

Date of Report: 8/3/22**BURNED-AREA REPORT****PART I - TYPE OF REQUEST****A. Type of Report**

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

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
- ☐ 2. Interim Request # _____
- ☐ Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION**A. Fire Name: Monday Creek****B. Fire Number: 2022-WYMRF-220194****C. State: Wyoming****D. County: Converse****E. Region: R02, Rocky Mountain Region****F. Forest: MBRTB****G. District: Douglas****H. Fire Incident Job Code: P2PT5722 (0206)****I. Date Fire Started: 7/9/2022****J. Date Fire Contained: 7/24/2022****K. Suppression Cost: Not Available****L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

1. Fireline repaired (miles): 2.5 miles
2. Other (identify):

M. Watershed Numbers:*Table 1: Acres Burned by Watershed*

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
101800080802	Headwaters Horseshoe Creek	32079	711	2%

N. Total Acres Burned:*Table 2: Total Acres Burned by Ownership*

OWNERSHIP	ACRES
NFS	625
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0
PRIVATE	86

OWNERSHIP	ACRES
TOTAL	711

- O. **Vegetation Types:** Ponderosa Pine woodlands are the dominant vegetation community within the fire area. Tree density and understory composition and cover vary with aspect and slope. Common understory plants include Ross sedge, elk sedge, bearberry, bitterbrush, and ribes. The lower elevations have patches dominated by bitterbrush shrubland and various grasses. There are also small stands of aspen that grow primarily in draws and along streams in the larger drainages. Stream valleys are relatively narrow and are dominated by three general community types: Shrub stands of willow, box elder, poplar, and water birch often with Ponderosa pine overstories and grass/sedge understories; turf of grasses and sedges in flatter areas and associated with beaver dams; and aspen stands.
- P. **Dominant Soils:** Soils are primarily forming in granitic parent materials. Soils under ponderosa pine woodlands tend to have thick dark coarse textured surface horizons, with high percentage of gravels and cobbles. Soil maps indicate that rock outcrop makes up 20-30% of the area and the remaining soils are often characterized by extreme stoniness or cobbles. Field observations are that rock outcrop may be 40-50% of some ridgetop areas. Up to nearly half of the Ponderosa Pine forest areas may have more developed subsoils with clay enrichment and finer textured surfaces. These soils also commonly have 35-65% rock content. Soils in the stream valleys are thick, fine to medium-textured, and have little rock. Erosion hazard ratings are severe and moderate for most of the burn area. The two dominant soil types include Cathedral Family (loamy-skeletal, mixed, lithic Haploborolls) and Typic Eutroboralfs.
- Q. **Geologic Types:** The North Laramie Range consists of ancient granite rock thrust through Paleozoic and Mesozoic sandstones and limestones, remnants of which can be seen along the flanks of the range and to the east of the Laramie Peak in the Glendo area. Bedrock within the fire area is primarily Precambrian granite. There are several northeast-trending dikes of mafic rock in the area. The stream valleys have Quaternary alluvium usually deposited in a thin veneer amongst granite boulders.

R. **Miles of Stream Channels by Order or Class:**

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERENNIAL	0.8
INTERMITTENT	0.1
EPHEMERAL	5.9
OTHER (DEFINE)	

S. **Transportation System:**

Trails: National Forest (miles): 0.0 Other (miles): 0.0
 Roads: National Forest (miles): 0.0 Other (miles): 0.0

PART III - WATERSHED CONDITION

- A. **Burn Severity (acres):** Soil heating affected the aggregate stability, canopy cover, ground cover, and infiltration rate. Before the fire, most of the area had protective vegetative ground cover in the form of litter, duff, or ground vegetation. In the high burn severity areas, little or no vegetative ground cover remains and the potential for re-establishment of ground cover within the first year following the fire is low. Consumption and scorching of ground cover by the fire was common within the moderate and high soil burn severity polygons, rendering the soils vulnerable to high rates of post fire erosion. However, other fire effects on soils are generally limited in spatial extent and occur in patchy patterns based on consumption of heavy fuels on the forest floor and the mosaic patterns of soil burn severity.

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	65	0	0	12	77	11%
Low	312	0	0	42	354	49%
Moderate	186	0	0	31	217	31%
High	62	0	0	1	63	9%
Total	625	0	0	86	711	100%

- B. Water-Repellent Soil (acres):** Hydrophobicity within the fire perimeter is highly variable. With the small number of field observations collected during soil burn severity mapping, the information should be viewed with caution as to conclusions about the presence of hydrophobicity across the fire. Some high soil burn severity locations showed hydrophobic (water-repellent) conditions at the soil surface, but immediately below the surface water infiltrated almost immediately. Most hydrophobic properties of soils in the burn area should breakdown relatively rapidly (predict within 1-2 years) with normal water infiltration thereafter.
- C. Soil Erosion Hazard Rating:** The majority of the burn area has moderate to severe soil erosion hazard ratings, due to steep slopes and erosive soils.
- D. Erosion Potential:** Erosion potential post-fire is contingent on a variety of site characteristics including soil texture, rock fragment content, slope, soil burn severity and the distribution of soil burn severity. During precipitation events, erosion is likely on steeper slopes (slopes greater than about 35%) and on soils in the moderate and high soil burn severity class. Soils that burned in the low soil burn severity class are not at risk of appreciable accelerated soil erosion and loss of soil productivity.
- E. Sediment Potential:** For the Monday Creek fire we assumed about 25% of sediment may reach and be delivered to connected stream courses downstream.
- F. Estimated Vegetative Recovery Period (years):** Based on applicable local research and observations of vegetative recovery on past wildfires, estimated recovery of vegetation (sufficient to provide effective ground cover to significantly reduce hill-slope runoff and erosion to levels closer to pre-fire conditions) is 3-5 years.
- G. Estimated Hydrologic Response (brief description):** The fire has reduced or eliminated canopy and ground cover, as well as altered soil structure with varying degrees of hydrophobicity across some areas within the fire perimeter. These changes will lead to reduced precipitation interception and infiltration capacity, as well as elevated runoff compared to pre-fire conditions.

Watershed response will likely include an initial flush of ash, rill and gully erosion in headwater drainages and on steep slopes within the burned area, debris-laden flash floods in response to high-intensity rain events, elevated snowmelt peak flows, and potentially debris flows. Water quality will be diminished during seasonal peak runoff, as well as after high-intensity summer rains, due to elevated ash, fine sediment, and nutrient loading. Elevated post-fire response will gradually diminish over time as vegetation and groundcover levels recover over the next several years, although some impacts are likely to persist for a decade or longer. The most probable damaging storm events are high intensity-short duration thunderstorms that most commonly occur during the July/August monsoon season.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

A. Describe Critical Values/Resources and Threats (narrative):

Table 5: Critical Value Matrix

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Very Likely	Very High	Very High	Low
Likely	Very High	High	Low
Possible	High	Intermediate	Low

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Unlikely	Intermediate	Low	Very Low

- Human Life and Safety (HLS):** Human life/safety is at risk from threats associated with hazardous burned trees, debris flows, and increased flooding. The probability is *Unlikely* as there are no roads, trails or developed recreation facilities within the area, so use is limited to dispersed, non-stationary activities such as hunting or hiking. The magnitude of consequences is *Major* as severe injury or death could occur; **the BAER risk is *Intermediate*.**
- Property (P):** No threat to property was identified from post-fire effects.
- Natural Resources (NR):** Native plant communities are at risk of invasion by known populations of Wyoming State listed noxious weeds adjacent to areas of high and moderate SBS, and areas disturbed by suppression activities. Plant communities most at risk include low elevation areas that present suitable habitat for the largest number of weeds, sites closest to roads and other transportation corridors, areas within ½ mile of known populations of weeds (including populations on private lands). Native plant communities are a critical resource for maintaining the ecological integrity of Forest Service lands. The probability is *Likely* as there are known invasive plants adjacent to areas of high and moderate SBS, and areas disturbed by suppression activities. The magnitude of consequences is *Moderate* as native plant communities could be impacted from invasive species expansion from suppression disturbances and burned areas with high/moderate soil burn severity. Therefore, **the BAER risk is *High*.**
- Cultural and Heritage Resources:** No threat to critical cultural resources was identified from post-fire effects.

B. Emergency Treatment Objectives:

- Minimize threats to life/safety to the extent possible through inclusion of the Monday Creek burn area in the Forest's post-fire hazards communication plan.
- Promote revegetation and soil stabilization by native plant communities through early detection/rapid response surveys to minimize the spread of Wyoming State listed noxious weeds.

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

Land: 90

Channel: N/A

Roads/Trails: N/A

Protection/Safety: 90

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land	70	75	80
Channel			
Roads/Trails			
Protection/Safety	80	85	90

- E. E. Cost of No-Action (Including Loss):** Cost of human life and safety were not quantified. There are currently relatively intact native plant communities, but the ecological services provided by these communities were not quantified. Without treatment to minimize invasive plant expansion into burned areas, both treatment acres and costs are expected to be significantly higher than the treatment costs.

F. Cost of Selected Alternative (Including Loss): \$17,810

G. Skills Represented on Burned-Area Survey Team:

- | | | | | |
|---|---|--------------------------------------|--|---|
| <input checked="" type="checkbox"/> Soils | <input checked="" type="checkbox"/> Hydrology | <input type="checkbox"/> Engineering | <input checked="" type="checkbox"/> GIS | <input checked="" type="checkbox"/> Archaeology |
| <input checked="" type="checkbox"/> Weeds | <input type="checkbox"/> Recreation | <input type="checkbox"/> Fisheries | <input checked="" type="checkbox"/> Wildlife | |
| <input type="checkbox"/> Other: | | | | |

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Forest BAER Coordinator: Dave Gloss
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Team Members: *Table 7: BAER Team Members by Skill*

Skill	Team Member Name
<i>Team Lead(s)</i>	Dave Gloss
<i>Soils</i>	Dave Gloss
<i>Hydrology</i>	Dave Gloss
<i>Engineering</i>	Nate Davis (consulted)
<i>GIS</i>	Jill Weatherd
<i>Archaeology</i>	Hallie Pelton (REAF – consulted)
<i>Weeds</i>	Michelle Buzalsky
<i>Recreation</i>	
<i>Wildlife/Fish/TES</i>	Tim Byer

H. Treatment Narrative:

Land Treatments: Equipment used for suppression activities travelled through areas of known weed populations to unaffected areas, which substantially increased the risk of noxious weed spread to 2.5 miles of suppression firelines, drop points, etc (17 acres disturbed). Other areas, especially high and moderate soil burn severity locations are susceptible to weed invasion (estimate 300 acres) including cheatgrass, leafy spurge, ventenata, and black henbane. Early detection/rapid response (EDRR) surveys will focus on areas of unimpaired native plant communities that burned at high or moderate soil burn severity and are adjacent to known Wyoming State listed noxious weeds, as well as areas disturbed by suppression activities. EDRR will be used to minimize the potential for new noxious weed infestations and ensure the natural recovery of native perennial grasses and forbs.

In the past decade, every major fire on the Medicine Bow National Forest has resulted in rapid and widespread cheatgrass infestation, including nearby fires on the Laramie Peak unit. These cheatgrass populations are thought to have established from dispersal via winds within the fire and from relatively small pre-fire patches that were typically restricted to roadsides. Post-fire infestation of this magnitude did not occur in the previous century; this change is likely driven by a warming climate and a greater abundance of propagules being moved throughout the region. The vast cheatgrass monocultures represent a substantial degradation of the native and natural vegetation community.

New weed populations would be promptly treated with BAER funds to minimize the potential to spread and lead to the modification of native plant communities. Surveys will begin as soon as possible starting in the Fall of 2022 when species presence become detectable. Treatments may be implemented through contracts or agreements but may also use Force account. Several locations include multiple weed species which may require treatment at different times and/or with different herbicides. Aerial application of Rejuvra, covered under the Forest's Invasives Species EIS and utilizing experience gained treating after the Mullen fire, is planned to address expansion of cheatgrass into native plant communities in the burn area.

Treatment	Units	Unit Cost	# of Units	Total Cost
P1a- Invasives EDRR	Acres	\$52	300	\$15,600
P1b- Invasives EDRR -Suppression Repair	Acres	\$130	17	\$2,210
TOTAL EDRR:				\$17,810

Channel Treatments: N/A

Roads and Trail Treatments: N/A

Protection/Safety Treatments: BAER funds are not requested for Protection/Safety Treatments, as the recommended treatment can be accomplished with existing staff expertise and time used to incorporate the Monday Creek burn area into the Forest's post-fire hazards communication plan (e.g. <https://www.fs.usda.gov/detail/mbr/fire/?cid=FSEPRD889210>).

I. Monitoring Narrative: Implementation monitoring will be accomplished during implementation of BAER treatments and is included in treatment cost estimates.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

			NFS Lands				Other Lands			All
		Unit	# of		Other		Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$	# of units	\$	Units	\$	\$
A. Land Treatments										
P1a- Invasives EDRR	Acres	52	300	\$15,600	\$0		\$0		\$0	\$15,600
P1b- Invasives EDRR - SR	Acres	130	17	\$2,210	\$0		\$0		\$0	\$2,210
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Land Treatments				\$17,810	\$0		\$0		\$0	\$17,810
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treatments				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Road and Trails				\$0	\$0		\$0		\$0	\$0
D. Protection/Safety										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Protection/Safety				\$0	\$0		\$0		\$0	\$0
E. BAER Evaluation										
Initial Assessment	Report	\$3,500	1	---	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				---	\$0		\$0		\$0	\$0
Subtotal Evaluation				\$0	\$0		\$0		\$0	\$0
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Monitoring				\$0	\$0		\$0		\$0	\$0
G. Totals										
				\$17,810	\$0		\$0		\$0	\$17,810
Previously approved										
Total for this request				\$17,810						

PART VII - APPROVALS

1. _____
 Forest Supervisor Date _____