United States Department of Agriculture
Forest Service
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File Code: 2520
Date: November 9, 1999
Route To:
Subject: Big Bar Complex, Interim BAER Report
To: Regional Forester, R-5

Attached is the initial funding request for Burned Area Emergency Rehabilitation (BAER) for the Big Bar Complex fires on Shasta-Trinity and Six Rivers National Forests. This interim request is our best estimate of funds necessary to implement rehabilitation measures. The BAER Team determined that an emergency situation exists as a result of the fire. The values at risk are water quality, soil productivity, archaeological sites, anadromous fish, domestic water supplies and the transportation system.

We would appreciate an expeditious review of our proposals, as fall rainstorms have already begun and time is of the essence. Please respond with immediate approval of funds for the non-controversial treatments in our proposal. Other items that you are not sure about, or for which you need further clarification, can be approved at a later date if they merit BAER funding. We do not want controversial items to slow down the approval process. This stepwise approval process will ensure that work gets underway in a timely manner, increasing our chances of getting the treatments on the ground before the first damage-producing storms.

We understand that there will be difficulty in getting all of these treatments on the ground before the weather forces us out of the burned area. We plan to continue the BAER treatments in early spring after the area is accessible again. We feel that this is an appropriate strategy because the highly erodible soils will continue to erode and deliver sediment to the high value anadromous fish streams and domestic water supplies for years to come. Reestablishing ground cover next spring will help prevent further erosion in following years.

Also note in 2500-8 PART VI that several items are marked with asterisks. The asterisks identify those items as treatments proposed in cooperation with and in addition to those treatments proposed by the Department of Interior and the Hoopa Tribe.

If you have any questions regarding this report call Scott Miles at (530) 242-2249.

J. SHARON HEYWOOD

Date of Report: 11/09/1999

BURNED-AREA REPORT

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[**X**] 1. Funding Request for Estimated WFSU-FW22 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)

[X] 2. Interim Report

[X] Updating the initial funding request based on more accurate site data and design analysis

[ ] Status of accomplishments to date

[ ] 3. Final report-following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Big Bar Complex

B. Fire Number: CA-SHF-6588

C. State: California

D.County: Trinity-Humboldt

E. Region: 5

F. Forest: Shasta-Trinity & Six Rivers NFs

G.District: Trinity River Management Unit (S-T NF) & Lower Trinity Ranger District (Six Rivers NF)

H. Date Fire Started: 8/23/1999

I. Date Fire Controlled: 11/__/1999

J. Suppression Cost: est. 75,000,000

K. Fire Suppression Damages Repaired with WFSU-PF12 Funds:

1. Fireline waterbarred(miles) 103

Safety Zones treated (ac) 25

2. Fireline seeded(miles) 14

Roadsides mulched (mi)

3. Fireline mulched (miles) 25

Fireline slashed (miles) 8 to date

L. Watershed Number: 1801021111, 1801021112, 1801020909

M. NFS AcresBurned: 135,570

Total Acres Burned: 141,200

( )State (4,830)Tribal (800)PVT

N. Vegetation Types: Douglas Fir, Tan Oak, Madrone, Oregon Grape, Snowbrush, Deer-brush. White Fir, Sugar Pine, Incense Cedar, Chinquapin, Whitethorn

O. Dominant Soils: Nuens, Deadwood, Chaix, Marpa, Holland, Chawanakee

P. Geologic Types: Metasedimentary, Diorite (Granitics)

Q. Miles of Stream Channels by Type: Perennial = 246 miles, Intermittent = 302 miles, Ephemeral = 522 miles

R. Transportation System:

Trails: 95 miles Roads 122 miles

PART III - WATERSHED CONDITION

A. Fire Intensity Estimated (acres): 95,125 (low) 27,367 (moderate) 18,708 (high)

B. Water-Repellent Soil (acres): 9,684

C. Soil Erosion Hazard Rating (acres): 10,012 (low) 25,245 (moderate) 102,850 (high)

D. Erosion Potential: 2.7 tons/acre

E. Sediment Potential: 1728 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 6 years

B. Design Chance of Success: 80 percent

C. Equivalent Design Recurrence Interval: 10 years

D. Design Storm Duration: 24 hours

E. Design Storm Magnitude: 5.71 inches

F. Design Flow: 134-169* cubic feet per second per square mile

G. Estimated Reduction in Infiltration: 2 percent

H. Adjusted Design Flow: 161-203** cubic feet per second per square mile

* The area of the fire was so large the design flows were calculated on a watershed basis. The figures shown show the range of flows, the mean flow is 146 cfsm. **Mean is 175 cfsm.

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Big Bar Complex consisted of 3 separate wildfires started by a dry lightening storm on August 23, 1999. The Onion Fire was contained in mid September at 16,000 acres. The Fawn and Megram Fires, both originating in the Trinity Alps Wilderness Area deified efforts to contain them with handlines and eventually grew together to form the Megram Fire. On September 24th a strong windstorm blew the fire to the west onto the Six Rivers National Forest. The fire burned through heavy fuels from a 1996 blowndown. Burning intensities were greatly increased during the blowout. Although the effects of the fire do not pose an emergency in the New River watershed the high burn intensities, high values at risk, and high potential for erosion, sedimentation and loss of control of water on the Six Rivers National Forest watersheds do constitute an emergency situation. The watersheds threatened are Mill Creek, Tish Tang a Tang Creek and Horse Linto Creek. All are anadromous fish habitat. Domestic water supply watersheds include Hawkins Creek, Tish Tang a Tang Creek and Mill Creek. All of the upper watershed areas on the Six Rivers National Forest contain significant Native American cultural sites. Some impacts to the will be persistent such as landsliding and channel headcutting.

B. Emergency Treatment Objectives:

The objectives are to reduce impacts to water quality, minimize sedimentation, protect human life and property, protect fish habitat and protect Native American cultural sites. A majority of the values threatened are on the watersheds of the Six Rivers National Forest where burn intensities were the greatest. Treatment objectives are to prevent erosion on the most highly erodible soils where burn intensity was high, capture eroded material high in the ephemeral watersheds during the first winter and allow for a metered flow of sediment in years thereafter, and to ensure the stability of small streams that have be destabilized by burning of woody debris in the channels.

Big Bar Complex Fire:

1. Threat to Human Life: Homes in the Hoopa Valley Indian Reservation are threatened by increased peak flows from the fire area, most directly from Tish Tang a Tang Creek. Areas along the stream channel could be threatened by debris flows or flooding from the burned portion of the upper watershed. Total value of the property is $2,000,000.

2. Threat to Property: (In addition to those items listed above under Threat to Human Life) Approximately $550,000 of fish habitat improvements in Horse Linto are threatened by increased flooding and/or debris flows in these streams. An additional $650,000 has been expended on watershed improvements in the habitat area affected by the fire. There are 122 miles of roads

within the fire area. An assessment of the portion of the road system, both within and downstream of the burned area was done to determine are actually threatened. Thirty-two miles of road, with their associated fill slopes and crossings were determined to be at risk, with an estimated value at risk of $1,920,000. Domestic water supply facilities in are at risk in the Hawkins Creek and Mill Creek watersheds, with an estimated value of $130,000.

3. Loss of Control of Water: Major loss of control of water is not expected in the New River watershed at this time due to the relatively low percentage of the watershed burned to moderate or high intensity. The Six Rivers NF watersheds of Mill Creek, Tish Tang a Tang Creek and Horse Linto Creek will most likely see significant increases in peak flows due to the amount of their upper watersheds burned at a high intensity. Plugging of culverts is one threat posed by increased peak flows, resulting in the loss of fill slopes, increased stream sedimentation, loss of fish habitat and degraded water quality. Numerous Native American and historical cultural sites are located in the headwaters of the above watersheds. Many of these sites are located in areas where a loss of control of water would result in damage. No estimate of monetary value can be placed on these sites.

4. Threats to Water Quality: The burned area of the Big Bar Complex drains into three major watersheds. Most of the fire area on the Shasta-Trinity NF drains into the New River watershed, with the exception of a few small tributaries of the Trinity River to the south. Red Cap Creek on the Six Rivers NF drains north into the Klamath River. Mill Creek, Tish Tang a Tang Creek and Horse Linto Creek drains to the Lower Trinity River watershed. A loss of water quality is most likely from increased sedimentation, turbidity, floating debris and nutrient enrichment. This condition is expected to occur on a small scale throughout the fire from the high burn intensity areas. Loss of water quality on a larger scale is more likely in the watersheds on the Six Rivers NF. The streams affected by the Big Bar Complex are reported to be some of the highest value anadromous fish habitat in Northern California. Red Cap Creek, New River and Horse Linto Creek in particular are major contributors to the anadromous fish populations in the Klamath and Trinity Rivers. The species are fall and spring Chinook salmon, coho salmon, and summer and winter steelhead. Mill and Tish Tang Creeks are lesser producers of Chinook and coho salmon and steelhead. The Coho salmon of the Klamath-Trinity system are within Southern Oregon-Northern California Evolutionarily Significant Unit (ESU) which has been given Threatened status by the National Marine Fisheries Service (NMFS). The existing habitat for coho in the Klamath-Trinity basin has been designated as critical to the recovery of the species in the ESU. The steelhead are within the Klamath Mountain Province ESU and are a candidate species for threatened or endangered status. Estimating the value of this fishery was done by consulting with numerous fishery experts in the state. The value of the fishery resource threatened by the fire is $1,100,000 annually, with a long-term value at risk of $16,000,000.

value of $16,000,000 based on the length of time the effects of the fire could influence the life cycle of the anadromous fish.

Four watersheds provide domestic water supplies for multiple families, and one watershed is proposed for development of a domestic water source. Mill Creek provides water for approximately half the houses on the Hoopa Valley Reservation (~400), but is not used in the rainy season due to high turbidity (pers. comm. Barbara Ferris, Hoop Water Services Manager). This facility has a filtration system. Hawkins Creek provides water for residents of Trinity Village and surrounding residences, about 170 hookups. Quimby Creek supplies domestic water to the town of Denny (number of hookups unknown). East Fork Horse Linto Creek has an out-of-basin diversion that contributes to Quimby Creek, the water supply for the town of Denny. Tish Tang a Tang Creek is under an engineering feasibility and design study for use as a domestic water supply. Total value of mitigation for the loss of water quality under a no action scenario would be $90,000.

5. Threats to Long Term Soil Productivity: Much of the burned area is in the Trinity Alps Wilderness. There are approximately 45,400 acres of commercial timber land burned outside the wilderness where a potential loss of soil productivity

would have a long term economic impact. For this analysis only the higher site classes for soil productivity were assessed. Loss in soil productivity was assumed to occur on high intensity burned areas. By equating high intensity fire to a loss of one site class the value of the loss of soil productivity can then be quantified as a loss in timber production values. Timber production values before and after the fire were then used to determine the value of the loss of soil productivity across the fire area as a result of the wildfire. The calculated loss of soil productivity is $1,271,000.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm: Probabilities are this high, despite the time of year, because the treatments have already begun under the authorization previously granted. Some treatments will still be worth doing in the Spring/Summer of 2000, as we expect some impacts to be very persistent, such as landsliding and channel headcutting.

Land 75 % Channel 70 % Roads 70 % Other _____ %

D. Probability of Treatment Success

<----Years after treatment----->

	1	3	5
Land	80	90	95
Channel	80	90	90
Roads	95	100	100
Other	80	90	95

E. Cost of No Action (Including Loss): $ 22,611,000

F. Cost of Selected Alternative (Including Loss): $ 5,180,674

G. Skills Represented on Burned-Area Survey Team:

[X]	Hydrology	[X]	Soils	[X]	Geology	[X]	Range
[X]	Forestry	[X]	Wildlife	[ ]	Fire Mgmt.	[X]	Engineering

[X] Contracting [X] Ecology [X] Research [X] Archaeology

[X] Fisheries

Team Leaders: Darrel Ranken and Jerry Barnes

Phone:: 530-242-2250, 707 442-1721 Electronic Address: dranken/r5,shastatrinity, jbarnes/r5,sixrivers

Fax:: 530-242-2274

H. Treatment Narrative:

The following are proposed emergency treatments for the Big Bar Fire Complex. The land, channel and road/trail treatments proposed are reasonable applications of treatments that have been determined to be effective for their purpose when used under similar conditions in other wildfire areas. The final set of treatments was determined with the input of the BAER survey team, the responsible Line Officers, the Hoopa Tribe, Bureau of Indian Affairs, Department of the Interior Southern States Burned Area Emergency Rehabilitation Team, National Fish and Wildlife Service, National Marine Fisheries Service, and Humboldt State University.

Land Treatments

Aerial Seeding

Application of cereal grain grass seed by helicopter is prescribed for 2700 acres of high burn intensity lands in selected areas of high burn intensity outside of the Trinity Alps Wilderness. The grass is needed to provide a protective ground cover, reduce runoff efficiency from the burned slopes, reduce erosion and offsite sedimentation, and retain the soil on site for long term soil productivity. The dried see application proposed consists of 100 pounds per acre of cereal barley. The cereal barley is being proposed for use with the realization that germination and growth for the first winter's rains is not probable, but that the benefits during the following summer, when high intensity summer thunderstorms are probable are desirable in these high value watersheds. The barley will not persist beyond the first two years. Native seed was considered for these areas and was determined to be too expensive to be applied at the rates necessary for reasonable erosion control. Cereal barley is estimated to cost $20 for the seed needed to treat one acre, whereas a mix of the lowest priced native seed would cost $318/acre.

Straw Wattles

Straw wattles are used as another means of preventing soil from moving off of a slope and into the stream system. Placed along the contour on moderate slopes or in shallow swales the wattles have proved effective in trapping small amounts of eroded material to keep it on site. On high burn intensity areas with hydrophobic soil conditions the wattles serve to slow down sheeting water during moderate to high intensity rainfall events. The wattles will be placed in a checkerboard pattern to reduce the potential for concentration of water. The use of straw wattles has been prescribed on 56 acres, requiring a total of 67,200 lineal feet of wattles.

Strip Mulching

Strip mulching with certified weed-free straw is proposed for 1150 acres in the high burn intensity watersheds. The purpose of the

treatment is to provide a suitable ground cover where there presently is none. The extent of this treatment is further confined to sensitive areas near stream channels or on erodible soils in high value watersheds. Mulching in strips, across slopes has proven to be a more cost effective method of applying this treatment. Strip widths of 15 feet alternate between mulched and unmulched area. Implementation of this treatment will be prioritized this fall. Lower priority work not accomplished before the onset of winter will be done next fall or summer to ensure the protection of the area from future erosion.

Contour Falling

There are certain areas of the fire that have high burn intensity, highly erodible soils and high values at risk in the watershed that require a land treatment to prevent soil movement off-site. In most cases straw mulching or straw wattles are used for such a purpose. In areas that are inaccessible by vehicle helicopters can be used to bring in the straw bales or wattles. In those areas where the terrain and standing trees prevent aerial delivery of these supplies the only remaining treatment available is to use local trees, felled and placed on the contour. Typically 10-14 inch diameter trees are felled and placed on the contour by hand. In the upper watershed areas of the Six Rivers NF, outside of the wilderness, 60 acres have been identified for contour felling.

Wilderness Strip Mulching

Some of the hottest burn intensity areas of the fire are within the Trinity Alps Wilderness. Areas of particular concern are in Mill Creek and Tish Tang a Tang Creek and Horse Linto Creek. Areas have also been identified downstream, outside of the wilderness, that will be treated. In order to provide as much protection as possible it will be necessary to treat as much of the burned area as possible, within and without the wilderness. To that end 1159 acres of strip mulching have been identified for treatment within the wilderness. Implementation of this treatment will be prioritized this fall. Lower priority work not accomplished before the onset of winter will be done next fall or summer to ensure the protection of the area from future erosion.

Fencing for Treatment Protection

The Megram fire burned the majority of the Mill Creek and Trinity Summit Grazing Allotments, creating a serious conflict between grazing and other resource values as related to erosion, stream stability and water quality. These two allotments are located in the headwaters of the Horse Linto, Tish Tang, and Mill Creek watersheds and the permittees are all Hoopa tribal members. The hottest portions of the fire were generally in these same headwaters. Portions of these allotments have fragile riparian zones, and resident fishes and amphibians including Forest Service Sensitive species. Downstream of these allotments are designated critical habitat for threatened coho salmon and domestic water sources.

The fire greatly reduced the amount of vegetation and holding the hillslopes and streambanks together. This reduction of vegetation and the fire consumption of downed material has also created a situation where cattle have easier access and travel routes. The forested areas used to function as partitions separating the meadow areas. Such easy control of livestock distribution and use is no longer possible on much of the allotment.

Accordingly we recommend that temporary livestock exclosure fencing be erected in key areas needing special protection. These include Patterson Meadow, Lower Ferguson Meadow, an area adjacent to Water Dog Lake, an area adjacent to Mill Creek Lake and several other locations. The work costs will be slightly high due to the difficulty in accessing the project sites; materials would need to be transported in via pack train and/or helicopter. Estimated costs: $42,000 for approximately 12,000 feet of fence. This equates to a rate of $3,500 per 1,000 feet of fence.

Channel Treatments:

Straw Bale Check Dams

The purpose of a straw bale check dam is to temporarily capture sediment in the upper reaches of ephemeral or intermittent stream channels. Wood or rock is used to dissipate the overflow of water on the downstream side of each dam and to provide a longer term storage capacity once the straw bale has decomposed. Straw dams have been proven effective in similar burned areas in their ability to capture sediment in the first two years after the fire and then allow the sediment to be metered out at a lower rate in subsequent years. The use of these structures will be concentrated in the watersheds serving as domestic water sources. There are 30 straw bale check dams prescribed for the domestic water supply watersheds in the burned area.

Rock or Log Grade Control Structures

Another channel treatment deemed necessary for the BAER effort in this fire area is the use of native materials to reestablish stream bed stability in the small channels that were burned intensely in the fire. Depending on availability of local materials either rocks or small diameter logs are used to establish a nick point, or grade control in the small channels. These structures are designed to provide for channel bed stability, not collection and storage of sediment. In the high value watersheds outside the wilderness 118 of these structures will be needed.

Wilderness Rock or Log Grade Stabilizers

Severely burned areas within the Trinity Alps Wilderness will also be treated with these structures. The design of the log dams will be modified for use in the wilderness, in that they will not be anchored with rebar. There will be a need for 105 of these structures within the wilderness.

Road and Trail Treatments:

Roads: Metal End Sections (MES)

Fire effects to soils and vegetation will increase the inputs of watershed products to culverts draining burned areas including increased peak water flows, and increased loading of woody debris and sediment. This increases the probability of exceeding culvert capacity and failure of crossings, with the attendant inputs of sediment, in some cases potentially delivered catastrophically in "dam-break" type failure scenarios. Where existing culverts drain a substantially burned watershed (>20% of the watershed) tapered metal end sections will be added to the inlet to facilitate the passage of watershed products. There are 49 such culverts in the Big Bar Complex area.

Critical Dips

On stream crossings where a diversion potential exists a 'critical dip' will be installed in the road surface to prevent crossing failure. Twenty such sites for installing critical dips have been identified in the burned area.

Roadside Mulching

Road fill and sidecast slopes are sites of greatly increased surface runoff. When combined with the soil effects of severe burning, erosion hazard is increased, and cover is needed to minimize erosion in these areas. There are 32 miles of road within the burned area that are located within high burn intensity areas and within high erosion hazard areas. The fill slopes will be treated by using straw blowers to mulch to an average width of 50 feet, equating to a total area coverage of 200 acres.

Trail Waterbarring

Although a number of trails (95 miles) have been affected by the fire, there are only two trail segments that need treatments in order to address soil erosion and water quality concerns. These segments are located in areas where the Megram Fire had a high intensity - the headwaters of both East Fork Horse Linto and South Fork Tish Tang Creeks. The treatment for both trail segments is waterbarring to dissipate the flow of water down the trail in order to reduce erosion and sediment delivery to these streams. Native materials (small diameter logs) will be used for the waterbars.

The segment of the Horse Ridge National Scenic Trail needing treatment begins at Grizzly Camp, in the headwaters of East Fork Horse Linto Creek, and parallels the stream within and just above the Riparian Reserve buffer to a saddle above the headwaters. Due to the steepness of the trail, the high intensity of the burn, and the proximity to the stream, this trail segment (from the trailhead to the saddle) needs waterbarring to reduce erosion potential and sediment delivery to the stream.
Length of trail segment: 3,520 feet; of this, about 60 percent (2,110 feet) is within the Trinity Alps wilderness area.

The Tish Tang Trail (6E18) passes through the headwaters of the South Fork of Tish Tang Creek, with three stream crossings. The segment needing treatment is located just above one of the stream crossings. The trail is very steep, with poor drainage design, and it will act as a conduit delivering water and sediment to the stream. Installing waterbars and outsloping the trail will dissipate water off the trail and slowing and minimizing sheeting water during moderate and high intensity rainfall events.
Length of trail segment: 3,200 feet (all outside wilderness).

Facilities and Signs

The outhouse located at Grizzly Camp received some damage from the high intensity burn in this area. The structure is concrete, so there is little structural damage; however, the vent pipe and window vents are plastic, and these melted. It is essential to replace these features in order to properly vent the outhouse. Cost (parts and labor): $1,200

A number of trail marker and wilderness signs burned in the fire. The signs inform trail users of their location along the trail system, so the loss of the signs is a health and safety concern.

Wilderness Boundary Signs: 4 signs at $400 each (sign & installation) = $1,600
Trail Marker Signs: 2 signs @ $205 = $ 410
6 signs @ $185 = $1,110
4 signs @ $155 = $ 620
Road Closed sign (Grizzly Camp) = $ 300
Total Cost for signs: $4,040

Heritage Resource Consultation for Treatment and Monitoring

The wildland fire and suppression efforts have impacted and have the potential to impact significant and complex cultural resource values. Resources impacted are two Traditional Cultural Properties (TCP), individual traditional spiritual localities, Traditional Gathering Areas (TGA), and approximately 200 prehistoric and historic archaeological sites. Some of the traditional contemporary cultural values apparently have never been addressed in fire and BAER activities. Our BAER reporting has been coordinated with the DOI BAER Team representing the BIA. Comments on our proposed Heritage BAER activities have been sought from the Karuk, Hoopa, and Tsnungwe Tribes and several individual traditional spiritual practitioners.

Section 106 Requirements -

On November 3, 1999, FS staff met with staff of the California State Historic Preservation Officer (SHPO). The meeting initiated National Historic Preservation Act (NHPA), Section 106 compliance for fire suppression and fire suppression rehab activities. Discussions also centered on potential heritage BAER projects. The Section 106 process could be quite cumbersome and time consuming for the BAER actions proposed by the FS. The SHPO has agreed that we could simplify the Sec. 106 process by entering into a Programmatic Agreement (PA) which would allow treatments on cultural sites and properties if consulting parties and the FS agree on treatment measures. No further Sec. 106 consultation will be warranted. 36 CFR 800 regulations for implementing Sec. 106 require including consulting parties.

Cost: 1 PA $5,500

Traditional Cultural Properties

The fire area includes two large traditional cultural properties (TCP) which are associated with Hupa, Karuk, and Tsnungwe traditional spiritual values. The two areas are the De No To District which was placed on the National Register of Historic Places (NRHP) on February 25, 1986, and the potentially eligible, temporarily named Salmon Summit District which the Forest has recognized for approximately twelve years. Critical NRHP elements of the Districts are the environmental settings. Visual quality, privacy, and quiet are integral requirements for the traditional activities that take place in the TCP. For example, the flush cutting of stumps and broadcast spreading of brush may be warranted to meet visual quality standards within the TCP. The fire and fire suppression activities have impacted the settings associated with the TCP. In order to assess the impacts to the TCP, Tribes and traditional users must be consulted to assess effects and propose appropriate treatment measures within the TCP. Consultation will also take place on appropriate treatments for fire suppression rehab for the tractor line constructed up the middle of the De No To trail corridor on FS lands

Cost: 2 Assessments /Inventories $39,825

National Register of Historic Places

Section 110 and 106 of NHPA also requires an assessment to identify if the fire suppression and wildland fire impacted the qualifying criterion in 36 CFR 60.6 which made the De No To District eligible for inclusion on the National Register of Historic Places. Consultation required with California State Historic Preservation Officer and Keeper of National Register of Historic Places.

Cost: 1 Assessment $9,385

Individual Spiritual Localities

Traditional spiritual practitioners have already come forth and identified that localities outside the TCP, yet in the fire perimeter exist. Karuk, Hupa, and Tsnungwe spiritual practitioners assist in identifying these areas for possible BAER treatment. Possible treatments could include enhancing natural vegetative screening to provide privacy if area is near a road or trail.

Cost: 5 Assessments/Inventories (est.) $17,215

Traditional Gathering Areas (TGA)

Many traditional gathering areas exist within the fire area. The plant materials collected are associated with basket weaving, medicinal plants, and food. The low and possibly moderate burn areas within the fire perimeter probably had a positive effect on the plants. However, in areas of high intensity burn, traditional gathering areas could have been destroyed. Traditional Hupa, Karuk, and Tsnungwe basketweavers, herbalists, and food gatherers shall be consulted for these areas and possible treatments. Collection of seed and planting of native plants may be an appropriate treatment in areas destroyed. If not undertaken, invasive species of other plants may preclude decades of gathering areas being reestablished, if at all.

Cost: 3 Assessments /Inventories $21,265

Prehistoric and Historic Archaeological Sites

Fire suppression activities impacted at least two major archaeological sites that need monitoring and an assessment of possible treatment measures with potential consulting parties. This is a requirement of Section 106 of the NHPA. Old Denny will need to be monitored to assess if its potential listing on the National Register of Historic Places has been compromised. The other site is a Native American village site adjacent to the Big Bar Ranger Station that was utilized as a fire camp. The site will need to be monitored and an assessment for possible treatments conducted with consulting parties pursuant to Sec. 106 requirements.

Cost: 2 Assessments /Inventory $17,990

Known Archeological Sites

Approximately 200 known archeological sites are identified within the burn perimeter. Priority for monitoring the sites for BAER treatment is based on burn intensity. Sites within areas of high intensity burning shall be monitored to ensure that erosion will not impact the sites. If treatment measures are needed they will be implemented. Due to the late nature of this fire and impending rains, the sites shall be monitored after first rains or as permitted to assess damage and further needs for treatment. All treatments will require consultation with Sec. 106 (PA) consulting parties. It is anticipated that no more than 10% of the sites shall require treatment.

Cost: 1 Assessment/Inventory $15,695

TOTAL CULTURAL RESOURCE DAMAGE ASSESSMENT / INVENTORY.....$126,875

Vegetation Planting

Riparian Reserve Planting

All of the 141,000 acres of the Big Bar Complex burned in anadromous fish habitat watersheds. All of this area has been designated as critical habitat for TE&S fish species. Burn intensities were high in a portion of the Riparian Reserves within the fire boundary, killing all vegetation. Replanting these areas with a mix of riparian and upland tree and shrub species is necessary to minimize the possibility of an unacceptable change to the ecosystem structure and function. Although there are many more acres of riparian reserve than can be treated twenty-five acres of planting has been identified to apply this treatment. A mixture of dogwood, big leaf maple, alder, Port Orford Cedar and suitable species of *ceanothus* will be used depending on availability. If no ecologically acceptable plants are available local plants will be propagated from cuttings or seeds this fall for planting next year.

Revegetate Backburned Plantations

It is estimated that 1800 acres of established plantations were destroyed by suppression activities. All of the damage occurred as a direct result of burn-out operations and dozer line and safety zone construction. Plantations are highly susceptible to mortality during back-firing operations due to the presence of heavy fuel loading, ladder fuels and the thin bark on young trees. Site preparation and planting will be needed to reestablish these early seral forest conditions. To insure survival, all plantations will also require an early release treatment.

Site Preparation (cutting, piling and burning, or broadcast burning):
1500 ac. @ $675/ac. = $1,012,500

Tree Planting (contract planting and supervision): 1800 ac. @ $182/ac. = $ 327,600

Seedlings: 1800 ac. @ 400 seedlings/ac. @ 0.35/seedling = $ 252,000

Release for Survival: 1800 ac. @ $340/ac. = $ 612,000

Total Reforestation: **$2,204,100**

Monitoring

Soil Monitoring for Treatment Effectiveness

The purpose of the soil monitoring phase of the 3 year plan is to evaluate effectiveness of soil stabilization treatments that were applied post fire. The following treatments will be monitored: aerial seeding, contour straw strip mulching and straw wattles. More detailed information is provided in the Soil Resource Monitoring Plan, attached. The cost of soil monitoring is $24,000.

Water Quality/Geomorphic/Treatment Effectiveness Monitoring

Three components are proposed to adequately answer key questions related to our stewardship responsibilities and be commensurate with Hoopa Tribe monitoring plans and domestic water quality values: 1) Water quality (turbidity) near the mouth of Horse Linto Creek (existing station). Add a recording turbidimeter and monitor for two years, reevaluation after two years. 2) Geomorphic monitoring of slope and channel erosion: treated and untreated areas. 3) Photo points of treatment sites (with some control sites). The cost of this portion of the monitoring plan is $62,516. A complete Monitoring Plan is attached with the details of this proposal (hard copy only).

Monitor Vegetative Recovery

Aerial photography will be needed to monitor delayed suppression-caused tree mortality in established plantations. The damage caused by burn-out operations may not be fully evident until the next growing season. A complete set of color aerial photography with standard stereo overlap will be used as a tool for documentation, monitoring of future mortality related to back-firing, and activity

project planning for reforestation of these damaged plantations. Flight at 1:15840 scale for area affected by backfiring operations: $15,000

Monitoring Reforestation Success

Monitoring of reforested areas is needed to assess seedling survival and determine the need for subsequent replanting, seedling protection or release treatments. First year survival exams on all reforested areas will be performed. Survival Surveys: 1800 ac. @ $8/ac. = $14,400

Sensitive Species Monitoring

The intent of this monitoring plan is represented by the following question:

What were the effects of the fire or burn area rehab efforts on habitat conditions for *Cypripedium fasiculatum* and on reproduction and survival of *Cypridpedium fasiculatum* and *Thermopsis robusta*?

This will be a three year program, complete details are provided in the attached Monitoring Plan.

Monitoring Fish Habitat and Populations

Four components are proposed to adequately answer key questions related to our stewardship and trust responsibilities as they relate to the fisheries resources within the burn area. Components are: 1) Determine the status of anadromous fish habitat condition in five watersheds. 2) Determine the status of anadromous TE&S fish populations within the burn area watersheds. 3) Determine the status of resident fish habitat condition in five watersheds. 4) Determine the habitat condition and fish population status of lakes within the burn area.

PART VI - EMERGENCY REHABILITATION TREATMENTS AND SOURCE OF FUNDS BY LAND OWNERSHIP

			NFS Lands			Other Lands			All
Line Items	Units	Unit Cost	Number of Units	WFSU-FW22	Other $	Number of Units	Fed $	Non-Fed $	Total $
A. LAND TREATMENTS									
Straw wattles	lineal ft.	$2.60	67,200	$174,720					$174,720
Strip Mulching	acres	$585	1150	$672,750					$672,750
Contour Felling	acres	$825	60	$49,500					$49,500

Aerial Seeding	acres	$92	2700	$248,400					$248,400
Wilderness Strip Mulching	acres	$600	1159	$695,400					$695,400
Fencing for Treatmt Protect.	feet	$3.50	12,000	$42,000					$42,000

B. CHANNEL TREATMENTS

Straw Check Dams	each	$475	30	$14,250					$14,250
Log Grade Stabilizer	each	$345	118	$40,710					$40,710
Wilderness Log Stabilizer	each	$280	105	$29,400					$29,400

C. ROADS AND TRAILS

Flood patrol	days	$180	20	$3,600					$3,600
Metal End Sections	each	$500	49	$24,500					$24,500
Critical Dips	each	$400	20	$8,000					$8,000
Roadside Mulching	acre	$145	200	$29,000					$29,000
Trail Waterbarring	miles	$8,100	1.27	$10,287					$10,287
Facilities and Signs	each	varies	17	$5,240					$5,240

D. VEGETATION PLANTING

Riparian Reserve Planting	acres	$1000	25	$25,000					$25,000
Reveg. Backburned Plnt. *	acres	$1,225	1800	$2,204,100		474	$591,140		$2,795,140

E. HERITAGE RESOURCE CONSULTATION FOR TREATMENT AND MONITORING

Section 106 Requirements *	each	$5,500	1	$5,500		1	$11,390		$16,890
Traditional Cult. Properties*	each	$19,912	2	$39,825		1	$16,966		$56,791
Nat. Reg. of Historic Places *	each	$9,385	1	$9,385					$9,385
Individual Spiritual Localts*	each	$3,443	5	$17,215					$17,215
Traditional Gathering Areas*	each	$7,088	3	$21,265					$21,265
Prehistoric & Hist Arch Sites*	each	$8,995	2	$17,990					$17,990
Known Arch. Sites	each	$15,695	1	$15,695					$15,695

F. MONITORING

WQ/Geo Resp/Treatments *	program		1	$62,516		1	$179,700		$242,216
Monitoring Veg. Recovery *	miles	$128	117	$14,976		128	$3.070		$18,046
Monitor Reforest. Success *	acres	$8.00	1800	$14,400		355.5	$2,844		$17,244
Monitor Fish Habitat & Pop.									
Andro. Fish Hab. Condition			1	$106,300					$106,300
Andro. TE&S Fish Populatn*			1	$268,700			$226,460		$495,160
Resident Fish Hab Condtn			1	$87,600					$87,600
Lake Fish Hab & Pop			1	$57,550					$57,550
Soil Monitoring of Treatments			1	$24,000					$24,000
Sensitive Species Monitoring			1	$7,200					$7,000

G. BAER EVALUATION/ADMINISTRATIVE SUPPORT

Salary, Travel, Etc.	days	$3,700	20	$74,000					$74,000
Color IR photo coverage	acres	$.42	141,000	$ 60,000					$60,000

H. TOTALS

Preferred Alternative				$5,180,674			$1,031,570		$6,212,244

*These treatments are proposed in cooperation with and in addition to those treatments proposed by the Department of the Interior and the Hoopa Tribe.

PART VII - APPROVALS

1. _____ _____
Forest Supervisor Date

2. _____ _____

Regional Forester Date