Date of Report: 10/4/2019

BURNED-AREA REPORT

SHADY FIRE
Salmon-Challis National Forest

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: Shady Fire

B. Fire Number: ID-SCF-019120

C. State: Idaho

D. County: Custer

E. Region: 4

F. Forest: Salmon-Challis

G. District: Middle Fork

H. Fire Incident Job Code:

I. Date Fire Started: 7/10/2019

J. Date Fire Contained: 10/3/2019

K. Suppression Cost: $603,275

L. Fire Suppression Damages Repaired with Suppression Funds (estimates):

1. **Fireline repaired (miles):** N/A
2. **Other (identify):** N/A

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
170602050501	Upper Rapid River	20,568	6395	31%
170602050502	Seafoam Creek-Rapid River	20,441	128	1%
170602050303	Upper Beaver Creek	16,259	42	0.3%
170602051001	Headwaters Loon Creek	32,241	9	0.03%
TOTAL			6574	

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	6574
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0
PRIVATE	0
TOTAL	6574

O. Vegetation Types: The burned area is 90% forested. Douglas fir is the dominant tree species (55% of the burned area), followed by lodgepole pine (21% of the burned area) and spruce/fir (8% of the burned area). Bunchgrass, fescue, grass, forb, and shrub vegetation types comprise about 8% of the burned area.

P. **Dominant Soils:** The landtypes in the table below are present within the burned area. Landtypes are generally characterized by steep to very steep mountain slopes, canyonlands, and headlands.

Landtype	Acres	Percent	Notes
GF13	1849	28%	Oversteepened canyonlands- timbered, moderately deep- sandy-skeletal soils
GG23	864	13%	Moderately dissected glacial sideslopes- timbered, shallow to moderately deep- loamy-skeletal soils
GF23	763	12%	Moderately dissected mountain slopelands- timbered, moderately deep to deep- loamy-skeletal and sandy-skeletal soils
GG18	489	7%	Weakly dissected glacial sideslopes- timbered, moderately deep- coarse loamy and loamy-skeletal soils
GD31	488	7%	Valley Trains, moderately deep to deep- loamy-skeletal soils
GG04	430	7%	Steep glacial headlands, shallow to deep- loamy-skeletal soils
GF11	389	6%	Oversteepened canyonlands, shallow to moderately deep- loamy-skeletal and sandy-skeletal soils
GG21	338	5%	Moderately dissected glacial sideslopes, shallow to deep- loamy-skeletal and sandy-skeletal soils
GF18	287	4%	Weakly dissected mountain slopeland- timbered, moderately deep to deep-loamy and loamy-skeletal soils
S09-2	207	3%	Streamcut valleys, very steep sideslopes, moderately wide with low to moderate gradients
S09-5	129	2%	Streamcut valleys with steep to very steep sideslopes, moderately narrow with moderate steep to steep gradients
GF21	110	2%	Moderately dissected mountain slopeland, moderately deep- sandy and loamy-skeletal soils
Other	231	4%	Other landtypes (<2% each)

Q. Geologic Types: The burned area is 95% granitic geology, and 5% alluvium.

R. **Miles of Stream Channels by Order or Class:** The fire affected most of Shady Creek, Casto Creek, and Bernard Creek. The lower portions of Fontez Creek, Duffield Creek, and Pinyon Creek were also affected to a lesser degree. All of these streams drain into the upper Rapid River.

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	14.6
INTERMITTENT	7.1
EPHEMERAL	0
OTHER (DEFINE)	0

S. Transportation System:

Trails: *National Forest (miles):* 4.9 *Other (miles):* 0
The Duffield Creek and Bernard Creek Trails are the only non-motorized trails within the burned area.

Roads: *National Forest (miles):* 3.4 *Other (miles):* 0
Very few roads exist within the burned area because 93% of the burned area is within wilderness. The Sheep Mountain Road follows Rapid River through the burned area, providing access to the Sheep Mountain/Mountain King Mine area.

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

The BAER Team used BARC (Burned Area Reflectance Classification) data derived from the Forest Service Remote Sensing Applications Center (RSAC) as a basis for analyzing burn intensity and burn severity. BARC data were derived from a comparison of Landsat 8 satellite imagery on 9/3/2019 with pre-fire satellite imagery from 8/31/2018.

BARC data verification of burn intensity was conducted using photographs and observations from fire personnel. Burn intensity as shown in the BARC data was determined to be relatively accurate, and no adjustments were made to the BARC data classification thresholds. The classification thresholds are as follows: Unburned 0-70, Low 71-116, Moderate 117-196, High >196.

Field sampling of burn severity (soil burn severity testing) was not conducted on the Shady Fire because of the generally low burn intensity of the fire and the lack of values at risk that would necessitate emergency treatments. It is unknown how burn intensity as shown in the BARC data relates to burn severity impacts to the soil. For this assessment, we assume that burn severity is roughly equivalent to burn intensity, based on similar findings in other wildfires in the area.

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	1639	-	-	-	1639	25%
Low	2494	-	-	-	2494	38%
Moderate	1991	-	-	-	1991	30%
High	450	-	-	-	450	7%
Total	6574	-	-	-	6574	

B. Water-Repellent Soil (acres): Approximately 500 acres. Water repellent soils are likely present in areas of high burn severity, as well as some areas of moderate burn severity where heavy ground fuels caused extended periods of smoldering.

C. Soil Erosion Hazard Rating: Landtype Erosion Hazard Rating is High or Very High for 71% of the burned area. These are primarily steep slopes (>45%) in granitic landtypes.

D. Erosion Potential: N/A

E. Sediment Potential: N/A

F. Estimated Vegetative Recovery Period (years): 1-3 (grasses), 2-5 (woody), 10-50 (conifers)

G. Estimated Hydrologic Response (brief description): High severity burns in portions of the Shady Creek and Casto Creek drainages increase the potential for localized flood events or debris flows in these streams. The Rapid River is not likely to experience large increases in flow as a result of the fire, but increased delivery of sediment and debris is likely. These are commonly occurring processes in this area of the Frank Church River of No Return Wilderness, which is naturally very dynamic as a result of steep, rugged terrain and high fire frequency.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Shady Fire started on July 10, 2019 as a result of lightning. The fire is located mostly (93%) within the Frank Church River of No Return Wilderness, in a remote area of the upper Rapid River watershed east of the Seafoam Guard Station. The fire burned in an area that is almost completely surrounded by the 2012 Halstead Fire scar, and a small portion of the fire burned into the Halstead Fire scar. The Shady Fire was managed with a point protection strategy (a wildfire response strategy that protects specific assets or highly valued resources from the wildfire without directly halting the continued spread of the wildfire) to minimize exposure to fire personnel while protecting identified values. The strategy takes in to account exposure to firefighters, values at risk, impacts to area user groups, and wilderness values. Specific values potentially threatened with this fire include mining and Forest Service infrastructure.

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
Unlikely	Intermediate	Low	Very Low

1. Human Life and Safety (HLS):

BAER Value: Human life and safety on or in close proximity to burned NFS lands
What is at Risk: Human life and safety
Probability: Possible
Consequences: Moderate
Risk: Intermediate
Comments: Increased risk of hillslope erosion, rockfall, hazard trees, and debris flows will be present for 3 to 5 years following the fire. These types of conditions are very typical throughout the Frank Church River of No Return Wilderness, where wildfire is common. The most exposure to human life and safety will occur along the Sheep Mountain Road corridor and the backcountry trails including the Duffield Creek and Bernard Creek Trails.

2. **Property (P):**

BAER Value: Buildings, water systems, utility systems, road and trail prisms, dams, wells, or other significant investments on or in close proximity to burned NFS lands
What is at Risk: Sheep Mountain Road
Probability: Possible
Consequences: Moderate
Risk: Intermediate
Comments: Large portions of the Shady Creek, Casto Creek, and Bernard Creek drainages were burned extensively during the fire. With high severity burn occurring in 7%, 10%, and 3% of these drainages, respectively, the risk of debris flows during a high intensity rain storm in the first few years following the fire is possible. Shady Creek and Casto Creek flow through culverts beneath the Sheep Mountain Road shortly before joining the Rapid River. A moderate to large debris flow in either of these streams could cause blockage of the culvert, overtop the road, divert flow onto the road, and/or erode a large section of the road. The Sheep Mountain Road also crosses Rapid River downstream of the Bernard Creek confluence.

BAER Value: Buildings, water systems, utility systems, road and trail prisms, dams, wells, or other significant investments on or in close proximity to burned NFS lands
What is at Risk: Duffield Creek and Bernard Creek non-motorized trails
Probability: Possible
Consequences: Moderate
Risk: Intermediate
Comments: The greatest risk to trails is on the Bernard Creek Trail, which crosses through about a half mile of high severity burned area at the base of a steep hillslope. The wilderness trails in the burned area are likely to experience increased erosion as a result of the fire. Increased deadfall will also impact the passability of these trails for many years.

3. **Natural Resources (NR):**

BAER Value: Soil productivity and hydrologic function on burned NFS lands
What is at Risk: Soil erosion and stream channel function
Probability: Possible
Consequences: Minor
Risk: Low
Comments: Increased soil erosion will likely occur, particularly in areas of high burn severity and steep slopes. Ground cover will likely recover quickly (1-3 years) in low and moderate severity burned area, and over a period of 3 to 5 years in high severity burned areas. Post-fire flooding and/or debris flows are possible in 3 tributaries of Rapid River, with the potential to deposit large amounts of mud, gravel, rocks, and trees in the river. Some of these effects could propagate downstream. Because debris flows are part of the natural balance in this system and have created many of the morphologic features in the river canyon, this will not alter the overall balance of this high fire frequency system in terms of hydrologic function.

BAER Value: Critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal or plant species on or in close proximity to buned NFS lands
What is at Risk: Chinook, Steelhead, and Bull Trout Habitat
Probability: Possible
Consequences: Minor
Risk: Low
Comments: The fire appeared to mimic natural fire patterns that would have historically occurred in this area and are critical to developing and maintaining quality fish habitat and fish populations by introducing woody debris and spawning gravel to the river system through increased erosion and debris flow events. Although debris flows may impact localized fish populations in the short term, the fire did not generate any large scale risks to critical fish values.

BAER Value: Native or naturalized communities on NFS lands where invasive species or noxious weeds are absent or present only in minor amounts
What is at Risk: Spread or invasive species
Probability: Possible
Consequences: Minor
Risk: Low
Comments: The burned area is susceptible to colonization by invasive species. The species known to be present in the area have the potential to disrupt native plant community reestablishment in areas otherwise uninfested by noxious weeds.

4. **Cultural and Heritage Resources:**

BAER Value: Cultural resources on NFS lands which are listed on or potentially eligible for the National Register of Historic Places
What is at Risk: Historic Sites
Probability: Unlikely
Consequences: Moderate
Risk: Low
Comments: Sites within and adjacent to the burned area are at low risk from post-fire erosion or flood events.

B. Emergency Treatment Objectives: N/A – No BAER treatments proposed at this time.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land N/A – No BAER treatments proposed **Channel** N/A – No BAER treatments proposed
Roads/Trails N/A – No BAER treatments proposed **Protection/Safety** N/A – No treatments proposed

D. Probability of Treatment Success
N/A – No BAER treatments proposed at this time.

Table 6: Probability of Treatment Success

	1 year after treatment	*3 years after treatment*	*5 years after treatment*
Land			
Channel			
Roads/Trails			
Protection/Safety			

E. Cost of No-Action (Including Loss): N/A – No BAER treatments proposed at this time.

F. Cost of Selected Alternative (Including Loss): N/A – No BAER treatments proposed at this time.

G. Skills Represented on Burned-Area Survey Team:

☒ Soils	☒ Hydrology	☒ Engineering	☒ GIS	☒ Archaeology
☐ Weeds	☒ Recreation	☒ Fisheries	☐ Wildlife	
☐ Other:				

Team Leader: David Deschaine
Email: david.deschaine@usda.gov **Phone(s):** (208)756-5171

Forest BAER Coordinator: David Deschaine
Email: david.deschaine@usda.gov **Phone(s)**: 208-756-5171

Team Members: *Table 7: BAER Team Members by Skill*

Skill	Team Member Name
Team Lead(s)	David Deschaine
Soils	Jeremy Back
Hydrology	Bill MacFarlane
Engineering	Pete Schuldt
GIS	Bill MacFarlane
Archaeology	Tim Canaday
Recreation	Jay Sammer
Fisheries	Christine Stewart

H. Treatment Narrative:

Land Treatments: N/A – No BAER treatments proposed at this time.

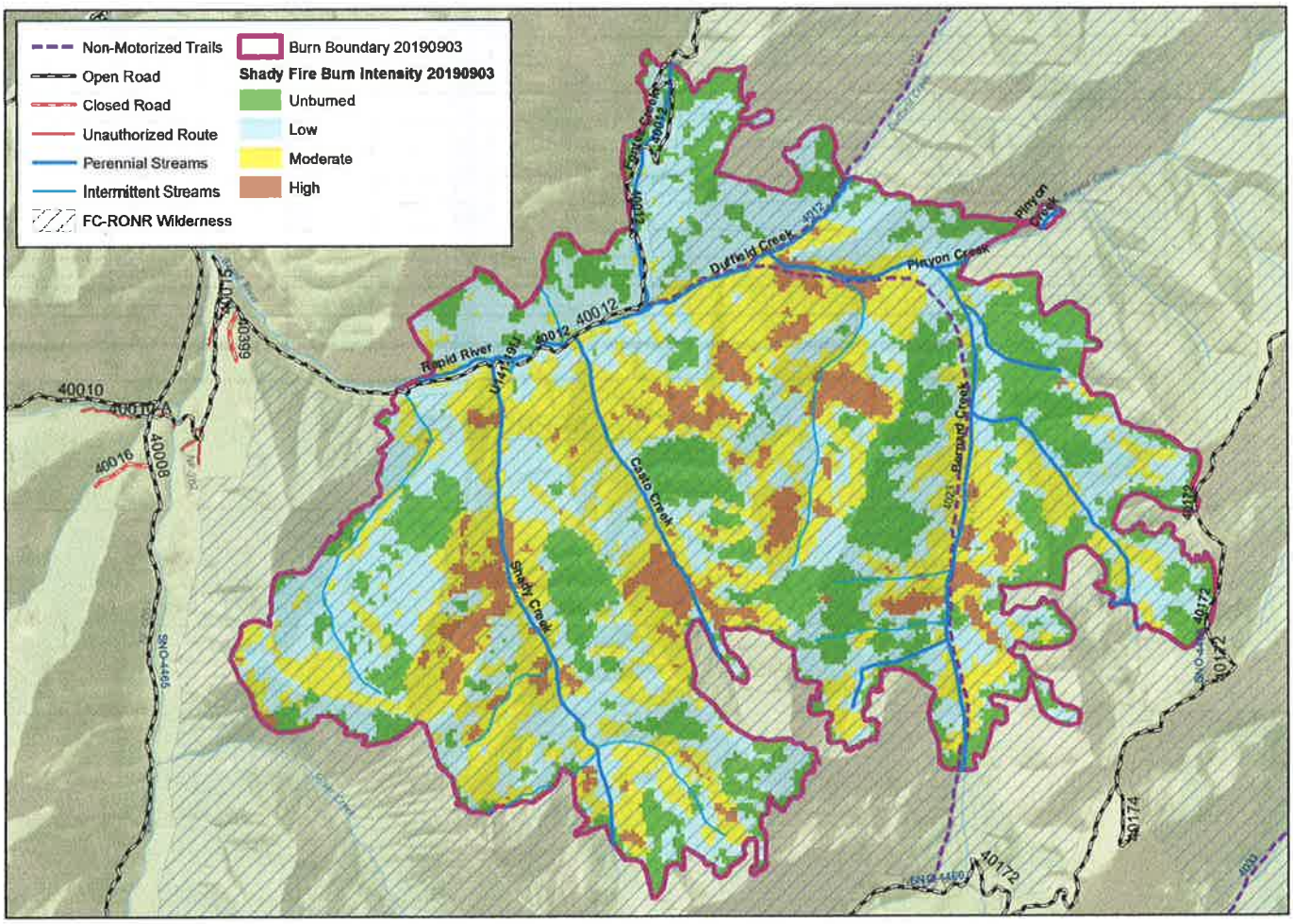
Channel Treatments: N/A – No BAER treatments proposed at this time.

Roads and Trail Treatments: N/A – No BAER treatments proposed at this time.

Protection/Safety Treatments: N/A – No BAER treatments proposed at this time.

I. Monitoring Narrative:

N/A – No BAER treatments proposed at this time.



Burn Intensity Map for the 2019 Shady Fire, Salmon-Challis National Forest
Map created 9/19/2019 by the Salmon-Challis National Forest Shady Fire BAER Team.
Burn intensity data from 9/3/2019 Landsat 8 satellite imagery. Burn intensity data not field verified.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Line Items	Units	Unit Cost	# of Units	BAER $	Other $	# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$0	$0		$0		$0	$0
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			---	$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				$0	$0		$0		$0	$0
Previously approved										
Total for this request				$0						

PART VII - APPROVALS

1. Charles A. Maul — 10/9/19

Forest Supervisor — Date