

Date of Report: September 27, 2017

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: Falcon Complex
- B. Fire Number: OR-UPF-000295
- C. State: Oregon
- D. County: Douglas
- E. Region: 6
- F. Forest: Umpqua
- G. District (s): Tiller Ranger District
- H. Fire Incident Job Code: P6K8800 (0615)
- I. Date Fire Started: August 7th, 2017
- J. Date Fire Contained: September 16th, 2017
- K. Suppression Cost: \$9.3M (as of 8/25/2017)
- L. Fire Suppression Damages Repaired with Suppression Funds
1. Handline waterbarred and slashed (miles): 0.8
 2. Dozer line waterbarred and slashed (miles): 6.7
 3. Fireline seeded (miles): NA
 4. Other (identify): Road containment lines 14
- M. Watershed Number: 1710030203 Middle South Umpqua- Dumont Creek Watershed;
- 1710030202 Jackson Creek Watershed
- N. Total Acres Burned: 2,935 total acres
- Upper Ash Flat- 1983, Double Buck- 762, Tallow-89, Buckskin 56, Cougar-40, Freeze 5
- NFS Acres (2,935) Other Federal (0) Private (0)

- O. Vegetation Types:** The dominate vegetation type within the Falcon Complex fire perimeter is mixed conifer with Douglas-fir, white fir, incense cedar, ponderosa pine, and sugar pine . Understory composition is primarily vine maple, rhododendron, salal and Oregon grape with sword fern in moister sites. Hardwoods including big

leaf maple and red alder in riparian areas. Scattered madrone and Oregon white oak occur in patches on well drained south facing slopes along with chinkapin.

P. Dominant Soils: Loam and clay loam

Q. Geologic Types: Undifferentiated sedimentary and volcaniclastic rocks

R. Miles of Stream Channels by Order or Class:

Fire	Stream Class (miles)		
	Perennial, resident fish	Perennial, non-fish	Intermittent/Ephemeral
Upper Ash	1	4	12
Double Buck	0	0.5	2

S. Transportation System

Roads: Road maintenance levels within the Falcon Complex Fire

Maintenance Level	Length
3 - SUITABLE FOR PASSENGER CARS	7.32
2 - HIGH CLEARANCE VEHICLES	15.42
1 - BASIC CUSTODIAL CARE (CLOSED)	0.73
Roads Designated as Motorized Trails, Open to All Vehicles	0.25
Roads Designated as Motorized Trails, <=50" OHV	0.4
Total	24.12

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

N/A* (Unburned) 2280 (low) 129 (moderate) 0 (high) *due to the absence of a BARC map unburned acres were combined with low burn severity acres

B. Water-Repellent Soil (acres): There was no observed water repellency in the burned area.

C. Soil Erosion Hazard Rating (percent):

38% (low) 53% (moderate) 9% (high) 0% (very high)

D. Erosion Potential: 0.44-7.73 tons/acre

E. Sediment Potential: 22 to 391 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years):	<u>2-3</u> years
B. Design Chance of Success (percent):	<u>90</u>
C. Equivalent Design Recurrence Interval (years):	<u>5</u>
D. Design Storm Duration, (hours):	<u>24</u>
E. Design Storm Magnitude (inches):	<u>3.7</u>
F. Design Flow (cubic feet / second/ square mile):	<u>163</u> (Upper Ash), 166 (Double Buck)
G. Estimated Reduction in Infiltration (percent):	<u>17</u> (Upper Ash), 48 (Double Buck)
H. Adjusted Design Flow (cfs per square mile):	<u>190</u> (Upper Ash), 246 (Double Buck)

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Emergency is determined using the Risk Assessment Matrix below. Values at risk that are at High to Very High Risk are considered to be at unacceptable risk of post-fire effects and warrant treatment. Values at Risk for the Falcon Complex Fire are summarized in the VAR Table (Table 1).

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>
<i>Native or naturalized communities on NFS lands 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 Falcon Complex Fire

BAP Critical Value		Threat		Probability of Damage or Loss	Magnitude of Consequences	Risk	Recommended Mitigation
Human Life & Safety		People on open roads	Fallen trees, snags, rocks	Possible (10% - 49%)	Major	High	Install hazard signs, emergency roads closures
Human Life & Safety		Ash Valley Residents	Flooding/debris flow in Ash Creek	Unlikely (0% - 9%)	Major	Intermediate	Low percentage of watershed burned at moderate severity; low hydrologic response expected. No treatments recommended.
Property		Roads- 23 miles level 2 & 3 roads	Road failure due to increased runoff by culvert plugging and flow rerouting down roads	Likely (50% - 89%)	Moderate	High	Armored Dips and Road storm patrol and response
Natural Resources		Soil Productivity - moderate and high soil burn severity	Accelerated erosion and debris flow	Possible (10% - 49%)	Minor	Low	None recommended
Natural Resources		TES Critical Habitat	Loss of high quality habitat for Northern Spotted Owl and Coho Salmon	Likely (50% - 89%)	Minor	Low	None for NSD. Road treatment for Coho
Natural Resources		Invasives - primarily meadow knapweed, Himalayan blackberry, Scotch broom, and sulphur cinquefoil	Expansion of currently isolated invasive populations along the major roads and trails in the burned area	Likely (50% - 89%)	Moderate	High	Weed detection and treatment
Natural Resources		Watershed - Hydrologic function and Aquatic Habitats	Loss of soils from post-fire erosion with flashier hydrologic response and subsequent degradation to Aquatic Habitats	Likely (50% - 89%)	Minor	Low	Sedimentation and elevated channel erosion will occur, especially the first winter. Road treatments recommended
Cultural & Heritage Resources		Treatment implementation - surface and subsurface features	Loss of scientific data present at archaeological sites due to looting or erosion	Likely (50% - 89%)	Moderate	High	Camouflage site and monitor. Ground disturbing treatment activities need to be cleared by Archeologist prior to implementation

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 and increased potential for debris flow. 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 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. Significance of protecting human life and safety is self-evident, and is justification enough for proposed treatments to mitigate or minimize the hazards.

Property – Road Infrastructure

Culverts within the burned area were found to have current pipes undersized for post-fire short-term increased storm runoff, and are now at risk for flash flooding, mud/debris flows, and loss of water control. Two perennial stream crossings on FS 2900 Road are at high risk of plugging as a direct result of the Double Buck fire. The steep streams cross the 2900 road through a 36" pipes which have very high rust lines, indicating undersized capacity. These two catchments had 28 and 42 percent of their watersheds burn at moderate soil burn severity, and modelled peak flow increases of 42% and 53%, respectively, from a 5-year, 24 hour design storm. Currently, these crossings are at risk of diversion down the ditchline if the culverts plug.

To reduce the risk of extensive road damage from a failure at these culverts, the recommended treatment is armored dips to reduce risk from fillslope erosion and downcutting to the road infrastructure. The structures also reduce adverse effects to soil, water, and aquatic habitat from fillslope erosion. This, combined with Storm Patrol to prevent plugging, will decrease the risk of substantial damage.

Roads within the Falcon Complex contain drainage structures that cross streams located in watersheds that have a moderate to low burn severity. These streams 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 torrents further down the drainage due to the failure. Storm inspection/response keeps culvert and drainage structures functional by cleaning sediment and debris from the inlet between or during storms. This work will be accomplished through Forest Service Road Crew, equipment rental, and general labor.

Natural Resources

Soil Productivity- Approximately 5% (129 acres) of land within the fire perimeter is considered to have moderate soil burn severity (Map 1). Specific to soil productivity, modeled erosion rates are low compared to more severely burned landscapes. Erosion rates are expected to recover quickly after year two post-fire and should return to near pre-fire conditions by year five. Risk rating for soils varies according to the likelihood of major soil loss: there is a very likely probability of effects that are recoverable and localized (low risk rating), ranging to a possible probability of considerable long-term effects (intermediate risk rating) on very small portions of the fire; neither of these comprise a high or unacceptable risk to soil productivity, and therefore natural recovery should be adequate for the soil resource. The ecosystems in the fire area are fire-adapted, so periodic post-fire erosion is a natural ecological and geomorphic process.

Upper Ash (Falcon Complex)

Legend

FalconFirePerimeters2
S_R06_UNMPSStreamClass
CLASS

Unknown

1

2

3

4

Soil Burn Severity

SBS

Low

Moderate

Road/Stream

Paved Road

Gravel Road Suitable for Passenger Car

Dirt Road Suitable for Passenger Car

Road Not Suitable for Passenger Car

Closed Road

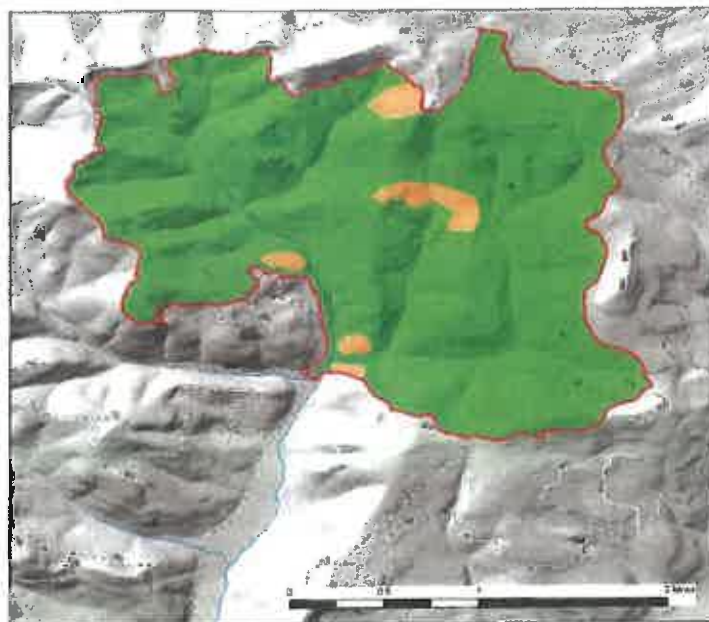
No Oper Maint Level

Image

Value

High : 4193

Low : -0



Double Buck (Falcon Complex)

Legend

FalconFirePerimeters2
S_R06_UNMPSStreamClass
CLASS

Unknown

1

2

3

4

Soil Burn Severity

SBS

Low

Moderate

Road/Stream

Paved Road

Gravel Road Suitable for Passenger Car

Dirt Road Suitable for Passenger Car

Road Not Suitable for Passenger Car

Closed Road

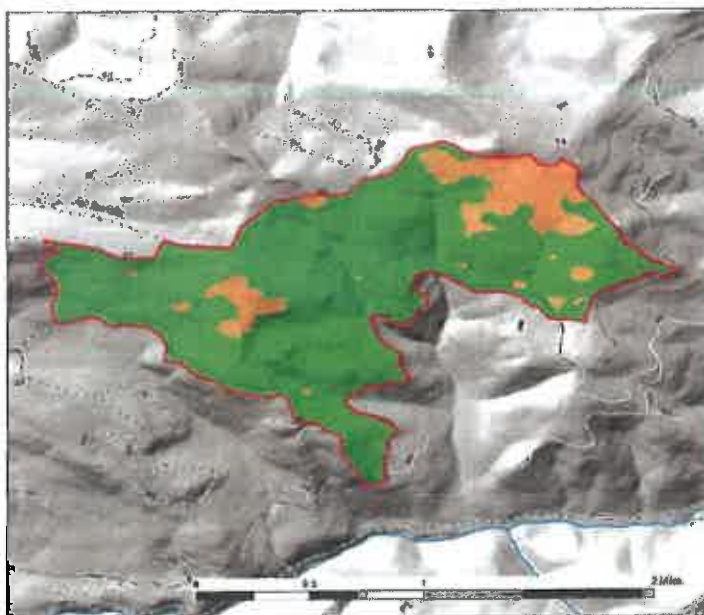
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Image

Value

High : 4193

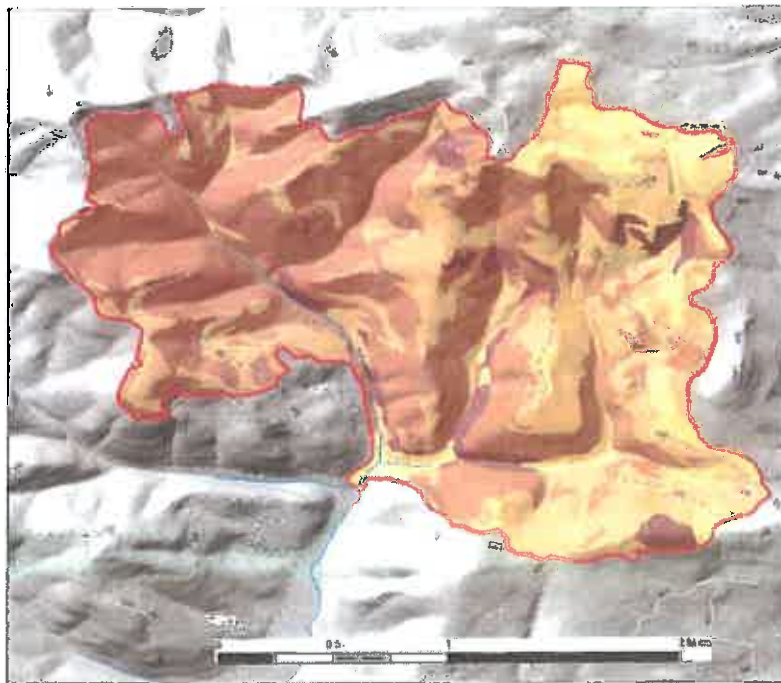
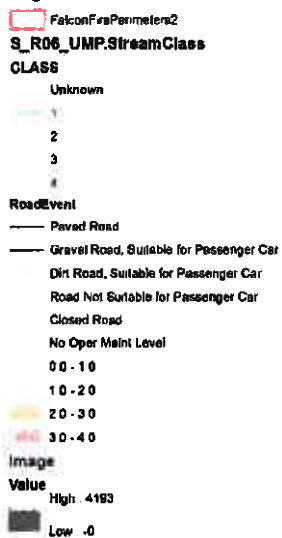
Low : -0



Map 1. Soil Burn Severity Map of Upper Ash and Double Buck Fires

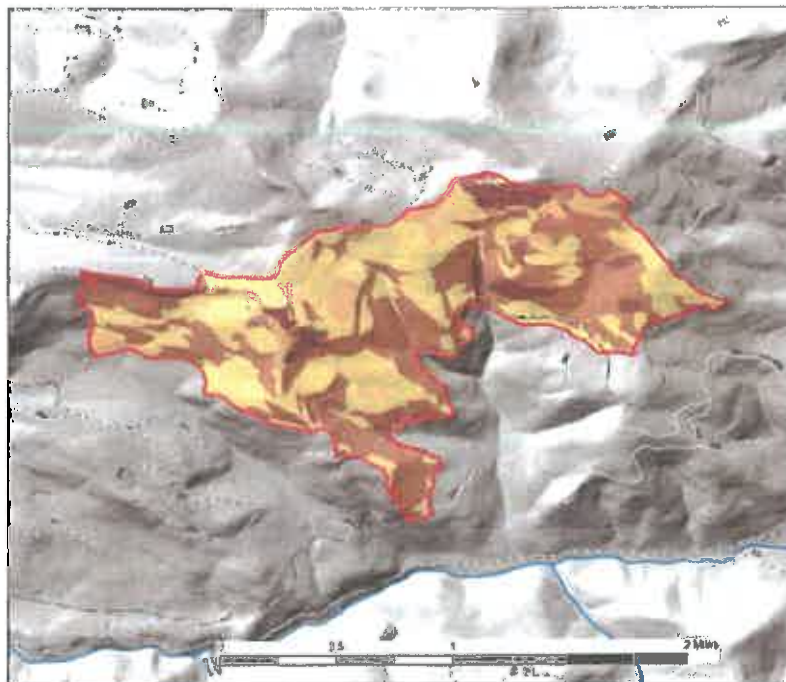
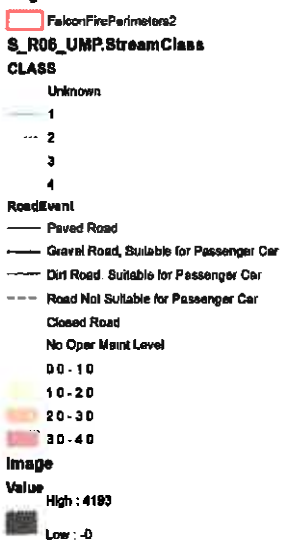
Upper Ash (Falcon Complex)

Legend



Double Buck (Falcon Complex)

Legend



Map 2. Erosion Risk Index Map of Upper Ash and Double Buck fires

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

Northern Spotted Owl

Within the fire perimeter, 854 acres of nesting, roosting and foraging (NRF) habitat and 1,833 acres of Critical habitat were impacted. There is one LSR4 owl core within the perimeter that has previously been impacted by fire activity from the 2002 Tiller Complex. Impacts to spotted owls from fire are largely due to loss of high quality habitat and habitat fragmentation.

The Upper Ash fire burned with mixed severity, with the low to moderate burns across most of the area. Areas with the most fire activity were within burns scars from previous fires. Fire burned through older stands and consumed most of the ground fuels and left older and bigger trees largely unburned. Some patches of isolated torching caused canopy mortality and consumption of standing and down deadwood. This area has experienced a higher frequency of fire interval and cumulative impacts, including this fire, has left the habitat largely fragmented with small patches of continuous suitable habitat. Beneficial impact from the fire include increased vigor in understory vegetation and hardwood species, recruitment of snags and down wood, and increase in heterogeneity across the landscape.

Doublebuck

Within the fire perimeter 505 acres of nesting, roosting, and foraging (NRF) habitat and 190 acres of Critical Habitat were impacted. There were no LSR4 owl cores within this perimeter. Impacts to spotted owls from fire are largely due to loss of high quality habitat and habitat fragmentation.

The Doublebuck fire burned with mixed severity, with low to moderate burns across most of the area. Areas with the highest fire activity were within historic fire scars, further consuming standing and down deadwood in unsuitable habitat. Isolated group torching along the edges of these scars caused small patches of canopy mortality in adjacent live canopy. The perimeter has largely contiguous stretches of suitable habitat, most of which burned at low intensity. This low intensity consumed most of the ground fuels and left older and bigger trees largely unburned. The benefits from this fire will include increased vigor in understory vegetation and hardwood species, recruitment of snags and down wood, and an increase in heterogeneity across the landscape.

Coho Salmon

The Double Buck fire burned adjacent to 2 river miles of coho salmon critical habitat in Jackson Creek. Impacts to habitat from this fire include increased risk of sediment loads into Jackson Creek, and increased amounts of downwood over time. The probability of damage or degradation of aquatic habitat is likely, but the magnitude of consequence minor, making the risk low.

Invasive Plant Species- There are four noxious weed species of main concern in the Upper Ash Flat fire perimeter: Armenian blackberry (*Rubus armeniacus*), Scotch broom (*Cystisus scoparius*) meadow knapweed (*Centaurea pratensis*) and sulphur cinquefoil (*Potentilla recta*). The probability of damage or loss from the introduction and spread of invasive plants is considered to be likely, and the magnitude of consequences is determined to be moderate, therefore, the risk is 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 where fire consumed the existing native vegetation leaving soil bare for colonization, so treatments are warranted to prevent or minimize their spread.

Along the Upper Ash fire perimeter there are small but established populations of Armenian blackberry, Scotch broom, and Sulphur Cinquefoil, and one large population of Meadow Knapweed. These infestations occur primarily along the road prisms, which were used as firebreaks. Areas where fire burned up to the road and adjacent to these known infestations have the highest risk of invasion. Previously closed roads opened for fire breaks also add to disturbed soil available to new infestation.

There is an historic infestation of a fifth species, spotted knapweed (*C. maculosa*), that is at the end of a spur road in a plantation immediately adjacent to southern perimeter of the Upper Ash Flat fire. This is one of the highest priority weed species on the forest and in Douglas County. The recommended treatment for any new infestations of spotted knapweed is herbicide spraying consistent with the standards established within the Umpqua forest-wide NEPA analysis.

There were no known noxious weed infestations along the Double Buck fire perimeter. However, there are many established infestations of Scotch broom and Armenian blackberry along the 29 road used by fire personnel to access the fire. The probability of damage or loss from the introduction and spread of invasive plants is considered to be likely, and the magnitude of consequences is determined to be moderate, therefore, the risk is high that invasive plant species will have a negative impact on native plant communities as a result of the fire. Monitoring would be recommended to detect early infestations and treat them while manageable.

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 vegetation, 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 (especially in the Double Buck fire) will likely result in elevated sedimentation. Elevated flows are also expected to increase the potential for instream erosion (gullying or debris flow) and floating debris that could compromise hydrologic function and integrity of downstream aquatic habitats, including the South Umpqua River which provides habitat for threatened OC Coho. Modelled hydrologic response from the fire showed 17% increase in peak flow for Ash Creek (Upper Ash fire) during a 5-year, 24-hour design storm. For the Double Buck fire, this storm produced a 42% and 53% increase in peak flow for the modelled culvert streams. Stream bank vegetation has burned in many areas, but is intact in the many unburned islands and where moister conditions dampened fire activity. 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 likely, but the magnitude of consequence minor, making the risk low.

Cultural Resources (Pre-contact and Historic)

Six sites were assessed on the Upper Ash and Double Buck fire, including 5 pre-contact sites and one historic site. While assessing burn severity within areas of moderate to high probability for cultural resources, a new pre-contact resource was found. This new site was located in an area of moderate soil burn severity and is now at risk of looting and sheet erosion. The possibility of damage or loss to site integrity from erosion or looting is likely and the magnitude of consequences (loss of scientific data present in the archaeological deposits) is moderate, making the risk high. Recommended treatment includes covering the site with wood straw and monitoring.

B. Emergency Treatment Objectives:

Human Life and Safety:

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

Property:

Protect road infrastructure by installing armored dips and performing storm patrol and response.

Natural Resources:

Protect native or intact plant communities from encroachment by invasives with emphasis on roads, dozer lines, and areas of moderate soil burn severity. Protect OC Coho Salmon critical habitat by performing road work and storm patrol.

Heritage and Cultural Resources:

Protect the integrity of known sites from looting and erosion. Ensure cultural resources are not damaged by road BAER treatment activities by site inspections by a qualified archaeologist prior to any ground disturbing activities.

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

Human Life & Safety 90-100% Roads 90-100% Trails 70-90% 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): **\$36,417 as determined below.**

Human Life and Safety – Without signs describing hazards present in the burned area a forest user could be unaware of risks and proceed without further consideration for their safety. For example minimizing exposure to fire-killed trees may not be a consideration for some forest users. The significance of protecting human life and safety is assumed self-evident and not included in the calculations used below to justify treatments.

Property – Certain road segments and trail segments have been identified as being susceptible to damage by post-fire peak flows and heightened runoff. A method called the Implied Minimum Value (IMV) is recommended by BAER leadership to determine the cost-benefit ratio for values at risk where market value is not available Calkin et. al., (USDA 2007). Since numerical values for cost to repair the damaged resources are not available an IMV is assigned to the Property Values at Risk which equals \$22,770.

Estim. cost of treatments: \$14,800
Estim. Probability of Damage or Loss w/o Treatment: 90%
Estim. Probability of Loss if Treated: 25%
IMV = Treatment Cost/(Probability Loss Untreated - Loss Treated)
Implied Minimum Value (IMV) for Property $\$14,800/(0.9-0.25) = \$22,770$

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 wilderness and the areas. Using the IMV method, the value of the native plant communities in threatened areas is \$10,770.

Estim. cost of treatments: \$7,000
Estim. Probability of Damage or Loss: 90%
Estim. Reduction of Loss if Treated: 25%
IMV = Treatment Cost/(Probability Loss Untreated - Loss Treated)
IMV for Natural Resources: $\$7,000/(0.9-0.25) = \$10,770$

Cultural Resources – Using the IMV method, the value of the cultural treatments is \$2,877.

Estim. cost of treatments: \$1,870
Estim. Probability of Damage or Loss: 90%
Estim. Reduction of Loss if Treated: 25%
IMV = Treatment Cost/(Probability Loss Untreated - Loss Treated)
IMV for Natural Resources: \$1,870/(0.9-0.25) = \$2,877

F. Cost of Selected Alternative (Including Loss): **\$31,540** – details in treatment narrative section

Treatment	Units	Unit Cost	# of Units	Total Cost
Life and Safety				\$7,870
Property				\$14,800
Natural Resources				\$7,000
Cultural Resources				\$1,870
Total				\$31,540

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Joe Blanchard

Email: jhblanchard@fs.fed.us Phone: 541-957-3356 FAX: _____

H. Treatment Narrative:

Human Life and Safety Treatments:

HL1 – Road Signage: Install warning signs for flash flooding and potential debris flows. Replace warning and directional signs damaged by the fire. 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 table.

Road	Location	Sign Type
27	At the junction of the 900 road	Entering Burned Area Fallen Rocks And Debris
2700-870	At the junction of the 27 road	Entering Burned Area Fallen Rocks And Debris
2700-890	At the junction of the 27 road	Entering Burned Area Fallen Rocks And Debris
2826	Near the 300 road junction	Entering Burned Area Fallen Rocks And Debris
2826	At the junction of the 27 road	Entering Burned Area Fallen Rocks And Debris
2826-400	At the junction of the 2826 road	Entering Burned Area Fallen Rocks And Debris
2826-500	At the junction of the 2826 road	Entering Burned Area Fallen Rocks And Debris
2826-600	At the junction of the 2826 road	Entering Burned Area Fallen Rocks And Debris
29	At the MP 19.61	Entering Burned Area Fallen Rocks And Debris
29	At the MP 22.67	Entering Burned Area Fallen Rocks And Debris
2924-200	Just after the Skookum Pond turnoff 2924-260 road	Entering Burned Area Fallen Rocks And Debris
2938-800	At the junction of the 2938-810 road	Entering Burned Area Fallen Rocks And Debris
2938-808	At the junction of the 2938-800 road	Entering Burned Area Fallen Rocks And Debris

Road Hazard Sign Locations

HL2 – Emergency Road Closure: Emergency road closure should be signed 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.

Emergency Closures- Road Maintenance Level	Total Miles
Designated Motorized Trail	0.65
2 - High Clearance Vehicles	11.92
Total	12.57

Summary of Emergency road & designated trail closures

Emergency Road Closures			
Road	Length	Maintenance Level	Recommended Closure location
2700-870	0.82	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
2700-890	1.76	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
2700-900	0.96	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
2700-928	0.8	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
2826-400	0.87	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
2826-500	0.54	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
2826-600	0.32	2 - HIGH CLEARANCE VEHICLES	Beginning of the road
2924-200	1.05	2 - HIGH CLEARANCE VEHICLES	After Skookum Pond turnoff
2938-800	2.12	2 - HIGH CLEARANCE VEHICLES	At the Junction of 2938 811
2938-808	2.68	2 - HIGH CLEARANCE VEHICLES	Beginning of the road

*2924-280 road is ML 1 and is closed per the MVUM

Emergency Road Closure Locations

Human Life and Safety Treatment	Units	Unit Cost	# of Units	Total Cost
HS1 –Hazard Signage	Signs	\$344	20	\$6,870
HS2 –Road Closure Signage	Signs	\$100	10	\$1,000
Life and Safety Total				\$7,870

Property Treatments – Roads:

R1 Armored Dips

2900 Road, MP 21.18: To reduce the risk of extensive road damage from a failure at this pipe, recommended treatment is to recontour the ditchline and road bed to prevent diversion, and allow flow over the pipe in the event of plugging.

2900 Road, MP 21.47: To reduce the risk of extensive road damage from a failure at this pipe, recommended treatment is to reshape the existing dip located just downstream from the culvert inlet and re-establish the ditch dam to ensure any overflow would cross at the dip.

R1-Road Treatments - The purpose of patrols is to identify those road problems such as plugged culverts and washed out roads and to clear, clean, and/or block those roads that are or have received damage. The storm patrollers shall have access to at least a backhoe and dump truck that can be used when a drainage culvert is plugged or soon to be plugged and to repair any road receiving severe surface erosion.

Construction Specifications

1. FS personnel will direct the work. The patrols are used to identify those road problems such as plugged culverts and washed out roads and to clear, clean, and/or block those roads that are or have received damage.
2. Immediately upon receiving heavy rain the FS will send out patrols to identify road hazard conditions – obstructions such as rocks, sediment, washouts, and plugged culverts so the problems can be corrected before they worsen or jeopardize motor vehicle users.
3. The road patrols shall bring in heavy equipment necessary to mechanically remove any obstructions from the roads and culvert inlets and catch basins where necessary.
4. All excess material and debris removed from the drainage system shall be placed outside of bank-full channel where it cannot re-enter stream channels.

Property treatments Roads	Units	# of Units	Unit Cost	Total Cost
R1- Armored Dips- material and install	Each	2	\$3,500	\$7,000
R2- Storm Patrol and response	Days	3	\$2,600	\$7,800
Property Treatments Total				\$14,800

Natural Resources Treatments: Invasive Plants – Surveys and manual treatment is recommended to protect native plant communities from the spread of non-native invasive species. There are known small populations of Armenian blackberry, meadow knapweed, Scotch broom and sulphur cinquefoil in and adjacent to the burned area along the road prism that are very likely to spread into the newly burned areas. Survey and treatments will focus on known populations within the burned areas as well as along dozer

lines, roads cleared and used as fire breaks as these areas are the primary vectors for the spread of invasive species.

NR1 and NR2 – Survey and Chemical Treatment: To prevent the infestation of intact native plant habitat in the Falcon Complex fire area the BAER team strongly recommends survey, detection, and treatment of the four most aggressive invasive plant species present in the burned area. Initial survey and treatment of invasive populations will take place in the spring of 2018. Invasive plant surveys and documentation will occur on 30 miles of roads within and adjacent to the burned area. Treatment will occur on those portions of the road and trail prisms where these invasive species are found, assuming that areas of moderate burn severity are the most likely to be invaded by noxious weeds, we propose to fund 15 acres of mechanical treatment. The treated populations will be re-surveyed and treated again if necessary.

Natural Resources Treatments	Units	# of Units	Unit Cost	Total Cost
NR1 – Invasive Survey and Detection	Miles	30	\$90	\$2,700
NR2 – Invasive Plant Treatment	Acres	15	\$180	\$2,700
GS-9 administration of survey and treatment and data entry	Day	3	\$300	\$900
Effectiveness monitoring of invasive plant treatment	Days	2	\$350	\$700
Natural Resources Total				\$ 7,000

Cultural Resources Treatments:

CR1 – Known sites at risk from erosion and looting will be covered with wood straw and monitored by qualified archaeologist. 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 is necessary to cover known sites, monitor for erosion and looting, and check the road prisms for Archeological resources prior to conducting ground disturbing activities.

Cultural Resources Treatments	Units	# of Units	Unit Cost	Total Cost
CR1 – Site camouflage, Monitoring, Implementation Survey and Section 106 Compliance	Days	5	\$294	\$1,470
CR1- Bails of woods straw	each	20	\$20	\$400
Cultural Resources Total				\$1,870

- I. **Monitoring Narrative: Effectiveness monitoring for Invasive plant treatment is included in Natural Resource Treatments section. No additional monitoring is requested.**

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

Line Items	Units	Unit Cost	NFS Lands		Other
			# of Units	WFSU SULT \$	
A. Human Life & Safety					
HS1 - Hazard signage	each	\$344	20	\$6,870	\$0
HS2 - Closure signage	each	\$100	10	\$1,000	
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Land Treatments				\$7,870	\$0
B. Property					
R1- Armored dips	each	\$3,500	2	\$7,000	\$0
R2 - Road storm patrol	days	\$2,600	3	\$7,800	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Channel Treat.				\$14,800	\$0
C. Natural Resources					
NR1 - Invasives Detection	miles	\$90	30	\$2,700	\$0
NR2 - Invasives Treatment	acres	\$180	15	\$2,700	\$0
Admin	days	\$300	3	\$900	\$0
Effectiveness monitoring	days	\$350	2	\$700	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Road & Trails				\$7,000	\$0
D. Cultural Resources					
CR1- Site protection and compliance monitoring	days	\$294	5	\$1,470	\$0
CR1- Wood straw bales	each	\$20	20	\$400	\$0
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Structures				\$1,870	\$0
E. BAER Evaluation					
				\$6,000	\$0
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Evaluation				\$6,000	\$0
F. Monitoring					
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Monitoring				\$0	\$0
G. Totals				\$31,540	\$0

PART VII - APPROVALS

1. Alice B. Carter
Forest Supervisor (signature)

9/27/17
Date

2. [Signature]
Regional Forester (signature)

9/28/2017
Date

