

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:** Umpqua North Complex **B. Fire Number:** OR-UPF-000406
C. State: Oregon **D. County:** Douglas
E. Region: Pacific Northwest **F. Forest:** Umpqua
G. District: North Umpqua and Diamond Lake **H. Fire Incident Job Code:** P6K9FS/0615
I. Date Fire Started: 08/11/2017 **J. Date Fire Contained:** est. 10/30/2017
K. Suppression Cost: \$ 42,103,555 (as of 10/9/2017)
L. Fire Suppression Damages Repaired with Suppression Funds
 1. **Fireline waterbarred (miles):** 41 miles of dozer line and 3 miles of hand line
 2. **Fireline seeded (miles):** NA
 3. **Other (identify):** 25 miles of chipping/grinding brush
M. Watershed Numbers (5th field):
 • Middle North Umpqua River (1710030108) 20.5% burned of 145,063 acres = 29,692 acres
 • Steamboat Creek (1710030107) 4.9% burned of 104,821 acres = 5,160 acres
 • Fish Creek (1710030104) 6.4% burned of 53,783 acres = 3,435 acres
 • Headwaters South Umpqua River 0.03% burned of 87,236 acres = 29 acres
N. Total Acres Burned: 38,316
 [38,063] NFS Acres [253] Private

O. Vegetation Types:

The Umpqua North Complex burned through a broad spectrum of native plant communities from mixed conifer and white oak (*Quercus garryana*) communities at low- to mid-elevations on the benches and ridges to cool moist

coniferous forest with silver fir (*Abies amabilis*), Shasta red fir (*A. magnifica* x *procera*) mountain hemlock (*Tsuga mertensiana*) and even a little subalpine fir (*A. lasiocarpa*) and Alaska yellow cedar (*Callitropsis nootkatensis*) up around Twin Lakes and Twin Lakes Mountain. Douglas-fir (*Pseudotsuga menziesii*) dominates the steep slopes and is the dominant to co-dominant species in the mixed conifer communities along with sugar pine (*Pinus lambertiana*), ponderosa pine (*P. ponderosa*), incense-cedar (*Calocedrus decurrens*), white fir (*A. concolor*), western hemlock (*T. heterophylla*) and western red cedar (*Thuja plicata*).

P. Dominant Soils: Loamy Sand

Q. Geologic Types: Little Butte Volcanic Group, Late Western Cascade Volcanics, Late High Cascade Volcanics.

R. Miles of Stream Channels by Order or Class:

Class 1 – 8.6 miles
 Class 2 – 9.4 miles
 Class 3 – 66.3 miles
 Class 4 – 79.4 miles

S. Transportation System

Trails: 27.6 miles	Roads: 112 miles
	ML2 – 96 miles
	ML3 – 9 miles
	ML4 – 4 miles
	State Highway – 2.2 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

USFS 12,333 (32%) **unburned**; 22,448 (59%) **low**; 2,619 (7%) **moderate**; 662 (2%) **high**

Total 12,443 (32%) **unburned**; 22,574 (59%) **low**; 2,636 (7%) **moderate**; 663 (2%) **high**

B. fire induced Water-Repellent Soil (acres of strong fire-induced water repellency):

USFS: 332 (0.9%) **Private:** (%)

C. Soil Erosion Hazard Rating (acres):

13,372 (34.9%) **(low)** 24,369 (63.6%) **(moderate)** 574 (1.5%) **(high)**

D. Erosion Potential: 6.9 tons/acre

E. Sediment Potential: 172 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2-5

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): 4.5

F. Design Flow, (cubic feet / second/ square mile): 220

G. Estimated Reduction in Infiltration, (percent): 2%

H. Adjusted Design Flow, (cfs per square mile): 230

PART V - SUMMARY OF ANALYSIS

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

Emergency is determined using the Risk Assessment Matrix below. Values at risk that are High to Very High Risk are considered to be at unacceptable risk of post-fire effects and warrant treatment. Additionally, Life and Safety Values at Intermediate risk warrant treatment. Values at Risk for the Umpqua North Complex are summarized in the VAR Table.

Critical Values to be Considered During Burned-Area Response (BAER)

HUMAN LIFE AND SAFETY
Human life and safety <i>on National Forest System (NFS) lands.</i>
PROPERTY
Buildings, water systems, utility systems, road and trail prisms, dams, wells or other significant investments <i>on NFS lands.</i>
NATURAL RESOURCES
Water used for municipal, domestic, hydropower, or agricultural supply or waters with special Federal or State designations <i>on NFS lands.</i>
Soil productivity and hydrologic function <i>on NFS lands.</i>
<i>Critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal, or plant species on NFS lands.</i>
Native or naturalized communities on NFS lands <i>where invasive species or noxious weeds are absent or present in only minor amounts.</i>
CULTURAL AND HERITAGE RESOURCES
Cultural resources which are <i>listed on or potentially eligible</i> for the National Register of Historic Places, <i>Traditional Cultural Properties, or Indian Sacred Sites</i> on NFS lands.

BAER Risk Assessment

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

Probability of Damage or Loss: The following descriptions provide a framework to estimate the relative probability that damage or loss would occur within 1 to 3 years (depending on the resource):

- **Very likely** - Nearly certain occurrence (90% - 100%)
- **Likely** - Likely occurrence (50% - 90%)
- **Possible** - Possible occurrence (10% - 49%)
- **Unlikely** - Unlikely occurrence (0% - 9%)

Magnitude of Consequences:

- **Major** - Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.
- **Moderate** - Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects.
- **Minor** - Property damage is limited in economic value and/or to few investments; damage to natural or cultural resources resulting in minimal, recoverable or localized effects.

Table 1. Values at Risk Analysis for the Umpqua North Complex (some treatments were combined - Section H. Treatment Narrative and Part VI)

	BAER Critical Value		Threat	Probability of Damage or Loss	Magnitude of Consequences	Risk	Treatment/ Recommendation
1	Human Life & Safety	People on open roads - collectors (NFS roads, 138 rd)	Fallen trees, cut slope debris, debris flows, rockfall Severe storm event/ road fill failure	<i>Unlikely (0% - 9%)</i>	Major	Intermediate	Install hazard warning signs (coordinate with Willamette and Deschutes for state highway approved version)
2	Human Life & Safety	People on trails	Snags, loss of trail tread, trail not visible, missing bridges, ravel on tread, logs across trail	Possible (10% - 49%)	Major	High	close North Umpqua Trail #1414 (Jessi Wright and Marsters segments), Twin Lakes Trail #1500, Bradley Ridge Trail #1551; and install caution signs on 6 trails - Bradley Trail #1491, Boulder Creek Trail #1552, Rattlesnake Mountain Trail #1497, Illahee Flats Trail #1532, Bartrums Rock Trail #1535, Illahee Rock Trail #1539
3	Human Life & Safety	People in developed campgrounds	Debris flow, high runoff event, snags	<i>Unlikely (0% - 9%)</i>	Major	Intermediate	Maintain current hazard warning sign for high water risk
4	Human Life & Safety	People fishing along /in river	Debris flow, high runoff event, snags, floating debris, rock fall	Possible (10% - 49%)	Major	High	post on highway portal signs and at raft put in/take outs; pamphlets in fishing license and O&G permits; media outreach
5	Human Life & Safety	Rafters	hung up on debris/logs in river (incl. strainers), rock fall, snags, eddies	Possible (10% - 49%)	Major	High	Close river to rafting through the winter, Sign raft put in/take outs (Boulder Flat, Horseshoe Bend, Gravel Bend, Bogus, and Susan Creek) AND survey river by mid-summer and adjust (winch or cut free) hazard logs for safe navigation as flows allow
6	Human Life & Safety	Hunters/mushroom hunters	snags, rock fall, ravel, stump holes, rolling logs,	<i>Unlikely (0% - 9%)</i>	Major	Intermediate	include no stopping on road signs and general hazard at trailheads; pamphlets for licenses and media outreach
7	Human Life & Safety	People in dispersed campsites	danger trees, debris flows, post-fire increased flows	Possible (10% - 49%)	Major	High	include "no stopping" on road signs
8	Human Life & Safety	People on arterial and resource NFS roads	Fallen trees, cut slope debris, debris flows, rockfall, severe storm event/ road fill failure	Possible (10% - 49%)	Major	High	close roads 4760-100, 4760-105, 4770-030, 4770-240, 4770-400, 4770-430 until post-fire hazards are addressed and adjust closure as needed, sign roads other for hazards
9	Property	Boulder Creek Stream Gage	High runoff event, debris flow	<i>Unlikely (0% - 9%)</i>	<i>Moderate</i>	Low	No Treatment Justified
	Property	NU @ Copeland stream, gage	High runoff event, debris flow	<i>Unlikely (0% - 9%)</i>	<i>Moderate</i>	Low	No Treatment Justified
11	Property	Shelter at Twin Lakes	green surrounding	<i>Unlikely (0% - 9%)</i>	<i>Minor</i>	Very Low	No Treatment Justified

12	Property	Burned shelter at Twin Lakes	none - burned	Unlikely (0% - 9%)	Minor	Very Low	No Treatment Justified
13	Property	Trail tread at Twin Lakes	damage occurred from burnout of organics,	Unlikely (0% - 9%)	Minor	Very Low	No Treatment Justified
14	Property	Picnic Table at Twin Lakes	hazard trees	Likely (50% - 89%)	Minor	Low	No Treatment Justified
15	Property	Boardwalk at Twin Lakes	weight on edge of damaged board, hazard trees	Possible (10% - 49%)	Minor	Low	No Treatment Justified
16	Property	Horseshoe Bend CG water system intake	floatable debris	Unlikely (0% - 9%)	Moderate	Low	No Treatment Justified
17	Human Life & Safety	Hiking Trail Bridge - partially damaged	high runoff event, debris flow, hazard trees	Possible (10% - 49%)	Moderate	Intermediate	Remove damaged bridge with hand crew
18	Property	NU Trail bridge at Deception Creek	lack of hazard trees still in area	Unlikely (0% - 9%)	Major	Intermediate	Treatment Justified if Life and Safety Critical Value
19	Property	Boulder Creek Bridge	Down log upstream of bridge, the potential for the log and additional debris could damage or destroy the bridge	Likely (50% - 89%)	Moderate	High	Shorten log so that it flushes under the bridge in a high water event. Implement as soon as safely possible to complete before first high water event.
20	Property	Steamboat Creek CG - picnic tables,	hazard trees	Possible (10% - 49%)	Minor	Low	No Treatment Justified
21	Property	PacifiCorp Power Facilities (flumes, reservoir)	upstream fires, erosion and flow	Unlikely (0% - 9%)	Moderate	Low	No Treatment Justified
22	Property	PacifiCorp Transmission line	hazard trees	Unlikely (0% - 9%)	Major	Intermediate	Treatment Justified if Life and Safety Critical Value
23	Property	PacifiCorp T-line access roads - loss of road, sedimentation	increased flows onto poorly drained roads, hazard trees,	Possible (10% - 49%)	Moderate	Intermediate	Treatment Justified if Life and Safety Critical Value
24	Property	Roads - Slides onto 138	slide area appears stable	Unlikely (0% - 9%)	Major	Intermediate	Treatment Justified if Life and Safety Critical Value
25	Property	Highway 138	rocks and trees	Possible (10% - 49%)	Moderate	Intermediate	Treatment Justified if Life and Safety Critical Value

26	Property	Road Bridges (Highway)	debris flows, floatable debris	<i>Unlikely (0% - 9%)</i>	Major	Intermediate	Treatment Justified if Life and Safety Critical Value
27	Property	Road Bridges (NFS)	debris flows, floatable debris	<i>Unlikely (0% - 9%)</i>	Major	Intermediate	Treatment Justified if Life and Safety Critical Value
28	Property	Transportation - road drainage	debris flow, increased post-fire flows, water impoundment, danger trees/debris (plugging culvert) in areas burned at high and moderate soil burn severity	Possible (10% - 49%)	Major	High	Improve road drainage in areas prone to increased post-fire overland flows. Storm inspection and response.
29	Property	Transportation - west Copeland Creek crossing (2801-100)	debris flow, increased post-fire flows, water impoundment, danger trees/debris (plugging culvert) below a small watershed burned at high soil burn severity	Possible (10% - 49%)	Major	High	remove trash rack to allow ravel and bedload to pass through existing pipe (64" x 80' with 36" overflow pipe). Remove sediment plug held by trash rack
30	Property	Transportation - Calf Creek unnamed tributary crossing (4750)	debris flow, increased post-fire flows, water impoundment, danger trees/debris (plugging culvert), western cascades geology with high surface rock	Possible (10% - 49%)	Major	High	install relief culvert with armored fill
31	Property	Transportation - 4760 slump in road fillslope; burned out stump in 4750 and maybe 2800	fillslope failure from burned out roots and organics in fill; high potential for post-fire erosion, ravel and gully in the burned out fill	<i>Very Likely (90% - 100%)</i>	<i>Moderate</i>	Very High	On three level 3-5 roads near the intersection with highway 138, excavate burned out material and replace with rip rap and surface, 4750 - burnout is under entire prism, excavate 20 foot section of road, remove burned out material, rip rap, build base and re surface; 2800 - remove asphalt, excavate 12x10 section, remove burned out material, replace with rip rap, build base and resurface road
36	Property	Winchester Dam	floatable debris	<i>Unlikely (0% - 9%)</i>	<i>Moderate</i>	Low	No Treatment Justified
37	Natural Resources	Soil Productivity - moderate and high soil burn severity	accelerated erosion and debris flow	<i>Likely (50% - 89%)</i>	Minor	Low	No Treatment Justified
38	Natural Resources	Botany - White Oak habitat (at risk for NNIS)	invasive weeds - primarily meadow knapweed, false brome, rush skeleton weed	<i>Likely (50% - 89%)</i>	Major	Very High	Early detection and rapid response

39	Natural Resources	Botany - Limpy Rock RNA	invasive weeds - primarily meadow knapweed, false brome, rush skeleton weed; rare plants burned over (kalmiopsis, grass fern (maybe))	<i>Likely (50% - 89%)</i>	<i>Moderate</i>	High	Early detection and rapid response.
40	Natural Resources	Botany - other native plant communities at risk of NNIS	Invasives - primarily meadow knapweed, false brome, rush skeleton weed	<i>Very Likely (90% - 100%)</i>	<i>Moderate</i>	Very High	Early detection and rapid response. Seeding a strip between existing weed infestations and burned areas on 13 miles of road and mowing the meadow knapweed along those 13 miles to keep the infestations from spreading into the black. Conduct implementation and effectiveness monitoring (map)
41	Natural Resources	Wildlife - Winter Range for Elk	Invasives - primarily meadow knapweed, false brome, rush skeleton weed	Possible (10% - 49%)	<i>Moderate</i>	Intermediate	Treatment Justified if Life and Safety Critical Value
42	Natural Resources	Wildlife - Owl habitat	loss of core habitat and NRF	Possible (10% - 49%)	<i>Moderate</i>	Intermediate	Treatment Justified if Life and Safety Critical Value
43	Natural Resources	Water quality - Glide Water Association	alterations to baseline water quality, sedimentation	Possible (10% - 49%)	Minor	Low	No Treatment Justified
44	Natural Resources	Water quality - City of Roseburg	alterations to baseline water quality, sedimentation	Possible (10% - 49%)	Minor	Low	No Treatment Justified
45	Natural Resources	Water quality - Umpqua Basin Water Association	alterations to baseline water quality, sedimentation	Possible (10% - 49%)	Minor	Low	No Treatment Justified
46	Natural Resources	Fish/aquatics - water quality	nutrient inputs (debris flows and runoff), sedimentation/turbidity, temperature increases	Possible (10% - 49%)	Minor	Low	No Treatment Justified
47	Natural Resources	Fish/aquatics - habitat	filling of pools, shallowing of pools, scour, passage barriers (wood accumulations and bedload aggradation), stream velocity barriers (headcut and tailcut)	Possible (10% - 49%)	Minor	Low	No Treatment Justified
48	Natural Resources	Fish/aquatics - wild and scenic corridor	adjustment/removal of new wood to address navigability	<i>Likely (50% - 89%)</i>	Minor	Low	No Treatment Justified

49	Natural Resources	Boulder Creek Wilderness - native plant community	invasive weeds - primarily meadow knapweed, false brome, rush skeleton weed	<i>Likely (50% - 89%)</i>	Major	Very High	Early Detection and Rapid Response. Seed and Mow treatment as above
50	Natural Resources	Rogue Umpqua Divide Wilderness - native plant community	invasive weeds - primarily meadow knapweed, false brome, rush skeleton weed	Possible (10% - 49%)	<i>Moderate</i>	Intermediate	Treatment Justified if Life and Safety Critical Value
53	Cultural & Heritage Resources	Heritage - Pre-Contact Cultural Resources (various)	looting, danger tree cutting/removal and other ground disturbance	<i>Likely (50% - 89%)</i>	Major	Very High	no dragging of trees off site if felled, patrols and monitoring of treatment effectiveness of patrols to hinder looting
54	Cultural & Heritage Resources	Heritage - Pre-Contact Cultural Resources (various)	looting and vandalism	<i>Likely (50% - 89%)</i>	Major	Very High	fell trees to restrict visibility from roadway, patrols and monitoring of treatment effectiveness of patrols to hinder looting (layered treatment – limit monitoring)
55	Cultural & Heritage Resources	Heritage - Protected Site	hazardous fuels – hazard trees in close proximity to wooden resources	Possible (10% - 49%)	Major	High	cut the danger tree off of the wooden resource to avoid loss of resource
56	Cultural & Heritage Resources	Heritage - Pre-Contact Cultural Resources (various)	Major to moderate erosion potential	Possible (10% - 49%)	<i>Moderate</i>	Intermediate	Treatment Justified if Life and Safety Critical Value
57	Cultural & Heritage Resources	Heritage - Pre-Contact Cultural Resources (various)	hazardous fuels - hazard trees that were felled onto site, ground disturbance	Possible (10% - 49%)	<i>Moderate</i>	Intermediate	Treatment Justified if Life and Safety Critical Value
58	Cultural & Heritage Resources	Heritage - Historic and Prehistoric Heritage resources (various)	minor erosion (deflation)	Possible (10% - 49%)	Minor	Low	No Treatment Justified

Human Life and Safety

Threats to human life and safety exist throughout the burned area. Fire killed trees in the burned area pose an immediate threat to the public. Many trees have already fallen, and it is likely that many more will continue to fall, especially during winter storm events.

There is an immediate and future threat to travelers along the roads within the burned area due to the increased potential for rolling and falling rock from burned slopes above roads, trails, and increased potential for debris flows. With the loss of vegetation normal storm frequencies and magnitudes can more easily initiate erosion on the slopes and it is possible that this runoff will cover the roads or cause washouts at drainage facilities (culverts) or stream crossings. These events make for hazardous access to forest roads and put the safety of users at risk.

The fire burned across the Jessi Wright and Marsters sections of the North Umpqua Trail, approximately 8 miles. There are no options for ingress/egress except the trailhead at each end of each section. The North Umpqua Trail is very popular with hikers, mountain bikers and anglers year around. The North Umpqua Trail crosses drainages through areas where soil burn severity was low to moderate. These areas have danger trees and high amounts dry ravel and pose a degree of hazard to trail users. Four bridges were destroyed, 1 was damaged and numerous locations are impacted by soil/rock ravel, slides onto the trail and collapse of trail due to burned roots under the trail.

In general 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, therefore the risk is deemed to be high.

Property – Roads, Trails, Infrastructure

Roads- Roads within the Umpqua North Complex contain drainage structures that cross streams located in watersheds that have a high and moderate soil burn severity (though most of the burn area is low soil burn severity). Even with low proportions of high and moderate soil burn severity, the streams in the fire area now have the potential for increased runoff and debris flows. These increases in flows pose a threat to the existing crossings which may result in plugging drainage structures or exceeding their maximum flow capacity. If these flows plug drainage structures the result could be erosion and debris flows further down the drainage due to the failure.

There are three areas where the fill and roadbed has been damaged by fire burning out logs in the road fill. While this is not a critical BAER value at risk by itself the high potential for localized post-fire erosion and ravel of the remaining roadbed and potential loss of the remaining adjacent road is a BAER values at risk. These areas are at risk of such erosion and since they are near the highway the loss of the road would have significant impacts on access.

Trails- There are 8 miles of the North Umpqua Trail that are within the burn area. Because the trail is at the bottom of steep slopes and crosses several drainages, it is threatened by high runoff events that could cause loss of trail tread and obliteration of the existing trail. The damaged trail bridge is on the Marsters segment and was deemed not structurally stable (recreation and engineering). This bridge is built with pressure treated lumber which contains chemicals toxic to fish. The bridge is a risk to people in its current location and if the bridge is moved by increased post-fire flows coming from moderate soil burn severity areas upstream it could be a risk to fisheries resources. The condition of the majority of the trail is very poor and dangerous to users.

Natural Resources

Soil Productivity- Approximately 9% (3299 acres) of land within the fire perimeter is considered to have high or moderate soil burn severity (Map 1). The threat within high and moderate severity burn areas is accelerated erosion and debris flow. Modeled erosion rates show the highest increased erosion in the Rattlesnake Creek catchment within the Boulder Creek Wilderness area. This indicates that the probability of damage or loss to soil resources is likely where burn severity was determined to be high or moderate. The magnitude however, was determined to be minor at the landscape scale.

Critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal, or plant species on NFS lands:

Northern Spotted Owl

In general, the largest impact to spotted owl habitat, across their range, is loss of high quality habitat and fragmentation by largescale wildfire. The Umpqua North Complex impacted 24,829 acres of nesting and roosting habitat (NR), 18 LSR4 cores as well as 24,201 acres of Critical habitat. Overall, only approximately 2% of the fire area experienced a high severity burn. For the most part, these areas were in younger, even aged stands and are not considered high quality spotted owl habitat. Fire burned through older stands and consumed most of the ground fuels and left large trees largely unburned. Within NR, small patches of high severity did occur, generally under 10 acres with the largest area being approximately 150 acres.

Although fire can be detrimental to spotted owl habitat, this fire burned with mixed severity with most areas experiencing a low soil burn severity beneficial under burn. Isolated patches of high severity will contribute to recruitment of snags and down wood and also provide for diversity in understory vegetation. These small high severity patches within larger stands of suitable habitat will not reduce overall functionality and over time will improve quality of habitat for spotted owls. Due to lack of data the full extent of impacts to spotted owls is largely unknown, however at the landscape level this fire was largely beneficial.

Coho Salmon

The Umpqua North Complex fire burned 6 river miles of coho salmon critical habitat. Most of the areas on the river bank experienced moderate to low fire severity. Impacts to habitat from this fire include increased risk of sediment loads into the North Umpqua River, and increased amounts of downwood over time.

Considering the existing and likely addition of large trees within the mainstem of the North Umpqua River, the mitigation of boater collision/hang up with in-river trees from upslope areas is recommended (see Recreation report for details). Repositioning of navigational hazard trees in the mainstem of the North Umpqua River is expected to mitigate for this risk to human life/safety in support of safe downstream navigation, while also supporting increased stability and retention of functional woody material and associated fish habitat, which will likely benefit ESA-Threatened Oregon Coast Coho.

Native Plant Communities - There are 15 species of non-native invasive plants on the Oregon Department of Agriculture's List of Noxious Weeds (ODA 2017) documented within in close proximity to the burned area. Far and away the most common of these invasive species is meadow knapweed. This species is reported to have been deliberately seeded in the 1960s for the purposes of erosion control. It currently lines many roads within the burn perimeter including extensive parts of FS roads 28, 2801, 2801-100, 2801-150, 38, 4750, 4760, 4770, 4770-240, 4770-350 and 4770-430. It is largely confined to roadsides and pullouts although it badly infests much of the openings in the Little Oak Flat area. The probability of damage or loss from the introduction and spread of invasive plants is considered to be likely to very likely, and the magnitude of consequences is determined to be moderate, therefore, the risk is high to very high that invasive plant species will have a negative impact on native plant communities as a result of the fire. Post-fire conditions are particularly favorable to noxious weed establishment in areas were fire consumed the existing native vegetation leaving soil bare for colonization, so treatments are warranted to prevent or minimize their spread.

Documented Invasive plant sites on the Umpqua National Forest within or in the vicinity of the Umpqua North Complex Fire perimeter associated with Soil Burn Severity Class. Acreages are approximate.

Umpqua North Complex Fire on NF lands		Acres with Soil Burn Severity Class			
Species	Common	High	Moderate	Low	Total
<i>Brachypodium sylvaticum</i>	False Brome				0
<i>Centaurea diffusa</i>	Diffuse knapweed				0
<i>Centaurea maculosa</i>	Spotted knapweed			1.1	1.1
<i>Centaurea stoebe ssp. micranthos</i>	Meadow knapweed	2.3	7.7	151.0	161.0

<i>Chondrilla juncea</i>	Rush skeletonweed				0
<i>Cirsium arvense</i>	Canada thistle			0.7	0.7
<i>Cytisus scoparius</i>	Scotch broom		0.1	6.5	6.6
<i>Hypericum perforatum</i>	St. Johnswort	No Data			
<i>Lathyrus latifolius</i>	Perennial peavine		0.5	3.8	4.3
<i>Linaria vulgaris</i>	Yellow toadflax				0
<i>Nymphoides peltata</i>	Yellow floating heart				0
<i>Potentilla recta</i>	Sulfur cinquefoil				0
<i>Rubus armeniacus</i>	Armenian blackberry			0.1	0.1
<i>Senecio jacobaea</i>	Tansy ragwort	No Data			
<i>Taeniatherum caput-medusae</i>	Medusahead rye			11.6	11.6
total					185.4

Watershed- Some loss of soil from post-fire erosion is expected, especially during the first winter when maximum bare ground is exposed. Much groundcover was consumed during the fire, but many areas retained residual litter and duff, and substantial amounts of rock. Some needle cast and newly fallen trees also provide groundcover, as well as many scattered areas of unburned vegetation. This reduction in groundcover combined with a slightly flashier hydrologic response will likely result in elevated sedimentation. Elevated flows are also expected to increase the potential for floating debris that could change hydrologic function and downstream aquatic habitats, including the North Umpqua River which provides habitat for threatened OC Coho. Most large channel wood was not consumed, and much new channel wood was observed from scorched bank trees. The probability of damage or degradation of water quality and aquatic habitat is possible, but the magnitude of consequence minor, making the risk low.

Cultural and Heritage Resources (Pre-Contact and Historic)

The cultural and heritage resources evaluated during this BAER assessment include resources containing pre-contact, historic, multicomponent (both pre-contact and historic resources), and unknown components. Resources were prioritized based on multiple factors including burn severity, slope or erosion potential, potential for looting, and site type. Another concern is the location of equipment during road treatments and the disposal of any waste material created during road treatments. A total of 38 sites were visited during this BAER assessment. Of the 38 sites, 28 sites were determined to be critical values at risk. Treatment implementation is priority as cultural features and subsurface resources are at a higher risk of being damaged or exposed by fire activities and post-fire effects such as erosion and soil movement and looting. The probability of damage or loss ranges from likely to very likely for 5 of the 28 sites due to burn severity, increased probability of erosion, and previous looting /vandalism that has occurred to these resources. The magnitude of consequences (loss of scientific data present in archaeological deposits) is moderate to major, making the risk high to very high. Of the remaining sites the probability of damage or loss ranges unlikely to possible, but the magnitude of consequences remains minor to moderate. The risk for these resources would be low to intermediate. Treatment recommendations include felling trees to restrict visibility, as well as patrols to monitor the effectiveness of the treatments and deterring locals from accessing these resources. Post-implementation monitoring will occur within a year by a qualified Heritage professional to assess whether this treatment was appropriate and effective.

B. Emergency Treatment Objectives (narrative):

Human Life and Safety:

Mitigate and minimize potential hazards from hazard trees, rocks, and debris flows with road and trail treatments, hazard signs, and closures

Property:

Protect road infrastructure.

Protect trail infrastructure

Natural Resources:

Protect native or intact plant communities from encroachment by invasives with emphasis on roads and trails within and adjacent to moderate and high severity burned areas. Protect OC Coho Salmon critical habitat by performing road and trail work.

Cultural and Heritage Resources:

To ensure cultural resources are not damaged by road and trail BAER treatment activities, site inspections by a qualified Heritage specialist will be performed prior to any ground disturbing activity. These Heritage specialists will assess locations where heavy equipment will work and be parked, as well as locations where work will occur.

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

Land 75% Channel NA% Roads/Trails 65% Protection/Safety 75%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	70	75	90
Channel	NA	NA	NA
Roads/Trails	80	90	90
Protection/Safety	70	80	90

E. Cost of No-Action (Including Loss): see VAR Calculation Tool

F. Cost of Selected Alternative (Including Loss): see VAR Calculation Tool

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology (Joy Archuleta, Matt Enger, Katie Buchan) [] Range
 [X] Soils (Jim Archuleta, Mary Young, Kellie Roussos) [] Geology
 [X] Wildlife (Errin Trujillo) [X] Engineering (Luis Palacios, Steve Hanussak)
 [X] Botany (Krista Farris, Bryan Benz) [X] Fisheries (Jason Wilcox)
 [X] Archaeology (Amber Nelson, Laird Naylor, Bill Dale, Mike Boero, Stuart Chilvers)
 [X] GIS (Rob Arlowe, Ed Hall)

Team Leader: Tedd Huffman/Ivan Geroy

Email: elhuffman@fs.fed.us **Phone:** 971-373-1008

FAX: 360-449-7801

Email: ijgeroy@fs.fed.us **Phone:** 530-200-0641

FAX: XXX

H. Treatment Narrative:

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

Non-native Invasive Plant Monitoring and Treatment - Post-fire non-native invasive plant detection is recommended the first year “to determine the post-fire presence of invasive species” moving from road, trails and fire lines into burned areas. This is consistent with Forest Service Manual direction of BAER treatment of invasive plants. (FSM2523.3). All treatments would be consistent with the Umpqua National Forest Environmental Assessment for Integrated Weed Management. (USDA 2003). Most newly discovered infestations would be expected to be treated manually by hand pulling or grubbing of weeds. In some instances, landscape fabric may be used to cover the plant. The chemical Picloram is available for use on primarily spotted and diffuse knapweed. All previously known infestations of these two knapweeds within the fire perimeter are thought to have been eradicated but we continually discover new ones, particularly along the highway where seeds are transported from eastern Oregon where these knapweeds are more prevalent.

Seeding and Mowing - Seeding with native grasses is recommended to occur along an approximately twenty foot width between existing roadside weed infestation and areas blackened by fire where there is potential for spread. This is particularly a concern for areas with meadow knapweed which has a demonstrated capacity for spreading under by rhizomes under low severity burn conditions as long as there is sufficient canopy opening. Approximately 7.7 miles have been identified as being of particularly high risk of weed movement. Although studies have shown mixed results with seeding after fire (Peppin et al. 2010, Peppin et al. 2011), recent seeding trials on the Tiller Ranger District after the Whisky fire conclude that seeding with native grasses had up to 60% more vegetative cover than unseeded areas, and is an effective treatment to prevent non-native species from colonizing post-fire on the Tiller Ranger District (Report by Wijayratne and Baker 2015). Scott Riley, regional restoration specialist has had great success in post fire seeding using native grass seed in high severity areas and those areas identified at risk for invasive plant colonization. Recommended seeding rates are 20 lbs/acre, raking seed in where possible will improve seed to soil contact and improve germination and establishment success. Blue wildrye (*Elymus glaucus*) is the preferred species over all the areas except for Oak Flats where a dry meadow grass species mix should be employed. Roemer’s fescue (*Festuca roemerii*), California oatgrass (*Danthonia californica*) and Prairie Junegrass (*Koeleria cristata*) are the generally preferred species for this habitat. Current seed supplies (native, local genetics) would be utilized to meet Regional policy and reduce costs of treatment.

Mowing of areas badly infested with meadow knapweed to reduce seed production and hand pulling or smaller infestations should accompany the areas where seeding occurs. This method was successfully employed after the 2002 Apple Fire (Figure 4). We mowed the meadow knapweed just prior to the plant’s flowering. Unfortunately we found that the plants were able to recover to produce flowers a few weeks later on the now much shorter statured plants. Despite this, the combination of mowing and seeding resulted in very few plants moving from the roads into the burned areas to this day. For the Umpqua North Complex we recommend doing two mowings about three weeks apart to more successfully reduce the production of knapweed seed. Implementation of this treatment in the Apple Fire was more cost effective than early detection rapid response in similar areas. It is expected that the same will be true for the Umpqua North Complex. Additionally, meadow knapweed is rhizomatous which means that it can progress into burn areas even if mowed as it doesn’t need to seed. Thus both seeding to out compete rhizomatous propagation and mowing to limiting meadow knapweed propagating through seed.



Figure 4. Meadow knapweed with pink flowers lines FS road 4714 two years after the Apple Fire. The tall grass in the background is seeded blue wildrye.

Cultural Resource Protection Treatments:

Archaeological surveys will be necessary to protect heritage values at risk from impacts of implementing other BAER treatments. It is important that there is coordination between heritage resource specialists and other specialists in the implementation phase so cultural resources are not lost or damaged during treatment implementation. To avoid damage to cultural resources by equipment and actions during implementation and comply with Section 106 of the National Historic Preservation Act qualified archeologists will perform assessment of the work sites and the proposed activities. Five days of work to check the road and trail prisms for Archaeological resources will be conducted prior to any work in the area if proposed.

The forest will be primarily utilizing local district resources to fall trees for resource protection from looters in multiple locations. Cost estimates below include cost of commercial fallers if local resources are not available. At these multiple locations trees will be felled along a road to restrict visibility and deter access to a pre-contact resources within a close proximity to roads. Another location will require fallers to remove fuel from a wooden resource to protect it from future fire hazards.

It is recommended that the Forest monitor the effectiveness of treatments, whether it be natural recovery or restricted visibility from looting. A majority of the resources will likely be affected by some degree of erosion and looting/vandalism based on the produced soil erosion hazard models and the proximity to roads. Past looting/vandalism to resources have proven that effectiveness monitoring is necessary to prevent damage from looting or vandalism.

Channel Treatments: None

Roads and Trail Treatments:

Roadway drainage structures should be improved by removing obstructions from ditches and cross-drain catch basins. This treatment should be conducted on the roadways list below. On road 2801-100, at the crossing of West Copeland Cr., the trash rack located at the inlet should be removed to improve the flow of the creek. On road 2801-300, operations will require removal of roadway vegetation and obstructions in order to allow travel of equipment. On 4750 a relief/overflow culvert will be installed to alleviate pressure if the main culvert should plug.

- 2801-100 from MP 0.1 (measured from 2801-245) to MP 0.73
- 2801-300 from MP 0.00 (measured from 2801-000) to MP 1.52

- 4750-000 from MP 0.5 (measured from Upper Calf Creek Bridge) to MP0.79
- 4760-000 from MP 0.6 (measured from 4760-050) to MP 0.88

Storm Inspection and Response - Monitor road drainage structures after significant storm events to ensure the maximum drainage capacity is maintained until the natural re-vegetation of the burned area has occurred. Maintain and/or repair any damage to road surfaces.

Storm Patrols should be used at the following locations:

1. Road crossings where loss of control of water or exceedance is identified.
2. Road access is necessary throughout the storm season.
3. Road crossings where high sediment and debris is anticipated.
4. Roads susceptible to landslides.
5. Roads with all-season surfacing (aggregate or asphalt).
6. Other roads within the fire perimeter may be patrolled as necessary depending on the storm magnitude and location.

See Burned Area Emergency Response Treatments Catalog Chapter 4, Storm Inspection and Response pages 149 -152 for more information.

Excavate burned out material and rebuild roadbed where wooden material burned beneath the road surface, the road prism should be excavated down until a stable base. The prism should be built back up in compacted layers until the grade matches the elevation of the adjacent road prism. In the instance where the fill slope was compromised by fire, unstable material should be removed from the fill slope to prevent raveling and gullying that could destroy the remaining roadbed making the road impassable during a post-fire storm event, and rip rap should be placed on the fill slope in order to protect the road prism. This treatment will protect the remaining roadbed and limit the impact of post-fire precipitation and overland flow from further damaging these road segments making large areas of the Forest inaccessible.

- 2800-000 MP 1.5 (measured from HWY 138): Excavate and rebuild road prism.
- 4750-000 MP 0.25 (measured from 4750-040): Excavate and rebuild road prism.
- 4760 from MP 0.67 (measured from 4760-045): Remove unstable material on fill slope, and armor with rip rap.



Boulder Creek Bridge Protection – A key log that is jammed above the Boulder Creek Bridge on the North Umpqua Trail that is putting the bridge at risk would be bucked to allow it to fall into the channel and either be

transported downstream or allow for material to flow over the log. This would help to avoid damage to the bridge and/or its piers. The purpose of the treatment is to protect the Boulder Creek trail bridge from being damaged from a debris flow during a high water event. The treatment will be conducted in a manner that the large wood would remain in the channel providing benefits to aquatic organisms and anadromous fish. The replacement value of the bridge is over \$100,000 and transportation of the bridge to the site by helicopter would be a minimum of \$60,000.

Protection/Safety Treatments:

Hazard and closure signs – Trails and Raft Launches – install signs on trails for closure of very high risk and hazard for lower risk (close Marsters and Jessi Wright segments of the North Umpqua Trail #1414, Twin Lakes Trail #1500, Bradley Ridge Trail #1551; and install caution signs on 6 trails - Bradley Trail #1491, Boulder Creek Trail #1552, Rattlesnake Mountain Trail #1497, Illahee Flats Trail #1532, Bartrums Rock Trail #1535, Illahee Rock Trail #1539). Sign current closure for rafter the North Umpqua River and the future hazard potential after winter flows at raft launches (Boulder Flat, Horseshoe Bend, Gravel Bend, Bogus, and Susan Creek). These are intended to notify the public of closures and the hazards related to them to improve compliance with both closures and improve safety of visitors by notifying them of the hazards.

Install warning signs for flash flooding and potential debris flows. Install “Entering Burned Area Fallen Rock and Debris” signs where necessary to properly alert the travelers of the dangers ahead. “Road Closed” signs should also be used in with road closures, see emergency road closure.

Road	Location	Sign Type
2715-000	Mud Lake Quarry	Entering Burned Area Fallen Rocks And Debris
2715-000	At junction with 2715-755	Entering Burned Area Fallen Rocks And Debris
2715-530	at Sheep Prairie Quarry	Entering Burned Area Fallen Rocks And Debris
2715-850	at junction with 2715-000	Entering Burned Area Fallen Rocks And Debris
2800-000	At beginning	Entering Burned Area Fallen Rocks And Debris
2800-000	At intersection with 2800-553	Entering Burned Area Fallen Rocks And Debris
3701-500	At the crossing of Dog Praire Cr. MP. 6.1	Entering Burned Area Fallen Rocks And Debris
3702-000	At Happy Canyon Quarry MP. 10.5	Entering Burned Area Fallen Rocks And Debris
3702-500	At the crossing of Rock Cr. MP. 4.5	Entering Burned Area Fallen Rocks And Debris
3810-100	before junction with 3810-205	Entering Burned Area Fallen Rocks And Debris
4713-100	before the junction of 4713-120	Entering Burned Area Fallen Rocks And Debris
4713-200	before the junction of 4713-240	Entering Burned Area Fallen Rocks And Debris
4750-000	At bridge over Calf Creek	Entering Burned Area Fallen Rocks And Debris
4760-000	At junction with 3800-000	Entering Burned Area Fallen Rocks And Debris
4760-000	At junction with 4760-041	Entering Burned Area Fallen Rocks And Debris
4770-000	At junction with HWY 138	Entering Burned Area Fallen Rocks And Debris
HWY 138	Just west of Boulder Creek CG	Entering Burned Area Fallen Rocks And Debris
HWY 138	Approx. MP. 45.5, west of the Fire Perimeter	Entering Burned Area Fallen Rocks And Debris
2715-000	Mud Lake Quarry	Entering Burned Area Fallen Rocks And Debris
4760-100	At Junction with 4760	Entering Burned Area Fallen Rocks And Debris

Emergency road closures should be ordered to protect human life, safety, and property. Road closures should be temporary and roads should be re-evaluated and re-opened when hazards are no longer a threat. Closures should be signed to inform people of the closure.

Emergency Road Closures			
Road	Length	Maintenance Level	Recommended Closure location
4760-105	1.15	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
4770-240	1.55	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
4770-430	0.32	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
4770-400	0.49	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
4770-030	1.8	2 - HIGH CLEARANCE VEHICLES	Beginning of the road

Instream Navigational Hazard Tree Mitigation - Repositioning of in-river navigational hazard trees is expected to mitigate the risk of boater collision/hang up with in-river trees from upslope areas to allow for safe passage, while minimizing disturbance of associated aquatic habitat.

Review of the possible risk and mitigation of boater collision/hang up with in-river trees from upslope areas following fires along the mainstem North Umpqua River for public health and safety should be undertaken. Review prior to Spring 2018 is not possible due to changing conditions resulting from variable river flows during the winter/spring and early summer. This requires an alternative mitigation for public health and safety and the designated boating segment of the river will be surveyed for navigational hazard trees by mid-summer 2018. The survey and implementation of this treatment will be timed after hazardous spring peak flows to ensure the safety of surveyors and implementation team. Those trees deemed to be unsafe for raft and kayak passage will be repositioned to allow for safe passage, while minimizing disturbance of associated aquatic habitat.

After surveying, work will include layout of the repositioning treatment, contract development and administration, oversight of implementation, and effectiveness monitoring.

Hunter/Angler Protection outreach - To meet the BAER Critical Value of Human Life and Safety, the Forest will develop a 1-page flyer or brochure to notify different recreationists and user groups of potential hazards and safety guidelines when being on the forest after a wildfire has occurred. Hazards include snags/danger trees, holes in the ground from stumps and roots burning out, rock ravel and rock slides, debris flows and high water.

The flyers/brochures could be distributed in cooperation with ODFW for anglers and hunters. One possibility is to distribute the flyers/brochures with angling and hunting licenses that are issued when they include the area of forest affected by wildfire. The flyers/brochures could also be distributed with Forest mushroom-picking permits.

The information would be posted on the Forest webpage and Facebook account and could potentially be used for other media outlets.

Removal of Damaged Trail Bridge - Although this segment of trail is closed and will remain closed due to the damage sustained in the fire, there is a concern that people may enter the trail and try to cross the trail bridge, even though there is evidence the trail bridge was damaged by fire. In addition, there is a benefit to water quality if the pressure-treated lumber is removed before it is deposited into the stream or the North Umpqua River by a debris flow. To meet the BAER Critical Value of Human Life and Safety, the staff decided to remove the trail bridge from the site and pack the bridge materials to the trailhead. There would also be a benefit to the Natural Resources Critical Value, because the bridge was constructed with pressure-treated dimensional lumber. There is a risk that a debris flow during a high-water event could destroy the bridge and transport the materials to the North Umpqua River, which provides habitat for numerous anadromous fish species including ESA-listed coho salmon.

The trail bridge would be cut up in the field and carried by hand and motorized cart with a small handcrew

I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Effectiveness monitoring for the seeding and mowing treatment includes the following components:

1. How effective was manual weed treatment in reducing infestations at designated treatment areas?
2. What was the establishment success of seeding native grasses (% cover relative to unseeded sites) and how effective was it at preventing non-native invasive plant colonization (compared to invasive establishment in adjacent non-seeded sites)?
3. Treatment recommendations for follow up treatment.

Cultural Resource Site Protection Effectiveness Monitoring – Resource monitoring will need to occur within the next year to ensure that the appropriate treatments have mitigated post-fire effects from erosion and exposure to looting. This must be completed by a qualified Heritage professional, costs estimated for a GS-9/2 Archaeologist. Five days of work to monitor the cultural and heritage resources will be conducted to ensure that patrolling and felling trees to restrict visibility were appropriate and effective treatments.

For the log bucking done to pass the log under the Boulder Creek Trail Bridge, effectiveness monitoring will occur after high water flow events to determine if logs and debris were able to pass under the bridge without damaging the structure.

For the instream log adjustment, effectiveness monitoring shall consist of additional in-field assessment of repositioned trees by a USFS fish biologist to assess post-treatment tree stability and retention of associated aquatic habitat. A USFS river recreation specialist shall conduct surveys of commercial rafting guides to assess post-treatment navigability. Monitoring will be based upon an evaluation of tree orientation and river channel dimensions, relative to the treatment specifications. Implementation monitoring shall occur during tree relocation operations, to allow for corrective action by the contractor, if deemed necessary. Effectiveness monitoring of post-treatment river navigability shall occur when the first authorized commercial rafting trip through all treated areas is completed, and at monthly intervals, thereafter. Effectiveness monitoring of post-treatment tree stability and retention of associated aquatic habitat shall occur at monthly intervals.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$	units	\$	Units	\$	\$
A. Land Treatments										
Seed and Mow - meadow knapweed	mile	1299	8	\$ 10,000	\$0		\$0		\$0	\$10,000
Early detection/rapid response	mile	167	90	\$ 15,000	\$0		\$0		\$0	\$15,000
Cultural Site Protection				\$9,280	\$0		\$0		\$0	\$15,030
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$34,280	\$0		\$0		\$0	\$40,030
B. Channel Treatments										
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
Road Drainage	mile	10189	3.22	\$32,810	\$0		\$0		\$0	\$32,810
Storm Inspection/Response	each	8050	2	\$16,100	\$0		\$0		\$0	\$16,100
Fill stabilization/ erosion prevention	each	9667	3	\$29,000	\$0		\$0		\$0	\$29,000
Buck log to protect bridge	Each	3500	1	\$3,500	\$0		\$0		\$0	\$3,500
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$81,410	\$0		\$0		\$0	\$81,410
D. Protection/Safety										
Hazard & closure signs - trail & raft launch	each	290	25	\$7,250	\$0		\$0		\$0	\$7,250
Hazard signs - roads	each	400	19	\$7,600	\$0		\$0		\$0	\$7,600
Closure signs - roads	each	500	5	\$2,500	\$0		\$0		\$0	\$2,500
Rafter protection - hazard log adjustment	each	1450	20	\$29,000	\$0		\$0		\$0	\$29,000
Hunter/Angler protection outreach	total	5800	1	\$5,800	\$0		\$0		\$0	\$5,800
remove damaged trail bridge	each	15,000	1	\$15,000	\$0		\$0		\$0	\$15,000
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$67,150	\$0		\$0		\$0	\$67,150
E. BAER Evaluation										
Initial assessment				---	\$130,000		\$0		\$0	\$130,000
<i>Insert new items above this line!</i>				---	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				---	\$130,000		\$0		\$0	\$130,000
F. Monitoring										
Seed and mow effectiveness	total	1400	1	\$1,400	\$0		\$0		\$0	\$1,400
Cultural Site Protection effectiveness	total	1500	1	\$1,500	\$0		\$0		\$0	\$1,500
Rafter protection effectiveness	total	2000	1	\$2,000	\$0		\$0		\$0	\$2,000
Implementation Coordination	days	390	20	\$7,800	\$0		\$0		\$0	\$7,800
<i>Subtotal Monitoring</i>				\$12,700	\$0		\$0		\$0	\$12,700
G. Totals				\$195,540	\$130,000		\$0		\$0	\$331,290
Previously approved										
Total for this request				\$195,540						

PART VII - APPROVALS

1. /s/ Alice Carlton
Forest Supervisor (signature)

10/12/17
Date

2. _____
Regional Forester (signature)

October 17, 2017
Date







