

BURNED-AREA REPORT

(Reference FSH 2509.13)

A. Type of Report

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

☒ 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)

A. Fire Name: Power

B. Fire Number: CASTF-002613

C. State: CA

D. County: Tuolumne

E. Region: 05

F. Forest: 16

G. District: Summit

H. Fire Incident Job Code: P5HT28

I. Date Fire Started: 8/5/2013

J. Date Fire Contained: 8/15/2013

K. Suppression Cost: \$6.5 mm

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): Dozer line – 1.5 miles
Handline – 7.0 miles

2. Fireline seeded (miles): 0

3. Other (identify):

M. Watershed Number: 180400100403

N. Total Acres Burned: 1076
NFS Acres(1076) Other Federal () State () Private ()

O. Vegetation Types: Mixed Conifer - Oak

P. Dominant Soils: Lithic Xerumbrepts-Fiddletown Family, Moderately Deep-Rock Outcrop Complex, 35 To 70 Percent Slopes; Gerle Family, Deep-Moderately Deep Association, 5 To 50 Slopes

Q. Geologic Types: Granodiorite of Poopenaut Valley

R. Miles of Stream Channels by Order or Class: Intermittent – 0.02 miles
Perennial – 1.79 miles
Ephemeral – 12.17 miles

S. Transportation System

Trails: miles 0.2 Roads: miles 7.8

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 537 (low) 273 (moderate) 134 (high)

B. Water-Repellent Soil (acres): 110

C. Soil Erosion Hazard Rating (acres):
 670 (low) 256 (moderate) 150 (high)

D. Erosion Potential: 5.0 tons/acre

E. Sediment Potential: 3,252 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5-10

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

C. Equivalent Design Recurrence Interval, (years): 2

D. Design Storm Duration, (hours): 0.5

E. Design Storm Magnitude, (inches): 0.5

F. Design Flow, (cfs per square mile): 19

G. Estimated Reduction in Infiltration, (percent): 20

H. Adjusted Design Flow, (cfs per square mile): 33

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Power Fire started on August 5, 2013 and burned 1076 acres of National Forest lands on the west-facing slope of the Middle Fork of the Stanislaus River. The burned area lays downslope from State Highway 108 and encompasses parts of Cow, Bull and Lilly creeks. The tributaries discharge to the Stanislaus River and to Beardsley Reservoir directly below the Fire. The Donnell Reservoir is upstream of the fire area. The Map Appendix shows the Soil Burn Severity and the Analysis Watersheds. Soil burn severity was mixed and consisted of low (49% of fire area), moderate (25%), high (12%), and unburned (12%). No non-NFS lands burned.

Slopes are very steep and rocky over much of the fire contributing to the primary hazard or threat of rolling rocks onto roads. Hazard trees are also an issue in areas of moderate to high soil burn severity close to roads. Burned oaks are common and contribute to the threat of trees falling on roads. Drainage crossings were looked at carefully on all roads within the fire, particularly at the Bull Creek crossing on the 4700 road where response is expected to be higher than in other watersheds. Hydrologic and erosion response was modeled. Soil productivity and water quality and use are critical values but are not considered at risk.

Values located outside the Fire that are not at risk from post-fire damaging storms are the Donnell Powerhouse, the residence close to the powerhouse and the transmission line. The penstock is located in an area of low soil burn severity similar to an underburn.

There are no known federally listed threatened and endangered plant species in the burn area. The spread of noxious weeds, primarily oxeye daisy and bull thistle is considered a threat.

Hydrologic and Erosion Response: The Power Fire has been analyzed by watersheds or pour points at three different locations in or downstream of the fire area. The Map Appendix, Analysis Watersheds shows the pour points, watershed boundaries, and burn severity within the watersheds. Runoff and sediment yield is modeled to these pour points because there is a potential value at risk. It is also important to know how much sediment is eroding from all acres within the fire boundary. For example, 3.4 acre-feet (over 5,460 cubic yards) of sediment is estimated to be delivered to the M.F Stanislaus River from the Fire (*50% chance that 3.4 acre-feet will be delivered in a storm event the 1st year*). Table 1 shows pre- and post fire peak flows and sediment yield for analysis watersheds.

The water modeling assumes an average or design storm event. The 2 year_30 minute_0.5 inch event was used as the design storm. Larger rain events do have the potential to increase the risk of flooding and sedimentation. Refer to the Power BAER Hydrology Resource Report for a more detailed description of field investigations, hydrologic modeling and discussion of potential critical values at risk.

Table 1: Modeled pre- and post-fire 1st year peak flows and sediment yield

Watershed	% of Watershed Burned	Pre-Fire Peakflow (cfs)	Runoff (Model1)		Sediment Yield			
			Post-Fire Peakflow (cfs)	Peakflow Increase (Percent)	Pre Fire Sediment (tons/acre)	Post Fire Sediment (tons/acre)	Sediment Increase (above background)	Post Fire Sediment (Acre-Feet) ¹
Bull Creek	48	19	32	70	0.5	4.9	9x	0.9
Bull Creek above 4700' Rd	33	14	21	53	0.4	3.5	9x	0.4
Lily Creek	18	30	33	11	0.4	2.7	7x	0.3
Whole Fire					0.6	5.0	8x	3.4

¹ An acre-foot of sediment is equal to 1600 cubic yards or to a football field with 1 foot of sediment.

The ERMiT erosion model was used to estimate erosion and sediment yield. Modeled runoff and sediment yield to the Middle Fork of the Stanislaus River as a result of the Power Fire suggest that effects are negligible in reducing water quality and beneficial uses downstream. A second model used by the hydrologist suggests that peak flow increases will recover to near pre-fire levels the third year after the fire.

Geologic Response: Debris flows and rockfalls are the primary geologic hazards associated with burned. The likelihood of debris flows following a wildfire is usually 1-3 years after the watersheds are burned. Watersheds with significant amounts of moderate to high soil burn severity are especially likely to generate debris flows. The majority of moderate and high burn severity within the Power Fire is within the Bull Creek watershed.

Emergency Determination of 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

Life and Property: Life and property values that are at risk are primarily road infrastructure and users of the roads (Forest visitors, Forest Service and Tri Dam workers). The road most affected and traveled in the Fire is NFS road 5N09X which is the only access to Donnell Reservoir operated by Tri Dam. The road is also used by fisherman and other recreationists. Although other roads in the burn may have similar hazards associated with road travel, the 5N09X road referred to as the 4700 road is the most at risk relative to safety or life and property. *An emergency exists on the 5N09X road because users of the road will be subject to increased debris flow, rock fall and tree fall hazard due to the Power fire.*

Debris Flows: The likelihood of debris flows within the Bull Creek watershed reaching Forest Road 5N09X is possible and the magnitude of their impact would be moderate. A debris flow could fill the drainage crossing affecting the potential for water overtopping the permeable rock fill during subsequent storm events. This would be a BAER risk level of intermediate. The 1997 storm washed out the crossing and was replaced by a culvert-less rock fill.

Rockfall: An emergency exists on Forest Road 5N09X at the rockfall zones defined in the field survey findings of the geology report. The likelihood is considered to be likely. Because the consequences could be from moderate to minor, the BAER risk level ranges from high to low.

Rockfall hazard in the path of the penstock maybe elevated slightly beyond background levels in the low severity burn conditions. The level 1 road, 5N52Y (normally blocked) does have a short segment where rolling rocks (boulders and smaller) are present and this rock chute is a threat to life and safety. This road provides limited access to the penstock. The Donnel Powerhouse, residence and supporting structures do not appear to be at risk, as the Power Fire poses no direct threat of increased rock fall or debris flow hazard to these values. See field survey findings of the geology report for further details.

Hazard Trees: An emergency exists relative to burned trees falling on Forest Road 5N09X and the 5N15Y and B spur at segments shown in yellow on the proposed treatment map. The probability of loss is possible. Because the consequences could be from major to minor, the BAER risk level ranges from high to low. Road 5N09X is maintained as a level 2 road and normally stays open for the maintenance of flows from Donnell Reservoir before snowfall. Tri Dam has asked that the road stay open their administrative use.

Roads: In general, increased peak flows carrying sediment and debris will likely cause road culverts to become clogged, which could result in loss of small road fills. The Bull Creek crossing at 5N09X (the 4700 road) was looked at carefully because of the high culvert-less fill and the high soil burn severity above the crossing. A significant increase in peak flow and sediment yield is expected at this crossing (Table 1).

Threats to Water Quality and Use: Water quality and use are not at risk. Based on field investigations and modeling of expected post-fire peak flows and sediment yield, there is a low risk to critical values (water quality and aquatic habitat) and, therefore, an emergency does not exist. The magnitude of peak flow increases and sediment yield estimated by the models does not appear likely to pose a significant risk to water quality and aquatic habitat. The Middle Fork Stanislaus River is a large stream that has adequate flow and transport capacity to dilute and move downstream increased debris and fine sediment loads transmitted from the fire area. Reach-scale water quality and aquatic habitat in the Middle Fork Stanislaus River could be affected by increased nutrients, suspended sediment and debris, increased turbidity, and increased fine sediment in pools; however, these effects are expected to be minor and short-term in duration and occur during storms or snow melt in the first 1 - 2 years after the fire.

Threats to Soil Productivity: There is no emergency to soil productivity. The likelihood of erosion and loss of soil productivity is possible and the magnitude of their impact would be minor. Modeling results showed that limited areas (not extensive) could have higher erosion rates of 14 tons per acre. The high severity burn area in the Bull Creek watershed is an example. The Map Appendix gives more detail. Erosion rates are modeled at 5 tons per acre as a fire wide average. This would be a BAER risk level of low.

Threats to Cultural Resources: The BAER team leader has consulted with the READ suppression archaeologist and the District archaeologist and they have stated that the sites found in the Fire are not at risk of post-fire damage. The probability of loss is unlikely, the consequence could be moderate and the BAER risk is low.

Threats to Botany: There are no known federally listed threatened and endangered plant species in the burn area. Sensitive species are not addressed by BAER.

Noxious Weeds - Ecosystem Health and Integrity. Probability of damage to landscape ecological structure and function is likely (>50% to < 90%), as existing populations of invasive species within and in close proximity to the fire are anticipated to expand in the post-fire environment. Most of the Power Fire was either clean of invasive plants or only had minor occurrences of low threat non-native plant species prior to the fire event. This potential for weed spread will have major impacts on native plant communities, particularly perennially wet places. The magnitude of invasive plant species expansion and isolated population establishment will be moderate the first year after fire. It is possible for oxeye daisy to have major consequences in perennially wet places (ditches and several small meadows). Furthermore, suppression activities have may have vectored noxious weed seed into or through the burned area. Heavy equipment was not cleaned prior to coming to the National Forests during suppression activities traffic from fire camp traveled on local pavement where oxeye daisy is growing adjacent to the roads. The BAER risk is high and a BAER emergency is determined.

B. Emergency Treatment Objectives:

Rockfall, tree fall and debris flows are the primary threats. Treatment objectives are to minimize loss of life and risk to human safety, property and ecosystem integrity. The objective for noxious weed treatment is to reduce the potential for existing population expansion and new population establishment. Oxeye daisy and non-native bull thistle are the target species.

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

Land na % Channel na % Roads/Trails 90 % Protection/Safety 90 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	90	50	20
Channel	na	na	na
Roads/Trails	80	90	90
Protection/Safety	80	85	90

E. Cost of No-Action (Including Loss): Road replacement cost are estimated at \$50,000.00 per mile, cost of proposed road treatments excluding signs and closure devices are estimated at \$10,250.00 or \$1,680.00 per mile.

F. Cost of Selected Alternative (Including Loss): Road replacement cost are estimated at \$50,000.00 per mile, cost of proposed road treatments excluding signs and closure devices are estimated at \$10,250.00 or \$1,680.00 per mile.

G. Skills Represented on Burned-Area Survey Team:

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

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H. Treatment Narrative:

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

Land Treatments:

Weed Detection and Removal. Invasive non-native plant surveys and eradication efforts will include three visits to treatment sites in the 2014 growing season. The first visit will coincide with the height of growing season for oxeye daisy on the Stanislaus NF, sometime in mid to late June. Subsequent visits for treatment should be done five to seven days apart to fully eradicate or control oxeye daisy seedlings. Oversight and guidance could be provided for the Summit RD resource staff. Where invasive non-native plants are found in survey target areas (Map Appendix, Proposed Treatments), plants will be removed with hand tools, bagged and taken to waste disposal facilities.

Land Treatments (continued)

MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item):	COST/ITEM
Vehicle miles @ 0.55/mile x 400 miles x 1 year = \$440	\$440
Misc. small supplies @ 100 x 1 bulk approximate x 1 year = \$100	\$100
Weed disposal @ 150 x 1 time x 1 year = \$100	\$150
MATERIALS AND MILEAGE COST	\$690
PERSONAL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):	COST/ITEM
GS-11 @ 351/day x 2 days = \$702; GS-09 @ 285/day x 10 days = \$2850; GS-09 @ 270/day x 10 days = \$2700	\$6,252
TOTAL COST + materials & mileage = \$6,942	

Channel Treatments:

No channel treatments are proposed other than to remove floatable dead and down material from the drainage crossing and basin on 5N09X at Bull Creek.

Roads and Trail Treatments:

Critical dips, drainage armor (rip/rap rock), culvert inlet modifications and rock spillways on fill slopes are some of the BAER road treatments proposed (Map Appendix, Proposed Treatments). Treatments are intended to protect culverts from plugging and diverting water onto the roadway and off the roadway into areas of critical resources down slope of the road.

Use the road blocking Bull Creek as a convenient closed debris flow basin to limit the impact of debris flow sediment to downstream values-at-risk ranging from hydroelectric operations to water quality. Funding is needed to clear captured debris to prevent water overtopping damage to the Forest Road 5N09X. This would create space for additional debris flow material or for water flood control.

	Line Items	Units	Unit Cost	# of Units	BAER Funds
	5N05YA, 5N09X, 5N15Y, 5N52Y				
6	Install Critical Dip	EA	\$ 250.00	2	\$ 500.00
7	Install Drainage Armor	CY	\$ 100.00	20	\$ 2000.00
8	Debris Basin Clearing at 5N09X Bull Ck. Crossing	EA	\$ 4000.00	1	\$ 4000.00
9	Install Armored Spillway	CY	\$ 200.00	25	\$ 5000.00
10	Hazard Tree Felling at Bull Ck Crossing	Day	\$ 1000.00	2	\$ 2000.00
11	Install Drive Water Bar	EA	\$ 150.00	2	\$ 300.00
	TOTAL REQUEST				\$ 13,800.00

Protection/Safety Treatments:

Accepted and economical BAER road treatments to mitigate the risk to life and safety are to close the roads that pose the greatest threat. This is accomplished through the installation of road closure devices, such as gates and rock barriers, along with BAER closure and warning signs. In some cases trees that pose the greatest risk to personnel can be felled. For the location of treatments see the Map Appendix, Proposed Treatments.

5N09X Road Hazards (tree fall and rock fall):

A limited survey recognized the potential for burned trees to fall onto this road (low risk on other roads such as the Hells Half Acre road 5N95). The hazard trees along this road will be removed through mutual effort of the Forest Service and Tri-Dam. No BAER funds will be requested for treatment at this time. However, the road will be closed to public traffic.

Line Items		Units	Unit Cost	# of Units	BAER Funds
5N09X, 5N32, 5N15Y, 5N95, 5N52Y					
1	BAER Warning Sign	EA	\$ 400.00	3	\$ 1200.00
2	BAER Information Sign	EA	\$ 150.00	3	\$ 450.00
3	BAER Closure Sign	EA	\$ 250.00	3	\$ 750.00
4	BAER Public Notice Sign	EA	\$ 150.00	3	\$ 450.00
5	Road Closure Device Gate	EA	\$1500.00	2	\$ 3000.00
TOTAL REQUEST					\$ 5,850.00

Close the 5N09X road to traffic from the Hells Half Acre Road junction to the vicinity of the quarry until late spring 2014. Re-evaluate the rockfall hazard before opening road to public.

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.)

No funding for monitoring is requested.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #

Line Items	Units	Unit Cost	NFS Lands			Other Lands				All
			# of Units	BAER \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$	
A. Land Treatments										
Weed Detection and Removal	ea	6942	1	\$6,942	\$0		\$0		\$0	\$6,942
<i>Insert new items above this line</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$6,942	\$0		\$0		\$0	\$6,942
B. Channel Treatments										
<i>Insert new items above this line</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
Install Critical Dip	ea	250	2	\$500	\$0		\$0		\$0	\$500
Install Drainage Armor	cy	100	20	\$2,000	\$0		\$0		\$0	\$2,000
Debris Basin Clearing	ea	4000	1	\$4,000	\$0		\$0		\$0	\$4,000
Install Armored Spillway	cy	200	25	\$5,000						\$5,000
Hazard Tree Felling	day	1000	2	\$2,000						\$2,000
Install Drive Water Bar	ea	150	2	\$300						\$300
<i>Insert new items above this line</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$13,800	\$0		\$0		\$0	\$13,800
D. Protection/Safety										
BAER Warning Sign	ea	400	3	\$1,200	\$0		\$0		\$0	\$1,200
BAER Info Sign	ea	150	3	\$450	\$0		\$0		\$0	\$450
BAER Closure Sign	ea	250	3	\$750	\$0		\$0		\$0	\$750
BAER Public Notice Sign	ea	150	3	\$450						\$450
Road Closure Device Gate	ea	1500	2	\$3,000						\$3,000
<i>Insert new items above this line</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$5,850	\$0		\$0		\$0	\$5,850
E. BAER Evaluation										
Assessment Team	ea	17430	1	\$17,430			\$0		\$0	\$0
<i>Insert new items above this line</i>				---	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				---	\$0		\$0		\$0	\$0
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0	\$0
G. Totals				\$26,592	\$0		\$0		\$0	\$26,592
Previously approved										
Total for this request				\$26,592						

PART VII - APPROVALS

1. Christina M. Welch
Acting Forest Supervisor (signature)

9/3/2013
Date

2. Bernie T. Bryant
for Regional Forester (signature)

9/13/13
Date