

**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 #  
     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: Ryan FireB. Fire Number: WY-MRF-000598C. State: WyomingD. County: CarbonE. Region: 02F. Forest: Medicine Bow-Routt NFG. District: Brush Creek/HaydenH. Fire Incident Job Code: P2L43R18 (0206)I. Date Fire Started: 9/15/2018J. Date Fire Contained: 10/31/18 (est. 70% 10/19/18)K. Suppression Cost: 6.8 M (as of 10/5/2018)

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): ...19.5
2. Fireline seeded (miles): 0
3. Other (identify):

M. Watershed Number: 101800020305 (Bear Creek – Big Creek), 101800020303 (Big Creek – North Platte River), 101800020304 (Spring Creek – Big Creek), 101800020301 (South Fork Big Creek), 101800020302 (North Fork Big Creek), 101800020503 (East Fork Encampment River), and CO 101800020501 (Encampment River – Gem Lake)

N. Total Acres Burned: 28,585 (as of 10/9/2018)

NFS Acres( 22,472 WY; 3,443 CO)    Other Federal – BLM ( 774 )    State (34 )    Private ( 1,863 )

O. Vegetation Types: The Forest Service lands burned in the Ryan fire were primarily composed of lodgepole pine forest, much of which experienced high mortality during the mountain pine beetle epidemic. Numerous aspen stands and some Engelmann spruce/ subalpine fir were also found in the area, along with areas of shrubland/grassland vegetation. Dominant shrubs were big sagebrush and bitterbrush. In forested stands, tree density and understory composition and cover varied with aspect and slope. Common understory plants

included grouse whortleberry, creeping juniper, elk sedge, and forbs. Aspen stands were commonly found in moist drainages with dense vegetation including tall grasses, sedges, and tall forbs. Some areas within the fire perimeter were previously logged and were composed of more sparsely vegetated stands of young lodgepole pine. There is some overlap with the Beaver Creek fire (2016) on the south part of the Ryan Fire. Open, non-forested areas on NFS lands were either sagebrush steppe or riparian areas with beaver ponds and wet meadows. Some large parks are in the area, including Big Creek, Holroyd and Cunningham parks. Disturbed areas such as along Forest Service roads and in popular dispersed recreation sites, within the fire perimeter contain a combination of native vegetation and invasive weeds including Canada thistle, musk thistle, Dalmatian toadflax, yellow toadflax and spotted knapweed. Cheatgrass populations prior to the fire were present. The majority of known cheatgrass populations were observed on south facing, non-forested slopes in the Cunningham Park and Holroyd Park areas. More details are available in the vegetation specialist report.

P. Dominant Soils: The burn area is located on steep, well drained, moderately deep soils. Devore-Agneston-Baula dominate mountain slopes and Endlich-Granadier-Moran dominate subalpine slopes. Soils are from the Ansel, Granite, Frisco and Taglake Families. The basic montane soil is moderately deep with gravelly sandy and gravelly sandy clay loams. Valley bottoms contain poorly drained soils from the Typic Cryaqueolls-Cumulic Cryborolls association, with a very gravelly sandy loam texture. Generally soils in the burn area have moderate erosion potential and a low potential of mass wasting.

Q. Geologic Types: The fire area is located in the Sierra Madre range of the Rocky Mountains. The burn area geological materials are dominated by metasedimentary and metavolcanic rocks, and small areas of granitic rock.

R. Miles of Stream Channels by Order or Class: 35 miles perennial, 109 miles intermittent, 90 miles ephemeral

#### S. Transportation System

Non-motorized Trails: 5 miles      Open System Roads: 46 miles      Closed System Roads: 10 miles

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

A. Burn Severity (acres): 16,064 (56%) (low)    12,414 (43%) (moderate)    107 (1%) (high)

The BAER team utilized a Burn Area Reflectance Classification (BARC) map to produce a soil burn severity map in a short timeframe (see Appendix A). The Burn Area Emergency Response (BAER) team acquired BARC images from September 27, 2018 which covered 75% of the burned area. Following field review, minor systematic adjustments to the classification were made and the BARC map was adjusted to reflect field observations in the burn area. BARC imagery was not available for fire growth areas after September 27, 2018 which included ~7,500 acres in the northern and southern portions of the burn area and these areas were mapped through field reconnaissance, using vegetation polygons (FSVeg) as a mapping unit.

B. Water-Repellent Soil (acres): Snow covered field conditions did not allow accurate measurements of water repellency. While field data was collected to determine acreages of water repellent soils, the extent of water repellent soils, based upon recent nearby and similar fires, is estimated to be approximately 20-30% of the moderate and high burn severity areas.

#### C. Soil Erosion Hazard Rating:

The erosion hazard rating interpretation predicts the hazard for soil loss after disturbance activities that expose the soil surface. The ratings are based on slope and soil erosion factor K. The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control

measures are costly and generally impractical.

#### D. Erosion Potential:

Erosion response is heavily influenced by soil burn severity and hill slope (see Map 1). Before the fire, most of the forested and shrub covered areas had protective ground cover in the form of litter, duff, or ground vegetation. Before the fire, minimal soil erosion occurred on forested hill-slopes within the burned area. Following the fire, the rates of erosion are expected to increase significantly because the burn affected soil aggregate stability, canopy cover, ground cover, and infiltration rates.

In high and moderate soil burn severity areas, it is highly likely that increased rates of soil erosion and sediment delivery to stream channels will occur, in the first 3-5 years following the fire, particularly on steep slopes.

#### E. Sediment Potential:

Rates of erosion are very low in unburned densely forested areas. Rate of erosion will increase significantly on moderately steep (30%) forested hillslopes that were mapped at moderate or high soil burn severity. Extensive removal of forest floor ground cover occurred in these areas. High rates of post fire erosion are also likely to occur on steep shrub dominated hillslopes within the burned area. Recovery of these areas is likely to occur within 3-5 years following the burn. In high and moderate soil burn severity areas, it is highly likely that increased rates of soil erosion and sediment delivery to stream channels will occur, in the first and second year following the fire, particularly on steep slopes.

Post fire debris flow hazard: The United States Geological Survey (USGS)-Geologic Hazards Division provided predictive debris flow model results. The model generates predictions for channel and basin probability, volume, and combined hazard for several design storms. For this assessment, channel segment probability model results, based on 15 minutes of precipitation at an intensity of 24 millimeters per hour (approx. 1 inch/hr) are displayed (Appendix 2) and described below:

- The probability that debris flows would occur in perennial main stem channels throughout the burned area is generally low. However, flooding and or entrainment of sediment and/or woody debris could occur.
- Throughout the burned area, the probability that debris flows could occur in first order tributaries within numerous burned watersheds is much higher, commonly 40-60%, in areas with sustained steep slopes.
- There is a 40-80% and higher probability debris flows could deliver materials to Big Creek Canyon.

Past debris flows (alluvial fans) were observed in the steep areas within the burn area (e.g. Big Creek and Middle Fork Big Creek Canyons). The alluvial fans likely occurred after a previous disturbance (e.g. fire) in the area, but it is unknown when or what precipitation event intensity causing those debris flows. More information on the USGS model and processes used can be found at the following website.  
[http://landslides.usgs.gov/hazards/postfire\\_debrisflow/](http://landslides.usgs.gov/hazards/postfire_debrisflow/)

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

A. Estimated Vegetative Recovery Period, (years):	<u>3-5 years</u>
B. Design Chance of Success, (percent):	<u>n/a</u>
C. Equivalent Design Recurrence Interval, (years):	<u>10 years</u>
D. Design Storm Duration, (hours):	<u>1 hour</u>
E. Design Storm Magnitude, (inches):	<u>1.03</u>
F. Design Flow, (cubic feet / second/ square mile):	<u>n/a</u>

G. Estimated Reduction in Infiltration, (percent): 43%

H. Adjusted Design Flow, (cfs per square mile): n/a

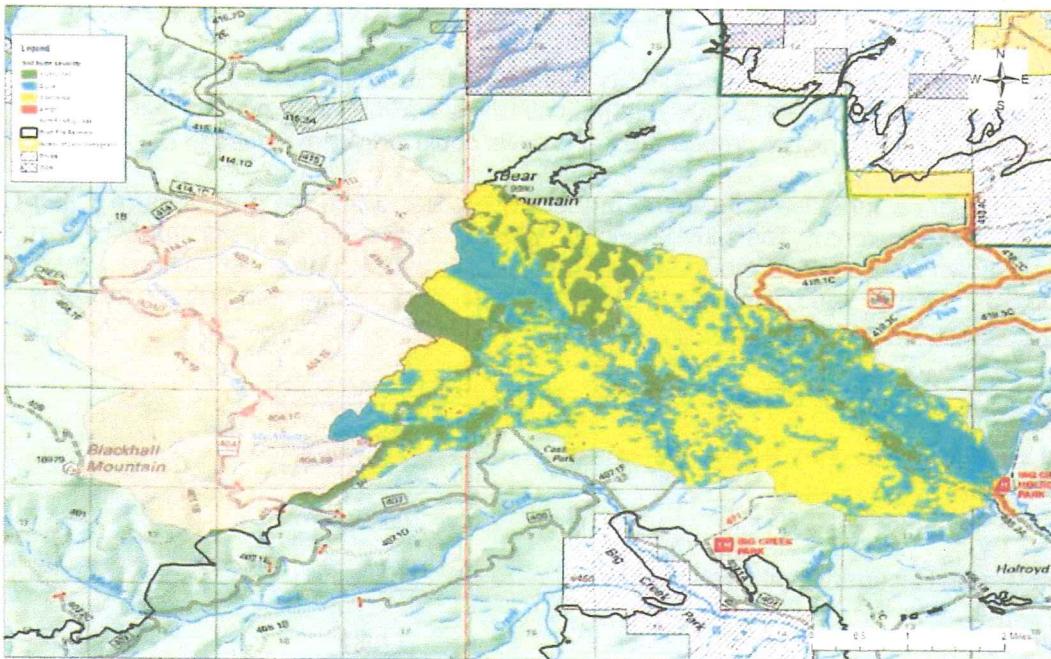
The majority of the fire (26,628 acres) burned within the Big Creek drainage HUC 1018000203, which drains an area of 128,477 acres into the North Platte River. Approximately 16 percent of this watershed burned (see table). The remainder of the fire (2,095 acres) burned in the Encampment River drainage HUC 1018000205, which drains an area of 167,721 acres. Several subwatersheds exist within the Big Creek drainage that had a high degree of burn across the basin and may experience a higher likelihood of post-fire effects. The North Fork of Big Creek (HUC 10180002030201) and the Middle Fork of Big Creek (HUC 1018000203020201) were more than 40% burned during the fire (see Maps 1, 2).

**Table 1: Burn severity percentages by watershed.**

Drainage Name	Acreage	Acreage High	Acreage Moderate	% High	% Moderate	% Low	% Unburned
Big Creek	128,477	105	11,426	>1	8.9	6.9	84.1
Middle Fork Big Creek	5,500	75.2	1,912	1.4	34.8	14.3	49.5
North Fork Big Creek	10,867	2.9	3,113	>1	28.7	17.3	54
Big Creek Canyon Mouth	68,412	99	7,663	>1	11.2	7.9	80.7
Ryan Fire w/in Perimeter	28,723	107	12,414	>1	43.2	33.7	22.7

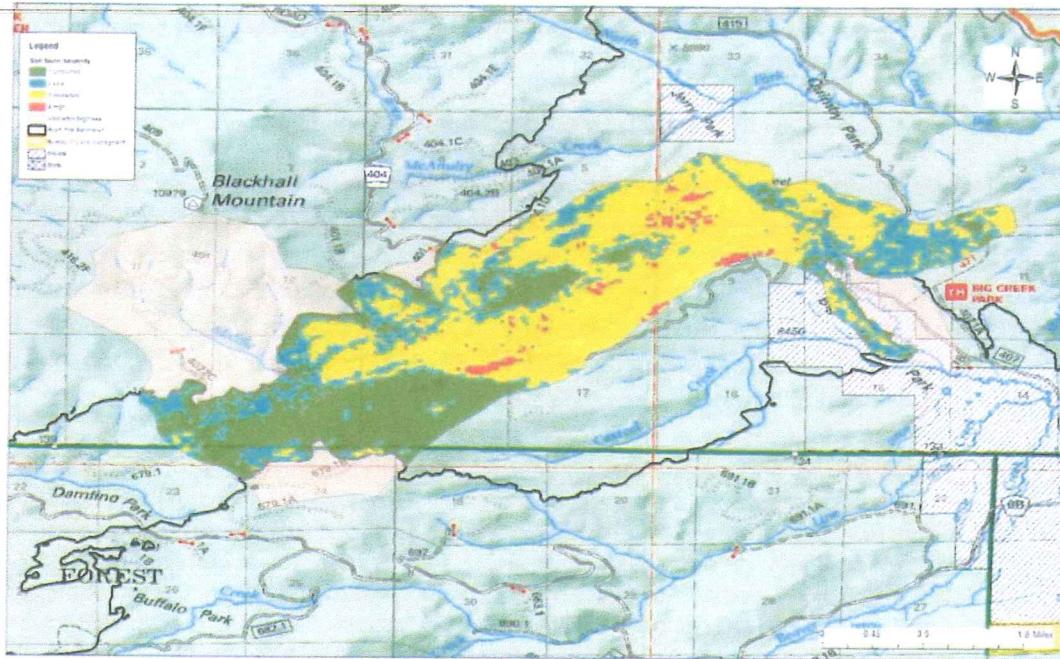
**Map 1: North Fork Big Creek**

North Fork Big Creek Drainage Area



**Map 2: Middle Fork Big Creek**

### Middle Fork Big Creek Drainage Area



Increases in overland flow and erosion are expected across the drainages post-fire. The late season timing of this fire, makes damage from a convective storm unlikely this year, but increased watershed responses may still be present during the spring runoff and a damaging convective storm for the next 3 years. Short duration, visible effects will likely be seen after large precipitation events in drainages across the burned area. More details are available in the hydrology specialist report.

### PART V - SUMMARY OF ANALYSIS

#### A. Describe Critical Values/Resources and Threats:

A BAER Risk Assessment (FSM 2523.1 Ex 2) was completed for **Critical Values** in and downstream of the Badger Creek burn area the table below summarizes where the level or risk warrants recommended treatments:

Value At Risk	Probability of Damage or Loss	Magnitude of Consequence	Risk Level	Treatment Recommended
<b>Human Life and Safety</b>				
Recreation residence/structure	Possible	Major	High	Yes
Public Safety	Possible	Major	High	Yes
<b>Property</b>				
Roads	Likely	Moderate	High	Yes
<b>Natural Resources</b>				
Native Plant Communities/ Noxious weeds (toadflax, knapweed, etc)	Likely	Moderate	High	Yes
Native Plant Communities/ Cheatgrass	Likely	Moderate	High	No

Cultural Resources				
Heritage Sites	Possible	Major	High	Yes

Additional critical values were considered (see Values at Risk spreadsheet in project file), but the level of risk did not warrant recommending a treatment.

#### Human Life and Safety:

**Flooding and Debris Flow:** There is a higher probability of debris flows and increase flood flows within the burn area. Middle and North Forks of Big Creek have the highest potential for increased flood flows; steep slopes along Middle Big Creek and Big Creek Canyon have the highest potential for debris flows. There is an increased risk of flooding and/or debris flows in the vicinity of the Big Creek Recreation Residence in the Big Creek Canyon. There is potential for people in the burn area to be exposed to elevated flood flows and/or debris flows with little warning. BAER information/outreach/coordination treatments are recommended to reduce the human safety risks.

**Hazard trees:** Threats to life and safety are highest on infrastructure used by the public and agency personnel such as roads located within moderate or high soil burn severity. Hazard tree safety concerns existed prior to the fire due to the beetle-kill timber, and these hazards have been further exacerbated by the fire. Burned trees, especially those previously impacted by beetle, are a high risk hazard due to the risk of injury or death from falling trees. Additionally there is increased hazard for forest users beyond this infrastructure such as hunters and others occupying the burned areas. There is a high likelihood of hazard trees falling in the vicinity of Forest users. BAER information/outreach treatments are recommended to reduce the human safety risk.

**Emergency Determination:** Increased threats to human life and safety from debris flows and hazard trees is Possible, and the magnitude Major resulting in a High risk rating and therefore a burned-area emergency exists.

#### Property:

**Roads:** Roads and associated stream crossings within the burned area are at risk from impacts from increased water, sediment, and/or debris. Moderate and high soil burn severity burned slopes and drainages exist above many roads. Impacts include damage to the road surface and drainage features and/or loss of access due to severe erosion of the road surface, or deposition of sediment or debris. Roads within the burned area are also likely to exacerbate the risk of flooding and erosion by collecting surface water, concentrating it and delivering it to hillslopes or stream channels. BAER road treatments are recommended to minimize the damage to the roads.

**Emergency Determination:** The probability of loss or damage to roads is Likely and the magnitude of consequence is Moderate, therefore, the BAER risk is High and a burned-area emergency exists.

#### Natural Resources:

**Native Plant Communities/Noxious Weeds:** There are no known occurrences of Threatened or Endangered plant species within the fire perimeter.

The integrity of native plant communities are at risk from non-native (noxious and/or invasive) plant invasion following the Ryan fire. Forest Service policy mandates the Forest to minimize the establishment of non-native invasive species to prevent unacceptable degradation of the burned area. Plant communities most at risk include areas with the highest soil burn severity, those closest to roads and other seed transportation corridors, those closest to known populations of weeds, and those in recent areas of timber harvest. Native plant communities are a critical resource for maintaining the ecological integrity of Forest Service lands, providing habitat for wildlife including greater sage grouse and mule deer, and providing forage for livestock and big game.

A limited number but wide distribution of noxious weed species were known to occur in the fire scar previously. Populations are typically restricted to roadsides and other previously disturbed areas. Noxious weed species are known to increase in patch size and distribution post-fire event. The noxious weeds known from the area include musk thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*), Dalmatian toadflax (*Linaria dalmatica*), yellow toadflax (*Linaria vulgaris*) and spotted knapweed (*Centaurea maculosa*). Weed populations and weed seeds are commonly dispersed during and post-fire by wind and vehicles. Patches spread and multiply due to conveyance post-fire of seeds along transporation corridors by vehicles and animals.

Post-fire threats related to suppression disturbance include 10.4 miles of dozer line constructed on NFS lands for the Ryan Fire. Using 10' affected width, this amounts to 13 acres of disturbed land adjacent to existing noxious weeds, primarily musk thistle and Canada thistle, that were not treated through suppression repair due to timing limitations.

Post-fire threats not related to suppression disturbance include approximately 10 miles of roadside that having existing minor patches of noxious weed plants on the Brush Creek/Hayden Ranger District and 3.3 miles on the Parks District for a total of 13.3 miles. These areas are at high risk for large weed population expansions post-fire. By accounting for a 50 foot right-of-way along each side of burned roadsides with known infestations (some roadsides were unburned and thus dismissed), we estimate that approximately 165 acres of roadside will need to be monitored and spot treated by hand or ground-based boom spraying in the spring of 2019. Pre-existing discrete populations of invasive plants will be treated where timing allows and it is more cost-effective than treating the likely first year expansion. There are an additional 10 + miles of road in the fire perimeter near current infestations that will also need to be monitored and treated (if necessary).

Additionally, cheatgrass (*Bromus tectorum*) is not pervasive within the Ryan Fire perimeter, but is present in very minor amounts in previously burned areas. Typically, these areas experience landscape-scale population explosions post-fire. These large-scale infestations are problematic and may rise to the level of hazardous for several reasons. Cheatgrass is not as effective at stablizing soil as native perennial vegetation. Persistent and high levels of cheatgrass cover can result in increased erosion, even when fully vegetated, when compared to pre-fire conditions. Cheatgrass has also been documented to increase the frequency and size of wildfires in areas such as the Great Basin. A cheatgrass canopy can carry fire more readily than many of the native vegetation types that it replaces, and each additional burn will result in an even larger infestation. The cheatgrass capable lands that have burned in the Ryan fire are also habitat for mule deer, elk, greater sage grouse, and other species and provide summer forage for livestock. Conversion to a cheatgrass dominated system would be detrimental to most, if not all, species that use the area. Cheatgrass does not provide adequate habitat quality or forage quality for native species or livestock. For example, livestock have been shown to graze on cheatgrass in the early spring, but weight gains are lower than when they graze on native vegetation. And no livestock or big game graze on cheatgrass once the seed heads have emerged in mid-spring.

In addition to the 178 acres of noxious weed invasion identified above, 108 acres of cheatgrass were burned. These areas are considered high-risk for post-fire cheatgrass expansion. An additional estimated 500 acres of expansion may occur. The potential capable cheatgrass expansion acres are much higher, but would likely occur over a few years. The BAER Risk Assessment (FSM 2523.1 Ex 2) for this critical value is high, since the probability for expansion of cheatgrass due to the fire is likely and the magnitude of consequences is high. BAER funds are not being requested at this time because the full extent of expansion of cheatgrass acres may take more than 12 months to fully establish.

We plan to monitor the mapped cheatgrass and expansion acres in the Ryan fire in the spring through fall of 2019 to determine if and where future cheatgrass treatments will be necessary. Infestations, where found, should be treated with an aerial application of the pre-emergent herbicide imazapic in the fall of 2019. The previously mapped cheatgrass acres on NFS lands in the Ryan Fire, and perhaps additional expansion acres, are planned to be treated in the fall of 2019 with non-BAER funds to improve sage grouse habitat, through an ongoing project.

**Emergency Determination: Invasive species establishment and expansion resulting in loss or damage of native plant communities is Likely and the consequences are Moderate, therefore the BAER risk is High and a burned-area emergency exists.**

#### **Cultural and Heritage Resources:**

**Cultural Resources:** Threats to critical cultural resources within the burn perimeter include increased potential for looting resulting from increased public access to sites and exposure of previously concealed artifacts and features , and loss of sites and/or site integrity as a result of erosion, runoff, flash flooding and debris flows from post wildfire storm events. BAER Cultural Resource Protection Patrol treatments are recommended to minimize the damage to the cultural resources.

**Emergency Determination:** The probability of loss or damage to cultural resources in the burn area is Likely and the magnitude of consequence is Moderate, therefore, the BAER risk is High and a burned-area emergency exists.

#### B. Emergency Treatment Objectives:

##### **Human Life and Safety:**

**Human Life and Safety:** Reduce the risk of loss of life or injury to humans from debris flows and flooding and burned trees falling.

##### **Property:**

**Roads:** Minimize damage to road infrastructure from expected increases in runoff from the burn area; minimize impacts to natural resources from erosion, sedimentation and road or road/stream crossing failure; minimize risk to life/safety concerns with road failure or loss of access.

##### **Natural Resources:**

**Native Plant Communities/Invasive Weeds:** Minimize introduction and expansion of invasive species into native plant communities.

##### **Cultural and Heritage Resources:**

**Cultural Resources:** Minimize damage to cultural resources from looting and expected increases in runoff from the burn area.

**C. Probability of Completing Treatment Prior to Damaging Storm or Event:** Intense summer thunderstorms, typically occurring in July and August, are most likely to result in runoff and erosion that may impact values at risk.

Land 70 % Channel n/a % Roads/Trails 70 % Protection/Safety 90 %

#### D. Probability of Treatment Success

Years after Treatment			
	1	3	5
Land	70	80	80
Channel	n/a	n/a	n/a
Roads/Trails	70	80	90
Protection/Safety	90	90	90

**E. Cost of No-Action (Including Loss):** \$105,000 (reflects monetary cost only, does not reflect non-market values)

Extensive repair or reconstruction of roads at increased risk of post-fire effects is estimated to be \$105,000 based on the existing IDIQ contract on the Forest. There is a threat to life and safety as well as natural resources that have non-monetary value. The VAR tool was used to assess the cost benefit of implementing the treatments, and indicated that treatments were justified with a ratio of 1.3. The VARTool Calculation Spreadsheet is available in the project file. As described in this report, increased risk for impacts to life/safety and non-market cultural and ecological values exists throughout the burned area. These values were not addressed in the VAR Assessment nor considered in the benefit/cost ratio.

F. Cost of Selected Alternative (Including Loss): **\$50,073**

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 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 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: Dave Gloss

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**BAER Team Members**

Soils  
Hydrology  
Vegetation/Botany/Invasive Weeds  
Engineering  
Cultural Resources  
GIS  
Wildlife  
Fisheries  
Recreation  
USGS Debris Flow Hazard

Zac Fisher  
Katie Buchan  
Brad Weatherd/Katie Haynes/Wendy Haas  
Ryan Nupen/Nate Davis  
Tara Hamilton/Halston Meeker/Gwendolyn Kristy  
Jill Weatherd  
Steve Loose (consultation only)  
Bill Baer (consultation only)  
Brian Waugh (consultation only)  
Dennis Staley

H. **Treatment Narrative:** The proposed treatments on NFS lands can help to reduce the impacts to critical values at risk, but treatments cannot fully mitigate the potential effects. Detailed information of the treatments summarized below can be found in the specialist reports prepared in support of this funding request. The treatments listed below are located on NFS lands and those that are considered to be the most effective to protect identified values at risk on NFS lands. Assessment information presented in this report regarding potential post-fire watershed conditions may be used to inform discussions about treatments on other, non-NFS lands.

**Land Treatments:**

**Invasive Weeds:** Early Detection Rapid Response (EDRR) surveys will begin in the spring of 2019 during the detection period of noxious weed/invasive species. Monitoring and simultaneous treatment of areas with high risk of weed invasion will be completed by Forest Service range and botany personnel as available and may be combined with post-fire effects or rangeland monitoring. High risk areas are those burn areas that contain known weed populations, or suppression disturbances (ie dozer line etc) adjacent to known weed population, where vectors exist such as roads, and near sage-grouse habitat. If high-risk areas are infested with noxious weeds to a greater extent than expected, additional funds may be requested to treat infestations. Treatment methods may include boom spraying operations, backpack spraying, changes to grazing methods, cultivation, hand pulling or biological control. As encountered, weed populations will be documented, mapped, and treated with appropriate methods. Aerial spraying for cheatgrass may be implemented.

**Channel Treatments:** None recommended.

### **Road Treatments:**

Road treatments were identified on most system roads that travel through moderate and high soil burn severity areas. Types of treatments include:

- Road/drainage stabilization with rolling dips, waterbars, and cleaning and replacement of damage of culvert inlets and cleaning ditches.
- Replacing burned directional and object marker signage in the burned area.
- Storm patrol on system roads and motorized trails.

Specific treatments and cost estimates for road treatments are based on costs from an existing IDIQ contract that the MBR NF already has in place. Work would be conducted under contract, with force account road crew or a combination of both. Specific treatments by road are detailed in the engineering report.

### **Protection/Safety Treatments and Interagency Coordination:**

Treatments to address life and safety concerns include:

- Posting of large BAER Warning and Information signs at key portal entrances and smaller BAER hazard signs on secondary roads and trailheads notifying the public of post-fire hazards. This signing will address the threats of hazard trees as well as flood and debris flow potential.

In addition, communication and coordination with other federal, state and local agencies, recreation residence, outfitter/guide and other permittees where life or property are at risk from post-fire conditions will be critical for success. Interagency coordination initiated during the BAER assessment includes completion and dissemination of a Soil Burn Severity map and USGS post-fire debris flow assessment. In addition, there is a need to expand and continue this effort with the following:

- Coordinate with the National Weather Service (NWS).
- Share BAER assessment of post-fire watershed conditions and potential threats to life, safety and property.
- The primary Forest Service objective is to share BAER assessment information and share information.
- Disseminate additional information on potential threats to life, safety and property to the permit holder for the Big Creek Recreation Residence, outfitter/guide and other permittees, and also directly to the public forest users.
- Additional outreach could include direct contact, press releases, news articles, posting information on the internet and/or creation and dissemination of brochures.

Treatments to address cultural resource concerns include:

**Cultural Resource Protection Patrols:** The primary purpose of resource protection patrols is to reduce or mitigate the risk of archeological looting when post-fire "sightseers" are expected to be in the area and assess the sites for potential loss of site and/or site integrity as a result of erosion, runoff, flash flooding and debris flows. These sites are most vulnerable to looting immediately after a fire when there is no vegetation to help obscure artifact visibility.

There is a high risk to cultural resource sites within the burn perimeter as a result of increased potential for looting resulting from increased public access to sites and exposure of previously concealed artifacts and features, and loss of sites and/or site integrity as a result of erosion, runoff, flash flooding and debris flows from post wildfire storm events.

#### **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**      **Interim #**

Line Items	Units	NFS Lands		Other \$	Other Lands		All	
		Unit	# of Units		Fed \$	# of Units	Non Fed \$	Total \$
<b>A. Land Treatments</b>								
Noxious Weed EDRR				\$0	\$0		\$0	\$0
Personnel	LS	5896	1	\$5,896	\$0		\$0	\$5,896
Fleet	LS	879	1	\$879	\$0		\$0	\$879
Supplies (herbicide)	LS	3260	1	\$3,260	\$0		\$0	\$3,260
<i>Subtotal Land Treatments</i>				<b>\$10,035</b>	<b>\$0</b>		<b>\$0</b>	<b>\$10,035</b>
<b>B. Channel Treatments</b>								
				\$0	\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<b>C. Road and Trails</b>								
Restore drainage	Mile	800	6.2	\$4,960	\$0		\$0	\$4,960
Rolling dip	Each	1200	1	\$1,200	\$0		\$0	\$1,200
Clean culverts	Each	250	10	\$2,500	\$0		\$0	\$2,500
Clean ditches	Mile	3100	0.63	\$1,953	\$0		\$0	\$1,953
Armor	Cu Yd	200	3	\$600	\$0		\$0	\$600
Storm Patrol	Days	1000	3	\$3,000	\$0		\$0	\$3,000
Storm Patrol	Miles	500	16.79	\$8,395	\$0		\$0	\$8,395
Mobilization	LS	3000	1	\$3,000	\$0		\$0	\$3,000
<i>Subtotal Road &amp; Trails</i>				<b>\$25,608</b>	<b>\$0</b>		<b>\$0</b>	<b>\$25,608</b>
<b>D. Protection/Safety</b>								
Road BAER signs	Each	250	12	\$3,000	\$0		\$0	\$3,000
Road Safety Markers	Each	300	2	\$600	\$0		\$0	\$600
Trail BAER signs	LS	500	1	\$500	\$0		\$0	\$500
Interagency coord.	Days	420	5	\$2,100	\$0		\$0	\$2,100
Cult. Res. Prot Pat	LS	8230	1	\$8,230	\$0		\$0	\$8,230
<i>Subtotal Structures</i>				<b>\$14,430</b>	<b>\$0</b>		<b>\$0</b>	<b>\$14,430</b>
<b>E. BAER Evaluation</b>								
			---	\$21,250	\$0		\$0	\$21,250
<i>Insert new items above this line!</i>			---	<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<i>Subtotal Evaluation</i>			---	<b>\$21,250</b>	<b>\$0</b>		<b>\$0</b>	<b>\$21,250</b>
<b>F. Monitoring</b>								
				\$0	\$0		\$0	\$0
<i>Insert new items above this line!</i>				<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<i>Subtotal Monitoring</i>				<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<b>G. Totals</b>				<b>\$50,073</b>	<b>\$21,250</b>		<b>\$0</b>	<b>\$71,323</b>

**PART VII - APPROVALS**

1. Karen Dugay  
Russell Bacon  
Forest Supervisor (signature)

10/25/18  
Date

2. Tamara Sette  
fwr Regional Forester (signature)

11/01/18  
Date