

Date of Report:07/06/2012

BURNED-AREA REPORT
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST****A. Type of Report**

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

B. Type of Action

- ☐ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
- ☒ 2. Interim Report #1_____
- ☒ 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: Hewlett
- B. Fire Number: CO ARF 000228
- C. State: CO
- D. County: Larimer
- E. Region: 2
- F. Forest: ARNF-PNG
- G. District: Canyon Lakes
- H. Fire Incident Job Code: P2GUQ9 0210
- I. Date Fire Started: 05/14/2012
- J. Date Fire Contained: 05/23/2012
- K. Suppression Cost: Approx. \$3 million at time of BAER Report.
- L. Fire Suppression Damages Repaired with Suppression Funds
 - 1. Fireline waterbarred (miles):
 - 2. Fireline seeded (miles): 0
 - 3. Other: 5.3 miles of handline constructed, 4.6 miles repaired (covered, scarified, waterbarred)
- M. Watershed Number: 6th Level HUCs: 10190070704, 101900070305, 101900070304
- N. Total Acres Burned: 7,685.
NFS Acres(6,111) Other Federal () State (249) Private (1,325)
- O. Vegetation Types: Dense conifer stands, predominantly Ponderosa Pine occurring on north facing slopes; shrub communities consisting mainly of Mtn. Mahogany, 3 Leaf Sumac, Rabbit Brush and Wax Currant with occasional Junipers occurring on south facing slopes. Grass dominated communities on dry SE and SW facing slopes.

P. Dominant Soils:

There are nine soil units inside the Hewlett fire perimeter. The dominant soil unit inside the fire perimeter is Haploborolls-Rock outcrop complex, steep, representing 44% of the area. This is representative of the low and moderate soil burn severity areas. In the high soil burn severity areas, Redfeather sandy loam, 5 to 50 percent slopes is the dominant soil unit (33%).

These soil units have 35% rock fragment content and are classified as stony and gravelly. Surface textures are coarse sandy loam and sandy loam. More than half of the burned area has slopes of 30% to 60%. Rock outcrops are common on steeper areas slopes of 60% or greater and make up 13% (1035 acres) of the burned area).

Q. Geologic Types:

There are three main geologic formations in the burned area, one igneous and two metamorphic. The igneous formation of granitic rock material covers 29 percent of the area. The metamorphic formations are biotitic and felsic gneiss with schist. The metamorphic formations cover around 71% of the area. Igneous material forms the mountains, ridges and slopes located in the western part of the burned area. Metamorphic rocks (biotitic gneiss and felsic gneiss) occur in the center and east section of the burned area.

R. Miles of Stream Channels by Order or Class: 1 Perennial, 30 Intermittent, 36 Ephemeral

S. Transportation System: Trails: 7.7 miles Roads: 3.2 miles of non-system roads

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 67(unburned) 5466(low) 639(moderate) 1513(high).

A BARC image was ordered but not available for the BAER assessment effort. Aerial Reconnaissance of the burned area was done on 05/21/2012. Field review of the burned area was done by the BAER Team on 05/21/2012 through 5/23/2012. Soil burn severity observations and mapping were based on criteria outlined in the Field Guide for Mapping Post Fire Soil Burn Severity.

B. Water-Repellent Soil (acres): 2,300. (Water repellency was observed in the field under moderate and high soil burn severity in shrub and forest vegetation types. Estimated 30% of burned area to get 2,300 acres)

C. Soil Erosion Hazard Rating (acres): 507 (low) 2,047 (moderate) 5,132 (high)

D. Erosion Potential: 8 tons/acre post fire and 1 ton/acre pre fire. (estimation based on soil burn severity, slopes and ERMiT runs)

The ERMiT model was used to determine rates of erosion on burned and unburned hill-slopes within the burned area. ERMiT runs for a variety of slopes, vegetation types and burn severities with the burned area are outlined in the Hewlett BAER Soil Resources Report.

Example of Typical Erosion Rate within the Hewlett Burned Area

Vegetation Type	Slope	Erosion Unburned to Low Soil Burn Severity (tons/acre)	Erosion Moderate to High Soil Burn Severity (tons/acre)
Forest Cover	40%	<1 - 6	10 - 11

ERMiT Inputs Used: Soil texture is SL, 300 foot slope length, 30% soil rock content

E. Sediment Potential: 800 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

- A. Estimated Vegetative Recovery Period, (years): 3-5 years (recovery of hill-slope stability)
- B. Design Chance of Success, (percent): 85-90% (assuming damaging storm does not occur before treatments are in place)
- C. Equivalent Design Recurrence Interval, (years): 10
- D. Design Storm Duration, (hours): 1
- E. Design Storm Magnitude, (inches): 1.5
- F. Design Flow, (cubic feet / second/ square mile): 128
- G. Estimated Reduction in Infiltration, (percent): 30
- H. Adjusted Design Flow, (cfs per square mile): 298

Watershed Number	Watershed Name	Prefire Estimated Discharge (cfs)	Postfire Estimated Discharge (cfs)	% of pre-fire flow
10190007121216	Long Draw	405.1	739.0	182%
10190007121218	UNT to NF Poudre	149.9	192.8	129%
10190007121222	Seaman Draw	466.1	1245.3	267%
10190007140800sub	UNT to Hewlett	19.9	59.2	297%
10190007140800	Hewlett Gulch	2401.3	2496.3	104%
10190007141006	Greyrock Trail Draw	184.9	345.3	187%
10190007141010	UNT1 to Poudre	70.1	222.9	318%
10190007141014sub	UNT2 to Poudre	51.9	170.8	329%

PART V - SUMMARY OF ANALYSIS

- A. Describe Critical Values/Resources and Threats:

HUMAN LIFE AND SAFETY

Hazardous Trees along Trails

The Greyrock National Recreation Trail and The Greyrock Meadow Trail are very popular trails on the Canyon Lake Ranger District. The BAER Team recommends removal of severely burned and/or structurally compromised trees to protect the life and safety of Forest Service workers implementing trail stabilization treatments. BAER Team Specialists identified severely burned hazardous trees along the Greyrock and Greyrock Meadows trails. The probability that a hazardous tree would impact human life and safety is only "possible" but the consequences would be "major". **Therefore, the risk is high, emergency conditions exist and BAER treatments are recommended.**

Recreational Users of the Cache la Poudre River

The Cache La Poudre river is a popular recreation resource. Recreational uses include fishing, river rafting, camping, and picnicing. While recreational users along the river may experience elevated flow and turbidity if they are present during or following thunderstorms in the burned area, it is likely that these increases would pose a low risk to recreational users.

PROPERTY

Trails

The Greyrock National Recreation Trail and the Greyrock Meadow Trail are very popular trails on the Canyon Lake Ranger District. Up to 400 users per day utilize these trails during the summer months. Most of the trail is routed across very steep terrain. In places, the trail is routed through or below severely burn hill-slopes. Increased run-off and/or erosion from from severely burned slopes above the trail is likely to impact the trail in many places. Impacts include loss of trail tread through erosion and/or sediment delivery to the trail. The probability that these trails would be impacted by post wildfire run-off and/or erosion is very likely and the consequences would be moderate. **Therefore, the risk is very high, emergency conditions exist and BAER treatments are recommended.**

NATURAL RESOURCES

Water

The North Fork Cache la Poudre River forms the eastern boundary of the burned area. Milton Seaman Reservoir, located on the North Fork of the Cache la Poudre River close to the confluence with the main stem of the Cache la Poudre River is a municipal drinking water supply for the City of Greeley. Increased run-off and erosion from the Hewlett Burned Area is likely to increase sediment delivery and reduce reservoir capacity. Additionally, for the first 2-3 years following the fire, impacts to drinking water quality are expected to occur. Water treatment costs are likely to increase for 2-3 years following the fire.

The Cache la Poudre River forms the southern boundary of the Hewlett Burned Area. Hewlett Gulch and several steep, rocky south facing gulches drain directly to the river on this side of the burned area. Two municipal water supply diversions are located along the Cache la Poudre directly adjacent to the burned area. These diversions provide water to the Tri-Districts and the city of Fort Collins. A third diversion located approximately 3 miles downstream of the burned area provides water to the city of Greeley. While most of the fire within the Cache la Poudre watershed burned at low severity on steep grass, shrub, and rock covered slopes, several of the unnamed gulches tributary to the Cache la Poudre burned at high severity in the upper, forested portions of the gulches. Increased run-off and erosion is likely to increase sediment delivery to the river. Additionally, for the first 2-3 years following the fire, impacts to drinking water quality are expected to occur. Water treatment costs are likely to increase for 2-3 years following the fire.

The public water supply diversions and reservoir are values at risk. A burn emergency exists because of the likely impacts of increased sedimentation and reduction in water quality to public drinking water supply. The BAER team recommends treatment with aerially applied straw mulch to replace ground cover and reduce the impacts of post-fire runoff, sedimentation, and water quality.

The probability that public water supply would be impacted by post wildfire run-off and/or erosion is very likely and the consequences would be moderate to high. **Therefore, the risk is very high, emergency conditions exist and BAER treatments are recommended.**

Native or Naturalized Plant Communities

Native or naturalized plant communities on NFS lands within burned areas adjacent to two recreational trails and the North Fork riparian corridor are at increased risk of Colorado-listed noxious weed establishment and/or spread. The probability that post wildfire recovery of native or naturalized plant communities would be impacted by noxious weed establishment and/or spread is likely and the consequences would be moderate. **Therefore, the risk is high, emergency conditions exist and BAER treatments are recommended.**

Critical Habitat or Suitable Occupied Habitat

The only federally-listed threatened or endangered species that occurs or has habitat within the Hewlett Fire vicinity is the Preble's meadow jumping mouse. Within and immediately adjacent to the mapped Hewlett Fire perimeter, designated critical habitat for Preble's meadow jumping mouse is located along: Gordon Creek in Hewlett Gulch from the FS boundary on the north to the confluence with the Cache la Poudre River, and along the North Fork Poudre River running upriver from the north end of Seaman Reservoir along the east fire perimeter. The BAER risk for post wildfire impacts to Preble's meadow jumping mouse habitat is low.

CULTURAL AND HERITAGE RESOURCES

Two cultural resources are considered to be values at risk:

5LR1098 is a prehistoric open camp site consisting of tipi rings, hearths, and prehistoric artifacts including ceramics, ground stone, and lithic debitage, located immediately above Seaman Reservoir. It is eligible for the National Register of Historic Places (NRHP). This site may be affected by erosion and/or debris flow along tributaries flowing into Seaman Reservoir, which could displace surface and near-surface artifacts, destroying historic context.

5LR13049 is the Cyril and Mayme Spaulding Homestead, a historical site dating from the 1920s that includes multiple foundations, a wooden bridge, and associated surface artifacts. It is potentially eligible for the NRHP and is interpreted to the public through signs at the Hewlett Gulch trailhead. This site may be affected by flooding or debris flow from tributaries to the Poudre River, displacing surface and near-surface artifacts and, in extreme conditions, knocking over structural remains, especially of the bridge.

In addition, undiscovered NRHP-eligible cultural resources may exist in the area of potential effects associated with BAER-related activities such as construction of water bars, trail work, or other ground-disturbing activities. The National Historic Preservation Act requires a cultural resource inventory and consultation with the State Historic Preservation Office (SHPO) prior to implementation of these activities.

The probability that post wildfire runoff from typical high intensity/short duration summer thunderstorms could impact cultural and heritage resources is unlikely but the, if impacted, the consequences would be major. The BAER risk for impacts to these resources is considered to be moderate.

Summary of BAER Risk Assessment

Threat Identification	Critical Value	Probability of Loss	Magnitude of Conseq.	BAER Risk
Hazardous Trees	Human Life and Safety	Possible	Major	High
Public Water Supply	Nat. Resources (Water Supply)	Likely	Major	Very High
Trails and Recreation	Property	Likely	Moderate	High
Preble's Habitat	Natural Resources	Unlikely	Moderate	Low
Invasive Species	Natural Resources	Likely	Moderate	High
Cultural Resources	Cultural Resources	Possible	Moderate	Intermediate

B. Emergency Treatment Objectives:

Land Treatments

The objective of aerial mulching is to lower hill-slope erosion and associated sediment delivery to the Milton Seaman Reservoir and to the Cache la Poudre River. This treatment is recommended to lower the threat of loss of reservoir capacity and lower threats to public water supply.

The objective of noxious weed detection surveys and treatments is to provide for recovery of native vegetation by preventing the establishment and spread of noxious weeds in the recently burned area.

Trail Treatments

The objective of the trail stabilization treatments is to lower the risk of damage to property (system trails) by lowering erosion of the trail surface in severely burned and steep areas within the burned area.

Protection/Safety Treatments

The objective of the hazardous tree removal treatment is to lower threat of hazardous trees to the life/safety of workers implementing BAER trail stabilization and storm patrol treatments on the Greyrock Trail and Greyrock Meadows Trail.

The objective of installing warning signs is to reduce threats to life/safety of recreational hikers by warning that they are entering a burned area and warning against access into hazardous areas adjacent to the trails. These signs also serve to accelerate natural recovery by preventing travel off trails. Additional signs to provide warning of increased potential for falling rock and debris are also recommended to lower threats to human life/safety at specific locations along trails within the burned area.

H. Treatment Narrative:

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

Aerial Mulching

Interim Update on 07/06/2012

An 8A Contractor submitted a bid for the aerial mulching work. The contractors bid for aerial application of straw mulch was \$1,099 per acre. The original USFS estimate and funding request for this work was \$700/acre. This interim request in the amount of \$270,153 is being submitted to request funding to implement the straw mulching project at a rate of \$1,099/acre. Included in this amount is an additional \$12,000 to cover personnel time for contract development and administration.

Original 2500-8 Treatment Narrative

Aerial application of 647 acres of mulch on NFS lands to provide groundcover replacement is recommended. On private lands within the burned area, the NRCS is considering the same treatment on 102 acres of private land. If NRCS obtains EWP funds for treatment on private lands, it is likely the mulching would be done under one contract. Criteria for treatment polygon locations include: High and moderate soil burn severity, slopes between 20% and 60%, source watersheds for Milton Seaman Reservoir or tributaries to the Cache la Poudre River, hill-slopes from which increased hill-slope erosion and sediment delivery to the Milton Seaman Reservoir and/or Cache la Poudre River is highly probable in the first year following the fire (based on soil erosion modeling, hydrologic modeling, map review and field review). Generally, these treatment polygons are located where dense to moderately dense stands of conifers were burned and where soil burn severity was mapped as high or moderate due to consumption of most, if not all, of the litter/duff forest floor. Due to removal of ground cover and heat impacts on the soil, these once stable hill-slopes are now highly susceptible to erosion. Generally, the precipitation events of highest concern are high intensity summer thundershowers. Erosion control materials that would meet treatment objectives include certified weed free agricultural straw and/or other effective erosion control materials. The recommended application rate for straw mulch is 1.5 tons/acre. Based on recent monitoring of aerial application of mulch on another local fire (Fourmile Fire in Boulder County), treatments are likely to be effective in this geographic location. As shown in the Soil Scientist's Specialist Report, ERMiT runs for typical treatment areas show significant reduction in probability of hill-slope erosion if mulching treatments are applied.

Noxious Weed Detection and Treatment

Noxious weed detection and treatment is recommended to provide for recovery of native vegetation by preventing the establishment and spread of noxious weeds in the recently burned area. Weed treatments would occur in the Fall of 2012 and the Spring of 2013, within 1 year following the fire. Treatment locations are focused along the Hewlett Gulch Trail, Greyrock Trail and North Fork Trail. Chemical, biological and mechanical (manual methods) would be utilized. Work would be completed through a participating agreement with Larimer County. A full breakdown of treatment costs including materials and labor is provided in the Noxious Weeds Program Manager's BAER Specialist Report.

Channel Treatments:

No channel treatments proposed

Roads and Trail Treatments:

Trail Stabilization Treatment

BAER treatments are needed on segments covering 1.8 miles of Greyrock Trail and Greyrock Meadows Trail. Trail stabilization treatments, rolling dips with lead out ditches, out-sloping and stabilization of several ephemeral drainage crossings, were proposed following field review of the trail and burned hill-slopes adjacent to the trail. Aerial mulching treatments, primarily proposed to lower threat to water

quality, will also serve to lower impacts to the trail.

Trail Storm Inspection and Response Treatment

Storm Inspection and Response treatments are proposed to keep trail tread and trail drainage in proper functioning condition over the course of the summer thundershower season. The BAER Team recommends a trail crew of 2-3 people make 5 responses following thunderstorms to implement the storm inspection and response treatments on the Greyrock Trail and Greyrock Meadows Trail.

Protection/Safety Treatments:

Hazardous Tree Removal Treatment

BAER Team Specialists identified severely burned hazardous trees and hazardous loose rocks over approximately 3.2 miles of the Greyrock and Greyrock Meadows trails. Hazard tree removal to protect the life and safety of workers implementing BAER trail stabilization and storm inspection/response treatments is recommended. Only severely structurally compromised hazardous trees posing an immediate threat to workers implementing BAER treatments would be removed

Warning Signs Treatment

Install 6 warning signs to reduce threats to life/safety of recreational hikers by warning that they are entering a burned area and warning against access into hazardous areas adjacent to the trails. These signs also serve to accelerate natural recovery by preventing travel off trails. Additional signs to provide warning of increased potential for falling rock and debris are also recommended to lower threats to human life/safety at specific locations along trails within the burned area.

Warning Signs Recommended for the Hewlett Burned Area are:

"Entering Burned Area/Stay on Trail" warning signs at the Hewlett Gulch and Greyrock Trailheads

"Falling Rock and Debris" signs at various locations along the Greyrock Trail

I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Monitoring for Aerial Mulching Treatment

Monitoring of effectiveness of the aerial mulching treatment following precipitation events is recommended. This monitoring will also serve to determine if treatment in year two following the fire would be necessary. Monitoring would be conducted by ARNF-PNG Soil Scientists and/or Hydrologists.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #1

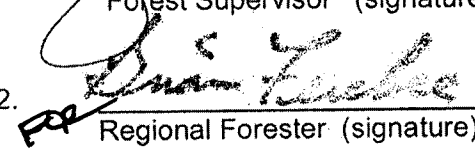
Note: Interim request highlighted. Additional information provided in the treatment narrative section of this report, above.

						Other Lands					All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total	
Line Items	Units	Cost	Units	BAER \$	\$	units	\$	Units	\$	\$	
						Potential NRCS-EWP Mulching on Private Land					
A. Land Treatments						102	\$71,400		\$0	\$524,300	
Aerial Straw Mulch	acres	700	647	\$452,900	\$0						
Aerial Straw Mulch Co	acres	399	647	\$258,153							
Agreement/Contract	days	40	300	\$12,000							
Nox. Weeds Detect.	days	300	1	\$300	\$0		\$0		\$0	\$300	
Nox. Weeds Treat	days	1200	11	\$13,200	\$0		\$0		\$0	\$13,200	
Nox. Weed Agreement	days	2	300	\$600							
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0	
Subtotal Land Treatments				\$737,153	\$0		\$71,400		\$0	\$537,800	
B. Channel Treatments											
				\$0	\$0		\$0		\$0	\$0	
Subtotal Channel Treat.				\$0	\$0		\$0		\$0	\$0	
C. Road and Trails											
Trail Stabilization	mile	1.8	1500	\$2,700	\$0		\$0		\$0	\$2,700	
Trail Storm Inspection	days	5	650	\$3,250	\$0		\$0		\$0	\$3,250	
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0	
Subtotal Road & Trails				\$5,950	\$0		\$0		\$0	\$5,950	
D. Protection/Safety											
Haz. Trees and Rocks	mile	3.2	600	\$1,920	\$0		\$0		\$0	\$1,920	
Warning Signs	each	150	6	\$900	\$0		\$0		\$0	\$900	
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0	
Subtotal Structures				\$2,820	\$0		\$0		\$0	\$2,820	
E. BAER Evaluation											
Assesment Team Costs				\$23,000			\$0		\$0	\$0	
Insert new items above this line!							\$0		\$0	\$0	
Subtotal Evaluation				—	\$0		\$0		\$0	\$0	
F. Monitoring											
	days	300	4	\$1,200	\$0		\$0		\$0	\$1,200	
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0	
Subtotal Monitoring				\$1,200	\$0		\$0		\$0	\$1,200	
G. Totals				\$747,123	\$0		\$71,400		\$0	\$547,770	
Previously approved				\$476,970							
Total for this request				\$270,153							

PART VII - APPROVALS

1. 
Forest Supervisor (signature)

7-11-12
Date

2. 
Regional Forester (signature)

JUL 16 2012
Date