USDA-FOREST SERVICE FS-2500-8 (6/06)

Date of Report: September 5, 2013

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 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)

[**X**] 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: **Whiskey Complex**

B. Fire Number: OR-UPF-130132

C. State: Oregon

D. County: Douglas

E. Region: Pacific Northwest (6)

F. Forest: Umpqua

G. District: Tiller

H. Fire Incident Job Code: P6HSP8

I. Date Fire Started: 07/26/2013

J. Date Fire Contained: 8/24/2013

K. Suppression Cost: $20,500,000 on 09/02/2013

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 12.7 miles of dozer and 8.4 miles of hand line
2. Fireline seeded (miles): none as of 2013.09.05
3. Other (identify): 43 miles of road brushed, 10 miles of road graded and 4 miles of road reclosed

M. Watershed Numbers: Ash/Zinc Facial (171003020303); Skillet/Emerson Facial (171003020104); Beaver Creek (171003020304), Lower Jackson Facial (171003020205)

N. Total Acres Burned: **17,948** total acres as of 08/18/2013
NFS Acres (17,870) Other Federal (0) State (0) Private (78)

O. VegetationTypes:

The fire occurred in a mixed conifer forest primarily composed of Douglas-fir with western hemlock, white fir, incense cedar, ponderosa pine, and some sugar pine. The Bunch Grass Meadows area is a mosaic of dry meadows comprised of dry bunch grasses with scattered Oregon white oak (*Quercus garryana)*, California black oak (*Quercus kelloggii*), and mountain mahogany (*Cercocarpus montanus*). Hardwood species in the riparian areas include of a mixture of red alder (*Alnus* rubra) and big leaf maple (*Acer macrophyllum*). Upland hardwoods consist of Pacific madrone (*Arbutus menziesii*), golden chinquapin (*Chrysolepis chrysophylla*), Oregon white and California black oak, and big leaf maple. Oceanspray (*Holodiscus discolor*), California hazelnut (*Corylus cornuta*), vine maple (*Acer circinatum*), several types of manzanita (*Arctostaphylos*) and Pacific poison oak (*Toxicodendron diversilobum*) are found in the shrub layer, with Pacific rhododendron (*Rhododendron macrophyllum*) becoming more dominant at higher elevations

P. Dominant Soils:

Dominant Soils of the Umpqua National Forest within the fire perimeter

- Fine-loamy, mixed, superactive, mesic Typic Palexerults
- Loamy-skeletal, mixed, superactive, mesic Typic Dystroxerepts
- Fine, mixed, superactive, mesic Ultic Haploxeralfs
- Fine, kaolinitic, mesic Typic Palexerults
- Fine, mixed, superactive, frigid Typic and Aquic Palehumults
- Loamy-skeletal and fine-loamy, isotic, frigid Typic Humudepts
- Medial, amorphic, frigid Typic Hapludands

Q. Geologic Types:_- The Whiskey Complex is within the Western Cascades Physiographic Province and includes formations from the Little Butte Volcanic Series and Sardine Formation. This area includes massive beds of andesitic and dacitic tuff ash flow, andesitic and basaltic lava flow, pyroclastic tuffs and breccias, and bodies of Tertiary intrusive rock in the form of plugs, dikes, sills, domes, and pipes made up of basalt, andesite, dacite, and rhyodacite.

R. Miles of Stream Channels by Order or Class:

Stream miles by class within Whiskey Complex Fire Perimeter

Stream Class	Length (miles)
1	8.2
2	3.0
3	37.6
4	48.5
Total	**97.3**

S. Transportation System

Trails: 14.5 miles Roads: 100 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1974 (11%) (unburned); 12,743 (71%) (low); 2872 (16%) (moderate); 359 (2%)(high)

B. Water-Repellent Soil (acres): approximately 2215 acres (12%) showing an increase of moderate to strong water repellency over unburned conditions

C. Soil Erosion Hazard Rating (acres):

2,361 (15%) (low) 8,824 (55%) (moderate) 4,858 (30%) (high)

D. Erosion Potential: 6 tons/acre/year (estimate)

E. Sediment Potential: 3,840 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

- additional information will be included later in an interim 2500-8.

A. Estimated Vegetative Recovery Period, (years): 1-5

B. Design Chance of Success, (percent): 80

C. Equivalent Design Recurrence Interval, (years): 5

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 3.5

F. Design Flow, (cubic feet / second/ square mile): 136 cfs / mi2

G. Estimated Reduction in Infiltration, (percent): 32%

H. Adjusted Design Flow, (cfs per square mile): 178 cfs / mi2

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Immediate concerns in the post-fire environment are related to human life and safety along roadways. The greatest threat is on roadways with steep slopes adjacent to the road with burned areas above the road. People driving the roads are threatened by falling debris (rocks in some cases, but also trees that were not felled during hazard tree assessments) either directly or indirectly.

Soil Response - For the Whiskey Complex fire, natural recovery of shrubs/trees, retention of and new coarse woody debris from snags, canopy cover and natural distribution of burned conifer needles will assist in protecting the soil resource. Field reviews noted extensive presence of an orange fungus (*Pyronema omphalodes)* that was blanketing burned areas, particularly in moderate to high severity areas, including burned out root and stump holes. It has been shown to significantly reduce erosion from raindrop impact.

Hydrologic Response: - Post-fire flows will increase moderately from pre-fire flows resulting in flow over road surfaces, rill and gully erosion of cut and fill slopes, erosion and deposition along road surfaces and relief ditches. Some debris flows and sedimentation out of the ephemeral channels is likely to occur at an accelerated rate until vegetation establishes itself and provides ground cover. Some catchments contained localized areas burned at higher severities and these catchments may experience greater post-fire increases in runoff but overall post-fire increase in flows are relatively moderate compared to other fires.

Geologic Response: Steep hillslopes above FR 2800 have the potential to have rocks and trees that appear stable using the R6 hazard tree guidance to fall into the roadway. The roots of some trees far from the road may be burned out and once they fall they may slide all the way to the roadway causing a driving hazard. Also, rocks and boulders on the steep hillslopes above 2800 may be destabilized as the supporting vegetation and ground material may have been consumed or partially burned out. These rocks may move during rainfall events or even without rainfall in dry ravel. Falling rocks present a driving hazard. Small headwater drainages in steep areas burned at high and moderate soil burn severity have an increased potential for debris flows.

Wildlife Response: - The Whiskey complex fire was a relatively large scale fire which resulted in an overall low intensity ground fire with occasional moderate to high severity burning, and limited scorching and canopy mortalities. Resource

conditions post-fire should result in increasing the general resiliency of forested areas which burned within the fire perimeter. Within the Whiskey Complex 11 total cores were inside the fire perimeter. Fire effects were minimal throughout the fire area, with only a few cores experiencing high severity burn. Only one core had over 20% loss of nesting roosting and foraging habitat. Overall fire increased foraging habitat and increased stand resiliency over time by decreasing fuel loads within old-growth stands.

Heritage: - The 17,891-acre burn area encompasses a range of prehistoric and historic cultural sites which range in occupation from the Early Archaic period (i.e., 9,000 years ago) to the middle of the 20th century. Prehistoric sites include lithic scatters, rock shelters and habitation sites. Local historic sites include cabins, an Aircraft Warning Station, lookout, roads, a corral, and a Civilian Conservation Corps culvert. The heritage sites which hold the greatest risk of fire damage tend to be historic structures made of combustible material, notably wood. Also at risk are prehistoric rock shelters and artifact scatters which may be impacted by vandalism, looting, and erosion and are irreplaceable resources.

Fisheries Response: - Both the South Umpqua River and Jackson Creek watersheds support a multitude of fish species with various life histories. Indigenous species include Oregon Coast spring Chinook salmon, OC Coho salmon, cutthroat trout, summer and winter run steelhead trout, rainbow trout, speckled dace, Umpqua long nose dace, redside shiner, large scale sucker, Umpqua pike minnow, sculpins, Pacific lamprey, and possibly Umpqua chub exist in the watershed. In-stream fisheries habitat improvement were damaged to a point in Beaver Creek such that that are no longer stable and could be mobilized under typical winter flows events. The change, and possible secondary impacts of mobilized fire-damaged structures, could degrade listed fisheries habitat. The Pipestone Creek and unnamed tributary to Jackson Creek areas poses a risk of increased landslide occurrences in the upcoming wet season due to the nature of the burn on steep mid-slope areas of the watershed and the predicted increase in peak flows in the watershed.

Values at Risk:

*The risk matrix below, Exhibit 2 of Interim Directive No.: **2520-2010-1**, was used to evaluate the Risk Level for each value identified during Assessment. Only treatments that had a risk of Intermediate or above are discussed below, but all values at risk are included in the Tables in the Appendix. Additionally more information on the values at risk by watershed that are driving treatments can be found in the appendix.*

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**

Life and Safety:

Road under steep hillslopes

There are approximately 2 miles of level 4 road (FR 2800) under a steep hillslope adjacent to the South Umpqua River. Imminent hazard trees have been addressed by suppression crews following the R6 hazard tree guidelines, but there is still a hazard to users and employees from falling rocks and trees farther uphill. The geologic hazards are lower in other areas, but hazard tree areas are present throughout the Buckeye and Whiskey fires.

Risk Assessment – Threats to travelers on Forest Roads

Probability of Damage or Loss: Possible. The high rate of speed traveled under pre-fire conditions could pose a possible risk to users when rocks and trees come off of the hillslope into the roadway. While a tree or rock

directly hitting someone or a vehicle may be rare; the chance of someone colliding with an unexpected hazard in the roadway is higher especially on narrow windy roadways.

Magnitude of Consequence: Major. There is a possible loss of life or injury to both administrative users and Forest visitors.

Risk Level: High – treatment considered for threats to human life or safety. Emergency closure until immediate hazards are addressed by fire suppression crews and warning signs to inform visitors and remind employees of the new hazards present in this area. Longer term closures are not an option due to several access to points to the area which is a very high use area from recreationalists on the District and is highly important to the Cow Creek Band of Umpqua Tribe of Indians. Closures in other areas are also likely infeasible due to connector roads and an interconnected road system including roads that connect onto the Rougue River-Siskiyou National Forest and private lands.

Stabilization of road fill on roads open to the public

There are approximately 10 sites on roads open to the public, including on road that is the primary access for 5 homes, where logs/stumps burned in the roadfill resulting in unstable sections of road. This situation presents a hazard to user and resident safety.

Risk Assessment – Threats to users/residents on Forest Service Roads.

Probability of Damage or Loss: Likely. Winter rains will result in increased runoff in the post-fire environment and a destabilized fillslope of the road could fail under the weight of traffic and increased moisture.

Magnitude of Consequence: Moderate. The roads that will not be closed to users could fail putting users, employees and/or residents at risk.

Risk Level: High. Without road stabilization (excavation of fillslope and backfilling with fill material and riprap) the road could be significantly damaged and safety could be compromised.

Area closures to limit exposure of the public to post-fire hazards in the burn area

There are multiple hazards present in the post-fire burn area including stump holes and hazard trees. To limit exposure to members of the public it is recommended to provide for and inform the public of an area closure through the winter at a minimum.

Risk Assessment – Threats to life and safety of the general public

Probability of Damage or Loss: Possible. Different activities have differing levels and types of hazards but the longer someone is exposed the greater the risk to their safety.

Magnitude of Consequence: Major. The post-fire environment exposes people to life threatening hazards.

Risk Level: High. Ensure that an area closure is in place for the burn areas at least through the winter. Inform the public through press releases and signage.

Property:

Stabilization of trail tread

There is approximately1.4 miles of trail under steep hillslopes burned at moderate soil burn severity in the Whiskey fire. These trails do not have the drainage structures to handle the increased flow without being damaged.

Risk Assessment – Threats to trail tread on Forest Trails

Probability of Damage or Loss: Likely. Winter rains will result in increased runoff in the post-fire environment. This increased runoff has the potential to damage system trails by gullying through the trail or running down the trail itself.

Magnitude of Consequence: Moderate. The trail will be closed to protect users but it is important to limit the negative effects of the post-fire environment on the trail to result in reduced long-term restoration needs on Forest Service property.

Risk Level: High. Without trail stabilization (waterbarring to allow for increased drainage needs) the trail could be significantly damaged so creation of waterbars would be the most cost-effective mitigation in the long-run. Adding waterbars to a portion of this length will help to stabilize the trail for future use once it is safe for users

Stabilization of ditch relief outlet splash areas

Hillslopes below ditch relief culverts typically had vegetation serving as the erosion control method to avoid gullying. Some of the splash areas burned at high and moderate soil burn severity. Many times these areas burned hotter than nearby areas due to high fuel loading at these sites (more water resulted in lusher vegetation).

Risk Assessment – Threats to soil productivity and hydrologic functioning

Probability of Damage or Loss: Likely. These ditch relief culverts typically flow in the winter during frontal rainfall systems.

Magnitude of Consequence: Moderate. The loss of soil in these areas will result in significant, localized impacts to soil productivity and hydrologic functioning by extending the stream network .

Risk Level: High. Add splash aprons of riprap to these sites to mitigate the loss of erosion protecting vegetation and get immediate soil stabilization.

Stabilization of road crossing on3114 and 2924-800

There are 2 road crossings that are subject to plugging in the post-fire environment. The crossings currently have trees and debris down at the inlets and one crossing has a damaged outlet impacting the capacity of the culvert. Both culverts are not sufficient to carry the predicted post-fire flows.

Risk Assessment – Threats to Forest Service roads and downstream fisheries habitat

Probability of Damage or Loss: Likely. Winter rains will result in increased runoff in the post-fire environment. This predicted increased runoff (130% increase at the 3114 crossing and 11% increase at 2924-800 from a 5-yr, 24-hour event) has the potential to damage system roads plugging culverts and washing out the crossings.

Magnitude of Consequence: Moderate. The road crossing could plug and back up with water and debris resulting in catastrophic failure. This failure would be a significant loss of Forest Service property and result in sediment downstream into listed Coho and other aquatic species habitat. The 11% increase at 2924-800 seems small but it is enough, especially combined with post-fire debris to result in exceeding the capacity of the existing culvert requiring an overflow

Risk Level: High. It is recommended that the upstream area is cleared of debris to avoid plugging. Repair of the outlet on the 2924-800 culvert is also recommended to improve capacity. Since these culverts are now undersized it is recommended to provide for overflow with an armored dip in the road fill and armoring of the downslope side of the culvert fill.

Replace culvert damaged by fire that if left would result in FS road loss and natural resource degradation

There is a road crossing over a small headwater stream in Pipestone Creek where the fire burned out a tree resulting in fillslope failure. The fillslope failure pulled the culvert in two pieces in the middle of the roadway resulting in the pipe being unable to carry the flow. The fill and culvert where damaged as a result of the fire but now pose a risk of additional failure during winter rain events (22% increase in post-fire flows during a 5-year; 24-hour event)

Risk Assessment – Threats to Forest Service roads and downstream fisheries habitat

Probability of Damage or Loss: Likely. Winter rains will result in increased runoff in the post-fire environment. This predicted increased runoff (22% increase at 3100-600 from a 5-yr, 24-hour event) has the potential to damage the system road (washing out the crossings and carrying sediment and roadfill downstream).

Magnitude of Consequence: Moderate. The road crossing could fail catastrophically. This failure would be a loss of Forest Service property and result in sediment downstream into listed Coho and other aquatic species habitat. The 22% increase at 3100-600 seems small but it is enough, especially combined with post-fire debris to result in exceeding the capacity of the existing culvert requiring an overflow

Risk Level: High. Repair of the culvert on the 3100-600 is recommended to address the issue as there are no, less intrusive fixes for the problem. Since these culvert is now undersized it is recommended to provide for the additional capacity needed in the post-fire environment.

Natural Resources:

Early Detection and Rapid Response treatment of non-native invasive species

Early detection and rapid response (EDRR) is a critical component of any effective invasive species management program. When new invasive species infestations are detected, prompt response can reduce environmental and economic impacts. This action results in lower cost and less resource damage than implementing a long-term control program after the species is established. Some species, such as Scotchbroom, which can last in the seedbank for decades, can be extremely difficult to reduce or eradicate once established.

Risk Assessment – Several species of invasive plants are located in and adjacent to the burned areas of the Whiskey Complex fires, providing a source for future infestations. Burned areas have lost competing native plant cover and provide a fertile substrate for future infestations.

Probability of Damage or Loss: Likely. A primary feature of invasive plants is their ability to quickly colonize disturbed sites, displacing native vegetation and slowing natural succession.

Magnitude of Consequence: Moderate. If caught early, Scotchbroom or tansy ragwort may not spread far into the burned areas. Untreated, over time invasives will continue to spread, making future treatments more difficult and costly, while delaying native habitat development and succession.

Risk Level: HIgh. Early detection and rapid response is the most effective mitigation against spread of invasive weeds into the burned areas. Competitive seeding can help reduce infestations and is recommended for one site where risk of infestation is particularly high. Efforts focus on scotchbroom and tansy ragwort expanding from known population sites.

Oregon Coast Coho and Critical Habitat: Beaver Creek Watershed

On September 01 and 03, 2013 a survey along the lower 3.5 miles of Beaver Creek in the fire area from near Switchback Creek to near Winters Creek was conducted. During these surveys 8 structures were noted to be damaged by fire. Five of these structures were burned to the point the structures stability and effectiveness is compromised. Damage sustained to these structures was assessed and courses of action discussed.

Large wood was initially placed in Beaver Creek in 2006. Log structures were constructed by placing multiple logs in designed jams. The structures were built using a heavy lift helicopter to place the logs. Areas selected for structure placement were typically areas where logs and debris would naturally be captured or impinged. Large logs were used, many with root wads, in order to withstand the high flashy flows common in this watershed. These structures were designed to increase instream habitat complexity in part to provide for hiding cover, high water velocity refugia, and to capture and retain mobilized gravels to provide for spawning habitat.

A total of 20 logs would be needed to be placed at these structures to restore structure stability. Placement would need to done by helicopter due to the challenging access to the stream. The risk of not repairing these structures is multi fold. There is a high potential for the individual structures to fail in the coming winter.

Beaver Creek is provides quality habitat to the ESA listed Oregon Coast Coho salmon. Coho spawn and rear in Beaver Creek and depend on the improved habitat conditions in the watershed to complete their life cycle. A large percentage of the overall improved habitat in Beaver Creek is a direct result of the instream large woody material structures that were placed in the stream over the last decade. In order to stabilize the fire damaged structures additional large woody material should be added to the structures. Due to the proximity of the existing structures to the forest road system, helicopter placement of the wood would be necessary to accomplish the project. Initial surveys of the damaged sites and preliminary site design needs for each site has been made.

Risk Assessment - These structures represent a large capital investment in Beaver Creek. Damage to the structures caused by the fire combined with the effects to the sediment and flow regime as a result of the fire pose a risk to the destabilized structures. There is a real risk that if an individual structure were to fail a domino effect of structure failures could occur. This could have a devastating negative impact on this ESA fish species and its critical habitat, potentially damaging or wiping out downstream habitat improvements, water quality would suffer, downstream domestic water supplies could be impacted, and Forest and County infrastructures may be damaged.

Probability of Damage or Loss – Likely – The structures stability has been compromised by the fire. Key logs holding the structures in place have been damaged thereby reducing the structures ability to withstand post fire modeled hydrologic flows and sediment delivery from the surrounding watershed (Table 1). A failed structure during high flows would damage more than just the structure. Coho and Coho critical habitat would also be damaged.

Magnitude of Consequence – Moderate – Structure failures in Beaver Creek could measurably impact the recovery of Coho salmon in the South Umpqua Basin. Beaver Creek is one of the highest producing Coho streams in the South Umpqua Basin. Large amount of capital and time has been invested in this stream. If habitat is lost or severely damaged it may take decades to reach the point of recovery we are currently at in Beaver Creek and the South Umpqua River system.

Risk Level – High

Table 1. Pre and Post Fire Hydrologic and Sediment Conditions

	Beaver Creek			Pipestone Creek			Tributary 1		
Percent change in pre and post fire flow event	5 year	10 year		5 year	10 year		5year	10 year	
	22	17		13	11		130	129	
Percent burn intensity	High	Mod	Low	High	Mod	Low	High	Mod	Low
	1	10	38	3	7	4	26	23	21
*Change in sediment delivery in tons per acre	10,504			1,495			2,473		

*tons delivered per acre modeled from moderate and high intensity burn areas only

Cross Channel Tree Felling

Value at Risk- Oregon Coast Coho and Critical Habitat: Beaver Creek and Jackson Creek Watersheds. Pipestone and Unnamed Tributary to Jackson Creek

Risk Assessment - A large portion of these 2 small watersheds are within the fire perimeter and experienced moderate to high level intensity fire with much of the over story killed. These small watersheds pose a risk of increased landslide occurrences in the upcoming wet season due to the nature of the burn on steep mid-slope areas of the watershed and the predicted increase in peak flows in the watershed. With ground cover and instream wood consumed by fire, debris torrents into downstream habitat are likely. Negative impacts to downstream Coho salmon and critical habitat could result.

Probability of Damage or Loss – Likely – There is evidence of debris flows/torrentsfrom the recent past in these higher watershed and they may initiate high up in these watersheds and deposit large amounts of sediments (Table 1 – above) into sensitive downstream Coho habitat.

Magnitude of Consequence – Moderate – Large amount of sediment can have severe long term impacts at all levels of the aquatic system. Sediment originating from these smaller streams can fill interstitial spaces in Coho redds downstream severely impacting egg survival.

Risk Level – High

Cultural Resources:

Patrols to limit looting/vandalism of exposed sites

There are 23 known cultural resource site within and near the Whiskey fire of which approximately half are at increased risk of vandalism/looting. To cut down on the potential for vandalism/looting it is proposed to have the areas patrolled by a Forest Protection Officer.

Risk Assessment – Threats to pre-historic and historic cultural resources from vandals/looters

Probability of Damage or Loss: Likely. There is a history of vandalism of cultural resource sites on the Tiller RD so there is an elevated probability of such a thing happening.

Magnitude of Consequence: Major. The loss of artifacts or displacement of them limits or destroys the information offered by the site and forever destroys the resource.

Risk Level: Very High. Patrol known cultural resource location and monitor the effectiveness of these patrols.

Cover/disquise exposed cultural sites

There are 2 cultural resource sites within the Whiskey fire where artifact scatters where exposed by moderate soil burn severity.

Risk Assessment – Threats to historic cultural resources from vandals/looters

Probability of Damage or Loss: Likely. There is a history of vandalism of cultural resource sites on the Tiller RD and there is a risk of erosion of the artifacts as well.

Magnitude of Consequence: Moderate. The loss of artifacts or displacement of them limits or destroys the information offered by the site and forever destroys the resource.

Risk Level: High. Scatter slash and debris over the artifact scatters.

Risks: **The full list of values at risk is included in the appendix and the VARs are listed by area.**

B. Emergency Treatment Objectives:

As noted above, threats to life, property, and natural and cultural resources from loss of water control, increased sediment delivery, increased debris flow potential, establishment of noxious weeds, and habitat degredation for Federally Endangered and Threatened species exist as a result of the Whiskey Complex. For these reasons the primary treatment objectives are:

- Mitigate effects of changed post-fire hillslope hazards on human life and safety, particularly where Forest roads are at risk of increased rates of falling rocks and trees present a hazard to users (visitors and employees).
- Mitigate effects of changed post-fire road system on Forest Service users and local residents and their vehicles.
- Mitigate effects of changed post-fire watershed response on the Forest Service system trails and recreation resources.
- Mitigate the effects of post-fire watershed response and erosion potential on hillslopes below Forest Service system roads and on Forest Service system roads themselves.
- Mitigate effects of changed post-fire watershed response and changes habitat features on natural resources such as Federally listed Coho Salmon (Threatened fish).
- Minimize the increased potential for the spread of invasive and noxious weeds.
- Mitigate effects of changed post-fire watershed response on long-term soil productivity and hydrologic function.
- Mitigate effects of changed post-fire erodability and access to cultural resources

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

Land **80** % Channel **80** % Roads/Trails **85** % Protection/Safety **85** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	70	80	80
Channel	80	90	95
Roads/Trails	75	95	95
Protection/Safety	85	90	95

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

For interim #1 reference the VAR Tool Spreadsheet in a separate document

F. Cost of Selected Alternative (Including Loss):

For interim #1 reference the VAR Tool Spreadsheet in a separate document

G. Skills Represented on Burned-Area Survey Team:

[x] Hydrology	[x] Soils	[ ] Geology	[ ] Range
[ ] Forestry	[x] Wildlife	[ ] Fire Mgmt.	[x] Engineering
[ ] Contracting	[ ] Ecology	[x] Botany	[x] Archaeology
[x] Fisheries	[ ] Research	[ ] Landscape Arch	[ ] GIS

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H. Treatment Narrative:

Land Treatments:

Cultural Resource Site Protection

The Whiskey Complex fire burned through across two major watersheds on the Umpqua National Forest: South Umpqua River drainage and the Jackson Creek drainage. The fire occurred in areas that had high use for American Indian groups in the past. These two drainages are key drainages on the Tiller Ranger District, and have been used by native groups for over 9,000 years. Over 20 sites were burned to some degree over the course of the fire to varying degrees of intensity. Four major rock shelter sites, two historic camps, and one village site were impacted by the fire. "The two historic camps, Whiskey Camp (was wrapped and protected) and Bunchgrass Meadows Shelter (burned completely) need camouflage materials spread across open can and bottle dumps to obscure their visibility.

Due to the nature of the burn in high probability areas associated with known archaeological sites in the South Umpqua and Jackson Creek drainages it is recommended that a weekend patrol be undertaken by a Forest Protection Officer (FPO). Patrolling and monitoring of archaeological resources will be required to lessen the chance of losing finite resources due to collection and vandalism. To monitor the effectiveness of the patrol, an archaeologist will undertake monitoring of the sites to assure there are no issues with erosion, looting, or vandalism.

Early Detection and Rapid Response for invasive weed species and seeding to out-compete Scotchbroom

All three fires have invasive plant (weed) populations within or near the fire area, and may be vulnerable to spread of known populations or recruitment of new populations. To address this concern, monitoring will be conducted along the most likely vectors into the burned areas to detect new weed populations. If new weed populations are found within the burn site, treatment will be initiated. Early detection and rapid response of areas that are most vulnerable to spread of weeds is one of the best methods of controlling new weed infestations. Treating known populations adjacent to burned areas may also be another method of mitigation available to prevent the spread of weeds into areas compromised by the fires.

Weed monitoring and treatment will be conducted along road corridors where there is high potential for existing weed infestations to spread into presently uninfested burned areas.

1. Buckeye Fire – Scotch broom along 2980, 2980-800, 2924, 2924-800 roads (list not inclusive)

2. Buckeye Fire – Sulfur cinquefoil along 2826 and 2800 roads (list is not inclusive)
3. Whiskey Fire – Scotch broom along 2925, 2925-930, 3100, 3100-600, 3114 roads (list is not inclusive)
4. Whiskey Fire – tansy ragwort along 2925, 3100, 3100-600, 3114 roads (list is not inclusive)
5. Whiskey Fire – competitive seeding on 2925-930 road (list is not inclusive)

Channel Treatments:

In-channel log placement

Six existing structures were damaged by fire to the point that structural stability has been compromised. There is a significant risk that these structures could fail over this coming wet season. Beaver Creek is a stronghold for Oregon Coast Coho on the Tiller Ranger District and they are listed under the ESA as threatened. Failure of one or more structures could initiate a debris torrent that could scour coho redds and important spawning habitat. In addition these structures represent a significant capital investment towards the aquatic restoration program on the Umpqua National Forest. A total of 20 logs would be needed to be placed at these structures to restore structure stability. Placement would need to done by helicopter due to the challenging access to the stream.

Several structures where also damaged by suppression efforts (cutting of logs in the stucture for control line and emergency egress needs). These structures are included in the approved suppression repair plan to have the structures stabilized by adding key logs. The plan to stabilize these structures will work in concert with the BAER treatments to avoid/limit degradation of listed Coho habitat. The suppression and BAER in-channel log placement efforts will share helicopter mobilization costs with previously planned log placement elsewhere on the Tiller Ranger District. This will result in lower unit costs for the BAER and suppression repair efforts than if done by themselves.

Cross channel tree felling

This treatment is prescribed in steep drainages to maintain channel stability and to reduce the risk of in-channel debris flow bulking for several years after the fire. In-channel tree felling also replaces woody material consumed by the fire. In-channel wood will contribute to biodiversity, sediment capture, energy dissipation, and hydraulic complexity. Approximately 2.5 miles of in-channel tree felling is prescribed.

Pipestone creek

Ground surveys indicate that Pipestone Creek and its tributaries have experience debris torrents in the past. If such an event were to occur as a result of this fire, large wood placed in the channel is likely to reduce the effects to downstream habitats. This technique has proven to be successful in other high gradient burned stream channels on the Umpqua (2002 Apple Fire, North Umpqua Ranger District, Ron McMullin, District Fisheries Biologist).

Tributary 1, Unnamed Jackson Creek Tributary Stream (NW corner of Whiskey Fire, Section 27)

This stream is a direct tributary to Jackson Creek. No previous surveys for this stream were located. This tributary encompasses approximately 700 acres with about 50% of the acres within the fire perimeter. Approximately 180 acres experienced high burn severity with another 160 acres experiencing moderate severity. The remainder burned with low severity. Recon of the tributary reveled nearly all ground cover had been consumed in the high severity burn portions of the drainage. Many large standing dead trees remain near the stream channel.

Because most of the woody material in the tributary has been consumed it is recommended that large wood be added to the channel by felling trees into the channel in the upper portion of the basin. Adding wood to this channel will add roughness and reduce the effects of the expected increases in stream peak flow events and sediment delivery to downstream T & E fish habitat. OC Coho salmon spawn and rear in Jackson Creek in the vicinity of this tributary.

Road and Trail Treatments:

Fillslope stabilization

Situation: The roads within the burned area of the Whiskey Complex Fire were found to have root wads and logs that have burned out leaving holes in the fill slope, and in some cases under the road. These areas are now are at risk of causing the road prism to fail and damage to the traveled roadway. In response to the burning wood in the fill slope, fire crews have sprayed large amounts of water into the holes, which has also contributed to the failure of the fill slope.

Recommendation: Excavate and remove any remaining woody debris in the fill slope holes and backfill material in place of the voids. In some locations, to prevent further damage, riprap may be required to stabilize the fill slope. These locations would be limited to roads that will be ope to the public with an empahsis on the 2826 road to private residences.

Waterbaring interior roads to allow for drainage

Situation: The roads within the burned area were found to have issues with their drainage system, and are now at risk for flash flooding, mud/debris flows, and loss of water control. Catchment-basins and ditch lines are filled with debris material. Areas of roadways lack proper drainage structures, which channel water along roadway surface which will become an issue in the post-fire environment.

Recommendation: Install cross drains (waterbars) where they will be most efficient and necessary along the 2700-918 and 2700-915 which are interior roads in the Buckeye fire. Cross drains are used to turn water flowing down secondary roads that intersecting roads at risk, preventing the water from flowing down at risk roads. This wil ensure the roadbed is retained and limit additional sedimentation downstream.

Armored Drain Dips on 3114 and 2924-800

Situation: The roads within the burned area were found to have issues with their drainage system, and are now at risk for flash flooding, mud/debris flows, and loss of water control. Catchment-basins and ditch lines are filled with debris material. Areas of roadways lack proper drainage structures, which channel water along roadway surface.

Recommendation: Install armored dips and cross drains where they will be most efficient and necessary. Armored dips should be installed on the down slope side, in locations where culvert failure is possible or likely (3114 and 2924-800 crossings). These armored dips will assist to remove water from the roadbed that has become trapped on the road surface causing erosion and travel hazards.

Splash aprons on moderate severity areas with no post-fire energy disipation

Situation: The roads within the burned area of the Whiskey Complex Fire were found to have vegetation and tree roots that have burned which are located at the outlet side of culverts. The burned tree roots have created holes at the outlet that will likely fail with the increase of runoff flow. The vegetation consumed had provided erosion control by acting as a splash apron. With this vegetation no longer available, and the expected increase runoff flow or even normal winter runoff, damage to the road is likely to occur.

Recommendation: Add the placement of riprap at the outlet of the culverts identified to act as an erosion control splash apron and stabilize the fill slopes.

Culvert Replacement

One roadway drainage culvert has been identified as damaged due to a log burning in the fill slope and expected increase in runoff and damage has decreased the effectiveness of the culvert.

Recommendation: Remove and replace the culvert identified as being damaged and at risk of failure. Replace the culvert necessary to keep the road system open. The culverts to be replaced shall be designed to pass the estimated flows.

Storm inspection and response

Situation: 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 the highway and increased potential for

flash floods and mudflows. With the loss of vegetation normal storm frequencies and magnitudes can more easily initiate erosion on the slopes and it is likely 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. Additionally when drinages are impact under one storm the next storm can cause actual damage o the road system. Providing for a mechanism to address concerns during the winter season often results in fixes to problems before dmaage to Forest Service roads can occur.

Recommendation: Monitor road drainage structures (bridges & culverts) 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 immediately prior to the next danaging storm.

Protection/Safety Treatments:

Falling Debris Hazard Warning Signs for Roads

Falling debris hazard signs will be installed at targeted locations on roads downhill of steep, burned hillslopes. These locations are ingress areas of roads at risk of falling debris due to fire effects. These signs are necessary to inform forest users of the danger posed by fire effects and hazards within burned areas (snags, loose rock, etc.).

Four road warning signs are anticipated for the 2800 road area and an additional 26 signs are anticipated for the other roadways where hazards are present in the Whiskey Complex (Buckeye and Whiskey fires). Ten additional signs are specificed to address potential unforseen needs and vandalism of signs over the next few months. This treatment is expected to provide protection of human life and safety. Crew costs include specifying wording, ordering and installing signs. Supplies include signs, posts, bolts and equipment (if additional necessary) to install signs. Travel/per diem covers vehicle use rates for installation.

Area closure signs will be included in the sign totals to informa users that a closure order is in place and highlight the post-fire hazards to people ignoring that order.

Gated closures

Gates will help to control access into areas of the Whiskey and Buckeye fires where visitors and Forest recreators would be at risk from falling hazard trees and road bed failures not addressed under BAER. Four gates are requested and these will limit access on main points of entry into the burn area but not eliminate all acess.

I. Monitoring Narrative:

Implementation:

Simple implementation monitoring and documentation will be conducted for each treatment to ensure that it is implemented correctly following specifications.

Effectiveness:

Pretreatment, post treatment, and post wet season photo point monitoring at re-stabilized in-channel log structures and cross-channel tree felling sites are included in the treatment costs. This monitoring will be written up for submission next summer to determine if there is a need for continued monitoring in winter 2015 as well.

Effectiveness of patrols to curb cultural site looting and vandalism will be done by a trained archaeologist to ensure that the patrol is effective and to serve as a feedback mechanism in case the patrols are not shown to be effective.

Part VI – Emergency Stabilization Treatments and Source of Funds

			NFS Lands				Other Lands		
		Unit	# of		Other	# of	Fed	# of	Non Fed
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$
A. Land Treatments									
Heritage site protection	*each*	*1010*	*16*	*$16,160*	*$0*				
Early Detection/Rapid Response	*trip*	*6150*	*2*	*$12,300*					
Seeding to compete invasives	*acres*	*275*	*3.25*	*$894*					
				$0					
Subtotal Land Treatments				$29,354	$0		$0		$0
B. Channel Treatments									
In-channel log placement	**each**	**5,800**	**6**	**$34,800**					
Cross-channel headwater felling	**miles**	**5,000**	**2.5**	**$12,500**					
				$0					
Subtotal Channel Treat.				$47,300	$0		$0		$0
C. Road and Trails									
Fillslope stabilization	*each*	*1,886*	*10*	*$18,860*					
Waterbars	*each*	*220*	*17*	*$3,740*					
Armored Drain Dip	*each*	*2,170*	*2*	*$4,340*					
Splash Apron	*each*	*200*	*9*	*$1,800*					
Pipe replacement	*each*	*4,840*	*1*	*$4,840*					
Storm Patrol	*each*	*16,400*	*1*	*$16,400*					
Trail tread stabilization	*each*	*2,450*	*1*	*$2,450*					
Subtotal Road & Trails				$49,980	$0		$0		$0
D. Protection/Safety									
Install hazard signs	each	**180**	**40**	**$7,200**					
Gates	**each**	**5000**	**4**	**$20,000**					
				$0					
Subtotal Structures				$27,200	$0		$0		$0
E. BAER Evaluation									
Assessment				$0	$50,000		$3,230		$0
Subtotal Evaluation				$0	$50,000		$3,230		$0
F. Monitoring									
compilation of monitoring	*each*	*2000*	*1*	*$2,120*	*$0*		$0		$0
				$0			$0		$0
Subtotal Monitoring				$2,120	$0		$0		$0
G. Totals				$155,954	$50,000		**$3,230**		**$0**
Previously approved				$9,600					
Total for this request				**$146,354**					

PART VII - APPROVALS

1. _____ _____
Forest Supervisor Date

2. _____ _____
Regional Forester Date