

Date of Report: September 9, 2016**BURNED-AREA REPORT**
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST****A. Type of Report**

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

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation 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:** Rail – North Portion**B. Fire Number:** OR-WWF-000582**C. State:** Oregon**D. County:** Grant & Baker**E. Region:** 6**F. Forest:** Wallowa-Whitman**G. District (s):** Whitman RD**H. Date Fire Started:** July 31st, 2016**I. Date Fire Contained:** estimated 9/18/2016**J. Suppression Cost:** \$32.9 million (as of 9/6/16)**K. Fire Suppression Damages Repaired with Suppression Funds**

- Handline waterbarred: 12 miles
- Dozer line: 11
- Fireline seeded (miles): NA
- Other (road containment lines): 27

L. Watershed Number: 10th-field HUCs

- S. Fk. Burnt River (1705020202) = 27, 104 acres
- Little Malhuer River (1705011612) = 5 acres
- Upper N. Fk. Malhuer (1705011611) = 57 acres
- Reynolds Ck.—John Day River (1707020105) = 162 acres

- Bridge Ck.–Middle Fk. John Day River (1707020301) = 29 acres

M. Total Acres Burned: This analysis addresses only the 27,344 acres within the fire, 27,087 acres on the Wallowa-Whitman National Forest and 257 acres on the Malheur National Forest. Here after referred to as the **North Portion** of the Rail Fire.

Total NFS Acres (27,344), Wallowa-Whitman NF Acres (27,087), Malheur NF acres (257)
Other Federal (0), State (0), Private (0)

N. Vegetation Types: Cold Dry Upland Forest; Cool Dry Upland Forest; Cool Moist Upland Forest; Cool Moist Upland Herbland; Hot Dry Upland Forest, Herbland, Shrubland, and Woodland; Hot Moist Upland Woodland; Warm Dry Upland Forest; Warm Moist Upland Forest, Shrubland

O. Dominant Soils: Ashy silt loam, gravely silt loam (see Soils report in the Appendices)

P. Geologic Types: 80% basalt and andesite lava flows of the Strawberry Volcanics, 8% sedimentary rocks, 2% mixed lithologies of meta-sedimentary rocks

Q. Miles of Stream Channels by Order or Class (miles): Class 1 = 7.7, Class 2 = 14.4, Class 3 = 14.2,
Class 4 = 32.6, Not Classified = 8.3

R. Transportation System (miles)

- Trails: Non-motorized = 4.5, OHV = 32.7, Snowmobile = 24.3
- Roads: WAW Open = 77.8, Closed = 99.4, MAL Open = 0.5, Closed = 0

PART III - WATERSHED CONDITION

A. Soil Burn Severity (acres):

Unburned = 1,755 (7%) Low = 12,086 (44%) Moderate = 11,475 (42%) High 2,001 (7%)

B. Water Repellency

Table 6 from the Soil Specialist Report shows the average water repellency at the mineral surface for low, moderate and high SBS. Moderate showed 15% strong repellency, which was more than twice the value of the high burn at 7%. Most of the soils across regardless of burn had weak water repellency at the surface. It was noted that water repellency was variable in all of the burns, and all three classes of repellency were found in each of the burn severities.

Table 6 from Soil Report. Average Percent Water Repellency at Surface

Field Assessed SBS	<i>Weak</i>	<i>Moderate</i>	<i>Strong</i>
Low	86	10	4
Moderate	74	11	15
High	93	0	7

Table 7 from the Soil Specialist Report shows the average subsurface water repellency, 4 inches, for low, moderate and high burn severity. Average repellency does not show a meaningful change from the surface to subsurface. Low burn remains approximately 3%. Moderate and high burn severities show higher level of moderate repellency at the subsurface, and a decrease in strong repellency.

Table 7 from Soils Report: Average Percent Water Repellency at 4 Inches Below the Surface

Field Assessed SBS	Weak	Moderate	Strong
Low	83	11	2
Moderate	71	20	9
High	83	13	3

C. Soil Erosion Hazard Rating (percent):

8% (low) 54% (moderate) 32% (high) 6% (very high)

D. Erosion Potential: 3-7 tons/acres. These values are generated by the soil erosion model ERMIT.

E. Sediment Potential: 1,240 to 3,370 cubic yards/square mile (conversion factor = 1.35 tons/cubic yard)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years): 2-5 years (70% effective ground cover)

B. Design Chance of Success (percent): 75

C. Equivalent Design Recurrence Interval (years): 10

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude (inches): 2.3

F. Design Flow (cubic feet / second/ square mile): 4.8 to 13.7 (pre-fire)

G. Estimated Reduction in Infiltration (percent): 15

H. Adjusted Design Flow (cfs per square mile): 33.2 to 58.2

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Human Life and Safety

Threats to human life and safety exist throughout the burned area. The area is very popular and known to be one of the most heavily visited parts of the Forest. People using the roads, developed and dispersed campgrounds, and OHV, snowmobile, and hiking trails will potentially be exposed to fire-exacerbated high runoff events, peak flows, debris flows, rock fall, and fire-killed falling trees/limbs. Limited ingress/egress and escape routes are offered by FS roads. Many are narrow, covered by a seasonal snowpack, located on steep slopes or in narrow valley bottoms, cross flood-prone streams, and traverse through burned-over forest. Primary routes are heavily used by recreationists, hunters, local residents, contractors, and administrative users. Currently the Rail Fire Closure Order (T-2016-0616-03) is in effect as fire suppression repair, patrol and mop-up, and hazard trees are being removed, but it is expected to be lifted before mid-fall.

There are about 57 miles of motorized trails (OHV and snowmobile) in the north portion of the fire, and 5 miles of non-motorized trails. Nearly 6 percent of those miles traverse through areas where soil burn severity was

moderate or high, and nearly all of the trees have been killed. These will become snags, which pose a degree of hazard to trail users.

The probability of damage or loss to values at risk of human life and safety is considered to be possible, and the magnitude of consequence major. Hence the risk is deemed to be very high. Significance of protecting human life and safety is self-evident, and is justification enough for proposed treatments to mitigate or minimize the hazards.

Property – Roads

There are 177 miles of road within the perimeter of the north portion of the fire. Approximately 80 miles are located within 1000 feet of high or moderate severity burned areas. Risks to roads from fire-exacerbated high runoff and peak flows, and debris flows exist on numerous segments within the burned area. Most of these segments are located on steep slopes, adjacent to streams, or crossing streams, and adjacent to or below moderate to high soil burn severity. Some segments adjacent to streams have a likelihood of intercepting peak stream flow and routing it down their tread. Damage to roads from high runoff or erosional events could contribute to excessive channel erosion, threats to aquatic habitat, and dramatically alter hydrologic function.

The road network intersects streams at many crossings in the burned over area, and certain ones are prone to impacts from elevated post-fire peak flows. An inventory of them in the field reveals that there are some that have undersized culverts or that could be overtopped by storm flows. The probability of damage from a 10-year storm event is considered to be likely, and the magnitude of consequence would be moderate, jeopardizing the primary travel routes accessing the area. Natural resources would also be at risk if a peak flow event were to washout a stream crossing. Data suggests that higher frequency storms of lower magnitude could also be potentially damaging. Table V1 lists inventoried road crossings and the likelihood they could be overtopped by flood flows and prone to catastrophic failure or loss.

Table V1. Likelihood of Inventoried Stream Crossings to be Overtopped by Storm Flow

Stream Crossing VAR	Percent of Contributing Area in Mod. To High Soil Burn Severity	Likelihood that the Crossing Could be Overtopped by Storm Flow of a Select Event		
		2-Year Event	5-Year Event	10-Year Event
Barney Ck @ FSR 6005	26	Possible	Likely	Likely
Bear Ck @ FSR 6005 xing#5	56	Possible	Possible	Likely
S. Fk. Burnt @ FSR 6005 xing#6	68	Possible	Likely	Likely
Lookout Ck @ FSR 6005	48	Possible	Likely	Likely
S. Fk. Burnt @ FSR 6015	52	Possible	Possible	Likely
Spring Ck @ FSR 6015	63	Likely	Likely	Likely
Unnamed trib. to Spring Ck @ FSR 6015	52	Possible	Possible	Likely
Last Chance Ck @ FSR 2655	78	Likely	Likely	Likely
Last Chance Ck @ FSR 2640-700	56	Not Likely	Not Likely	Possible
Last Chance Creek at Eldorado Ditch, FSR 2655	45	Likely	Likely	Likely
Unnamed trib. to Barney Ck @ FSR 6010-065	85	Likely	Likely	Likely
Unnamed trib. to Barney Ck @ OHV Trails #4025 & #4058	NA	Possible	Likely	Likely

Suppression repair on segments of the road system has occurred to return them to their pre-fire condition. Suggested BAER treatments however, are prescribed for additional protection, and to prevent or minimize loss to certain road segments and stream crossings from heavy runoff, peak flows, and debris flows.

Natural Resources – Soil Productivity

The extent of moderate and high soil burn severity is 49 percent of the burned area in the north portion of the fire. Thirty eight percent of the fire area has an erosion hazard rating of high to very high, where soil burn severity is moderate to high and slopes are greater than 20%. This indicates that the probability of damage or loss to soil resources is likely. The magnitude however, was determined to be minor at the landscape scale. Certain sites it is recognized will be impacted for the long-term, especially those where cumulative effects from both natural and anthropogenic past disturbance of have occurred. But overall, recovery potential is judged to be high.

Sampling of soil burn severity in the field suggested that below-ground effects to soils were not high across 93

percent of the burned over area. Fine roots, rhizomes, seeds, and organic material were present near the surface in moderate and low burn severity. In places, the fall of unconsumed needles from fire-killed trees has already provided some ground cover. Thus it was concluded that recovery potential, or the time it will take for vegetation to reestablish an effective ground cover will be less than 2 years across most of the northern portion of the fire. The risk to soil productivity and hydrologic function was determined to be low, and treatments unnecessary. It is recognized however, that there will be individual sites prone to long-term damage and loss from post-fire effects.

Natural Resources – Invasive Plant Species

There are ten different known noxious weed infestations within the fire perimeter. Status of native communities was inferred from ecological plot data that gives plant community composition and shows that the communities were not infested by the focus weeds at the time of data collection. The probability of damage or loss from invasive plant is considered to be likely, and the magnitude of consequences is determined to be moderate. So the risk is high that invasive plant species will have a negative impact as a result of the fire. Post-fire conditions are particularly favorable to noxious weed establishment and spread, so treatments are warranted to attempt to minimize or mitigate their spread.

Of particular concern are long-term ecological plots located in the burn area. Populations of invasive plants known to be within proximity of those plots pose a threat to their ecological integrity and usefulness for monitoring change. There has been considerable investment put into the establishment, maintenance, inventory, and data collection of these plots. Since the risk is high of post-fire impacts from invasive plants, treatments to mitigate or minimize it would be justified.

Aquatic Habitat and Redband Trout

Redband trout are present in some streams within the northern portion of the fire. They are not considered to be a critical value at risk to evaluate for BAER. They are a state sensitive fish species, and this population is isolated. There is no connectivity between them and downstream populations in the watershed because of two dams downstream that obstruct passage. Although funds for mitigation of post-fire effects to this population are not being requested, the team assessed the population for the sake of local biologists and residents in order to provide some understanding of the potential for post-fire effects to their habitat.

The South Fork Burnt River within the fire perimeter has a robust population of fish. There are fish in its tributaries as well, but their numbers are fewer. Habitat quality in the mainstem of the river has been impacted by an extensive road and trail network, campgrounds, and past management in the drainage. Nonetheless, certain reaches such as Last Chance Creek have high quality habitat. In the context of the entire watershed, some of the highest quality habitat is within the burned area.

Post-fire threats to redband habitat in occupied stream reaches include channel impacts from peak flow events and sedimentation. There are however, factors that would be expected to attenuate that threat somewhat. In-stream large woody debris (LWD) remains in place in most reaches of these affected drainages, and except for certain reaches most of it did not burn. In addition large wood pieces have fallen into reaches by either natural processes or from fire suppression activities. More is expected to be deposited as fire-killed trees fall. Presence of large, in-stream wood has the ability to slow stream velocity and capture smaller pieces of wood, which overtime will accumulate in log jams. Log jams can serve to capture bedload and coarse sediment that might mobilize during peak flow events. Additionally, floodplains in the lower reaches of the watershed are connected to their stream, and are capable of functioning to store and slow high water and filter sediment. The large wetland below the confluence of Elk and Last Chance Creeks is one example.

Cultural and Historical Resources

There are cultural resource sites that have been exposed by the fire and fire suppression activities. The Table Rock Lookout outbuildings were damaged by the fire and no longer eligible for national listing. Two other eligible sites, Table Rock Fire Lookout and Eldorado Ditch, are within the burn perimeter. The lookout on Table Rock is at a low risk of post-fire damage. The Eldorado ditch may be subject to accelerated erosion and runoff, but would serve to intercept any overland flow. There is one road segment that crosses over the ditch. A

culvert there is not functioning to pass flow, and could threaten a short segment of the ditch should it blow out from heavy runoff.

Other

Off-forest concerns were raised by members of the local South Burnt River Irrigation District regarding post-fire runoff and potential damage or negative impacts to their diversion, conveyance, and storage infrastructure. Understanding that BAER does not authorize the funding of projects to protect values at risk on private lands, their interest was in treatments that might be prescribed to protect VARs on FS lands that could have a secondary indirect benefit to their concerns. Of particular concern to them was the potential for heightened runoff and sedimentation to potentially impact their interests, and they wondered about the efficacy of emergency treatments to provide immediate effective ground cover where the tree canopy and effective ground cover had been denuded.

Analysis was conducted to evaluate where burned slopes would be best suited for aerial mulching. Coupling soil erosion hazard with soil burn severity we generated an index of where the risk of soil erosion would be expected to be high or very high, and the slopes were directly connected to the stream network. The acreage amounted to about 1,700 acres, which is less than 10 percent of the burned over area. The cost of aerially mulching that amount of ground using helicopters was estimated to be nearly 8 million dollars. But nearly 90 percent of the burned area would remain untreated. Sediment potential from the untreated acres of moderate and high soil burn severity would not be minimized. So it would be expected that fine sediment could still enter streams and be transported off-forest despite an aerial mulch treatment. Not enough area could be effectively treated to reduce risk of widespread erosion and sediment-laden runoff, given the high cost of aerial mulching.

Table V2. Values at Risk (VAR) Analysis for the Rail Fire (north end) identifying threats and showing factors contributing to risk analysis.

BAER Critical Value		Threat	Probability of Damage or Loss	Magnitude of Consequences	Risk
Human Life & Safety	People on open roads	Fallen trees, snags, debris flows, Severe storm event/ road fill failure	Possible (10% - 49%)	Major	High
Human Life & Safety	People on OHV and snowmobile trails	Fallen trees, snags, debris flows, Severe storm event/ road fill failure	Possible (10% - 49%)	Major	High
Human Life & Safety	People on hiking trails	Snags	Possible (10% - 49%)	Major	High
Human Life & Safety	People in developed campgrounds	Debris flow, high runoff event, snags	Possible (10% - 49%)	Major	High
Human Life & Safety	People in dispersed campsites	Debris flow, high runoff event, snags	Possible (10% - 49%)	Major	High
Human Life & Safety	Peoples lives relying on comm site	Access to site if powerline is compromised	Possible (10% - 49%)	Moderate	Intermediate
Property	Dispersed recreation sites - S. Fk Burnt River	Debris flow, high runoff event	Possible (10% - 49%)	Minor	Low
Property	Dispersed recreation sites -Last Chance Ck	Debris flow, high runoff event	Possible (10% - 49%)	Minor	Low
Property	Developed campgrounds - Elk Flat Spring Campground (Malheur)	Debris flow, high runof events, snags falling on property	Possible (10% - 49%)	Minor	Low
Property	Developed campgrounds - All campgrounds in WW-s fk burnt river. Highest concern Elk Ck Campground	Debris flow, high runoff event, snags falling on property	Possible (10% - 49%)	Moderate	Intermediate
Property	Developed Hiking Trails - WW all trails Trail 156, Trail 1370	High runoff event caused loss of trail tread	Likely (50% - 89%)	Minor	Low
Property	Developed Hiking Trails - Malheur Elk Flat Trail (362) Little Malheur River Trail (366)	high runoff event caused loss of trail tread	Likely (50% - 89%)	Minor	Low
Property	Elkhorn Comm Site	no post-fire threat to comm site	Unlikely (0% - 9%)	Minor	Very Low
Property	Power line to Elkhorn Comm Site	Debris flow, snags, increased runoff pose threat to powerline poles, snags hitting lines	Possible (10% - 49%)	Minor	Low
Property	Roads, bridges, culverts	debris flow, increased runoff, snags	Likely (50% - 89%)	Moderate	High
Property	Developed OHV trails	debris flow, increased runoff, snags	Possible (10% - 49%)	Minor	Low
Property	Off Forest Irrigation Reservoir				
Natural Resources	Bull trout habitat - Little Malheur river				
Natural Resources	Redband trout habitat - State sensitive species, LRMP MIS. NOT a BAER critical value at risk.	high runoff, burned LWD, increased sediment, and debris flow cause loss of habitat	Possible (10% - 49%)	Moderate	Intermediate
Natural Resources	Soil Productivity - moderate and high soil burn severity	accelerated erosion, debris flows	Likely (50% - 89%)	Minor	Low
Natural Resources	Range, fencing not a BAER critical value at risk.	Snags pose threat to fencing	Likely (50% - 89%)	Minor	Low
Natural Resources	Invasives	Expansion of currently isolated invasive populations (spotted knapweed)	Likely (50% - 89%)	Moderate	High
Natural Resources	Eco plots	Threat of invasives encroaching	Likely (50% - 89%)	Major	Very High
Cultural & Heritage Resources	Table Rock Lookout - and outbuildings	no threat to the outbuildings and the lookout			
Cultural & Heritage Resources	Eldorado ditch	high runoff event, debris flow	Possible (10% - 49%)	Minor	Low
Cultural & Heritage Resources	Elk Flat Heritage Site	Falling snags			

B. Emergency Treatment Objectives:

Human Life and Safety:

Mitigate and minimize potential hazards from flash floods and snags by using a combination of temporary closures and warning signs. Continue Rail Fire Closure Order (T-2016-0616-03) for the duration of snagging operations, salvage, and OHV trail restoration.

Install signage containing specific language that clearly informs the public about the potential for debris flows, high flow events, eroded trails, falling trees and loose rock. Existing WWNF templates for fire recovery are available.

Conduct storm patrols to monitor any damage or loss to CGs, THs, trails, or the road system that could pose a threat to public life and safety.

Property: Prepare specified NFS roads to protect them from damage or loss that could result from expected heightened runoff, heavy storm flows, and debris flows. Improve the effectiveness of road drainage structures to help mitigate or minimize post-fire impacts to roads.

Natural Resources: Protect native or intact plant communities from encroachment by invasives with emphasis on preserving the integrity of the long-term research plots.

Heritage and Cultural Resources: Protect the Eldorado Ditch from a dysfunctional culvert that would not be capable of intercepting and passing heavy runoff, and where overflow could damage the feature.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Human Life & Safety 90-100% Property 90-100% Natural Resources 50-90% Heritage and Cultural Resources 90-100%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Human Life & Safety	90-100%	90-100%	90-100%
Property	70-90%	90-100%	90-100%
Natural Resources	50-90%	50-90%	50-90%
Heritage & Cultural Resources	90-100%	90-100%	90-100%

E. Cost of No-Action (Including Loss):

Human Life and Safety – Without notifications or temporary closures a forest user could be unaware of post-fire dangers that would exist, and unknowingly overlook risks without due consideration. Minimizing exposure would not be a consideration to some forest users, whom then may not make a conscience attempt to avoid possible harm from post-fire hazards.

Property – Certain road segments and stream culverts that have been identified would be susceptible to damage by post-fire peak flows and heightened runoff coming from adjacent and upstream hillsides where soil burn severity is moderate to high. Should a precipitation event at roughly a 5-year recurrence interval occur (i.e., at least a 20% chance of occurring in any year), there would be a high likelihood of damage to these road

segments and culverts. The cost of repair and lost or delayed use should damage from a runoff event of that magnitude occur would be expected to be greater than preventative treatments. If using the Implied Minimum Values (IMV) method described by Calkin et. Al., (USDA 2007), the benefit to cost ratio of no treatment to treatment is estimated to be 2.5 (See figure VE.1). This would indicate that the cost of proposed road and culvert treatments given the probability of success (75%) of the treatments to prevent damage from that size storm would be justified.

Figure VE.1. IMV Calculation of Benefit:Cost Ratio for Property at Risk

Estim. cost of treatments: \$363,978
Estim. Probability of Damage or Loss: 90% (max.)
Estim. Reduction of Loss if Treated: 75%
IMV = Treatment Cost/(Δ Probability Loss Untreated - Δ Loss Treated)
Estim. cost of no treatments (IMV): $\$363,978 / (0.9 - 0.25) = \$909,945$
Benefit:Cost Ratio: $\$909,945 / \$363,978 = 2.5$

Natural Resources – Without treatments to minimize post-fire effects from the spread of known populations of invasive plant species, there is a risk of diminishing native vegetation and ecosystem diversity in adjacent areas, reducing the quality and quantity of forage for both native wildlife and livestock, and losing the viability and investment in the established long-term ecological plots nearby. Using the IMV method (USDA 2007), the benefit to cost ratio of no treatment to treatment is estimated to be 25 (See figure VE.2). This would indicate that the cost of proposed road and culvert treatments given the probability of success (75%) of the treatments to prevent damage from that size storm would be justified.

Figure VE.2. IMV Calculation of Benefit:Cost Ratio for Natural Resources at Risk

Estim. cost of treatments: \$46,475
Estim. Probability of Damage or Loss: 90% (max.)
Estim. Reduction of Loss if Treated: 50% (min.)
IMV = Treatment Cost/(Δ Probability Loss Untreated - Δ Loss Treated)
Estim. cost of no treatments (IMV): $\$46,475 / (0.9 - 0.5) = \$116,187$
Benefit:Cost Ratio: $\$116,187 / \$46,475 = 25$

Cultural and Heritage Resources – Treatments prescribed to address post-fire effects to the Eldorado Ditch would entail replacement of a culvert, which is proposed as a treatment to protect a road segment. Benefits to the heritage resource would be a secondary benefit. If the treatment was not implemented, then the Eldorado Ditch could be damaged by post-fire runoff at one particular location near the namesake interpretive sign.

F. Cost of Selected Alternative (Including Loss):

Human Life and Safety	\$19,540
Property	\$363,978
Natural Resources	\$46,475
Monitoring	\$525
Total	\$430,518

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range
<input type="checkbox"/> Forestry	<input type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input checked="" type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS

Team Leader: Todd Reinwald & Dave Callery

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H. Treatment Narrative: (see Treatments Map)

Human Life and Safety:

Treatments proposed to minimize or reduce the post-fire risks to human life and safety on the Rail fire are relatively inexpensive and easy to implement. Thus, the benefit/cost ratio is considered to be high, and well worth the minor expense. A high degree of effectiveness of the treatments would be expected, but is dependant in part on the awareness and responsibility of individual forest users to heed warnings and alerts, or posted temporary closures.

HL1. Temporary Administrative Closures and Signage.

These are implemented at-will by the local unit and do not necessitate gates or access barriers. Informs users that closure is in effect until the post-fire hazard has been mitigated, and allows for administrative access while implementation of emergency treatments is underway. Typically entails postings at individual sites to notify users. Also informs front-liners so that they can convey the temporary closure to users.

Warning signs (~12) will also be posted at principle portals and ingress/egress routes at or near the fire perimeter, and at developed campgrounds. They will inform users that they are entering a burned over area and that caution is warranted, and to be mindful of the potential for unanticipated flash floods and falling snags or limbs from fire-killed trees that can happen without warning.

HL2. Storm patrols will occur periodically over the next 2 years to monitor watershed response to precipitation and runoff events. Effects on roads, developed and dispersed campgrounds, and trails will be documented. Any damage that may pose a hazard to human life and safety will be reported, and appropriate steps taken to mitigate the hazard.

Property:

Several road segments and stream culverts have been identified to be susceptible to damage by post-fire peak flows and heightened runoff coming from adjacent and upstream hillsides where soil burn severity is moderate to high. Should a precipitation event at roughly the 5-year recurrence interval occur (i.e., at least a 20% chance of occurring in any year), then its estimated that there would be a high likelihood of damage to these road segments and streams.

R1. Road Drainage Enhancement

Treat 52 miles of road to improve drainage to protect them from damage or loss that could result from expected heightened runoff, heavy storm flows, and debris flows. Improve the effectiveness of road drainage structures to help mitigate or minimize post-fire impacts to roads. Activities would include enhancing ditchlines, installing drain dips or waterbars, and cleaning inlets of existing cross-drain culverts where needed. Estimates include removal of hazard trees in the immediate vicinity of work locations in order to protect BAER implementation workers if needed, and administrative costs.

R2. Storm flow Passage

The road network intersects streams at many crossings in the burned area, and certain ones are highly susceptible to impacts from elevated post-fire peak flows. Treatments are intended to alleviate the risk of washouts at stream crossings. Three types of treatment are planned: R2a) replacing 4 undersized culverts with larger ones, R2b) Removing 5 culverts and installing high-water fords, and R2c) leaving undersized culverts in place and constructing a hardened surface and rolling dip over the crossing and on the fill slope. Estimates include removal of hazard trees in the immediate vicinity of work locations if needed, and administrative costs.

Note: No emergency treatments are prescribed for hiking, OHV, or snowmobile trails. Work would be coordinated and performed by user groups and clubs, or during project work.

Natural Resources:

To address the threat of noxious weed infestation an Early Detection and Rapid Response (EDRR) program will be implemented. Long-term ecological plots that are located inside the burn area will be prioritized. Weed monitoring and treatment will be conducted along road corridors where there is high potential for identified weed infestations to spread into presently uninfested burned areas. These known infestations occur along roads, OHV trails, and hiking trails. If new weed populations are found within the burn site, herbicide treatment will be initiated. In addition to herbicide, seeding with native plants is recommended to address infestations along roadsides and a known area of musk thistle infestation.

NR1. EDRR where eco-plots are located. Treat as appropriate to allow natural recovery of native plants. Minimize use of chemical treatments so as to limit herbicide effects to native plants.

NR2. EDRR along road, OHV, and trail corridors where there is high potential for identified weed infestations to spread into presently uninfested burned areas. Target new weed populations. Seed with native mix on hand as is needed to keep invasion from encroaching into uninfested areas.

I. Monitoring Narrative:

Effectiveness monitoring will include the following: 1) evaluate the effectiveness of prescribed treatments in preventing damage or loss, erosion, and reducing infestation, 2) determine if Project Design Features were implemented as needed, and 3) identify if there are any treatment recommendations or follow up actions needed.

Part VI – Emergency Rehabilitation Treatments and Costs

A. Natural Resources					
NR1 - Invasives Eco-plots	project	\$18,590	1	\$18,590	\$0
NR2 - Invasives	project	\$ 27,885	1	\$27,885	\$0
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Land Treatments</i>				<i>\$46,475</i>	<i>\$0</i>
B. Channel Treatments					
				\$0	\$0
				\$0	\$0
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Channel Treat.</i>				<i>\$0</i>	<i>\$0</i>
C. Property					
R1 Enhance Road Drainage	miles	\$3,634	52	\$188,978	\$0
R2 Storm Flow Passage	total	\$175,000	1	\$175,000	\$0
				\$0	\$0
					\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Road & Trails</i>				<i>\$363,978</i>	<i>\$0</i>
D. Human Life & Safety					
HL1 Signage	signs	\$530	18	\$9,540	\$0
HL2 Storm Patrol	days	\$1,000	10	\$10,000	\$0
					\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Structures</i>				<i>\$19,540</i>	<i>\$0</i>
E. BAER Evaluation					
	project	\$57,736.00	1	\$57,736	
<i>Insert new items above this line!</i>				---	\$0
<i>Subtotal Evaluation</i>				---	<i>\$0</i>
F. Monitoring					
GS9 Engineer 1 day per year	days	\$ 175.00	3	\$525	\$0
GS9 Range 1 day per year for	days	\$ 175.00	3	\$525	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Monitoring</i>				<i>\$525</i>	<i>\$0</i>
G. Totals				\$430,518	\$0
Previously approved					
Total for this request				\$430,518	

PART VII - APPROVALS

1. /s/Thomas Montoya
Forest Supervisor (signature)

September 12, 2016
Date

2. _____
Regional Forester (signature)

Date