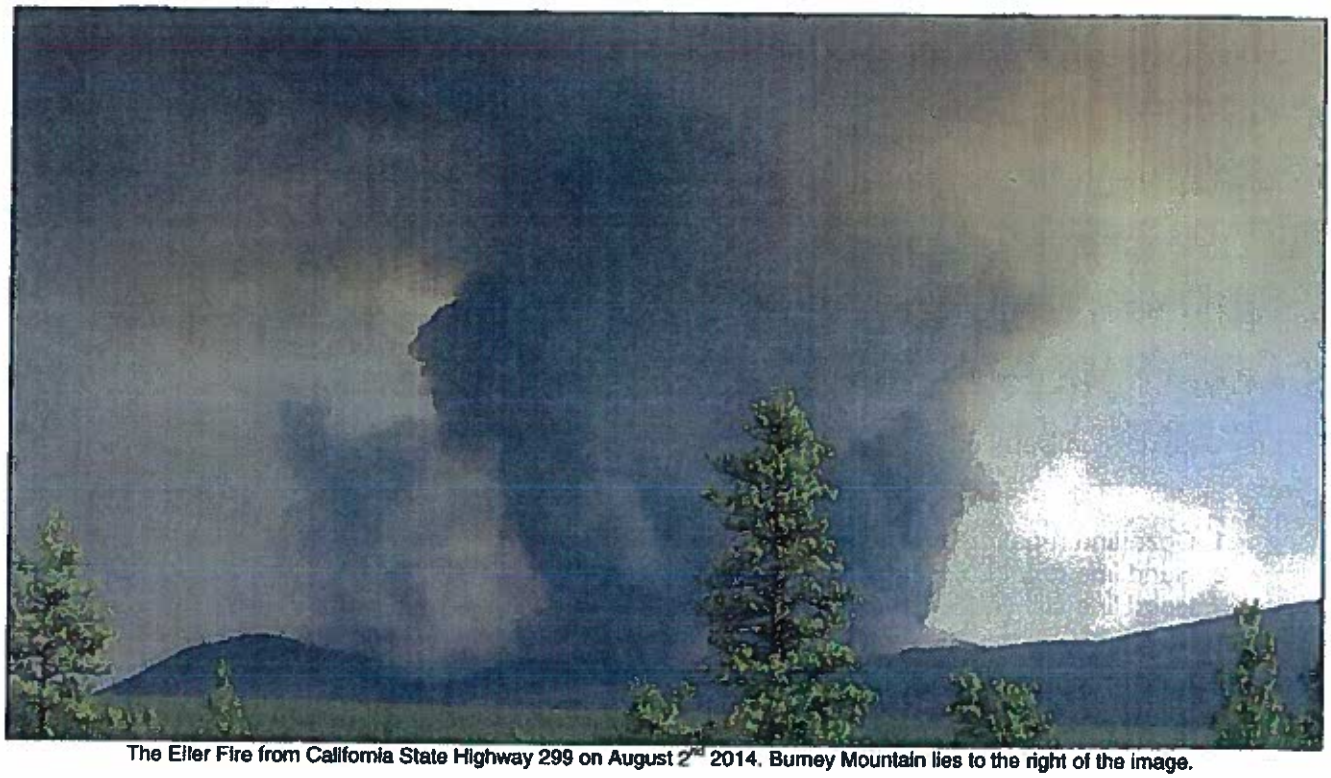
USDA-FOREST SERVICE

FS-2500-8 (7/08)
Date of Report: 8/26/14

DAY, BALD AND EILER FIRES BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST



The Eiler Fire from California State Highway 299 on August 2nd 2014. Burney Mountain lies to the right of the image.

A. Type of Report

[x] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[x] 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: Day, Bald and Eiler Fires

B. Fire Number: Day = CA-SHU-001040; Bald = CA-LNP-003479; Eiler = CA-SHU-006933

C. State: CA

D. County: Day = Modoc; Bald = Shasta and Lassen; Eiler = Shasta

E. Region: 5

F. Forest: Lassen and Modoc (Day Fire)

G. Districts: Hat Creek

H. Fire Incident Job Code: P5H94L

I. Date Fire Started: Day = July 30, 2014; Bald = July 30, 2014; Eiler = July 31, 2014

J. Date Fire Contained: Day = August 13, 2014; Bald = August 15, 2014; Eiler = August 25, 2014

K. Suppression Cost: Day = $8 million; Bald = $10 million; Eiler = $12 million

L. Fire Suppression Damages Repaired with Suppression Funds

Day =

1. Dozerline repaired / waterbarred: xx miles
2. Hand line repaired: x miles
3. Hand line still needing repair: xx miles

Bald =

1. Dozerline repaired / waterbarred: xx miles
2. Hand line repaired: x miles
3. Hand line still needing repair: xx miles

Eiler =

1. Dozerline repaired / waterbarred: xx miles
2. Hand line repaired: xx miles
3. Hand line still needing repair: xx miles

M. Watershed Numbers and Names

Day = 180200021701 Window Valley Creek, 180200021109 Taylor Creek, 180200030712 Lower Hat Creek, and 180200030503 Wiley Ranch

Bald = 180200030201 Upper Beaver Creek, 180200030203 Lower Beaver Creek, 180200030204 Bald Mountain Reservoir, and 180200030107 Corders Reservoir

Eiler = 180200030706 Thousand Lakes, 180200030711 Eiler Gulch, 180200030709 Middle Hat Creek, 180200030712 Lower Hat Creek, 180200030710 Baum Lake, and 180200030804 Middle Burney Creek

N. Total Acres Burned:

Day: 13,146

NFS Acres (1,352), Other Federal (31), State (0), Private (11,763)

Bald: 39,717

NFS (31,352), Other Federal (7,211), State (514), Private (640)

Eiler: 31,981

NFS Acres(14,363), Other Federal (149), State (0), Private (17,467)

O. Vegetation Types:

Day Fire
Eastside pine with ponderosa pine, Jeffrey pine, incense cedar, greenleaf manzanita, mahala mat, big sagebrush, bitterbrush and Idaho fescue. Oregon white oak series with sugar pine, California black oak, buck brush, skunk bush and squirrel tail. Western juniper series with big sagebrush, birchleaf mountain mahogany and bitterbrush. Montane chaparral consisting of greenleaf manzanita, deer brush and rock spiraea.

Bald Fire
Eastside pine consisting of ponderosa pine, Jeffery pine, incense cedar, Klamath plum, California black oak, Bloomer's goldenbush, bitterbrush, wax currant, Idaho fescue and threadleaf sedge. Western juniper series with rubber rabbitbrush, gray pine, big sagebrush, squirrel tail and Sandberg's bluegrass.

Eiler Fire
Mixed conifer-fir forest with Jeffery pine, sugar pine, white fir, Douglas fir, bitter cherry, whitethorn, snowberry and California needle grass. Montane chaparral consisting of bush chinquapin, greenleaf manzanita, tobacco brush and rock spiraea. Subalpine habitat with mountain hemlock, red fir, whitebark pine, and scattered western white pine. Lodgepole flats with twin berry, western blueberry, yarrow, Woods' rose and California oatgrass. Riparian corridors and lakes with Lemmon's willow, cottonwood, mountain alder, aspen and sedges.

P. Dominant soils: Yallani, Klicker, Neer, Sadie

Q. Geologic Types: Quaternary volcanics including basalt and rhyolite

R. Miles of Stream Channels by Order or Class:

Day = 5 Miles Perennial, 27 Miles Intermittent, 2 Miles Ephemeral

Bald = 5.3 Miles Perennial, 71 Miles Intermittent, 0.8 Miles Ephemeral

Eiler = 7.7 Miles Perennial, 25 Miles Intermittent, 0 Miles Ephemeral

S. Transportation System:

Day: Trails: 0 miles Roads: 1.5 miles NFS, 8.2 miles Other

Bald: Trails: 0.1 miles Roads: 112.6 miles NFS, 19.1 miles Other

Eiler: Trails: 2.2 miles Roads: 47.9 miles NFS, 18.1 miles Other

PART III - WATERSHED CONDITION

A. Burn Severity by total and FS (acres):

Day, Bald and Eiler Fires
Soil Burn Severity by Ownership

	Soil Burn Severity					
Fire and Ownership (acres & %)	**Unburned and Very Low**	**Low**	**Moderate**	**High**	**Total Acres**	**Percent**
Day Private	1403	4939	4693	727.7	11,763	89.47%
	11.9%	41.9%	39.9%	6.1%		
Day BLM	6.5	20.7	3.5	0	30.75	0.2%
	21.1%	67.3%	11.3%	0		
Day FS Lassen	57.8	622	490.2	8.9	1,179	8.9%
	4.9%	52.75%	41.6%	0.75%		
Day FS Modoc	37.1	87.2	48.1	.44	173	1.3%
	21.4%	50.4%	27.8%	0.2%		
Day Totals	**1504.4**	**5668.9**	**5234.8**	**737.04**	13,145.75	100%
	11.4%	**43.1%**	**39.8%**	**5.6%**		
Bald Private	183	431	26	0	639	1.6%
	28.6%	67.4%	4%	0		
Bald State	30	390	95	0	514	1.3%
	5.8%	75.8%	18.5%	0		
Bald BLM	2203	4669	334	2	7209	18.1%
	30.5%	64.7%	4.6%	.02%		
Bald FS Lassen	1954	20,109	8793	499	31,355	78.9%
	6.2%	64.1%	28%	1.6%		
Bald Totals	**4370**	**25,599**	**9348**	**501**	**39,717**	**100%**
	11%	**64.4%**	**23.2%**	**1.2%**		
Eiler Private	1105.04	5297.46	10929.66	129.13	17,461.29	54.5%
	6.3%	30.3%	62.6%	0.7%		
Eiler BLM	10.77	92.21	40.91	0	143.89	0.4%
	7.4%	64%	28.4%	0		
Eiler FS Lassen	1906.89	3668.48	8365.33	419.75	14,360.45	44.9%
	13.3%	25.5%	58.3%	2.9%		

Eiler Totals	3022.7	9058.15	19335.9	548.88	31,988.9	100%
	9.4%	28.3%	60.4%	1.7%		

Soils

B. Soil Resource Condition Assessment Sections:

Three lightning-caused fires occurred in August 2014 on the Hat Creek District of Lassen NF: the Eiler, Bald, and Day, occurring in the vicinities of Burney, Fall River Mills, and Day respectively. NFS lands as well as BLM, State, and private ownerships were affected. FS BAER team earth scientists assessed the incidents with a whole-watershed approach regardless of ownership. Soil burn severity patterns varied for the fires due to different topographies and fire behavior, resulting in:

		Soil Burn Severity			
Fire	Acres	Unb./V. Low	Low	Moderate	High
Eiler	31,971	9%	28%	60%	2%
Bald	39,717	11%	64%	23%	1%
Day	13,146	11%	43%	40%	6%
Total	84,834	10%	48%	40%	2%

The high and moderate severity classes have evidence of severe soil heating in a patchy distribution. Despite widespread complete vegetative mortality, there was an overall lack of high soil burn severity due to rapid fire progression and thus short residence time for severe soil heating effects. The seed bank and infiltration characteristics are largely intact for the moderate SBS, so natural recovery should be normal and acceptable for the resource. The low and lesser severity classes still have good surface structure, contain intact fine roots and organic matter, and should recover in the short-term once revegetation begins and the soil surface regains cover. Water repellency is common, varying from slight and surficial in low SBS to severe at 2-4 inches depth in high SBS; repellency was generally patchy everywhere, so it is not expected to greatly exacerbate runoff production. Unburned areas had no repellency. These coarse-loamy to sandy loam soils generally have rapid infiltration rates; thus surface runoff and erosion should here be localized to shallow soil areas upon steep, sparsely-vegetated slopes. There is little potential for sediment delivery to the fluvial system due to somewhat unique hydrography in this vicinity, so habitat and water quality effects from sediment should be minor.

C. Water Repellent Soils:

Water repellency is common, varying from slight and surficial in low SBS to severe at 2-4 inches depth in high SBS; repellency was generally patchy everywhere, so it is not expected to greatly exacerbate runoff production. Unburned areas had no repellency. It is crudely estimated that about 25-30% of the areas having low to high SBS have water repellency elevated by the fire, or about 19K-23K acres in total for the three fires as a whole.

D. Erosion Potential:

Total fire area: 2 tons per acre for a 5 year runoff event, as determined using WEPP-ERMiT. Stated model accuracy is +/- 50%. With water repellency levels in this fire, +50% may be more representative for this area.

E. Sediment Potential:

ERMiT estimates (part 3D) try to account for hillslope re-deposition, and sediment production numbers are delivery to the bottom of the hillslope. Many modeled hillslopes in this fire do not have streams at the base of the slope; water percolates into the sandy soils and sediment is deposited on the gentle toe-slopes. Therefore it is roughly estimated that 20% of sediment estimates above would be delivered to the fluvial system.

Hydrology

Field evaluations were conducted to identify potential values at risk. A drainage basin above the community of Day was identified as a potential value at risk. The community of Day is located on an alluvial fan at the base of a drainage basin of approximately 659 acres. The initial assessment of this basin was that it was severely burned and flooding in the community of Day was a concern. Speaking with a resident of the community it was discovered that several residences use the water from a spring in the drainage for domestic water use.

Further field evaluation revealed that this basin has a moderate soil burn severity with no hydrophobicity. Modeling a pour point at the county road in Day indicated that after a five year storm event the peak flow in this basin would increase by 37% (from 17 cfs to 24 cfs). These results led the team to conclude that the risk of flooding and the degradation of water quality was low.

Potential post-fire peak flow increases were estimated using a modeling technique to evaluate watershed response in HUC6 watersheds within the fire area. Modeling estimates of post-fire peak flow increases ranged from 1% in Corders Reservoir HUC6 on the Bald Fire to 69% in the Eiler Gulch HUC6 on the Eiler Fire.

The only perennial stream on these fires besides the spring at the community of Day is Hat Creek which is adjacent to the east side of the Eiler Fire. Due to the volcanic nature of the Eiler Fire area there is no surface hydraulic connectivity between the intermittent streams within the Eiler Fire and Hat Creek. The water quality and beneficial uses of Hat Creek is not at risk.

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	**5**
B. Design Chance of Success, (percent):	**90**
C. Equivalent Design Recurrence Interval, (years):	**5**
D. Design Storm Duration, (hours):	**1.2**
E. Design Storm Magnitude, (inches):	**1.2**
F. Design Flow, (cubic feet / second/ square mile):	**Day – 6.4** **Bald – 5.7** **Eiler – 4.3**
G. Estimated Reduction in Infiltration, (percent):	**Day – 23** **Bald – 26**

Eiler - 23

H. Adjusted Design Flow, (cfs per square mile): **Day – 7.9**
Bald – 7.2
Eiler – 5.3

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Background:
The Day Fire started on July 31 by lightning near the town of Day and quickly progressed east northeast to 7,000 acres on August 1. The fire burned intensely through timber and brush on Lassen and Modoc National Forest land as well as private land, causing 60 people to be evacuated on July 31. By August 3 the fire was near its max size of 13,146 acres and additional evacuations were ordered for Lookout Ranchettes.

The Bald Fire started by lightning on the east flank of Bald Mountain the evening of July 30 and was reported to be about 1,700 acres on July 31. The fire spread east and northeast to 16,305 acres on August 1, influenced by the prevailing southwest winds with the eastern spread likely due to thunderstorms in the area. The community of Little Valley was evacuated, but was successfully protected through suppression activities. The fire increased rapidly to 34,335 acres August 2 due to very hot dry weather, gusting winds, exceptional drought and extremely dry fuels resulting in explosive fire behavior.

The Eiler Fire started in the Thousand Lakes Wilderness south of Freaner Peak around 8pm July 31. The next day it spread 6 miles (6,928 acres) downhill to the floor of the Hat Creek Valley under a local wind condition that develops in the Hat Creek drainage. This wind is initiated by the lava flows on the eastside of the valley as they heat up causing the air to rise. Cold air from higher elevations then flows in to replace the warm air and a downhill wind develops.

On August 2 prevailing southwest winds, channeled by the Hat Creek Valley topography moved the fire northward to 22,788 acres. Extreme fire behavior on this day produced a substantial column with swirling winds, fire and updrafts (fire whirls) that snapped trees off 30 feet above the ground, wrapped sheet metal around tree trunks, twisted barbed wire into long braids and sand blasted trees in the Dutch Flat area.

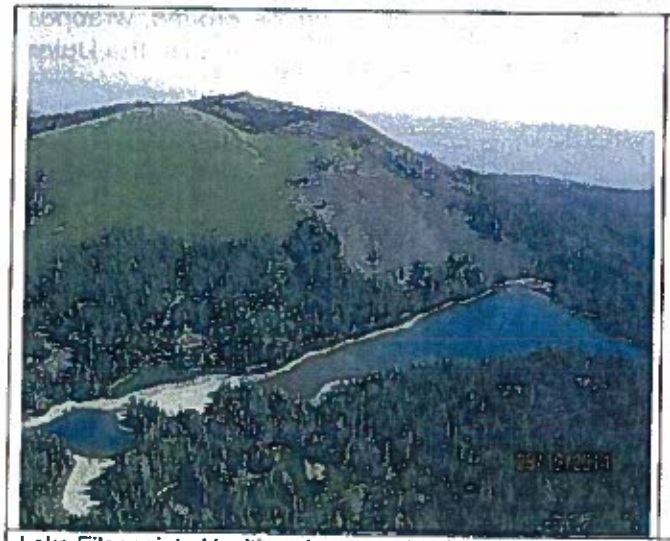
During the August 1-3 fire progression, 8 residences, 21 other buildings and 3 vehicles were burned or destroyed. Residences were evacuated from Hat Creek and several nearby communities, and the Town of Burney was under an advisory to be prepared to evacuate.


Dutch Flat fire whirl area with flatten trees


Dutch Flat fire whirl area with sandblasted tree

On August 3, the weather began to change ahead of a monsoonal low pressure system from the Gulf of Mexico. Fire behavior dropped off and around three tenths of an inch of rain fell on the fires on August 4 and 5, holding them at approximately their current perimeters.

Approximately 45.4% (Day) 24.6% (Bald) and 62% (Eiler) burned at high and moderate soil burn severity (see soil burn severity maps below). The rest of the fire was either low or very low soil burn severity. It is very important to understand the difference between *fire intensity* or *burn severity* as discussed by fire behavior, fuels, or vegetation specialists, and *soil burn severity* as defined for watershed condition evaluation in BAER analyses. Fire intensity or burn severity as defined by fire, fuels, or vegetation specialists may consider such parameters as flame height, rate of spread, fuel loading, thermal potential, canopy consumption, tree mortality, etc. For BAER analysis, we are not mapping simply vegetation mortality or above-ground effects of the fire. Soil burn severity considers additional surface and below-ground factors that relate to soil hydrologic function, runoff and erosion potential, and vegetative recovery. Pictures below show the ignition point for the Eiler fire and mixed mortality where the picture on the right shows high mortality due to high burn intensities caused by a large fire whirl on August 2, 2014 in Dutch Flat of the Eiler fire.


Lake Eiler point of ignition shown on the right of the lake.


Dutch Flat fire whirl with trees laid flat in circular pattern.

General trends are mixed pine forested areas that had high basal area were moderate to high soil burn severity with 80 to 100 percent timber mortality. Open brush/grass areas had moderate to low soil burn severities and with 30 to 50 percent mortality. Areas that burned hot have topsoil destruction of compromised structure (single-grained), burned out organic matter, roots, and water-repellency to 2 inches (see left pics below). Areas that moderate to low soil burn severity had duff removal but little destruction of topsoil, roots, and organic matter (see right pics below).

High soil burn severity in mixed conifer off Tamarack Trail

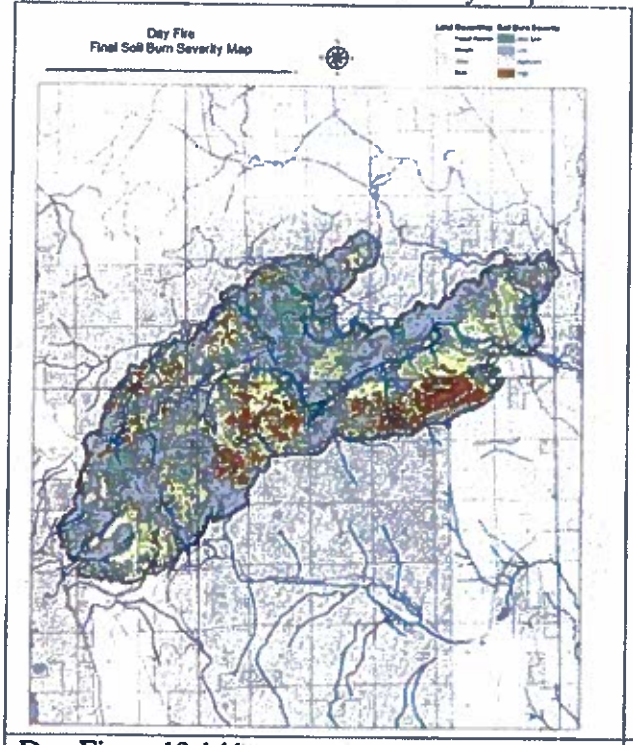
Low soil burn severity in mixed conifer off Tamarack Trail

High soil burn severity in mixed conifer along Tamarack

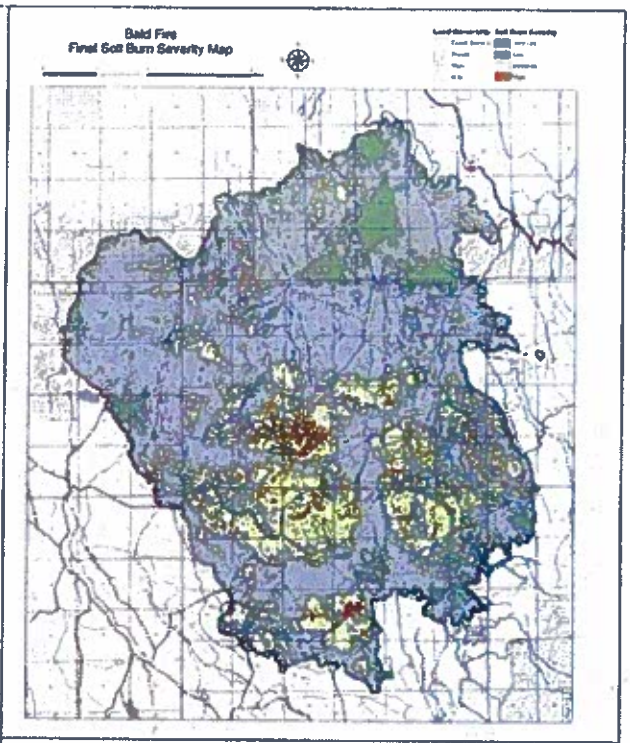
Low soil burn severity m-conifer in wildemess

Looking at the soil burn severity maps below shows the majority of soil burn severity was moderate to low across all fires. Areas that burned the hottest were south Taylor Creek for the Day Fire, Negro Mountain area for the Bald Fire, and the east Eiler butte area for the Eiler Fire.

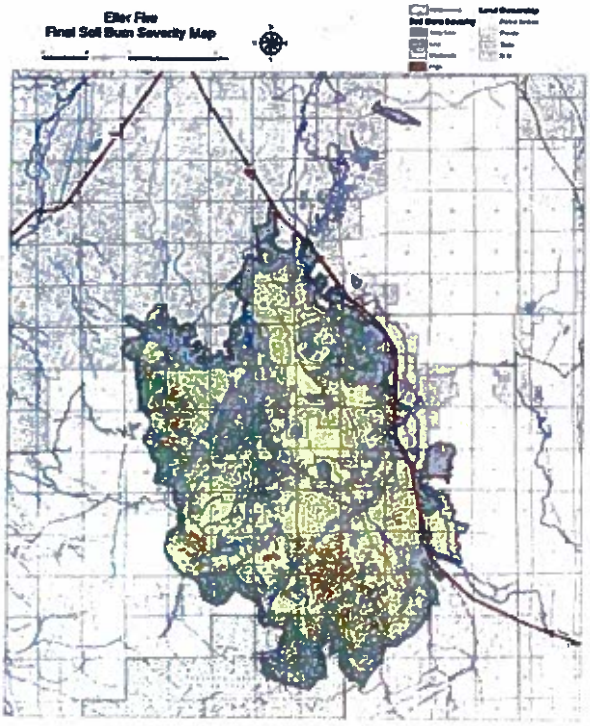
Day, Bald, Eiler Fire Soil Burn Severity Maps:



Day Fire – 13,146 acres



Bald Fire – 39,717 acres



Eiler Fire – 31,971 acres

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:

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

Values at Risk Matrix: (see Appendix B)

The values at risk (VAR) matrix in Appendix B display all the ratings for the potential values at risk for the Day, Bald, and Eiler fires. Only ones that rated as high or very high are discussed in detail, all others that rated intermediate to very low are only briefly discussed below or listed with their ratings in the table.

Forest Service Roads and Hazard Trees

Life: As a result of the severely burned watersheds risks to life and safety of Forest visitors and personnel entering certain areas of the burn are likely and pose a moderate risk, due to burned Hazard trees along roadways.

Property: Based on the watershed response, the BAER Assessment team determined that residences and private property within and below the fire area are at increased risk of flooding as a result of the Day, Bald, and Eiler Fire. Forest roads within the fire area will be repaired as a result of suppression activity which is critical to protect road-bed and associated infrastructure. But because of the expected increase in watershed response, the assessment team feels that significant damage would occur on roads throughout the fire perimeter due to undersized culverts and poor drainage (see hydrology report for details). There is a likelihood that post burn conditions will increase runoff and the movement of sediment into drainage features, such as culvert inlets, overside drains, roadway dips and run outs, this occurrence causes drainage function to fail and uncontrolled water to divert, resulting in a moderate risk of damage to the invested road improvements, loss of road function and the denial of access. Forest wilderness trail (Tamarack Trail – Thousand Lakes Wilderness) is at risk from erosion and trail collapse due to burned hillslopes and stumpholes compromising the trail tread in multiple locations.

Risk Assessment – Forest Service roads Day Fire

Probability of Damage or Loss: Possible
Magnitude of Consequence: Minor

Risk Level: Low.

Risk Assessment – Forest Service roads Bald Fire

Probability of Damage or Loss: Likely. This determination is based on the expectation that increased erosion and sediment will occur and could plug drainage structures along roads.
Magnitude of Consequence: Moderate. This determination was made based on the amount of damage that would occur if culverts were temporarily plugged.

Risk Level: High

Risk Assessment – Forest Service roads Eiler Fire

Probability of Damage or Loss: Likely. This determination is based on the expectation that increased erosion and sediment will occur and could plug drainage structures along roads.
Magnitude of Consequence: Moderate. This determination was made based on the amount of damage that would occur if culverts were temporarily plugged.

Risk Level: High.

Risk Assessment – Forest Service Trail (Tamarack Trail – T.L. Wilderness)

Probability of Damage or Loss: Likely. This determination is based on the expectation that increased erosion and trail tread collapse will occur compromising the trail.
Magnitude of Consequence: Moderate. This determination was made based on the amount of damage that would occur if the trail was rendered impassible.

Risk Level: High.

Water Quality, Quantity, and Fisheries

The highest changes peak runoff occurs on the Day Fire in the Taylor Creek watershed (HUC6), on the Eiler Fire in the Middle Hat Creek and Eiler Gulch watersheds. The Taylor Creek watershed has a high amount of moderate and high soil burn severity (53%). The Day Fire burned in the upper reaches of the watershed where the ground is steep. The rest of the watershed is very flat and characterized by seasonally wet meadows ending at Taylor Reservoir. Increased flows and sediment resulting from the fire will be absorbed by the meadows.

On the Eiler Fire, the geology is characterized by volcanic lava. As a result, all of the streams are intermittent and either drains into a meadow or a sink. There is no surface hydraulic connectivity between the streams inside the Eiler fire perimeter and Hat Creek. The burned area in the Middle Hat Creek watershed is mostly on the upper slopes above Hat Creek and to the west of State Highway 89. This watershed has moderate and high soil burn severity of 56% within the fire. Due to the volcanic nature of the slopes there is only one intermittent stream is in the fire area and it goes into a sink before reaching Hat Creek. Increased flow and sediment will not reach Hat Creek and will not pose a problem to water quality. A large portion of the Eiler Gulch watershed is within the fire perimeter with a high amount of moderate and high soil burn severity (70%). The streams within the fire area are discontinuous. Flooding and sediment to the perennial stream system are not a concern. Though the Day, Bald and Eiler fires burned almost 85,000 acres on the Lassen National Forest values at risk from flooding and water quality are minimal. The one value at risk that was identified is a low risk and mitigations will be carried out by the holders of the water rights on private property.

Risk Assessment – Water Quality

Probability of Damage or Loss: Possible

Magnitude of Consequences: Minor

Risk: Low

Hat Creek has the endangered Shasta Crayfish 4.8 stream miles below the fire and the Forest Service sensitive Black Juga within the fire area. In addition Hat Creek is a fishery for native residential trout and spawning gravels could be impacted by increased sedimentation. Other aquatic plants and animals also could be affected by turbidity and sediments in habitat reduction (see hydrology and fisheries report). The Bald fire and Day fires have very limited effects on aquatics.

Risk Assessment – Shasta Crayfish.

Probability of Damage or Loss: Unlikely. This determination is due to mitigating effects of the distance to downstream occupied habitat and an intermediate impoundment between the fire area and occupied habitat.

Magnitude of Consequence: Major. This habitat is one of seven occupied habitats still remaining, with continued decline of the species. If a change in sediments occurs, cobble embeddedness might occur which would further depress this population.

Risk Level: Intermediate.

Risk Assessment – Black Juga.

Probability of Damage or Loss: Possible. This determination is due to the presence of the snail within the fire affected reaches of Hat Creek. This snail has some tolerance for mud (see fisheries report) but prefers cobble gravel and sand.

Magnitude of Consequence: Moderate. Due to the change in sediments water and gravel embeddedness could occur.

Risk Level: Intermediate.

Risk Assessment – Fisheries of Hat Creek.

Probability of Damage or Loss: Possible. This determination is due to the change in watershed response and increased bed-load turbidity affecting the fish habitat in Hat Creek.

Magnitude of Consequence: Moderate. This determination is due to the change in sediments in the water and spawning gravel embeddedness that could occur.

Risk Level: Intermediate.

Risk Assessment – General aquatics

Probability of Damage or Loss: Likely. This determination is due to the change in watershed response and increased bed-load turbidity and embeddedness affecting the benthic macroinvertebrates in Hat Creek.

Magnitude of Consequence: Minor. This determination is due to the mixture in responses that to a change in sediments in the water and gravel embeddedness that could occur. Most macroinvertebrates can also recolonize areas once the response has abated.

Risk Level: Low.

Threatened, Endangered, Sensitive and Invasive Plants

There are no Threatened or Endangered plants in the fire areas. Three sensitive plants occur in the area. Two, disappearing monkeyflower (*Mimulus evanescens*) and Whitebark Pine (*Pinus albicaulis*), are not found within the fire perimeters. Long-haired star-tulip (*Calchortus longebarbartus var. longebarbatus*) is found within the Day Fire on the Modoc National Forest, but was not impacted by the burn.

The Day Bald Eiler Fire Complex resulted in heavy impacts to the native plant communities over large portions of the burned areas. The large scale loss of vegetative cover has resulted in ecosystems which are highly vulnerable to non-native invasive plant establishment and proliferation. There are several known weed sites within the burned areas on National Forest System lands, plus private and BLM lands all of which were subjected to impacts by dozers resulting in the likely spread from infested areas into uninfested natural communities. Invasive plant species include the California A-Rated diffuse knapweed (*Centaurea diffusa),* spotted knapweed (*Centaurea stoebe* ssp. *micranthos*) and Scotch thistle (*Onopordum acanthium),* the B-Rated Dyer's woad (*Isatis tinctoria*) and Canada thistle (*Cirsium arvense*), and the C-Rated medusahead (*Elymus caput-medusae*), Klamathweed (*Hypericum perforatum*) and yellow starthistle (*Centaurea solstitialis*). Since the weed washing stations did not arrive until nine days into the Fire Complex incident, most of the dozers and other vehicles were not cleaned prior to entering the burned area and likely vectored weeds into the burned area from beyond the Forest boundaries. Within the Day and Bald Fires, several dozer lines and vehicle tracks had crossed through invasive plant occurrences along roadsides on the way into forested areas. The CalFire Whitmore helibase, north of Shingletown was utilized for most of the aerial fire operations, this helibase is infested with yellow starthistle (*Centaurea solstitialis*). Calfire helicopters made repeated trips from this base, landing in the vicinity of Eiler Lake and Freaner Peak in the Thousand Lakes Wilderness, to deliver firefighting crews, supplies and equipment. In addition, two spike camps were established within the northern portion of the wilderness, and Eiler and Hufford Lakes were used by Calfire helicopters for water dipping sites. Seed may have attached to the helicopters while equipment and crews were loaded and refueling was conducted. Invasive plant propagules may have attached to the boots, packs and clothing of firefighters en route to the helicopters. Invasive plant seed was likely vectored into the wilderness by helicopters and hand crews, and by dozers and other vehicles into burned areas outside of the wilderness within the Day Bald Eiler Fire Complex.

The value at risk is the ecosystem health and integrity of the native plant communities within the burned areas. The threat is the potential loss of that health and integrity due to new invasive plant introductions and invasive plant spread from existing infestations which could inhibit the return of the native plant communities and crowd out recovering native vegetation resulting in nonfunctioning or poorly functioning ecosystems. The deep taproots of these aggressive species are able to access soil water previously utilized by native vegetation, making it unavailable to the new growth of the native species. For these reasons, loss of the ecosystem health and integrity of the native plant communities from weed invasion in the burned area is an emergency requiring mitigation.

The value at risk ratings and treatments for the specific fires are as follows:

Risk Assessment - Day Fire Invasive Plants

Probability of Damage or Loss: Likely. There is a likely probability of spread and introduction of non-native invasive plants into areas disturbed by fire.

Magnitude of Consequences: Moderate. Damage to these plant communities would be considerable and long-term.

Risk Level: High. Invasive plants were observed along roads used to access the fire area, on adjacent private lands, and near dozer lines. Weed detection surveys would primarily occur along Forest Service roads, at known invasive plant locations, on Forest Service lands west of Pete Spring where Scotch thistle was observed on adjacent private land, and along dozer lines. Rapid response treatments by manual removal would occur where new, small invasive plant occurrences are discovered. Where large invasive plant occurrences are discovered, additional funding for treatment of these sites may be requested.

Risk Assessment – Bald Fire Invasive Plants

Probability of Damage or Loss: Likely. There is a very likely probability of spread and introduction of non-native invasive plants into areas disturbed by the fire.

Magnitude of Consequences: Moderate. Damage to these plant communities would be considerable and long-term.

Risk Level: High. Numerous small invasive plant occurrences are found within the fire affected area and several dozer lines and vehicle tracks had crossed through these sites when entering forested areas. Weed detection surveys would occur primarily along dozer lines, at drop points and at known infestations. Rapid response treatments by manual removal would occur where new, small invasive plant occurrences are discovered. Where large invasive plant occurrences are discovered, additional funding for treatment of these sites may be requested.

Risk Assessment – Eiler Fire Invasive Plants

Probability of Damage or Loss: Likely. There is a likely probability of spread and introduction of non-native invasive plants into areas disturbed by the fire.

Magnitude of Consequences: Moderate. Damage to these plant communities would be considerable and long-term. Helicopter landings and hand crew activities may have introduced yellow star thistle into the wilderness. The Thousand Lakes Wilderness is currently weed free and is a priority area for weed detection and rapid response surveys.

Risk Level: High. Weed detection surveys would occur in the priority areas near Eiler Lake, Freaner Peak, Tamarack trail and Hufford Lake. Dozer lines, drop point, roads, and small, known invasive plant infestations would be conducted outside the wilderness. Rapid response treatments by manual removal would occur where new, small invasive plant occurrences are discovered. Where large invasive plant occurrences are discovered, additional funding for treatment of these sites may be requested.

Heritage Resources

Three archaeological sites appear to be eminently threatened by further degradation due to erosion, flooding, untrammeled access for OHV and cattle, or pose a risk to people and wildlife. In addition, many other cultural resources are at a heightened risk of impact from proposed non-heritage DBE Incident BAER treatments. Therefore, Lassen Resource Management relay the following recommendations for the purposes of the DBE BAER assessment:

At site 05-06-53-0077 spring box lids are to be replaced to ensure safety of forest visitors, personnel, and wildlife. This treatment will also aim to maintain the original aesthetic of the historic site.

Risk Assessment – Cultural Resource (05-06-53-0077)

Probability of Damage or Loss: Possible. If spring boxes were left open it would increase the risk to people and wildlife. It would also potentially undermine the spring boxes and take away from the historic value of the site.

Magnitude of Consequence: Major. Safety to all visitors and personnel is a high priority.

Risk Level: High. Hand mulching of weed free hay and placement of straw waddles are recommended for the site 05-06-53-437. It is also recommended that the local Native American Tribes should be invited to participate in this process.

Risk Assessment – Cultural Resource (05-06-53-0437)

Probability of Damage or Loss: Very Likely. Site is already showing signs of erosion (riling) from a few post burn rain events.

Magnitude of Consequence: Major. If no treatment is implemented there is a high potential for data loss and impacts to site integrity as the site erodes into Beaver Creek.

Risk Level: Very High. The reconstruction and repair of fencing around the historic spring box at site 05-06-53-464 is recommended to prevent livestock from impacting the resource.

Risk Assessment – Cultural Resource (05-06-53-0464)

Probability of Damage or Loss: Likely. If the fence is not repaired cattle could potentially impact the historic spring head.

Magnitude of Consequence: Moderate. If no treatment is implemented there is a potential for data loss and impacts to site integrity.

Risk Level: High. Locations where non-heritage related treatments are proposed will require review by LNF Heritage Resource Management prior to implementation. Heritage survey and site protection measures may also be required for proposed BAER treatment areas prior to implementation.

Threats to Wildlife: There are no wildlife concerns for the Day, Bald, Eiler Fire due to no T&E species (see wildlife report). No emergency exists for wildlife habitat as result of the Day, Bald, Eiler Fire.

B. Emergency Treatment Objectives: To allow safe passage of water to protect infrastructures and watersheds from accelerated sheet and rill erosion. To protect watersheds from the spread of noxious weeds.

Risk determination is dependent on the design storm selected and downstream values at risk. By using an average storm (5-year event) emergency planning measures can be designed to mitigate and minumize anticipated risks. Using a 2-year design storm the values at risk can be evaluated to determine if an emergency exists.

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

Land 90 % Channel - % Roads/Trails 85 % Protection/Safety 90 %

D. Probability of Treatment Success

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

E. Cost of No-Action (Including Loss): $1,138,200

F. Cost of Selected Alternative (Including Loss): $389,624

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Brad Rust

Email: brust@fs.fed.us Phone: 530-226-2427 FAX: 530-226-2485

H. Treatment Narrative for Forest Service:

(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.)

Land Treatments: Invasive weed detection surveys are the selected treatments (see treatment map).

The total treatment cost to mitigate the emergency across the DBE Complex is $36,900:

Lassen National Forest

Item	Unit	Unit Cost	# of Units	Cost
GS-5 Technician	day	$150	150	$22,500
GS-9 Crew Leader –planning & implementation	day	$250	10	$2,500

Item	Unit	Unit Cost	# of Units	Cost
GS-11 Botanist - coordination & reporting	day	$400	15	$6,000
Mileage	mile	$0.50	7000	$3,500
Miscellaneous supplies	N/A	$500	1	$500
Total Cost for FY2015				**$35,000**

Modoc National Forest

Item	Unit	Unit Cost	# of Units	Cost
GS-5 Technician	day	$150	4	$600
GS-11 Botanist - coordination & reporting	day	$400	2	$800
Mileage	mile	$0.50	1000	$500
Total Cost for FY2015				**$1,900**

The proposed treatments on National Forest System lands can help to reduce the impacts of the fire, but treatments will not completely mitigate the effects of the fire. The treatments listed below are those that are considered to be the most effective on National Forest System lands given the local setting including topography and access. The treatments designed to mitigate the emergency include non-native invasive plant detection surveys and rapid response eradication treatments by manual removal to prevent new infestations and/or the expansion of existing invasive plant infestations. With approximately 82 miles of dozer line and hand line, two spike camps and helispots within wilderness, numerous drop points, staging areas, water drafting and dipping sites in the fire complex it is expected that new and expanding invasive plant infestations will proliferate along these vectors and if left unchecked may eventually lead to vegetation type conversion. Surveys and rapid response eradication treatments will begin in 2015 during the flowering periods of invasive plant species. The area requiring assessments was calculated at over 505 acres, plus approximately 82 miles of dozer line and hand line needing survey, largely on the Lassen National Forest with a small portion of the Modoc National Forest requiring survey (approximately 37 acres).

Natural Recovery: Vegetation in the mixed conifer and fir forests will recover slowly. Even in areas of moderate soil burn severity, the canopy was mostly killed and the seed source removed. Stands with an element of Jeffrey, sugar, western, or ponderosa pine will likely recover more quickly, since at least a few mature trees are likely to have survived to produce seed into newly exposed mineral soil. Meadows dominated by grasses and forbs will recover within a year, because for the most part soil temperatures were not hot enough to kill root systems. The montane chaparral shrubs were mostly killed by the fire, but fire stimulates manzanita seeds stored in the soil to germinate. In riparian areas along Hat and Lost creeks, sedges and grasses were resprouting within 10 days of the fire, and most riparian shrubs are also likely to resprout.

Channel Treatments: none

Roads and Trail Treatments: Restoring overall drainage function along with installing culvert inlet treatments, critical dips, upsizing culverts and drainage armor will control water from moving off site reducing the risk to adjacent resources along some road and trail segments.

There was approximately 1.0 mile of maintenance level 2 NFSR assessed on the Day fire of this no miles are proposed for treatment. On the Bald fire approximately 123 miles of maintenance level 2, 3, and 4 NFSR were assessed with 35 miles proposed for treatments and for the Eiler fire 48 miles of maintenance level 2, 3, and 4 NFSR were assessed with 15 miles proposed for treatments. In high severity burned water sheds upslope of roads, there is a likely risk of some road drainage function failing due to the anticipated increased flow of water and sediment moving into culvert inlets, ditch lines, roadway dips and associated run outs. Accepted BAER road treatments along these segments include.

- Install Roadway Dips (critical dips at culvert crossings and intermediate rolling dips at grade breaks).
- Restore Drainage Function (restore drainage features along roadways to function at full capacity while storm proofing and winterizing).
- Install Drainage Armor (rip/rap rock at critical dips, low water crossings and fill slope protection).
- Install Culvert Inlet Treatments (metal end sections).
- Install Upsized Culverts for increased water and debris flows).

Road Treatments Cost Estimate

Treatment	Unit	Quantity	Unit Cost	Total
Install Armored Rolling Dip w/Rip Rap Outlet	Each	115	$1,200.00	$138,000.00
Restore Drainage Function	Mile	22.5	$800.00	$18,000.00
Install Drainage Armor	Cubic Yard	140	$100.00	$14,000.00
Install Culvert Inlet Treatment	Each	9	$1,000.00	$9,000.00
Install and Remove Culverts	Feet	640	$150.00	$96,000.00
Roadside Crew Hazard Tree Mitigation	Mile	10	$5,000.00	$50,000.00
Cost include: 10% Mobilization and Personnel Cost 15% Administration Cost				
			Total	**$325,000.00**

The average value of the road and the cost of repairing these road segments without BAER treatment if damage occurs is approximately $50,000/mile for a total of $2,534,202. The average cost to of the BAER treatment is approximately $5,500/mile for a total of $275,000.

Tamarack Trail has many trees that were burned in areas that have moderate to high soil burn severity compromising their integrity and pose a hazard to trail crews working on the trail. These hazards are scattered throughout the trail so trail crews would be at risk during remediation.

Sections of the Tamarack trail are at risk due to steep burned hillslopes that will experience accelerated erosion and trail tread failure due to burned out stumps. Tamarack trail is a key trail for the Thousand Lakes Wilderness access since it is one of the shortest routes to Eiler Lake. The trail is now at risk to erosion and collapse compromising its use as a main access to the wilderness.

A combination of actions is necessary to protect the users of the area and crews working to repair the trail:

a. Emergency work to be completed on Tamarack Trail by Lassen trail crew.
b. Signing trail with warning of hazardous conditions due to the burn.
c. Replacing burned trail signs for safety.

Cost of Trail Treatments

Treatment	Unit	Amount	Cost
Trail erosion control	miles	2	4,250
Stumphole repair	ea.	35	1,750
Warning & trail signs	ea.	4	1,000
Hazard tree removal	miles	0.5	1,000
		Total	**$8,000**

Protection/Safety Treatments: Burned area road signs.

Safety: Posting of areas burned will alert the public to potential dangers of falling trees and rolling rocks. Repair of road signs burned will insure public safety (see treatment map).

Heritage Resource Prescriptions:

Three heritage resources within the burn area require emergency treatments.

Site 05-06-53-0077:
Treatment Type: Repair lids on spring box openings.
Treatment Objective: Wooden covers on historic spring boxes where destroyed during the fire. These spring boxes are located near ground level, and are approximately 8 to 15ft. deep, and if left uncovered, pose a safety hazard to people and wildlife.

Cost of treatment for Site 05-06-53-0077
GS-9 Archaeologist@approx. $25.00 /hour X 24 = $600.00
2 person crew for installation $50.00 /hour X 16 = $800.00
Mileage@ $0.56 /mile X 100 = $56.00
Materials = $2,000.00
TOTAL = $3,456.00

Site 05-06-53-0437:
Treatment Type: Straw waddles and hand straw mulching
Treatment Objective: Straw waddles will be placed for redirecting water flows away from the concern area and straw mulching will be hand strewn to help mitigate erosion. These treatments are to prevent the site from washing away into Beaver Creek which would impact site context and integrity.

Cost of treatment for Site 05-06-53-0437
GS-9 Archaeologist@approx. $25.00 /hour X 40 = $1,000.00
GS-5 Archaeological Tech @approx. $15.00 /hour X 32 = $480.00
Mileage@ $0.56 /mile X 200 = $112.00
Materials = $780.00
TOTAL = $2,372.00

Site 05-06-51-0464:
Treatment Type: Repair fence around historic spring box.
Treatment Objective: To repair a fence around a historic box spring that was constructed to keep cattle from impacting the resource.

Cost of treatment for Site 05-06-53-0464
GS-9 Archaeologist@approx. $25.00 /hour X 24 = $600.00
GS-5 Forestry Tech. (for install) @approx. $15.00 /hour X 16 = $240.00
Mileage@ $0.56 /mile X 100 = $56.00
Materials = $500.00
TOTAL = $1,396.00

Coordinator/Implementation Team Leader: Interagency coordination started during the fire and continued throughout the BAER Assessment. Continuing this coordination by providing the BAER Assessment Report, specialist reports and attending meetings is anticipated. In addition, letters detailing potential physical responses and impacts from the fire that may influence safety in and downstream of the fire area will need to be composed and sent to all public and private stakeholders. Cost is for this position is $6,000.

Item	Unit	Unit Cost	# of Units	Cost
Interagency Coordinator	Day	$400	15	$6,000

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.)

See Appendix C below for road, heritage, and trail monitoring.

Part VI – Emergency Stabilization Treatments and Source of Funds Initial Request

DBE BAER Costs	NFS Lands					Other Lands				Money Left
Line Items	Units	Unit Cost	# of Units	BAER $	Spent $	Units	Fed $	Units	Non-Fed $	Total $
A. Land Treatments										
NX Weed Det. Survey - Lassen NF	project	$35,000	1.0	$35,000	$0		$0		$0	$0
NX Weed Det. Survey - Modoc NF	project	$1,900	1.0	$1,900	$0		$0		$0	$0
Subtotal Land Treatments				$36,900	$0		$0		$0	$0
B. Channel Treatments - none										
Subtotal Channel Treatments				$0	$0		$0		$0	$0
C. Road and Trails										
Road Stormproofing	mile	$6,500	50	$325,000	$0		$0		$0	$0
Tamarack Trail Stormproofing*	project	$8,000	1	$8,000	$0		$0		$0	$0
Subtotal Road & Trails				$333,000	$0		$0		$0	$0
D. Protection/Safety										
Heritage Site Protection (3 sites)	project	$7,224	1	$7,224	$0		$0		$0	$0
Burned Area Warning Signs	ea	$300	10	$3,000	$0		$0		$0	$0
Road & Trail Signs	ea	$250	6	$1,500	$0		$0		$0	$0
Interagency Coordinator & Implementation Team Leader	ea	$6,000	1	$6,000	$0		$0		$0	$0
Subtotal Protection				$17,724	$0		$0		$0	$0
E. BAER Evaluation										
Assessment Team	0520	HSBAER	---	---	$107,996	---	$0	---	$0	$0
Subtotal Evaluation				---	$107,996	---	$0	---	$0	$0
F. Monitoring										
Road & Trail Treatment Monitoring	ea	$1,000	1	$1,000	$0		$0		$0	$0
Heritage Treatment Monitoring	ea	$1,000	1	$1,000	$0		$0		$0	$0
Subtotal Monitoring				$2,000	$0		$0		$0	$0
G. Totals				$389,624	$0		$0		$0	$0
Previously approved						Comments: * T. Trail treatment consists of trail tread water-barring and filling in burned out stump holes that compromise trail.				
Total for this request				$389,624						

PART VII - APPROVALS

1. _____ 9/16/14
Lassen Forest Supervisor (signature) Date

APPROVAL IN PART: Approval is given for $258,624 of expenditure for this project. The decision on funding for culvert replacement ($96,000) is being deferred pending additional information, and the amount of funding for hazard tree treatment along roads has been reduced (from $50,000 to $15,000) based on a new estimate of work.

2. _____ 9/17/14
For Regional Forester (signature) Date

Additional Approval (October 7, 2014): Approval is given for $30,000 for culvert replacement.

3. Bernie T. Grant for Regional Forester (signature)

10/7/2014 Date