

Date of Report: 5-03-05

BURNED-AREA REPORT

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST**A. Type of Report**

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

B. Type of Action

- ☐ 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)
- ☐ 2. Interim Report
 - ☐ Updating the initial funding request based on more accurate site data or design analysis
 - ☐ Status of accomplishments to date
- ☒ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTIONA. Fire Name: EarlyB. Fire Number: CA-STF-001761C. State: CAD. County: TuolumneE. Region: 05F. Forest: STFG. District: GrovelandH. Date Fire Started: August 9, 2004I. Date Fire Contained: August 15, 2004J. Suppression Cost: 2.8 million (early estimate)**K. Fire Suppression Damages Repaired with Suppression Funds**

- 1. Fireline waterbarred (miles): approx 4 miles of hand lines
- 2. Fireline seeded (miles): none
- 3. Other (identify):

L. Watershed Number: 180400090702M. Total Acres Burned: 1670NFS Acres(**1670***) Other Federal () State () Private ()

*CCSF easments are part of burned area

N. Vegetation Types: 1,334 acres of WHR type Montane hardwood-Conifer (MHC); 334 acres of Mixed Chaparral (MCH)O. Dominant Soils: Fiddletown, moderately deep; Lithic Xerumbrepts; Holland family, deep; Rock Outcrop; parent materials are granitic

P. Geologic Types: Granodiorite of Sawmill Mountain; tonalite of Granite Creek

Q. Miles of Stream Channels by Order or Class: 5 miles

R. Transportation System

Trails: 1 miles Roads: 6 miles paved; 5 miles native surface

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1208 (low) 154 (moderate) 308 (high)

B. Water-Repellent Soil (acres): 504

C. Soil Erosion Hazard Rating (acres):
0 (low) 300 (moderate) 1370 (high)

D. Erosion Potential: 5.7 tons/acre (watershed avg. for 24 month period; 3.7 t/a year 1; 1.9 t/a year 2)

E. Sediment Potential: 3,648 cubic yards / square mile (watershed avg. for 24 month period)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): NA*

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

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

D. Design Storm Duration, (hours): NA

E. Design Storm Magnitude, (inches):

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

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

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

*Recommendations are made to CCSF to do their own hydrologic analysis and coordinate potential treatments related to hydrology with Forest Service. .

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Early Incident was a mixed severity fire of 1,670 acres that burned a very steep mountain slope immediately above Hetch Hetchy, Early Intake facilities, located in the Tuolumne River watershed. The fire burned both the north and south aspects of a mountain ridge lying between two streams (Cherry Creek and Tuolumne River), with higher burn severity on the south aspect. The north aspect facing Cherry Creek mainly underburned at a low severity.

The south face of the burn directly above Early Intake facilities and residences is of highest concern. Two thousand vertical feet of burned mountain slope sheds water, sediment, and rocks onto approximately 1 mile of paved road known as the Early Intake road. Structures located along this road are susceptible to rockfall hazards. The penstock, powerhouse, and three residences adjacent to the powerhouse are particularly susceptible to rolling rocks. The bunkhouse may also be subject to a higher level of risk. City and County of San Francisco (CCSF) own the facilities (easements are governed by the Raker Act). Early Intake is the location of major infrastructure investments affecting local residents, the employees of CCSF, and nearly 3 million users of the utility services produced.

The Forest Service Burned Area Emergency Response (BAER) team has surveyed the fire and has determined that a life and property emergency does exist on CCSF easements and other locations within the Early Fire. The hydrologist has noted a water and sediment hazard at two channel crossing points along the Early Intake road.

Values at Risk:

Values at risk were determined by the Early BAER Team, based on field observations, modeling, and discussions with CCSF personnel. There are values at risk related to life and property, noxious weeds, and heritage resources. **There are many life and property values at risk in the Early Fire.** Table 1 summarizes life and property values at risk. It briefly describes actual values at risk and recommended treatments. Values are stratified by type of hazard and location. Many of these items will require ‘continuing assessment and coordination’ as described in part H of this report. BAER policy states that approved treatments be in place before the first damaging storm. Weather patterns are such that storms can occur in October.

Table 1. Summary of Life and Property Values at Risk

Hazard	Value-at-Risk	Objective	Treatment	Responsibility/ Timing
1. Geologic Hazards (rockfall,etc.) along Early Intake road	Area 1: The Early Intake Powerhouse, three newer residences adjacent to the powerhouse, and the barracks building	Protect the investment in infrastructure	Conduct a detailed evaluation of rockfall hazard (<i>assessment #1</i>); implement counter-measures if warranted; Clean out catchment structure below penstock; explore feasibility of deflection structure at powerhouse	CCSF Recommend immediate assessment Recommend treatments in place by Oct 15
	Residents in Area 1	Prevent injury or loss of life	Address safety issues with residents; re- locate residents during rainy season	Recommendation to CCSF
	Workers in Area 1		Address safety issues with workers; institute a safety program for Area 1; limit worker presence during vulnerable periods	Recommendation to CCSF

Hazard	Value-at-Risk	Objective	Treatment	Responsibility/ Timing
2. Geologic Hazards (rockfall, etc.) on Preston Falls Trail	Forest visitors	Prevent injury or loss of life	Close area 1 st winter. Trail opens when gate opens (see hazard 5); Implement Forest Order for temporary closure; Trail warning signs in place before 1 st damaging storm	Forest Service Coordinate timing with gate closure and gate opening
3. Geologic Hazard at Penstock	Functioning and integrity of the upper penstock	Protect the investment in infrastructure	Evaluate potential for landslide movement in the colluvial mass surrounding the penstock (<i>assessment #2</i>); implement protective measures	CCSF Recommend immediate assessment Recommend treatments in place by Oct 15
4. Geologic Hazards on Canyon Portal Road	Workers using the Canyon Portal Road	Prevent injury or loss of life	Limit or avoid use during storm events and for several days following events; consider installing gate	Recommendation to CCSF
5. Hydrologic Hazard at West drainage on Early Intake road	Workers and Forest visitors using Early Intake road	Protect life	CCSF to place gate on Early Intake road at West drainage crossing; Close to public 1 st winter; FS re-assess safety risks to users before opening;	CCSF Recommend treatments in place by Oct 15
	Workers and Forest visitors using Early Intake road and Integrity of road crossing	Protect investment in infrastructure and Protect life	Conduct a detailed hydrologic response evaluation of at least the West drainage (<i>assessment #3</i>); implement counter-measures if warranted, i.e., aerial hydromulching, up-size culvert on Early Intake road	CCSF Recommend immediate assessment Recommend treatments in place by Oct 15

Hazard	Value-at-Risk	Objective	Treatment	Responsibility/ Timing
6. Hydrologic hazard at West and East drainages, on Powerline road above residences	Integrity of road and fillslopes	Protect investment in infrastructure	Redesign water crossing to accommodate increased post burn flow	CCSF Recommend treatments in place by Oct 15
7. General Post Burn Hazards along roads	Workers and Forest visitors using roads, particularly during storms (1 st three years)	Prevent injury or loss of life	Post warning signs at entry points, i.e., Early Intake and Cherry Creek bridges and at West drainage crossing; consider 1N07 road closure during storms.	Forest Service Treatments in place by Oct15
	Roads under jurisdiction of FS but maintained by CCSF Forest visitors and Workers using affected roads	Protect the investment in infrastructure; Prevent injury or loss of life	Remove hazard trees; Restore drainage function on roads; Storm patrol to remove rocks and debris from roads and culverts;	CCSF Recommend treatments in place by Oct 15
8. Rock fall onto Cherry Oil road, bridge to old penstock	Workers and Forest visitors	Prevent injury or loss of life	Explore feasibility of engineered methods for reducing or catching rolling rocks; These might include scaling rocks off slopes, rock netting, or catchment structures.	CCSF Recommend immediate assessment Recommend treatments in place by Oct 15

Noxious Weeds. There is an emergency for noxious weeds. The fire created conditions conducive to the spread of the noxious weeds known to be within and adjacent to the fire area. Furthermore, there is concern that suppression activities might have vectored noxious weed seed from one or more locations. The Granite Noxious Weed Control Project will mitigate the emergency in areas included in that project. Treating the area next to the penstock in the Granite project should reduce the risk of weed spread out of that site into the adjacent burned area. The area of greatest concern which can not be mitigated by the Granite project is the hand line along the Preston Falls Trail and the Heritage Resource sites in that area. This area was not included in the Granite NEPA analysis or contract. There is a need to ensure that weeds do not become established along the handline/trail or in the Heritage Resource sites in that area (refer to the Heritage Resource Specialists Early Fire BAER Report for more information on this need).

Heritage Resources: See Noxious Weeds above.

Values Not at Risk:

There is no emergency related to the following:

- Sensitive plants
- Heritage oaks
- Wildlife habitat
- Soil productivity
- Water quality

See Specialist Report for why these values are not at risk.

B. Emergency Treatment Objectives:

- 1) Prevent injury or loss of life to employees and residents of Early Intake
- 2) Prevent injury or loss of life to users of the Preston Falls trail and roads affected by the fire.
- 3) Reduce threat to Early Intake properties.
- 4) Protect investment in road infrastructure.
- 5) Reduce risk of noxious weed invasion onto Preston Falls trail and heritage resource sites.

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

Land* NA % Channel* NA % Roads* NA % Deflection Structures* NA % Signs 100 % Gate* NA %
Heritage Resources* NA %

*require further analysis by CCSF or stated as recommended treatment to CCSF on their easements, therefore, not a 100% probability that recommended or potential treatments will be implemented.

D. Probability of Treatment Success (if treatment is implemented)

	Years after Treatment		
	1	3	5
Land	80%	90%	90+%
Channel	NA	NA	NA
Roads	80%	90%	90+
Trails	90%	90%	90+

E. Cost of No-Action (Including Loss): Worst case is loss of life and/or interruption of water and electricity to CCSF users plus cost of replacing damaged facilities, potentially millions of dollars.

F. Cost of Selected Alternative (Including Loss): Nominal relative to Forest Service treatments.

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 checked="" type="checkbox"/> Trails
<input type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/>

Team Leader:___ Alex Janicki

Email:___ajanicki@fs.fed.us

Phone:___ 209-532-3671 x273

FAX:___ 209-533-1890

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.) **See Table 1 above.**

Continuing assessment/coordination with CCSF

Based on our preliminary BAER assessment, we notified CCSF of geologic and hydrologic hazards to life and property related to their operations in the Early fire area. They will conduct a detailed assessment of those hazards to determine if and what treatments are needed to protect their facilities and employees. Coordination will be needed between the Forest Service and CCSF during this process for better understanding of hazards, discussion of potential treatments, determination of actions, and agreements or permits needed if treatments are to occur outside their boundaries.

Coordination continued with CCSF staff and their consultants through January of 2005. Evaluation of slope conditions and erosion potential continued through March of 2005 by the FS. Cost of continuing assessment and coordination was \$17210. The requested amount was 17,150.

Land Treatments:

Further assessment is needed to determine any specific land treatments. The BAER survey is a reconnaissance level survey. When serious life and property values are at risk a timely, more detailed evaluation is often recommended. The Forest Service strongly recommends that CCSF follow up with three assessments ASAP (Table 1).

The West drainage is noted as having a significant hydrologic concern that may be addressed by both land and road treatments (Table 1, item 5). The situation is this:

- The two thousand vertical feet of burned mountain slope will shed water, sediment, and rocks onto approximately 1 mile of paved road known as the Early Intake road. Runoff from future storms is expected to increase, compared to pre-burn conditions. The absence of normal ground cover and vegetation, exacerbated by very steep slopes, is expected to result in increased, flashy runoff, downslope movement of fine ash and sediment, and rock fall.
- Erosion estimates are 5 to 7 tons/acre/year in this specific area of highest concern (modeled using USLE). Much of the eroded sediment may be redeposited on the slope before delivery to channels. This amount of erosion would be considered moderate on a relative scale. It is unknown how much sediment will be delivered to the channels referred to as the East and West drainages. The FS hydrologist noted that the West drainage has the greatest potential for delivering runoff and sediment across the Early Intake road and into the river. This drainage has a pre-burn history of delivering sediment to the culvert, plugging the culvert, and depositing sand and rocks onto the road (97 storm and several other events).
- Richard Wisehart, CCSF engineering geologist, noted that the East and West drainage conditions are somewhat similar and suggested a similar hydrologic evaluation. Historically the East

drainage has not been as much of a problem as noted by CCSF maintenance staff. Case in point, this could result in discussion of a potential land (slope) treatment in the East drainage.

A new land treatment known as aerial-hydromulching may be an effective first year treatment to provide immediate post-burn ground cover over a small watershed, such as the West drainage. Treatment cost is approximately 2,000 dollars per acre for full coverage. The treatment, hydromulching with a helicopter, could be applied to the West drainage (about 60 acres). The objective would be to reduce runoff and sediment yield routed across the Early Intake road, thereby reducing risk of human life and access during emergencies. No seed would be added to the hydromulch fiber.

In general, standard treatments on steep slopes (greater than 50%) are largely ineffective. Seeding (aerial seeding, no hydromulch), on steep slopes has produced mixed results with little evidence that soil loss is significantly reduced the first year following the burn. Typically natives will provide similar amounts of ground cover the first year. Relative to adding seed to an aerial hydromix product, the seeding response is not well known. Adding seed to the mix may be unnecessary. Aerial hydromulch without seed appears to provide effective post-fire ground cover when applied at full coverage (Southern California Cedar Fire, 2003).

If aerial hydromulching becomes an agreed to treatment (a detailed hydrologic evaluation is recommended to determine this), the BAER team leader will coordinate the action with the BAER botanist and biologist.

MACTEC Engineering and Consulting evaluated the erosion potential of the West and East drainages. They recommended approximately 100 acres of hydromulch and seeding. The CCSF bureaucracy attempted to setup a contract to do this but things did not go very smoothly. In January of 2005 they decided to forego this treatment siting difficulties with contracting, high costs of treatment, and a more stable watershed condition. Two feet of sediment was deposited on the Intake road following the first damaging storm in mid October. Subsequent storms were of relatively light intensity and did not produce large amounts of erosion and sediment. Their perception of an increasingly more stable watershed influenced CCSF to drop the hydromulch treatment. Evaluation of slope conditions and erosion potential continued through March of 2005 by the FS.

Channel Treatments: No channel treatments are proposed. The two channels above Early Intake facilities have very steep gradients. Standard BAER channel treatments would be wholly ineffective. Debris basins are not a solution because of lack runout and little opportunity to catch and store sediment.

Roads and Trail Treatments:

Road treatments are summarized in Table 1, items 4,5,6, and 7 above. Road recommendations relate to drainage crossings, a temporary gate closure, storm patrols and maintenance, and signing to warn people of post-fire hazards. For more detail please refer to the BAER Roads/Engineering Report for the Early Fire, author Mike Bradshaw. Forest Service implements treatment before the first damaging storm.

Trail treatments are listed in Table 1, item 2 above. Close area during the rainy season from November to May. Post closure signs at the trailhead and in front of the proposed gate on the Early Intake road. Signs should explain why the trail is temporarily closed for the first winter (time of maximum hazard), and note that rockfall may be a continuing hazard for several years, until the burned vegetation recovers. Also place sign on the most threatened trail section. Forest Service implements before the first damaging storm.

CCSF placed a gate on the Intake road and the Canyon Portal road which effectively restricted entry into the burn by the public. Storm patrols and culvert maintenance were conducted by CCSF personnel. Warning signs were placed by the FS as noted above (before first damaging storm). Cost of road and trail warning signs was \$8,490. The requested amount for signing was \$8,316.

Structures:

The Forest Service is recommending that CCSF conduct a detailed evaluation of rockfall hazard and develop and implement counter-measures if warranted. See Table 1, item 1, 3, and 8. Recommend that CCSF explore feasibility of deflection structure at powerhouse. And clean catchment structure at base of penstock.

MACTEC Engineering and Consulting evaluated the rockfall hazard. They recommended that wire mesh be placed to stabilize rock talus close to the penstock. Safety fences were also recommended to protect facilities and workers from rolling rocks. These treatments were implemented under CCSF direction and are now in place.

Noxious Weed Treatment:

Conduct noxious weed assessment on the Preston Falls Trailhead, the first one mile of trail and the Heritage Resource sites in this area of new infestations of noxious weeds. Remove the noxious weeds if found. Detect new infestations while small enough to effectively eradicate and prevent the long-term establishment of new infestations. Eradicate new infestations to prevent the spread of noxious weeds beyond new detection sites. Prevent vectoring of weeds along the trail by the visiting public. Protect heritage sites from the adverse effects of noxious weed infestations (see the Heritage Resource Specialist BAER Report).

Conduct assessment two times in 2005: once in May to detect tocalote (which is identifiable one month before yellow star-thistle is) and again in June to detect yellow star-thistle and conduct follow-up to detect any weeds missed in the May visit. This coverage will also be adequate to detect any other noxious weeds not anticipated. Hand pull all noxious weeds found. Bag and properly dispose of seed heads. Map and document findings. Treatment Cost. \$900.

A monitoring report will be forwarded upon completion of the noxious weed treatment this year.

Heritage Resources

Two archaeology sites are located on CCSF easements that require follow-up with the District Archaeologist.

- Site 1: The recommendation for protection of site 54-1694 is to install a simple water diversion mechanism such as fiber rolls on the slope above the structure flat to divert water away and to the west of the cabin flat. It is estimated that the diversion structure will need to be 40 to 50 feet long. The BAER recommendation is for the District to work directly with CCSF personnel to implement treatment on CCSF easement.
- Site 2: During the course of fieldwork associated with BAER a problem has been discovered at prehistoric site F.S. 05-16-54-1294, located on the 'saddle'. If plans develop to remove the down ponderosa pine from beneath the power line or to fell any hazard trees within the site boundaries, the Stanislaus National Forest Heritage Resource staff should be notified. Given the past and ongoing disturbances to this archaeological site on Forest Service land it is recommended that some sort of damage mitigation measures be

undertaken at the expense of the CCSF Water Company. These might include an enhanced recording and evaluation of the site as well as data recovery efforts in the intact portions of the site. Careful backfilling of the percolation test pits is also recommended. See Heritage Resource report for more detail.

Site 1: This area remained stable through out the winter. No treatment was done.

Site 2: The District is aware that hazard trees were dropped. Direction was given to CCSF personnel to leave the downed trees in place.

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 special monitoring is planned at this time. Patrolling of road conditions during and after storms is a standard treatment and is proposed under Road Treatments.

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

A. Land Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$0	\$0		\$0		\$0	\$0
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
Road Warning Signs	ea	924	6	\$5,544	\$0		\$0		\$0	\$5,544
Trail Warning Signs	ea	924	3	\$2,772	\$0		\$0		\$0	\$2,772
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$8,316	\$0		\$0		\$0	\$8,316
D. Structures										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$0	\$0		\$0		\$0	\$0
E. BAER Evaluation										
BAER survey				\$35,100	\$0		\$0		\$0	\$35,100
Cont. Coord/Assess				\$17,150						\$17,150
Nox. Weeds	job	900	1	\$900	\$0		\$0		\$0	\$900
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$53,150	\$0		\$0		\$0	\$53,150
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				\$61,466	\$0		\$0		\$0	\$61,466

PART VII - APPROVALS

1. _____
Forest Supervisor (signature)

Date

2. _____
Regional Forester (signature)

Date