have a high potential to become infested. New species or areas that are found to be spreading will then be treated with integrated pest management practices, which may include the use of herbicides, biological control and other cultural methods as appropriate. The objective will be to prevent establishment and spread of identified noxious weeds. Approved WRNF integrated Weed Management Practices will be used to control any identified infestations.

Channel Treatments: None recommended

#### Roads and Trail Treatments:

##### Roads;

It is estimated that a 2.9 mile stretch of the Clinetop Road FSR# 603 will need drainage and culvert improvements to safely handle the estimated increased runoff and prevent water concentration damages from occurring on the road and off the road. Specific measures include the installation of 10 rolling dips, hardened with pit run gravel, and placement of four additional corrugated pipes so the road can handle safely the increase volume and velocity of anticipated flows from storm runoff or snowmelt.

Seed will be applied at 20 pls per sqft and mulched at the rate of one ton per acre on the areas needing revegetation.

##### Trails:

The direct emergency response is to establish a closure order for the trails involved and then provide appropriate signing to explain the hazards involved. The trails will remain closed until the appropriate funding is available to remove the hazards, or mitigated so as not to pose a hazard to trail users. The trails affected and number of signs needed are:

- Centennial Trail ( East Elk Creek ) # 1841      2 signs
- Hadley Gulch Trail # 1840                              2 signs
- Spring Creek Trail #2068                              1 sign
- Boiler Creek Trail #1843                              2 signs

Structures: No structures need treatment

#### Cultural Resources

No treatment measures can assure protection of the Grayeagle Mine from possible damage due to potential slope unraveling, talus slope downward migration and rock fall.

### **I. Monitoring Narrative:**

#### Monitoring for increase of noxious weed populations:

Systematic and consistent monitoring in the form of field surveys and traverses will be conducted to evaluate whether noxious weed populations are increasing as a result of fire and fire related activities or any new species have come into the area. The focus will be on areas that sustained high fire intensities, areas that were disturbed by suppression activities or are adjacent to known populations of noxious weeds.

#### Monitoring of the Soil Scarification treatment:

Systematic monitoring (i.e., walking and observing individual treatment swaths) will provide ocular documentation of the effectiveness of treatments in breaking through the hydrophobic layer on the soil surface thereby slowing runoff and erosion following runoff generating rain events.

**Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership**

<b>A. Land Treatments</b>										
Soil Scarification	Acres	62	100	\$6,200			\$0		\$0	\$6,200
							\$0			
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$6,200			\$0		\$0	\$6,200
<b>B. Channel Treatments</b>										
none prescribed				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$0			\$0		\$0	\$0
<b>C. Road and Trails</b>										
Rolling dip	ea	800	10	\$8,000			\$0		\$0	\$8,000
18" Cor.metal pipe	ea	1,000	4	\$4,000			\$0		\$0	\$4,000
metal pipe ext.	ea	360	1	\$360			\$0		\$0	\$360
rip rap outlets	ea	150	2	\$300			\$0		\$0	\$300
Pit development	ea	1500	1	\$1,500			\$0		\$0	\$1,500
Seed & mulch	Acre	450	1	\$450			\$0		\$0	\$450
Mobilization	ea	4500	1	\$4,500			\$0		\$0	\$4,500
P&O= 1.25 x above										
Subtotal Road & Trails				\$23,888			\$0		\$0	\$23,888
<b>Structures</b>										
None involved							\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
Subtotal Structures				\$0			\$0		\$0	\$0
<b>E. BAER Evaluation</b>										
Baer Team costs				\$29,200			\$0		\$0	\$29,200
				\$0			\$0		\$0	\$0
<b>F. Monitoring</b>										
soil scar, noxwd				\$6,670						
<b>G. Totals</b>				<b>\$65,958</b>			<b>\$0</b>		<b>\$0</b>	<b>\$65,958</b>

**PART VII - APPROVALS**

/s/ Martha J. Ketelle

July 26, 2002

1. \_\_\_\_\_  
Forest Supervisor (signature)

\_\_\_\_\_  
Date

2. **/s/Richard P. Salazar (for)**  
Rick D. Cables  
Regional Forester (signature)

**7/31/02**  
Date