

Date of Report: **July 24, 2007**  
**Interim #2**

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**BURNED-AREA REPORT**  
(Reference FSH 2509.13)

**PART I - TYPE OF REQUEST**

A. Type of Report

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

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

**[ X ] 2. Interim Report #2 Items are Bolded & Blue font**

- ☒ Updating the initial funding request based on more accurate site data or design analysis  
☐ Status of accomplishments to date

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- ☐ 3. Final Report (Following completion of work)

**PART II - BURNED-AREA DESCRIPTION**

A. Fire Name: Angora

B. Fire Number: CA-TMU 011011

C. State: CA

D. County: El Dorado

E. Region: 5

F. Forest: Lake Tahoe Basin Management Unit

G. District:

H. Fire Incident Job Code: P5DKN9

I. Date Fire Started: June 24, 2007

J. Date Fire Contained: July 2, 2007

K. Suppression Cost: \$12,100,000

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 12  
2. Fireline seeded (miles): 5 (to be completed fall 2007)  
3. Other (identify): 2 acres of safety zones

M. Watershed Number: Upper Truckee River, Taylor Creek

N. Total Acres Burned:

NFS Acres ( **2736** ) Other Federal ( ) State ( **163** ) Private ( **144** )

O. Vegetation Types: mixed conifer

P. Dominant Soils: SM, SP, GM, and GP Unified Soil Classification

Q. Geologic Types: glacial deposits, granitic core rocks, metamorphic roof pendants, and colluvial deposits

R. Miles of Stream Channels by Order or Class:

Perennial Stream – 5.0 miles  
Ephemeral Streams – 22.0 miles

S. Transportation System

Trails: 4.6 miles      Roads: 4.2 miles

### **PART III - WATERSHED CONDITION**

A. Burn Severity (acres): 730 (low) 1,305 (moderate) 1,065 (high)

B. Water-Repellent Soil (acres): 2,370

C. Soil Erosion Hazard Rating (acres):  
1306 (low) 1109 (moderate) 685 (high)

D. Erosion Potential: 10 - 34 tons/acre

E. Sediment Potential: 6,400 – 21,760 cubic yards / square mile

### **PART IV - HYDROLOGIC DESIGN FACTORS**

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

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

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

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 4

F. Design Flow, (cubic feet / second/ square mile): 25

G. Estimated Reduction in Infiltration, (percent): 52

H. Adjusted Design Flow, (cfs per square mile): 38

### **PART V - SUMMARY OF ANALYSIS**

A. Describe Critical Values/Resources and Threats:

The following is a summary of the threats to critical values relating to life or property or to stabilize and prevent unacceptable degradation to natural and cultural resource resulting from the effects of the fire. Additional discussion is found in the resource areas below.

Private Land There is 144 acres of private land within the burn area, including residences that were

destroyed by the fire. This private land is situated downstream from severely burned; moderately steep National Forest System Lands. Increased runoff and sedimentation is expected to impact the private land. During the BAER Team's rapid reconnaissance of the burn area, the BAER Team observed potential post-fire threats to most property along the urban interface areas except the Tahoe Paradise and neighborhoods adjacent to Lake Tahoe Blvd which are mostly on high ground with no steep burned slopes above it. The Gardner Mountain area has one small channel draining a high to moderate burn severity area that skirts the western edge of the community above Gardner Street. The BAER Team observed that the channel should have capacity to accommodate the expected post-fire runoff.

County Roads The county roads through the neighborhood affected by the fire are at risk from increased runoff and sedimentation. There are multiple culverts on county roads that are expected to plug due to increased runoff and mobilized debris. Additionally, the stormwater system associated with the roads are at risk of being overwhelmed by increased runoff.

USFS Infrastructure The Forest Service road system is a value at risk. These roads are considered a government investment or asset and are needed for fire, other emergency vehicle and administrative access. There are 4.2 miles of Forest Service system roads and 4.6 miles of Forest Service system trails. Increased runoff from FS roads could contribute to degradation of water quality. Additionally, hazard trees along roads and trails pose a treat to life and property.

High School The slopes above South Lake Tahoe High School burned from low to high severity. The slope on the east side of this burn polygon is a ridge and should dissipate runoff, but there could be some post-fire debris and sediment deposition around the perimeter of the campus. There is a concave slope above the football field that has potential to concentrate runoff and deposit sediment and debris.

Water Quality The threats to Water Quality in Angora Creek, Upper Truckee River and Lake Tahoe represent a BAER emergency. There is a high probability of ash and sediment delivery to receiving waters in and downstream of the fire, and a high probability of unacceptable consequences as a result.

The threshold for unacceptable consequences of ash and sediment delivery was determined by the BAER team after evaluating several sources of information. Upon review it was found that neither the Lake Tahoe Basin Management Unit Forest Plan nor the Water Quality Control Plan for the Lahontan Region of the California Water Quality Control Board has a water quality threshold value related to effects of wildfire. The latter source has regulatory values for planned management activities but does not address wildfire. The BAER team also considered that Angora Creek and the Upper Truckee River are 303d listed waters, and that the clarity of Lake Tahoe is of national significance.

Without an established quantitative or narrative water quality threshold for a wildfire emergency, the BAER team established an operational threshold to guide its emergency determination. The threshold was set as the minimum practical amount of ash and sediment delivered as a result of the fire. This threshold was established with the acknowledgement that ash and sediment delivery would likely occur, and the objective that the amount of these materials reaching water should be reduced to minimum practicable to help maintain the quality of the significant waters in this setting.

It cannot be overstated that Lake Tahoe is a significant water of national and even international recognition. The Upper Truckee River, which is the main conduit for Angora Creek to reach Lake Tahoe, contributes the highest amount of sediment to the lake. The effects of ash and sediment delivery to Lake Tahoe from the Angora Fire, while not chronic, will nonetheless be a cumulative effect in a situation in which there is substantial concern over a treasured resource to the states of California and Nevada.

Flow increases from the fire will also be bulked by ash, debris and other floatable and transportable material within the channel areas. There is a high probability that post-fire flows from the first runoff producing rain events will see a high concentration of ash discharged from the burn area a long distance downstream to the Upper Truckee River and Truckee Marsh.

All of the sub-watersheds within the burn area are expected to see increased sedimentation that could potentially affect instream beneficial uses such as cold water fish habitat. Potential for short-term effects on water quality are especially high in Angora Creek above the Lake Tahoe Blvd crossing.

The fire has killed a large number of trees, many of which have already fallen down in the channel, many more are hazard trees. Stream temperatures in reaches of Angora Creek that are fish bearing will be affected by the burning of shade producing riparian vegetation.

Angora Creek and tributaries are the main perennial streams. Loss of water control or flooding is a possibility during rain events.

Noxious Weeds Burned areas provide opportunities for invasive plants to establish quickly because of disturbed soil, release of nutrients, and lack of competition. Noxious weeds could have been introduced to the area during fire suppression activities as there were no wash stations for vehicles and equipment arriving to the fire. Additionally, there are existing noxious weed populations within the fire perimeter in the urban intermix and at areas used as drop points and safety zones. Thus, there is a potential for spread from existing noxious weed populations within the burned areas.

Five known populations of bull thistle (*Cirsium vulgare*) and five known populations of dalmatian toadflax (*Linaria dalmatica*) on ten Forest Service urban lots, as well as one known population of bull thistle and one known population of perennial pepperweed, also known as tall whitetop, (*Lepidium latifolium*) on the forest are of concern. The California Invasive Plant Council and Lake Tahoe Basin Weed Management Group have designated these weeds as Group 2 Priority Noxious Weeds for the Lake Tahoe Basin and require management of infestations with the goal of eradication.

Prior to the Angora fire, the urban lot noxious weed populations were declining due to abatement efforts within the urban lot management program. During the BAER assessment no individual plants were found at these sites, primarily because these areas were treated in June 2007 prior to the Angora fire. These areas then experienced moderate burn severity during the fire. Impacts from the fire and potential disturbance from future reconstruction activities on adjacent private property may lead to an increase in these noxious weed populations. Bull thistle reproduces by wind-dispersed seeds and manual control is possible if individual plants are removed before flowering occurs. Dalmatian toadflax is more difficult to control as it reproduces both by seed and vegetatively. Experience in the Basin shows that hand-clipping at the base of this plant without disturbing the roots can be successful in reducing the spread of this weed. Oxeye daisy (*Leucanthemum vulgare*), another Group 2 weed, was identified on private property and street right-of-ways adjacent to burned urban lots, creating a threat of invasion.

The known bull thistle population on the forest located at the unburned area used as Drop Point 1 at the intersection of Tahoe Mountain Rd. and the Forest Service system road, Angora Ridge. No individuals were found during the assessment. This population consisted of 1 individual in 2006, although increased traffic and activity in this area may lead to an increase and spread of the infestation.

The perennial pepperweed population on the forest is of greatest concern as it was bulldozed to create a safety zone. Perennial pepperweed establishes by seed and root fragments. Any mechanical disturbance such as digging, tilling, or bulldozing breaks up and disperses root fragments, creating new plants (Johnson and Wilson 2003). The bulldozer used to create the safety zone was not washed before moving to other sites and therefore may have transported seeds and root fragments. Additionally, while individuals were not found during the BAER assessment, the infestation consisted of approximately 230 plants in 2006, making the potential for spread of the population high. However, an engine captain working in this division stated that there was little to no driving on the safety zone after its creation. Additionally, the dozers used to rehab the site were washed prior to moving to other sites. Nevertheless, use of herbicides is the primary effective means for perennial pepperweed eradication. Given that there is no NEPA in place to use herbicides for noxious weed abatement in the Lake Tahoe Basin; control of this population will be difficult. Hand-clipping at the base of individual plants will prevent seed spread, but will not eradicate the population. A sow thistle species (*Sonchus sp.*) was also

noted at this site. The species is believed to be *Sonchus asper*, but it is important to note that *S. arvensis* is listed by the state of California as a Class A noxious weed.

In addition to the spread of existing populations, a major threat is the introduction of more weeds into the fire area on equipment. There were no washing stations for vehicles and equipment arriving to the Angora fire, although a washing station was set up on the fourth night of the fire. All resources leaving LTBMU were washed. According to information from the LTBMU's website, there were maximums of 186 engines, 54 crews, 21 helicopters, 15 water tenders, and 4 dozers working on the Angora Fire, as well as various other trucks and support vehicles. Additionally, within the urban intermix there has been various equipment associated with utility repair, tree removal, and private property clean up.

Threats to Soil Productivity Most soils were gravelly loamy sands to sandy loams. Organic matter destruction was moderate and extended down to 1 to 4 inches in the hot burned areas. Seed source was present in most soils of moderate to low burn severity except in hot burned areas in steep slopes above Angora Creek. Cover was not adequate for erosion control in the high burn severity areas due to loss of cover, water repellency, and little cover recruitment possibilities. In the hot burn areas seed source was less and erosion will be accelerated for the first year until natural vegetation reoccupies these areas in 2 to 5 years. This area is in the Angora Creek watershed. In other drainages either they did not burn hot enough for treatments or no resources were at risk for treatment. Hydrophobicity was on the soil surface and down to 2 to 4 inches in most areas and on the most part it was fairly continuous across the landscape in hot burned areas. Angora Creek watershed was the most impacted area where hillslope cover was destroyed by the fire.

The erosion rates are thought to be excessive for the natural range of variability of fire dependent forest ecosystem present. Excessive fuels in these watersheds caused severe burn intensities and fuel consumption. An estimated 76% percent of the burned area is hydrophobic from 1 to 4 inches deep. High erosion hazard conditions will increase because of the loss of soil cover and water repellency.

Urban Lots Urban lots are parcels of environmentally sensitive land acquired by the Forest Service as authorized by the Santini-Burton Act. The area burned included 131 Forest Service urban lots, which consisted of open space areas of natural forest vegetation within developed communities. These Forest Service lands (urban lots) are usually intricately commingled with private land holdings.

*Urban Lots - Potential threats to human life and property.*

The urban lots contain burned and partially burned trees, which pose a hazard to the public, private residences, roads, and utilities. The potential for high intensity rainstorms occurring over the burned area adds to the potential for surface erosion and debris flows increasing the risk to human life and property within the communities.

*Urban Lots - Potential threats to erosion control projects/resources, county roads, or other investments/properties.*

Severely burned conditions have destabilized hillslopes, escalating the probability for accelerated overland flow with increased surface erosion. Even under normal or average precipitation, the above-mentioned resources are susceptible to detrimental impacts from erosion and/or transport of eroded material and debris.

*Urban Lots - Potential threats to water quality below the burned area.*

Often called the jewel of the Sierra's, Lake Tahoe was classified as an Outstanding National Resource Water (ONRW)<sup>1</sup> in the early 1970s. With this designation, Lake Tahoe is provided the

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<sup>1</sup> ONRW is a state designated water system of exceptional recreational or ecological significance, usually of a high or pristine water quality.

highest level of protection under the anti-degradation policy and no further degradation is permitted. The threats from the burned area would come from sediment loading and heavy inputs of ash and nutrients into Lake Tahoe's water system.

*Urban Lots - Potential loss of soil productivity.*

Throughout the majority of the burned area, the fire completely consumed the vegetation canopy and effective ground cover (plant litter and duff). This includes the needle fall and decay of dead plants that replenish the soil nutrient pool. Even with average/normal precipitation, accelerated erosion rates combined with higher surface runoff efficiency may move the exposed soil and nutrient-rich ash off-site decreasing the soils' productivity.

*Urban Lots - Potential threats to natural resources and local ecosystems.*

National Forest urban lots are public lands not to be claimed by individuals for private exclusive use. Unauthorized use of urban lots is a common problem wherever they adjoin developed private lands. These unauthorized uses threaten the damaged soils and remaining vegetation, leading to the degradation of the hydrologic function these lands are intended to protect.

Several physical barriers that restricted OHV (Off Highway Vehicles) prior to the fire were damaged or destroyed. The lack of vegetation and these physical barriers have exposed and opened several decommissioned routes and user created trails to unauthorized OHV use and with it the potential disturbance of burned lands increasing the threat of erosion and increased sediment production. Unauthorized OHV use can also introduce or spread invasive species/noxious weeds and threaten to alter the biotic diversity by decreasing the natives and losing vulnerable plant species.

**B. Emergency Treatment Objectives:**

***Human Health and Safety/Hazardous Trees***

Provide for public safety by addressing hazardous trees (detection and removal) on urban lots.

***Hydrology/Soils***

The strategy to mitigate the threat to water quality is to provide immediate cover on severely burned hillslopes within the fire. This is designed to prevent to the extent practicable the expected increase of soil/ash sediment delivery by retaining as much of these materials as possible on the land surface. This strategy is usually more effective than the alternative of attempting to control water once it reaches stream channels. Additionally, immediate cover on severely burned slopes will provide a measure of protection to the private property, country roads and the high school by reducing runoff and sediment delivery to these areas.

***Noxious Weeds***

Ensure populations do not increase exponentially and threaten uninfested areas within the burn, especially in the highly disturbed urban areas.

***Transportation***

The treatments proposed will help protect road investments and adjacent resource values and/or preserve road function, and assure future access. Proposed treatments will provide for control of water and runoff stabilizing soil, sediment and debris movement and reducing the threat to life, property, and other downstream values.

### Urban Lots

Prevent loss of soil and degradation of resources due to sedimentation. Protect adjacent resources values. Protect the urban lots from encroachment and noxious weed spread.

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

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

D. Probability of Treatment Success

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

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

F. Cost of Selected Alternative (Including Loss):

G. Skills Represented on Burned-Area Survey Team:

☒ Hydrology    ☒ Soils    ☒ Geology    ☐ Range    ☒ Urban Lots  
☒ Forestry    ☐ Wildlife    ☐ Fire Mgmt.    ☒ Engineering    ☐  
☐ Contracting    ☐ Ecology    ☒ Botany    ☒ Archaeology    ☐  
☒ Fisheries    ☐ Research    ☐ Landscape Arch    ☒ GIS

Team Leader: Jim Frazier

Co-Team Leader: Stephanie Heller

H. **Treatment Narrative:**

Land Treatments: *Items are Bolded & Blue font for Interim #2*

#### **Hydrology/Soils**

Aerial Hydromulch – Apply aerial hydromulch by helicopter to 636 acres of high burn severity areas that would be expected to cause unacceptable amount of sediment and ash delivery (see treatment map in the BAER project file for application locations). These areas include the high burn severity areas above the neighborhoods on North Upper Truckee Road and the High School.

This treatment is the most feasible option for mitigating post-fire ash and soil erosion on a broad hillslope scale. Ground based treatments in nearly all of the Angora Creek watershed are not feasible due to road access limitations. While this option is expensive, it has advantages of staying on the

ground during wind events (which are common in this area) and will not result in the risk of introduction of noxious weeds posed by straw application (even weed-free straw has been known to possess weeds in limited cases).

#### Interim # 1

*The implementation team has contacted potential contractors about the price per acre costs and were given estimates of \$2,700 to \$3,000 per acre. The original request was based upon the values given in the BAER Catalog which did not include any overhead cost and did not probably reflect increasing fuel costs for aviation equipment. The estimated cost per acre for treatment and overhead is \$3357. Total treatment cost of 636 acres is \$2,135,052.*

#### Interim #2

*The Implementation Team received aerial hydromulching bid proposals. Each proposal was rated based on the company's organizational experience, past performance, and understanding of the government's requirements. A contractor was selected based on an excellent performance. When presented with the final bid the cost per acre was higher than the estimated \$2700 - \$3000 per acre. The City of South Lake Tahoe Airport is the closest and most cost effective facility for the hydromulching treatment. The City of South Lake Tahoe requested, for safety purposes, that a temporary Federal Aviation Administration (FAA) tower be provided by the Forest Service contractor, based on the amount of use the airport will receive during this project. These factors have lead to an increased cost per acre in the aerial hydromulching contract. This cost of the bid came in \$37,823.00 over the expected cost.*

*There is a heightened concern for safety and public information during the aerial application phase of the Angora BAER. Supplementary personnel will be needed. Safety Personnel, at roadways and trailheads, notifying the public of safety issues during aerial application. The Forest is recommending Fire Information Officers to be overseen by a Public Affairs Officer to assist with the media attention this project will bring. The estimated overhead cost for the team is expected to increase by \$111,001.00 for additional Safety Personnel and Fire Information Officers.*

*The new cost per acre for aerial hydromulching application and overhead is \$3591.00. Bringing the total project cost to \$2,283,876.00. That is an additional cost of \$148,824.00*

Ground Hydromulch – Apply hydromulch to approximately 35 acres adjacent to the following subdivision areas: Boulder Mountain Drive neighborhood, Mule Deer Circle area, and the Angora Creek Restoration site downstream of Lake Tahoe Boulevard. The intent is to truck-spray hydromulch up to 300 feet upslope of residential areas in need, and on the burned slope along Angora Drive adjacent to the restoration site. This treatment will reduce the risk of excessive runoff and sediment delivery to private and state lands, as well as the county road system and associated drainage.

#### Interim # 1

*The implementation team has decided to incorporate the Ground Hydromulching, estimated at 27 acres, and Hand Straw Mulching of 10 acres in the contiguous forest land into one treatment of Wood Straw Mulching by hand application totaling 37 acres, because there is limited access to apply hydromulch from ground based equipment. The cost is estimated out at \$2,379 per acre for a total cost of \$88,023 with all overhead costs included.*

#### **Noxious Weeds**

Noxious weed detection - existing noxious weed populations on 10 urban lots and at 2 sites in the general forest within or near the Angora fire perimeter (total of 19.5 acres). Conduct noxious weed detection surveys at the known bull thistle, dalmatian toadflax, and perennial pepperweed weed sites on urban lots and on the forest starting in 2007. Hand-pull bull thistle, removing as much of the root as



possible. Hand-clip dalmatian toadflax and perennial pepperweed at the base without disturbing the roots. These efforts will not eradicate the perennial pepperweed infestation, but merely prevent spread into the burned area. Place plants in plastic bag, taking care not to spread any seeds, and dispose of properly. Record population information in the "Invasive Weed Field Form" and give to appropriate weed coordinator (i.e. urban lot or general forest coordinator).

Conduct noxious weed detection surveys in areas of soil disturbance by suppression equipment, heavy traffic from outside resources, and vulnerable locations within the urban areas. This objective would be accomplished by surveying the approximate 24 miles of dozer lines and travel routes through FS lands used during fire suppression (i.e. FS system roads, decommissioned roads, etc.), the 2 uninfested safety zones, 9 drop points, and the staging area at the high school starting in 2007. Surveyors should look for all California State Noxious Weeds ([www.cdфа.ca.gov/weedhome](http://www.cdфа.ca.gov/weedhome)) and all Priority Weeds for the Lake Tahoe Basin (<http://www.fs.fed.us/r5/lbmu/about/urban-lots/nxsweeds.shtml>). A 2-person crew of GS-5 biotechs should survey dozer lines, decommissioned roads, drop points, and the staging area on foot. This crew can also survey FS system roads from the vehicle with the passenger doing the inspection. Locations of new infestations should be recorded using GPS and an "Invasive Plant Field Form" should be filled out and given to the appropriate weed coordinator. This crew should properly treat and dispose of new populations if they are small enough. If populations will require a more significant investment of resources and time, the Forest Botanist should be consulted to plan appropriate control actions.

Additionally, the 10-person NCC restoration crew (existing agreement) should perform detection surveys on urban lots adjacent to or near urban lots with existing noxious weed populations. Handpulling or clipping should occur when weeds are found. Coordination with the California Tahoe Conservancy and the University of Nevada-Reno Cooperative Extension is needed to ensure state and private lands are protected from noxious weed infestations.

## **Interim #2**

*There are existing noxious weed populations within the fire perimeter in the urban interface and numerous noxious weed sites are expected to develop adjacent to known populations. The expansion of existing populations needs to be monitored and treated. The initial monitoring occurred once during BAER implementation, and continuous monitoring is critical to detect noxious weeds early, in order to treat and avoid the spread of weeds. Several populations have already expanded in size and area. Burned areas provide opportunities for invasive species to establish quickly because of disturbed soils, release of nutrients, and lack of competition. It is necessary to retreat these areas to avoid additional spread of these populations and reduce the infestation size. The additional cost for detection and treatment for the expansion of existing populations is \$14,040.00.*

*The initial detection surveys of disturbed areas along dozer lines and travel routes were too early for seeds and plants to germinate. It is critical to detect noxious weeds early when the plants are growing but before seed heads form, in order to treat and avoid the spread of weeds. An additional treatment will assist to prevent spread and reduce infestation size of new disturbed areas. The additional cost for detection surveys in disturbed areas is \$3,280.00.*

## **Urban Lots**

Hand Straw/Chip Mulch - mulching hillslopes with hand applications on 48 urban lots, totaling 110 acres. Straw mulch with weed-free straw or chipped slash helps provide temporary cover to erosion-vulnerable areas as a result of the fire. Straw and/or chip are applied by hand with 90% coverage for the smaller urban lot treatment sites. The urban lots above and intermixed with the residential areas where lives and property are potentially at risk from effects from flooding and sedimentation during precipitation runoff events are the primary focus.

#### Interim # 1

*The current Hazard Tree Removal Contract associated with this treatment includes removal of the merchantable trees and drop/lop and scattering of the remaining resultant slash to return nutrients back into the soil. The lop and scatter treatment will not provide sufficient direct soil contact and cover to reduce the erosion potential. It is necessary to purchase rice straw now to provide the needed cover for erosion control.*

*Recommended replacement treatment: Hand application of rice straw mulch in the urban lots at \$2,103 per acre. Totaling \$210,300.*

*Installing log check dams and waterbars using a hand crew on 4 lots, installing a total of 8 logs.*

Checkdams are designed to trap and store sediment mobilized from the hillslope and channel. Properly constructed checkdams prevent down cutting and attenuating peak flows as water is routed through a series of small basins created by the checkdams. The moist deposits of soil, ash, and organic material can serve as fertile sites for vegetative recovery. See specs in the BAER Response Treatment Catalog.

*Seeding using a hand application on 14 lots, totaling 25 acres.* Objectives are to reduce erosion and prevent the introduction or spread of noxious and invasive plants in the 14 lots that had high soil burn severity and moderate slopes in the Mt Diablo area. Cover with mulch or chip. If populations are detected on new urban lots, seed and mulch as well if possible.

#### Interim # 1

*In the Urban Lot Specialist Report, 4 lots were identified for seeding due to the high soil burn severity and high water repellency. This did not get incorporated into the initial 2500-8 Seeding by hand application for these 4 urban lots adds 2 acres to bring the total to 27 acres. Total cost of hand application \$4,725 and purchase of native seed \$5,400.*

*Installing Filter Fencing on 2 lots, totaling 1.7 acres.* Silt fences are used to trap sediment. Silt fences will be located on urban lots on the Lookout Point Road in conjunction with other treatments to protect life and property below this areas steep slope.

#### Interim # 1

*The Initial 2500-8 only included the cost of the fencing supplies and did not include the labor or overhead costs. The total cost of material (\$350) and labor to install (\$1800) is \$2150.*

*Install log/worm fences at 10 different exposed decommissioned roads on 1 lot and 1 urban interface area to prevent OHV incursion and disturbance of burned lands.* Protective fences and barriers provide public safety, protect BAER treatments, and allow natural vegetative recovery of a burned area (BAER Guidance Paper-Gates, Fences, & Barriers). Use the LTBMU specs on building a worm/log fence. An important task throughout the various treatments on Forest Service urban lots is the continued coordination with other neighboring land owners conducting their own stabilization measures.

#### Channel Treatments:

N/A

#### **Roads and Trails**

Restore drainage function Purpose is to control water flow and enhance water quality. This treatment includes a broad range of activities designed to open and restore function. It includes: Clean culverts, culvert catch-basins, overside drains ditch lines, and clear vegetation blocking drainage ways. Grade road to drain, removing ruts and gullies and restoring needed inslope or outslope. Re-shape rolling dips and led off ditches. Remove floatable and transportable debris, gravel bars, and the like from catch

basins and immediate upstream channel to make the existing drainage facilities and features as effective and efficient as possible to handle the anticipated post burn flows. Restore design capacity. In addition this activity will aid in the preparation of other road treatments. Purpose is to control water flow and enhance water quality. This treatment includes a broad range of activities designed to open and restore function. It includes: Clean culverts, culvert catch-basins, overside drains ditch lines, and clear vegetation blocking drainage ways. Grade road to drain, removing ruts and gullies and restoring needed inslope or outslope. Re-shape rolling dips and led off ditches. Remove floatable and transportable debris, gravel bars, and the like from catch basins and immediate upstream channel to make the existing drainage facilities and features as effective and efficient as possible to handle the anticipated post burn flows. Restore design capacity. In addition this activity will aid in the preparation of other road treatments.

Roadway hazard trees Purpose is protection of life and safety, keeping drainage facilities clear and unobstructed. Treatment sites: Angora Fire System roads, 1214 Angora Ridge & 12N19 Tahoe Mountain Road. Fell and remove any burned hazardous trees that could fall on the roadway. The Angora Fire System roads will remain open for administrative use and this area is a popular trail system (high risk), the Angora Ridge Road (1214) is open to public access to a special use permittee-run resort (high risk), and the Tahoe Mountain Road is open for administrative use and is a popular trailhead (high risk). Place trees and limbs in designated areas for treatment such as landing or clearings, do not place trees and limbs in drainage courses. Purpose hazard trees along roads pose a threat to life and safety of road users, interference with the proper drainage of facilities, and can deny access until roads are cleared.

Install drainage armor Purpose is to control water run-off and enhance water quality. Treatment sites: Angora Fire System roads, 12N19, 12N19A, 12N27. Deliver and machine place on the road surface  $\frac{3}{4}$ " crushed aggregate base rock from a commercial source. A minimum 4 inch layer of crushed rock is evenly placed on the road way at drainage dips (rolling dips) and other drainage structures. Compaction and watering requirements will be designed to provide adequate strength for stability, resistance to erosion, protection to the underlying road surface and acceptance of higher volume of traffic.

Install aggregate base rock Purpose is to control water run-off and enhance water quality. Treatment sites: Angora Fire various locations on system roads 12N19, 12N19A, 12N27 within the burn. Place riprap (rock) in bottom of dips at outlets of drain dips and drivable water, liner roadway ditches, culvert inlet and outlets and relief dips at culvert crossings. Riprap (rock) size will be 6 inch minus in dips and run outs and 6 inches to 12 inches diameter in roadway ditches and culvert outlets. **Note:** Rock material riprap needs to be certified weed free.

BAER warning signs Purpose is protection of life and safety. Treatment sites: Angora Fire burn area entry points designated by LTBMU along Angora Ridge Rd and Tahoe Mt. Rd. Construct and install signs with text, font, colors, size and shape designated by the Forest Service at locations designated by the Forest Service. Information signs will be 18 inches by 24 inches and will provide background on reasons for closures and contact phone numbers for further information. Warning signs will be 48 inches by 96 inches, black on yellow, and will alert drivers, walkers, cyclist, and others to traffic hazards in order to minimize accidents. Sign text will be in English.

Install geotech fabric Purpose is to provide for road and resource protection and the success of the over layment material. Treatment site: System roads 12N19, 12N19A, 12N27. Lay the Geo-Tech fabric directly over the treatment area in the road way drainage dips and associated run-outs cover the fabric with the desired course of material At the desired depth Specific drainage location for the installation of the fabric will be determined on the ground for implementation and will be installed as needed.

### ***Protection/Safety Treatments***

Hazard Tree Removal on 3 lots, totaling 5 trees. Fell hazard trees, chip slash, and use the slash as mulch for each lot.

Hazard Tree Detection Surveys in urban areas. An urgent significant hazard is identified when the

collapse or breakdown of the burned or unstable object is "highly likely to occur within the year and could result in property damage, personal injury or death."(BAER Guidance Paper-Hazardous Tree and Rock Removal) The area requiring patrolling includes the urban intermix where the burned urban lots are located and in the urban interface where the general forest borders private property.

#### I. Monitoring Narrative:

The cost of implementation monitoring is included in the treatment cost.

#### Interim #2

*Angora BAER Treatment Effectiveness Monitoring Plan is proposed (detailed plan enclosed) to determine if objectives are being met or whether re-treatment/maintenance is needed on the Urban Lots and the aerial hydromulch in the General Forest. Monitoring of the land treatments, straw and wood mulch, aerial hydromulching, filter fencing, log check dams, and worm fences would occur. A secondary objective would be to determine the change in the level of soil cover between the time of aerial hydromulch completion to that following the end of the first winter. This information would enable the Forest to report the general persistence of the hydromulch through the winter period. The cost of treatment effectiveness monitoring is \$5,840.00*

#### Part VI – Emergency Stabilization Treatments and Source of Funds Interim # 1 Interim #2

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non	Total
Line Items	Units	Cost	Units	BAER \$	\$	units	\$	Units	Fed	\$
A. Land Treatments										
<i>Aerial Hydromulch</i>	<i>acres</i>	<i>\$3591</i>	<i>636</i>	<i>\$2,283,876</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$2,283,876</i>
<i>Hand Wood Straw Mulch</i>	<i>acres</i>	<i>2379</i>	<i>37</i>	<i>\$88,023</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$88,023</i>
<i>Hand Rice Straw Mulch (ULM)</i>	<i>acres</i>	<i>2103</i>	<i>100</i>	<i>\$210,300</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$210,300</i>
Log Check Dam	logs	200	8	\$1,600	\$0		\$0		\$0	\$1,600
<i>Filter Fencing</i>	<i>feet</i>	<i>10.75</i>	<i>200</i>	<i>\$2,150</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$2,150</i>
Log Fencing				\$30,000	\$0		\$0		\$0	\$30,000
<i>Noxious Weed – Detection for expansion of existing populations</i>	<i>days</i>	<i>1502</i>	<i>20</i>	<i>\$30,040</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$30,040</i>
<i>Noxious Weed - Detection Disturbed Areas</i>	<i>days</i>	<i>247.1</i>	<i>26.5</i>	<i>\$6,580</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$6,580</i>
<i>Application of Native Seeding</i>	<i>acres</i>	<i>175</i>	<i>27</i>	<i>\$4,725</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$4,725</i>
<i>Native Seed Purchase</i>	<i>acres</i>	<i>200</i>	<i>27</i>	<i>\$5,400</i>	<i>\$0</i>		<i>\$0</i>		<i>\$0</i>	<i>\$5,400</i>

Seeding of Urban Lots	acres			\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$2,662,694	\$0			\$0		\$0	\$2,662,694
B. Channel Treatments											
				\$0	\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$0	\$0			\$0		\$0	\$0
C. Road and Trails											
Restore Drainage Function	mile	1200	2.5	\$3,000	\$0			\$0		\$0	\$3,000
Roadway Hazard Trees	mile	5000	1.5	\$7,500	\$0			\$0		\$0	\$7,500
Install Drainage Armour	yd3	275	700	\$192,500	\$0			\$0		\$0	\$192,500
Install Aggregate base rock	yd³	225	250	\$56,250	\$0			\$0		\$0	\$56,250
Install geotech fabric	yd³	18	120	\$2,160	\$0			\$0		\$0	\$2,160
BAER warning signs	each	800	7	\$5,600	\$0			\$0		\$0	\$5,600
Subtotal Road & Trails				\$267,010	\$0			\$0		\$0	\$267,010
D. Protection/Safety											
Hazard Tree Removal	tree	400	5	\$2,000	\$0			\$0		\$0	\$2,000
Hazard Tree Detection Survey	days	220	100	\$22,000	\$0			\$0		\$0	\$22,000
Subtotal Structures				\$24,000	\$0			\$0		\$0	\$24,000
E. BAER Evaluation											
Personnel Cost				\$70,000				\$0		\$0	\$70,000
Travel				\$12,000				\$0		\$0	\$12,000
Helicopter Flights				\$6,000				\$0		\$0	\$6,000
Office Supplies				\$1,500				\$0		\$0	\$1,500
Implemtation Leader	days	320	20	\$6,400				\$0		\$0	\$6,400
Implemtation Assistant	days	300	20	\$6,000				\$0		\$0	\$6,000
Travel and Incidental Cost				\$10,000				\$0		\$0	\$10,000
COR for contracting tasks	days	250	10	\$3,750							\$3,750
Subtotal Evaluation				\$115,650	\$0			\$0		\$0	\$115,650
F. Monitoring											

