

Date of Report: November 1, 2021**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: Schneider Springs****B. Fire Number: WA-OWF-000453****C. State: Washington****D. County: Yakima****E. Region: Pacific Northwest (R6)****F. Forest: Okanogan-Wenatchee****G. District: Naches****H. Fire Incident Job Code: (0617) P6N7VN****I. Date Fire Started: August 4, 2021 (lightning)****J. Date Fire Contained: est.11/5/2021****K. Suppression Cost: Projected Final \$60 million****L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

1. Fireline repaired (miles): ~81 miles (dozer line and road used as line repaired)
2. Other (identify): N/A

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

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
1703000201	Little Naches River	219,886	11,781	5%
170300020107	Lower American River	20,755	266	1%
170300020108	Lower Bumping River	29,426	11,515	39%
1703000202	Rattlesnake Creek-Naches River	192,158	101,463	53%
170300020202	Lost Creek-Naches River	38,661	7,079	18%
170300020203	Nile Creek	20,496	17,775	87%
170300020204	Upper Rattlesnake Creek	32,836	19,293	59%

170300020205	Little Rattlesnake Creek	16,191	15,858	98%
170300020206	Lower Rattlesnake Creek	36,967	34,603	94%
170300020207	Dry Creek-Naches River	14,255	5,403	38%
170300020208	Waterworks Canyon-Naches River	21,593	1,452	7%
1703000203	Tieton River-Naches River	294,826	445	>1%
170300020306	Middle Tieton River	21,874	81	>1%
170300020307	Oak Creek	20,053	323	2%
170300020308	Lower Tieton River	28,427	41	>1%

N. Total Acres Burned: 113,689 as of 10/26/2021

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	101,320
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	11,872
PRIVATE	497
TOTAL	113,689

- O. Vegetation Types:** Forests are dominated by Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), ponderosa pine (*Pinus ponderosa*) and an understory of grasses, Oregon grape and pinemat manzanita (*Arctostaphylos nevadensis*) plant communities. In the upper mid elevation, Larch (*Larix occidentalis*) and subalpine fir (*Abies lasiocarpa*) with an understory of huckleberry species (*Vaccinium membernacium*). Ridge tops and talus slopes contain subalpine fir and a Proposed listed tree species whitebark pine (*Pinus albicaulis*)
- P. Dominant Soils:** Soils are typically deep, well drained, and formed from volcanic residuum or colluvium. Soils typically have an ash inclusion or mantle and a low bulk density. The most common soils include: Typic Vitricryands, Xeralfs, Xeric Vitricryands, Nile ashy sandy loam, Carmack loam, Jumpe stony loam, Singh ashy sandy loam, and McDaniellake sandy loam.
- Q. Geologic Types:** The geology consists of folded layers of volcanic and volcanoclastic rocks on the eastern three-quarters of the burned area. The volcanic rocks are comprised of both locally sourced volcanic rocks and distally erupted Columbia River basalts. On the western portion of the burned area the rocks are made up of a mix of older Jurassic metamorphic and sedimentary rocks and younger Pliocene and Miocene volcanic rocks. There is abundant volcanic pumice and ash from various eruptions of Mount Saint Helens on top of the bedrock.

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	161
INTERMITTENT	203
EPHEMERAL	74
OTHER (ARTIFICIAL PATH)	24
TOTAL	462

S. Transportation System:

Trails: National Forest (miles): 159.3 Other (miles):
Roads: National Forest (miles): 264.3 Other (miles): 53.7

PART III - WATERSHED CONDITION**A. Burn Severity (acres):***Table 4: Burn Severity Acres by Ownership*

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	21,918	0	1,733	68	23,718	20.9
Low	32,413	0	6,642	239	39,312	34.6
Moderate	19,938	0	1,195	70	21,203	18.7
High	18,506	0	278	7	18,792	16.5
Rock/talus	8,527	0	2,024	113	10,664	9.4
Total	101,320	0	11,872	497	113,689	100

B. Water-Repellent Soil (acres): ~38,400**C. Soil Erosion Hazard Rating: Slight 3%, Moderate 22%, Severe 65%****D. Erosion Potential: 6 – 99, tons/acre, Average 49 tons/acre****E. Sediment Potential: 440 yd³/mi² - 6770 yd³/mi², Average 3350 yd³/mi²****F. Estimated Vegetative Recovery Period (years): 3 - 5**

G. Estimated Hydrologic Response (brief description): A number of watersheds have percentages of high and moderate burn severity dominating headwater areas and tributaries with high likelihood of debris dam formation and resulting breach hydrology. For the 5 yr. 24-hour frontal rainfall event (3.25"), increases in post fire runoff ranges from 3 to >10 times pre-fire values. For a 2 yr. 1-hour convective event (0.55") in smaller watersheds with high percentages of moderate and high burn severity increases in runoff range from 33 to over 200 times pre-fire values.

Debris Flow Potential

The USGS provides estimates of debris-flow probability, approximate volume, and combined hazard for several storms with a range of 15-minute peak intensities. The peak 15-minute intensity of 32 mm/hr was used to evaluate risk to critical values in this BAER assessment. This rainfall intensity corresponds roughly to a 20% probability (five-year return interval) rain event.

Debris flow estimates are calculated at two scales: individual stream segments and drainage basins. The USGS debris flow model uses several parameters, including soil burn severity (SBS) data provided by the BAER team.

Additional information on the USGS debris flow model used for the Schneider Springs Fire is available at:

https://www.usgs.gov/natural-hazards/landslide-hazards/science/scientific-background?qt-science_center_objects=0#qt-science_center_objects

The model outputs are posted on the USGS public-facing webpage:

https://landslides.usgs.gov/hazards/postfire_debrisflow/ which has an interactive map and downloadable geospatial data. The interactive map on the USGS website only allows the display of the 24 mm/h peak 15-minute rainfall intensity rain event.

Summary of Observations:

- A rainfall intensity (I_{15}) of 40 mm/h was predicted to have greater than 80% probability of debris flows in many drainages, including but not limited to many unnamed tributaries to Lower Bumping River, several tributaries to American, Naches River below Little Naches, Nile Creek, Dry and Rattlesnake, Little Rattlesnake, and Upper Rattlesnake Creek.

- The probability of debris flows is even higher in the Schneider Springs burned area in response to a 15-minute intensity of 40 mm/h, a rain event with roughly a 5-year recurrence interval (20% chance0).
 - 10mm in 15 minutes, 0.4"/hr, our 5 year 1 hour storm is 0.44", so this rain event is above the intensity threshold represented by the USGS model results.
 - The 25 year storm is 0.63" or >40 mmh, and above the precipitation intensity thresholds the USGS model represents.
- Most of these watersheds are roughly estimated to produce more than 1,000 m³ of debris, resulting in a high debris flow hazard.
- Several Forest Service campgrounds lie partly or entirely on debris fans, and many are in areas where a large debris flow event has the potential to flow through the campground. Debris flow and flood pathways on large debris fans are difficult to predict due to dynamic damming and rerouting of flow during an event. This uncertainty makes it difficult to assign probabilities to campground inundation.
- Non-FS values within and downstream of the burned area may also be threatened by inundation from flooding and debris flows, including but not limited to recreation residences on the Edgewater Summer Homes floodplain downstream of multiple drainages that may
- People and infrastructure near headwater channels with higher probability of debris flow occurrence are at risk of injury or damage from direct impact of debris and flood flows, as well as loss of egress from damaged roads.
- People and infrastructure along mainstem streams are vulnerable to flooding and debris flows as well, but are also vulnerable to elevated flooding when mainstem streams are blocked by debris flows from tributary drainages. A temporary debris dam can cause upstream flooding as waters pool behind the dam, and can cause catastrophic flooding downstream when the dam breaches. Streamflow flowing around a debris dam can also cause extensive lateral scour and incision elsewhere on the floodplain as water finds its way past the obstruction.
- The increased probability of debris flow activity will likely subside within 3-5 years following fire containment, as conditions within the burned watershed recover and hillslopes stabilize. Recovery may be more complete in areas of low and moderate burn severity. Areas of high burn severity may take longer to recover and stabilize at higher elevations as growing season in shorter.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Schneider Springs Fire began as a lightning strike on August 4, 2021. As of the date of this report the Schneider Springs fire perimeter includes roughly 113,689 acres primarily on the Okanogan-Wenatchee National Forest. The fire has burned over 50% of the Rattlesnake Creek-Naches River watershed that include large contiguous areas of moderate to high soil burn severity in the headwater areas of Nile, Glass, Dry, North Fork Rattlesnake and Rattlesnake Creeks. The BAER assessment was initiated on October 12, 2021.

Critical BAER values were assessed for post-fire threats to identify where an emergency exists that warrants treatment and to identify the most cost effective treatments to minimize or mitigate post-fire threats. The critical value spreadsheet in the project file summarizes the values assessed and the level of risk to those values.

A. Describe Critical Values/Resources and Threats (narrative): The fire burned through private, State and NFS lands. Critical Values identified during the BAER assessment with potential as Values at Risk, defined in FSM 2523.1 include human life and safety of employees and public, FS property (roads, trails, administrative, recreation infrastructure), cultural resources, natural resources including Threatened and Endangered species habitat, native plant communities, soil and water resources. The BAER team evaluated the risk to these critical values in accordance with the Interim Directive No. 2520-2020 by using the BAER risk assessment. See Table 5. Risk Table for BAER Critical Value for rationale for proposed treatments

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):

Threat to Human life and safety (access):

Human life and safety is at risk from threats associated with burned trees, rock fall, debris flows, flooding, and loss of egress/access throughout the burned area.

Probability of post-fire threats to life and safety were determined for several trails, roads and developed recreational facilities within the burned area. Separate ratings were determined for hazard trees and flooding/debris flows to better inform temporary closure treatment recommendations and future decisions about re-opening the closed roads, trails and facilities. For both hazard trees and flooding/debris flows, the BAER risk ratings for the roads, trails and facilities listed below generally ranged from possible to likely. In all cases, the magnitude of consequences was considered to be major, resulting in a *high* or *very high* risk rating.

Roads with *high* or *very high* risk ratings for human life and safety due to the threat of direct injury or death or loss of egress from falling burned hazard trees, rolling rocks and debris that could injure or strand users from getting out or help getting in. Road use is also at risk from flash flooding and debris flows on all road segments within or immediately downslope of the burned area.

The risk of losing access to two communication towers in the fire area was determined to be *very high*. The Bethel Ridge site houses a cell tower and a FS radio repeater and is accessed by FS Road 1500, 1500-324 (ML3) and the Little Bald FS radio repeater site is accessed by 1600 (ML3), and 1600-231 spur (ML2)

Developed Recreational Facilities within and downslope of the fire were determined to be at a *high* or *very high* risk for human life and safety due to the threat of falling hazard trees and rocks from burned slopes above and also from flash, dam breach flooding and debris flows. Campers at McDaniel Lake campground are at high risk due to threat of hazard trees. Forest personnel and visitors at Cougar Flat, Soda Springs, and Cedar Springs campgrounds, dispersed sites, and Edgewater Summer Homes are at high risk due to the threat of increased upstream flooding and debris flow impacts.

The risk of flooding is *very high* and includes the potential for breach hydrology and debris flows that could overtake or trap users within the burned area at road stream crossings, developed campgrounds, dispersed campsites and recreational areas adjacent to the Bumping River. Over 130 recreational residences are located immediately downstream of the fire along the Bumping River and the Naches River.

The threat of flood debris or debris flow reaching the Bumping River from the burned slopes south of the Bumping River from Thunder Creek to Cedar Creek is high, as there area ~30 basins draining to the Bumping, and downstream, where both sides of the river are burned with ~35 more small drainages with an increased risk of flooding, and delivering debris to the road and floodplain areas below. The drainages including Fife's Creek downstream have evidence of previous hillslope instability to just upstream of the Edgewater Summer Homes and multiple dispersed camp sides on the river bank. The potential for debris flows to deliver hyperconcentrated, debris laden flow to the road, and potentially the river, creating dams and breaching (possible). Cedar Springs Campground (Concessionaire) is further distance from the burned area, and situated on a bank, not on a debris/alluvial fan, but downstream of the fire and at risk for flooding. In all cases the magnitude of consequences for potential impacts on life and safety was considered to be major.

Table 6. Life and Safety Risk Ratings for Developed Recreation Facilities and Adjacent Recreation Residences (preliminary determinations based on flow modeling and USGS Debris Flow assessment-site specific risk assessment per site recommended in spring 2022).

Facility	Threat - Life-Safety Risk Rating
Bumping River Edgewater Summer Homes*, Cougar Flat CG, dispersed sites below Cougar Flat CG in floodplain, Soda Springs CG, Cedar Springs CG, dispersed camp sites of Nile Ridge Trail 974 along Bumping River below Scab Mountain American River- Sleepy Hollow and American River Summer Homes*, American River Guard Station rental (debris flow on slope across river may dam American River and cause flooding) Nahces River- Summer Homes* below the fire near Edgar Rock off Old River Road, Halfway Flat, Sawmill Flat, Mather Memorial	Flooding and Debris Flows – High Risk
Below the confluence of the American River and Bumping CGs and Summer Homes* -Willow Springs, Indian Flat, Indian Flat Group CG Bumping Dispersed use sites along Bumping River Road (1800) from junction with Hwy 410 to Goose Prairie Naches- Cottonwood CG, Cliffdell Summer Homes* Devil Creek- Boulder Cave Picnic Area Nile- Old Mill/Nile Feeding area Sno-Park	Flooding and Debris Flows – Intermediate Risk
Bumping River Dispersed campsites at American Ridge TH area (hillslopes above not burned), American River- Idle Hour Summer Homes, Pine Needle Group CG, Naches- Gold Creek Summer Homes*, Milk Creek snowpark, Swamp Creek- Boulder Cave Snopark	Flooding and Debris Flows – Low Risk
McDaniel Lake CG	Hazard Trees – High Risk
Fire area- Summer and Winter Trails in burned area	Hazard Trees, Rock Fall, Flooding, Debris Flows, Hazard Trees – High Risk

*Recreation Residences under Special Use Permit

Dispersed Camping sites: several sites were estimated to have a *high* or *very high* life and safety risk ratings due to the threat of falling hazard trees, rocks and/or the occurrence of flash flooding or debris flows. Risk ratings have not been completed for all dispersed camping locations within or immediately downstream from the burned area.

An emergency was determined for life/safety and BAER response actions, described in the treatments section of this report, are recommended.

2. Property (P):

Threat to the Property (roads):Very High

Post fire impacts to roads and related infrastructure may occur in response to increased flows, sediment transport and debris that may cause failure of existing drainage features and erode road prisms near creeks and at major drainage crossings of impacted watersheds. Roads with significant burned areas above are also susceptible to mass wasting and debris flows in addition risks previously mentioned. There are 60 miles of roads within areas of high or moderate burn severity. Bridges and AOP structures are at high risk of loss or

damage from flooding and debris: Bottomless Arch on FSR 1611 MP 1.6; Rattlesnake Bridge on FSR 1502 MP 0.8; Nile Creek CRAB Buried Bridge on FSR 1601 MP 0.4.

Threat to Property (trails): Very High

Impacts to and loss of trail prisms may occur in response to increased flows, sediment transport and debris that may cause failure of existing drainage features and erode prisms within or immediately downgradient moderate and high burn severity and at drainage crossings of impacted watersheds. Downgradient trails with significant burned areas above may also be susceptible to mass wasting and debris flows impacts in addition to risks previously mentioned. (Very High/High) (There are 45.8 miles of trails within areas of high or moderate burn severity)

Threat to Property (developed recreation sites)-infrastructure at developed recreation sites determined high risk for flooding, preventative measures are advised including removal of water pumps, wells capped, and portable infrastructure removed and stored in a safe location.

3. Natural Resources (NR):

Water Quality (Very High): Ash and sediment laden high flows can potentially effect water quality in listed T and E Habitat and potentially impact downstream diversions and municipal water supply for the city of Yakima. From the Forest plan; *“An executive order was issued by President Harding in 1923 to protect those lands lying within the Rattlesnake and Little Rattlesnake Watersheds for the water supply of the City of Yakima.”* Of the combined 85,994 acres of Rattlesnake subwatersheds (see Table 1), 69,754 acres are within the fire perimeter (81%). The Rattlesnake-Naches River watershed of 192,158 acres has an area of 101,463 acres (53%) within the Schneider Springs Fire perimeter.

Soil Productivity (High): Based upon estimated postfire erosion rates, 56% of the fire (>63,000 acres) is expected to exceed tolerable soil loss (TSL) thresholds likely resulting in a loss of productivity hindering natural recovery and resulting long term impacts to soils and dependent resources in these areas exceeding loss thresholds. Hydrologic recovery will also be extended in time with loss of soil productivity. Further evaluation of conditions and potential feasibility of treatments are being explored for inclusion in a future interim request.

T & E Species Habitat

Aquatics (very high): The risk to Bull trout and steelhead habitat in Rattlesnake Creek, listed steelhead habitat in Nile Creek and Steelhead in Little Rattlesnake Creek was determined to be *very high*. Sensitive species, west slope cutthroat trout (Rattlesnake, Dry and Nile Creeks) and Chinook salmon (Rattlesnake Creek). All of these aquatic habitat systems are going to be subject to increased post fire ash-laden flows, increased sediment and bedload transport plus possible large scale inputs mass movement events. Reduction in canopy cover may increase water temperatures in critical habitats. There are 85 miles of aquatic were in the fire perimeter.

Wildlife (very high): The risk to Clark's nutcracker was determined to be *very high*, due to loss of food source resulting from burned Whitebark pine trees. The risk to Canada lynx was determined to be *high* due to altered snowshoe hare habitat reduced due to fire, and the risk to Spotted owl is determined to be *very high* from loss of nesting, roosting and foraging habitat and a high probability that the known successful nesting trees burned.

4. Cultural and Heritage Resources:

There are 126 known sites within the fire perimeter with one listed on the National Register of Historic Places, three eligible, 71 unevaluated and 51 not eligible. There are two CCC structures within campgrounds along the Bumping River being recommended for closure. These two structures may require protection from post fire high flows. Twenty-five sites are rated high to very high. Further evaluation and monitoring are under consideration.

B. Emergency Treatment Objectives:

- a. Reduce the post-fire risks to life and safety by installing signage, and temporary closures of specific campgrounds and dispersed recreational use areas. Coordination with partners regarding ALERT station placement is in process (no request at this time).
- b. Storm-proof and stabilize roads where feasible and practicable to protect property investments and maintain access for administrative and emergency use. Patrol roads, safely, during and immediately after rain events to clear debris from drainage structures and reestablish drainage as needed.
- c. Maintain native plant communities and soil stabilization through early detection/rapid response (EDRR) and subsequent treatments to minimize the spread of noxious weeds and specific invasive plants.
- d. Continued sharing of critical information with federal agencies (NWS, NRCS, USGS), local emergency services and County/City departments with downstream jurisdiction and responsibilities.

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

Land: 80

Channel: N/A

Roads/Trails: 80/70

Protection/Safety: 90

D. Probability of Treatment Success

Table 7: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land	90	80	70
Channel	N/A	N/A	N/A
Roads/Trails	80	80	60
Protection/Safety	90	70	50

E. Cost of No-Action (Including Loss): \$972, 835

F. Cost of Selected Alternative (Including Loss): \$ 425,169

G. Skills Represented on Burned-Area Survey Team:

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

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Team Members: *Table 8: BAER Team Members by Skill*

Skill	Team Member Name
Team Lead(s)	Greg Kuyumjian
Soils	Kristen Meier, Andrew Farris
Hydrology	Rebecca Lloyd, Brian Anderson
Engineering	Ken Bigelow, Aaron Lamp, Bruce Bernard
GIS	David Keenum
Archaeology	Anna Jansson
Weeds	Helen Lau
Recreation	Suzanne Cable, Justin Martini

Skill	Team Member Name
Other	SUPs: Lee Ellis, PIO: Jess Clark, Cathleen Thompson

H. Treatment Narrative:

Land Treatments:

P1b. EDRR within or directly associated with suppression activities and disturbance; drop points and staging areas (75 acres), dozer lines (152 acres) and dipping points (64 acres). Two treatments, spring and fall 2022 to include herbicide applications. Total acres for suppression EDRR, 291.

Channel Treatments: N/A

Roads and Trail Treatments:

R1. Storm proofing roads. Clean and dig ditches, increase number and capacity of waterbars and dips where high severity burns are contributing to storm flows (5.78 miles).

R1. Storm Proofing - Clean inlet/Catch Basin/Culvert Outlet. Clean culvert inlets and outlets and ensure they are free from obstructions that could impede flow. Dig catch basins deeper than existing to increase capacity where particularly high severity burns are contributing to storm flows (32 locations).

R1 - Storm Proofing - Remove Berm. Remove segments of outside berm where berm is likely to concentrate overflow (0.6 miles)

R2a - New Drainage Feature - Drainage Dip. Excavate drivable dips in road surface that will safely pass flow from overwhelmed drainage (43 dips).

R2c - New Drainage Feature – Waterbars. Excavate a skewed waterbar in road surface that will direct flow from the travelled way and away from overwhelmed drainage structures (3 armored waterbars).

R3 - Storm Inspection and Response. Inspection by qualified persons, determination of effectiveness, coordination of treatment restoration (20.72 miles)

R3 - Storm Inspection and Response - with Heavy Equipment. Inspection by qualified persons, determination of effectiveness, coordination of treatment restoration followed by a response requires heavy equipment with multiple personnel to ensure existing drainage and road remain in functional status (3 events)

R5 - Critical Dip (Stream Crossing) - Armored Dip. Excavate a drivable dip in road surface that will safely pass flow from overwhelmed drainage with armored base and outlet (7 armored dips).

R6 - Culvert Modification - Install Drop Inlet. Install vertical CMP riser at the inlet end of pipe with an opening on the sides to allow water through and keep large debris from plugging inlets (3 inlets).

R9 – Check Dam. Install straw bale check dam (using Washington certified weed free straw) anchored with T-posts upstream from culvert in low gradient drainage (1 installation).

R10 – Channel Clearing -Earthen Fill Removal. Remove enough fill from channel (from skid -road) for water to adequately flow to culvert estimated at 10 cubic yards per location (10 locations).

R13 - Fill-Slope Stabilization - Riprap Armoring. To protect erodible road features at inlets, outlets, crossings, and fill slopes, place specified size and quantity of rip rap to armor designated features. Estimated at 10 cubic yards/location (10 locations)

Implementation overtime, 10 days each for a GS-9 and GS-11 for time needed beyond NFSE time for contract inspections, administration, and reporting (20 days support)

T1. Trail Drainage Stabilization (includes supporting T2. Trails Structure Stabilization and S3. Hazard Tree Felling (for worker safety)). Work includes installing drainage dips, waterbars and tread stabilization.

"Front country", non-wilderness, no pack support needed. 0.9 miles at \$3844/mile

Wilderness, no pack support needed, 0.9 miles at \$4992/mile

Wilderness, pack support needed, 10.6 miles at \$6604/mile

Protection/Safety Treatments:

S1a. Install signs at Forest entry points (roads) and replace fire damaged warning signs (10)
Life and Safety Risk Ratings for Developed Recreation Facilities and Adjacent Recreation Residences
(preliminary determinations based on flow modeling and USGS Debris Flow assessment- maintain temp closure to CGs until spring, further evaluation recommend to opened site specific risk mitigation.

S1b. Trail Recreation Hazard Signs. Install signs to alert visitors of burned areas of hazards on trails, trailheads, or at dispersed use sites or at closures. (4 at campgrounds, 50 for trail closures and conditions, 2 snow trail use warning at sno parks, 75 for dispersed use sites, 25 for established campsites, trailheads, and wilderness sites for a total of 156 signs)

S7. Infrastructure protection. Three campgrounds adjacent to the Bumping River at elevated risk for flood and debris flows. Remove pumpjacks and cap wells, move tables and other portable improvements for storage outside of the floodplains (3 sites: Cougar Flat, Soda Springs, and Cedar Springs)

- Campgrounds: Campers at Cougar Flat, Soda Springs, and Cedar Springs campgrounds and property are at high risk due to the threat of increased flooding and debris flow. Recommended treatment is site closure, signage, removal of water pumps, wells capped, and portable infrastructure removed and stored in a safe location. Campers at McDaniel Lake campground are at high risk due to threat of hazard trees. Recommended treatment is closure and signage.

I. Monitoring Narrative:

Not requested at this time

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										
P1b. Suppression EDRR	acres	70	291	\$20,370	\$0		\$0		\$0	\$20,370
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$20,370	\$0		\$0		\$0	\$20,370
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treatments</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
R1. Storm Proofing	miles	3,000	6	\$17,340	\$0		\$0		\$0	\$17,340
R1. Clean CMP/Excavate Catch Basin	each	300	32	\$9,600	\$0		\$0		\$0	\$9,600
R1. Berm removal	miles	350	1	\$210	\$0		\$0		\$0	\$210
R2a. Drainage dip	each	3,900	43	\$167,700	\$0		\$0		\$0	\$167,700
R2c. Armor waver bar (5 CY)	each	800	3	\$2,400	\$0		\$0		\$0	\$2,400
R3. Storm inspection & response	miles	850	21	\$17,612	\$0		\$0		\$0	\$17,612
R5. Armored relief/drain dip (10 CY)	each	6,350	7	\$44,450	\$0		\$0		\$0	\$44,450
R6. Culvert modification/Riser pipe	each	1,500	10	\$15,000	\$0		\$0		\$0	\$15,000
R9. check dam	each	600	1	\$600	\$0		\$0		\$0	\$600
R10. Material removal; (10 CY)	each	350	10	\$3,500	\$0		\$0		\$0	\$3,500
R13. Riprap armoring (10 CY)	each	900	4	\$3,600	\$0		\$0		\$0	\$3,600
T1. Trail stabilization. (non-wilderness)	miles	3,844	1	\$3,460	\$0		\$0		\$0	\$3,460
T1. Trail Stabalization Wilderness (no stock support)	miles	4,992	1	\$4,493	\$0		\$0		\$0	\$4,493
T1. Trail Stabalization wilderness stock support	miles	6,604	11	\$70,002	\$0		\$0		\$0	\$70,002
Implementation Overtime	days	525	20	\$10,500	\$0		\$0		\$0	\$10,500
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road and Trails</i>				\$370,467	\$0		\$0		\$0	\$370,467
D. Protection/Safety										
S1a. BAER Warning (road)Signs	each	750	10	\$7,500	\$0		\$0		\$0	\$7,500
S1b. Recreation warning/closure signs		150	156	\$23,400	\$0		\$0		\$0	\$23,400
S7. Infrastructure protection (campgrounds)	each	1,144	3	\$3,432	\$0		\$0		\$0	\$3,432
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Protection/Safety</i>				\$34,332	\$0		\$0		\$0	\$34,332
E. BAER Evaluation										

PART VII - APPROVALS

1. _____
 Forest Supervisor Date _____