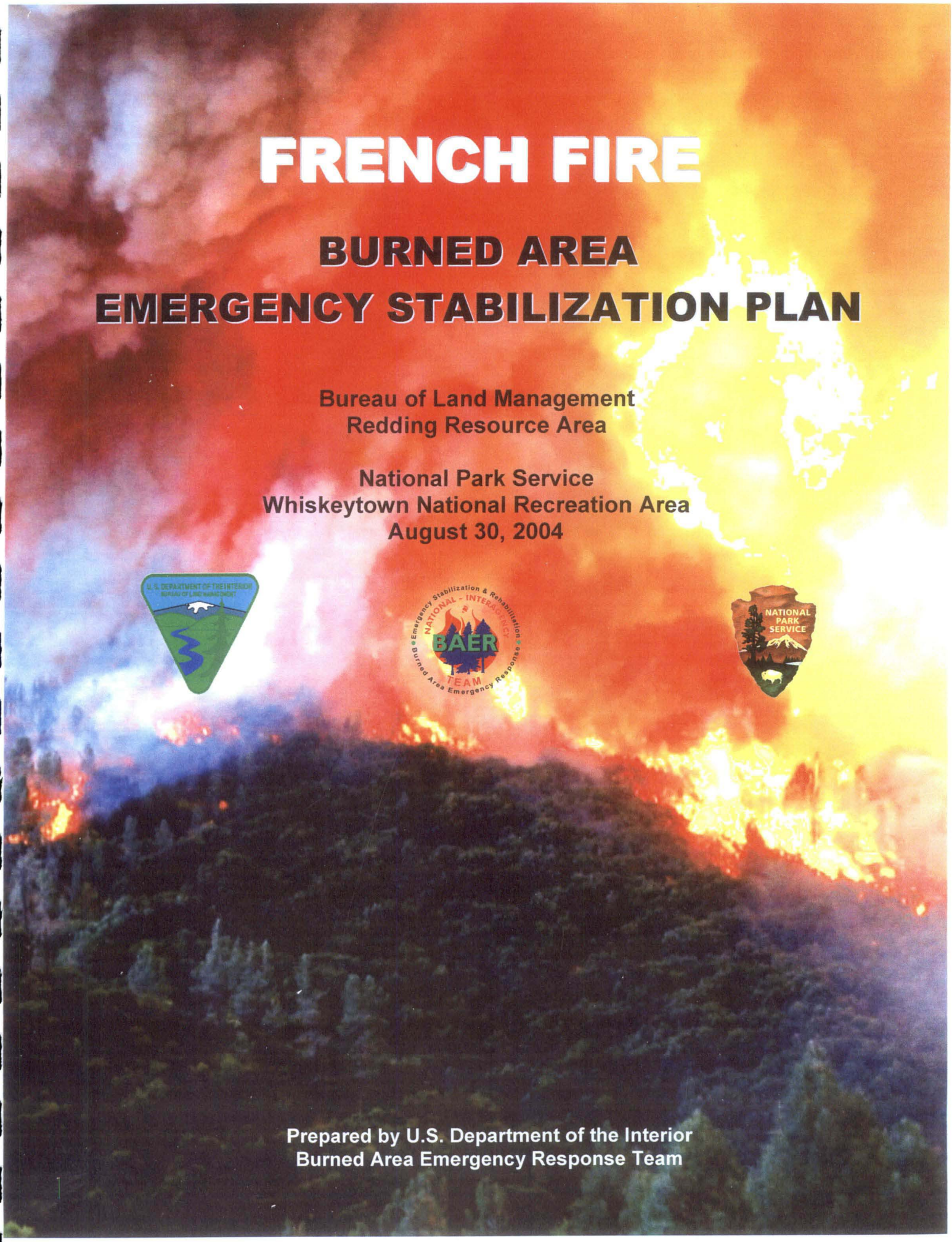


FRENCH FIRE

BURNED AREA EMERGENCY STABILIZATION PLAN

Bureau of Land Management
Redding Resource Area

National Park Service
Whiskeytown National Recreation Area
August 30, 2004

Prepared by U.S. Department of the Interior
Burned Area Emergency Response Team

FRENCH FIRE
BURNED AREA EMERGENCY STABILIZATION PLAN

AGENCY/UNIT: U.S. Bureau of Land Management
Redding Resource Area

U.S. National Park Service
Whiskeytown Recreational Area

LOCATION: Shasta County, California

DATE: August 30, 2004

PREPARED BY: United States Department of the Interior
Interagency
Burned Area Emergency Response Team

Submitted By: _____ 8.30.04
ERV GASSER, BAER Team Leader, National Park Service, Seattle

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

FRENCH FIRE

PART I REVIEW AND APPROVAL -- BUREAU OF LAND MANAGEMENT

I. EMERGENCY STABLIZATION PLAN CONCURRANCE

☐ Concur

☐ Concur with Revision

☐ Disapproved

Explanation for Revision or Disapproval:

Steven Anderson, Redding Field Office Manager, Acting Date

II. EMERGENCY STABILIZATION CONCURRENCE

☐ Concur

☐ Concur with Revision

☐ Disapproved

Explanation for Revision or Disapproval:

Mike Poole, California State Director, BLM Date

III. EMERGENCY STABILIZATION CONCURRENCE

☐ Concur

☐ Concur with Revision

☐ Disapproved

Explanation for Revision or Disapproval:

Jack Hamby, National BAER Coordinator, Washington Office, BLM Date

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

FRENCH FIRE

PART I REVIEW AND APPROVAL – NATIONAL PARK SERVICE

I. EMERGENCY STABLIZATION PLAN CONCURRANCE

☐ **Concur**

☐ **Concur with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

Jim Milestone, Superintendent, Whiskeytown National Recreation Area **Date**

II. EMERGENCY STABILIZATION CONCURRENCE

☐ **Concur**

☐ **Concur with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

John Jarvis, Regional Director, National Park Service **Date**

INTERAGENCY
BURNED AREA EMERGENCY AND STABILIZATION PLAN

FRENCH FIRE
French Gulch, California

EXECUTIVE SUMMARY

The plan addresses emergency stabilization of fire suppression impacts and fire effects as a result of the French Fire. The plan has been prepared in accordance with the *Department of the Interior, Departmental Manual, Part 620: Wildland Fire Management, Chapter 3: Burned Area Emergency Stabilization and Rehabilitation* (May 2004). This plan has been prepared according to the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook (draft 2001), incorporating the necessary changes of policy identified in the Departmental Manual. This plan provides emergency stabilization recommendations for all Bureau of Land Management - Redding Field Office; National Park Service lands - Whiskeytown National Recreation Area; and the private lands in Shasta County, California. The Department of the Interior National Interagency Burned Area Emergency Response (BAER) Team conducted its assessment of conditions in coordination with local, state and federal agencies as well as private lands. The French Fire occurred on city, county, federal and private lands in Shasta and Trinity Counties, California.

The primary objectives of the French Fire Burned Area Emergency Stabilization Plan are:

- To prescribed post-fire mitigation measures necessary to protect human life, property, and critical cultural and natural resources;

- To promptly mitigate the unacceptable effects of the fire and suppression impacts on lands within and adjacent to the burned area in accordance with management policy guidelines and all relevant federal regulations.

The primary objectives of rehabilitation are:

- To repair or improve lands damaged directly by Wildland fire an unlikely to recover naturally by emulating historic or pre-fire ecosystem structure, function, diversity and dynamics according to approved land management plans;

- To restore or promote healthy, stable ecosystems in the burned area within Interior lands.

The DOI National Interagency BAER Team has conducted an analysis of fire effects using aerial and ground reconnaissance methods throughout the lands impacted by the fire. The operations specialists identified suppression impacts on all lands within the fire, coordinated team activities with the Incident Management Team, and initiated emergency rehabilitation treatments on BLM lands. The watershed group assessed and mapped the overall fire impacts on watershed conditions and developed the burn severity and watershed response map. Archeologists inventoried suppression impacts for potential damage to cultural sites as well as initiating consultation with the California State Historic Preservation Office. Vegetation specialists evaluated vegetation mortality and assessed fire effects and suppression impacts to vegetative resources including noxious weed populations, and fire effects to T&E species. The wildlife biologists conducted an assessment of fire effects to Threatened & Endangered (T&E) wildlife species and their associated habitat, suppression impacts to wildlife species, and initiated Section 7 Consultation with the US Fish and Wildlife Service. The mining specialist surveyed active and abandoned mine sites within the fire perimeter for adverse affects from the fire or suppression activities. Foresters assessed the immediate post-fire effects to forest stands and identified tree hazards, potential salvage, potential reforestation and long-term forest health. The GIS

specialists gathered the data layers necessary for the plan, coordinated GPS activities, processed data calculations for the resource specialists, and produced maps for analysis, the BAER Plan, and for presentations.

Resource assessments produced by these specialists can be found in Appendix I and treatments identified in the assessments can be located within Part F, Specifications. A summary of treatment costs is located within Part E. A signature page in the front of the plan is for agency review and approval. Appendix II contains the National Environmental Policy Act (NEPA) compliance summary for all recommended treatments. Appendix III contains photo documentation of fire effects while Appendix IV contains supporting documentation.

Fire Location

The fire area is located within the Clear Creek Canyon within and adjacent to the community of French Gulch, Shasta County, California. The fire started south of the community along the Trinity Mountain Road within Whiskeytown National Recreation Area.

Bureau of Land Management

BLM lands within the burn area are managed for timber resources, wildlife, recreation, and to protect critical watersheds. The primary activity taking place on the lands is recreation.

National Park Service – Whiskeytown National Recreation Area

The National Park Service lands within the burn area are managed to protect the Clear Creek watershed and habitat for the T&E species. In addition, the Tower House Historic District on the southern edge of the fire is a focal point for various visitor activities. Other land uses include outstanding vistas, recreation, watershed protection and T&E species management.

Other Lands Management

Other lands within the fire perimeter are comprised of state, city/county, and private. The state lands are primarily roadways. City/county and private lands within the fire perimeter can best be described as a rural residential and commercial community primarily situated long the banks and surrounding valley on Clear Creek. Beyond the town of French Gulch extending up several side drainages are found scattered parcels of private property including several abandoned and active mine sites. Sierra Pacific Industries on the north perimeter of the fire were adversely affected by the fire and suppression actions. Most private residences are located within a wildland/urban interface setting.

Fire Background

The French Fire started at 1422 hours on Saturday, August 14, 2004. The origin was on the west side of Trinity Mountain Road, approximately 1 mile north of Hwy 299E within the Whiskeytown National Recreation Area. The fire burned rapidly north and west from the origin in the Clear Creek Canyon south of the community of French Gulch. The fuels near the origin were primarily grass and scattered brush. The fire spotted quickly into old, dense stands of chaparral (including manzanita, chamise, poison oak, ceanothus and blackberries) with a discontinuous over story of grey pine, knobcone pine and live oak. To the west and north the vegetation transitions into mixed conifer with a moderate to heavy understory. The extreme burning conditions within the canyon resulted in repeated showers of embers and erratic fire behavior within the community of French Gulch. Fire engines protected buildings and fought numerous structure fires while Shasta County Sheriff Deputies evacuated residents.

From the beginning of this fire, it posed a significant threat to fire fighter safety with high rates of spread and high energy release at the flaming front. The fire spread to 340 acres within the first hour as it approached the mobile home park on the south edge of town. By the end of the initial burning period that evening, the fire had burned approximately 3,100 acres and destroyed 27 structures. The fire continued to grow significantly over the next few days until favorable weather conditions and a large fire fighting force of crews and machines were able to contain the blaze on Friday, August 20, 2004.

On August 15th, 2004, the Shasta Trinity Unit was relieved by the California Department of Forestry & Fire Protection, Incident Command Team (ICT) #3. By the time the ICT had arrived, the growing fire had been divided into two Branches with a total of eight Divisions. Suppression forces contained the fire by building 40 miles of dozer line and 7 miles of hand line, and tactical use of numerous miles of existing primary and secondary roads. At the peak of suppression activity the following resources were on the fire: 42 dozers, 58 hand crews, 105 engines, 32 water tenders, 22 aircraft, and support equipment. Due to the extreme fire behavior, steep terrain, and concerns for fire fighter safety, dozers, engines and aircraft, were utilized heavily during the early stages of the fire. Fire lines were built across varied topography including ridge tops and slopes in excess of 50%. Approximately 13 miles of dozer line exceeded 120 feet in width (ten blades wide). An estimated 39 miles of primary and secondary roads were utilized by suppression forces, and numerous former logging and mining roads were reopened to allow access for suppression equipment. There were 11 drop points, 3 helispots and 1 staging area.

The French Fire burned for six days in a northerly direction until it was contained on August 20, 2004. The final perimeter was in excess of 22 miles with 13,323 acres burned. The fire destroyed 27 dwellings, 1 commercial structure, 76 outbuildings, and 58 vehicles. As of August 29, 2004, the fire continues to burn "green" islands within its interior and there is no projected date when the fire will be declared out.

At the request of the Bureau of Land Management (BLM) and National Park Service (NPS), the Interagency Burned Area Emergency Response (BAER) Team (Smith/Gasser) was assembled on August 19, 2004, at the BLM Redding Field Office. Agency Administrators and staff of the NPS and BLM identified resource issues and concerns as a result of the French Fire. The BAER Team was requested to prepare an Emergency Stabilization Plan to address potential effects of the fire and fire suppression impacts to all jurisdictions affected by the fire. Resource specialists from the BLM and NPS augmented the team members from the national BAER Team. This incident provided an excellent opportunity to train the locally available disciplines on the aspects of burned area assessment and emergency stabilization and rehabilitation plan development.

Issues identified by the agencies include:

BLM Administered Lands	NPS Administered Lands
Suppression Damage Repair	Suppression Damage Repair (roads/gates/culverts)
Timber Salvage (dozer line & fire area)	Sedimentation into Whiskeytown Lake
OHV Road Closure - Erosion Control, Safety	Salt Grass Impacts (only remaining pop. in world)
Slope Stabilization – French Gulch (Sec. 22 & 26)	Invasive Species (star, broom, arundo, blackberry)
Cultural Resource Damage Assessment/Inventory	Erosion/Revegetation of Old Mine Roads re: suppression
Fire Severity Map	Archeological/Historic/Pre-Historic Sites
Exposed Mine Shafts	Fisheries below Whiskeytown Dam/lower Clear Cr.
Revegetation on Roads/Dozer lines	Recreation on Fuel Breaks
Invasive Species	Transport of Toxics to Lake/Contaminant Transport
Watershed Response	Watershed Response/Values @ Risk Downstream
Socio-Economics	Signs
Interface with County/Industry	Coordination with BOR
Mill Site Targets for Hydrologic Events	Mining Operations on NPS

Resource Damages and Threats to Human Safety and Resources

Operations Summary

The Operations Section of the DOI National Interagency BAER Team arrived on the French Fire on August 18, 2004. The team established communications and coordinated all BAER activities with the CDF Incident Command Team 3 assigned to the fire. Operations Specialists, with the assistance of BLM, NPS, and Shasta County resource advisors, assessed suppression-related activities and assisted BAER Team members with reconnaissance flights and ground surveys. Surveys were conducted in conjunction with other BAER disciplines and agency resource advisors to identify areas needing emergency stabilization. Field assessments identified approximately 40 miles of dozer lines in need of immediate stabilization and repair. The Operations Specialists documented 39 miles of pre-existing primary and secondary roads which had been heavily impacted by suppression vehicles and dozers. There were two boundary gates on the NPS boundary that were destroyed by suppression activities and need replacing. There were numerous old roads opened within the fire perimeter to provide emergency vehicle access, and need to be closed to protect the unsuspecting public from entering this very unstable and dangerous burned area.

The Operations specialists, in coordination with CDF Rehabilitation Specialists began emergency repair of dozer lines on BLM lands on August 20, 2004. The Incident Command Team implemented BAER specifications in rehabilitating approximately 17 miles of dozer line on BLM lands. Additional inter-agency coordination between CDF, BLM and NPS is needed to ensure timely implementation of recommended emergency rehabilitation treatments and the repair of suppression impacts within 60 days of the fire being declared OUT.

Watershed Summary

Soil burn severity and watershed response maps were developed from Landsat imagery with field verification. Sixty-five percent of the burned area was low severity and unburned, 31% was moderate severity and 3% was high severity. The watershed response map is the same as the soil burn severity map. Erosion potential modeling showed that the majority of the fire area experienced erosion rates between 1 to 2 tons per acre annually before the burn. Modeled post-fire erosion rates increased in areas of low and moderate soil burn severity to between 1 to 10 tons per acre. Post-fire erosion in areas of high soil burn severity ranged between 2 and 50 tons per acre, with the highest erosion potential values on areas of steep slopes (greater than 50% slope). Fifteen watersheds above values at risk were evaluated for increased risk of post-fire debris flows. Five of those watersheds met the criteria for producing debris flows in a 2-year storm. Debris flows are very dangerous and improvements at the mouths of these drainages are subject to significant damage. There is a potential for loss of life for people in structures or on roadways in these locations. Peak flows were modeled for 2, 10, and 50 year storms of 6 and 24 hour duration in fourteen watersheds above values at risk. Peak flows, as modeled, is expected to increase by a factor of 1.7. In most cases, this increase will not result in damage to life or property but may produce what is generally called nuisance sediment or water. In the case of French Gulch near its confluence with Clear Creek, increases in peak flows by a factor of 1.7 are expected to cause the stream to overflow its banks resulting in significant damage to property at that location and potential loss of life. Ninety-six individual structures and culverts were evaluated in the field to determine the amount of risk they faced. Fourteen were identified as high or very high risk. Sixteen were at moderate risk. Sixty-two had a low or no risk and four were undetermined and need further evaluation by the NRCS. Structures identified as being at high or very high risk of being impacted have been evaluated and emergency treatments prescribed to mitigate the impacts of potential floods/debris flows.

Cultural Resources Summary

The Cultural Resources Group identified a total of twenty-eight (28) archaeological sites located on public lands within the French Fire's area of potential effect. The vast majority of these resources date to the Historic Period, and are illustrative of intensive mining activity that has occurred in the vicinity of French Gulch from the initial California Gold Rush through World War II. Of the eighteen (18) sites assessed during field reconnaissance, twelve are located on BLM lands and the remainders are on NPS lands. These sites consist of features relating to placer and hard rock mining activities, including mills, mine adits, artifact scatters, ditches, placer tailings, and domestic structures. It was observed that while many of the wooden components of the mill sites were devastated by fire, the majority of the assessed wooden cabin structures remain intact.

Field findings led to recommendations for treatments at three sites on NPS lands that were affected by suppression and another site that needs emergency stabilization due to fire effects. These sites include a historic Native American gravesite and associated artifact scatter, a historic road, and a historic ditch/flume complex. The gravesite has been affected by dozer line piling of earth and brush, while the historic road and ditch/flume complex were intersected by the dozer line. It is recommended that an excavator be used to pull earth, brush and root wads back from the gravesite and that a full damage assessment be made of the surrounding site constituents by a qualified archaeologist. A hand crew will be employed to recontour the compromised segments of the historic road and ditch. A rock walled sod-roofed dugout structure was assessed as at risk from erosion. Additionally, the wall's integrity was compromised by a burned-out tree. Treatment recommendations at this site include the placement of rice straw on the slope above the structure to slow runoff, and the placement of sand bags within the wall segment that is exposed by the stump hole.

Three sites were recommended for treatment on BLM lands. The Niagara Mill Site is at risk from erosion, particularly along the lower wall, due to an uprooted fire-killed tree that allows undercutting from higher runoff values as the result of partial understory denudation above the

mill. Emergency stabilization recommendations are that sandbags be placed along the edge of the wall and that the burned trees surrounding the mill site foundation be felled, then lopped and scattered along the slope above the mill to slow runoff. Burned trees are also recommended for removal within and surrounding a stone walled structure at the location of the mill site camp. The Summit Mill site was also burned over during the fire incident. Two clumps of fire-killed trees pose a risk to the remaining site elements by destabilizing the side slopes above the mill features. It is recommended that they be removed. The Sybil Mill site was also burned. It lies on a steep angle of repose and emergency stabilization measures would be impractical. It is recommended that the site be fully assessed and documented before its eventual demise.

Three cemeteries and a midden site were observed to have sustained fire related impacts or are at risk from post-fire effects on private land in the community of French Gulch. Non-specification recommendations call for the removal of burned trees at the cemeteries, the stabilization of slopes along the west and north side of one cemetery where it abuts an historic hydraulic mining operation, and that protective measures be taken at the midden site that is bisected by a drainage that will be subject to increased runoff as the result of the fire. Additional non-specification recommendations include inventorying high probability areas in the fire, assess the ditch works, clear brush around unburned sites and fill in an illegal "coyote hole" mining pit.

Wildlife Summary

The BAER Team Wildlife Specialists obtained species lists from U.S. Fish & Wildlife Service (FWS), Red Bluff Fish and Wildlife Office, on August 20, 2004, Bureau of Land Management (BLM) and National Park Service. Through discussions with the FWS, NPS and BLM, it was determined that the following federally listed species occur, have habitat within the fire area, or were potentially affected by the fire suppression actions: Northern Spotted Owl (NSO) and Bald Eagle. Federally listed fish species (Salmon and Steelhead) occur downstream from Whiskeytown dam in lower Clear Creek, but were not affected by the fire. It was determined that habitats for the NSO and bald eagle were affected by the wildfire. Suppression actions may have affected NSO habitat. These species or their habitat may have been affected by the fire, but a determination was made that they were not likely to have been adversely affected. A determination was made that none of the proposed suppression repair and emergency stabilization activities will adversely affect listed species.

Vegetation Summary

A number of vegetation types, or plant alliances, occur in the fire area. These vegetation types include northern mixed-chaparral, montane mixed-chaparral, knobcone pine, foothills grey pine, ponderosa pine mixed-conifer pine, pacific Douglas-fir, Douglas-fir/ponderosa pine, oak woodlands, dry grass/herbs, and barren. Also included were riparian and non-native ornamental/conifer/hardwood alliances. Vegetation resources were impacted from the fire to varying degrees due to species composition, the seral gradation of one plant community into another, slope, aspect, stage of maturity of the species, the amount of woody vegetation with low live fuel moistures, and fire behavior. Vegetation was assessed for post-fire mortality or degree of top kill, potential for vegetative recovery, impacts from fire suppression activities, presence and potential for spread of non-native undesirable or noxious weed species, and fire effects to T&E species.

Vegetation mortality was determined to be 36% high, 22% moderate-high, 29% moderate low, and 13% low. No T&E plant species were impacted. Suppression impacts were evident, especially on the dozer lines that were 5 blades wide (60 feet) or more. The majority of the vegetation in the chaparral, oak woodland, knobcone pine and to some extent grey pine will recover within 1 to 2 years (sprouting or from seed). The majority of the high vegetation mortality class fell in those plant communities adapted to fire. Noxious and non-native invasive species can be expected to spread along roads, dozer and hand lines, and into weed free areas adjacent

to high vegetation mortality, moderate to high burn severity areas that presently contain weed occurrences.

The dozer lines and the watersheds above the town of French Gulch have moderate to high burn severity and high vegetation mortality will be seeded. In addition, the dozer lines on BLM lands will be mulched. The seeding is for slope stabilization and for protection of water quality and fisheries down drainage on federal lands (BLM and NPS). The seed mix for both treatments will include the natives blue wild rye, California brome, sky lupine, and a sterile hybrid and non-persistent introduced species added to the mix, to quickly stabilize the slopes. The fire will be monitored for vegetation recovery, seeding success, and noxious weed expansion. If monitoring indicates the need for an additional treatment or re-treatment then a supplemental funding request will need to be made.

Mine Safety

Twenty active and abandoned mines were evaluated for safety hazards resulting from the French Fire. No active or abandoned mine sites were surveyed that had a changed condition of safety resulting from the fire. Seventeen unsecured openings (adits) were identified having a preexisting subjective hazard rating less than four. Five mill sites were evaluated to determine if resident mill tailings were subject to transport off site as a result of post fire hydrologic effects. There are no specifications for treatment involving mine safety or mill contaminant transport because there is no evidence that the French Fire adversely affected the condition of safety or contaminant transport at any of the surveyed mines. Four previously unidentified mine openings were recorded in the Lower Dutch Gulch area.

Forestry

Team foresters assessed the immediate post-fire effects to forest stands. Based upon this assessment, four-management issues were examined; imminent and long-term tree hazards, potential salvage, potential reforestation, and long-term forest health. Tree hazards are those trees damaged or killed by the fire such that they pose a hazard to public safety or to property. Potential salvage is the utilization of commercial timber before it loses its value to insect and decay damage. Potential reforestation is examining areas that are not likely to regenerate within ten years. And, long-term forest health examines potential indirect effects to impacted forest stands.

Forestry field work began with a flight to overlook the entire fire and to prioritize areas that needed to be examined on-the-ground to make efficient use of the limited time available for field reconnaissance. As a result, and knowing that satellite imagery would be available for mortality mapping, two days were then spent examining the commercial forest types on the northwest and west sides of the burn area. Items examined were feasibility of salvage based on logging system and potential salvage volume, areas that would not regenerate to commercial species within ten years and insect and disease levels within and adjacent to the burned areas.

GIS

Initial GIS data on the French Fire perimeter, progression, suppression actions, etc., was accomplished by the CDF, IMT. The request for GIS base data layers (administrative boundaries, roads, lakes, streams, Do, Dregs, etc.), were made to the BLM Redding Field Office, NPS Whiskeytown NRA, USFS Region 5 and Natural Resource Conservation Service. In addition, Information Technology (IT), GIS and administrative support (supplies and technical support) were provided by the BLM Redding Field Office.

Data creation for acreage and mileage were computed in support of each BAER Specialist, e.g.; Operations, Wildlife, Forestry, Watershed, Vegetation, Mine Safety and Archeology. Maps were produced for BAER specialists and resource advisors field work, presentations, and final BAER

Plan. Data and maps will be copied to CDs and distributed to each agency represented (BLM, NPS, NRCS, etc.), with additional requests made to the DOI BAER Team Leader.

Recommendations

Based on aerial and ground surveys the BAER Team identified the following treatments for implementation. These treatments meet the policy stated in the Departmental Manual (May 2004), and the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook.

Fire Suppression Stabilization:

- Repair roads impacted by suppression activities
- Rehabilitate dozer lines
- Rehabilitate hand lines
- Emergency road closures

Emergency Stabilization:

- Ditch cleaning
- Culvert Evaluation/clean/remove/replace/install
- Hydro-mulch
- Post flood event road cleanup
- Flood hazard warning signs
- Structural protection – K-rails
- Structural Protection – sandbags
- Floatable debris removal
- Non-native invasive species control
- Revegetation
- Native plantings
- Treatment effectiveness monitoring
- Cultural resource stabilization – suppression
- Cultural resource emergency stabilization
- Increase agency presence
- Finish cultural resource assessment
- Native American consultation
- Long-term tree hazards
- Tree hazard mitigation
- Implementation leader/administrative support

The BAER Team conducted an agency close-out presentation for all agencies on August 30, 2004, providing findings and identifying proposed emergency stabilization and rehabilitation treatments.

Implementing emergency watershed stabilization and erosion control treatments and mitigating non-native species invasion are critical tasks. These activities should be initiated as quickly as possible through the Implementation Leader. It will be important for the Implementation Leader to coordinate the recommended activities, track budgets, coordinate contracts, and prepare accomplishment reports.

The BAER Plan is the initial funding request for Emergency Stabilization funds. This plan may also be used as a justification to seek funding from other sources for treatments proposed/recommended that are not covered by ESR funds. Additional supplemental requests may be made after this document has been reviewed and approved. It is recommended that

supplemental requests be made on an as needed basis, if necessary. The approval process for supplemental requests is the same that was used for approval of this plan

The Emergency Stabilization funding for this plan extends over three years from the date of control of the fire. Emergency stabilization treatments must be installed within one year of fire containment. Monitoring and maintenance of emergency stabilization treatments can extend for up to three years from containment of the fire. At the conclusion of the funding period, a final Accomplishment Report will be due to the approval authority. The Accomplishment Report will document the funding received (initial and supplemental funding), treatments installed, the effectiveness of the installed treatments, and the results of monitoring activities. A template for this report is provided with the transmittal memorandum to BLM and NPS.

Some treatments in this plan have been identified to protect life and property. Because of the lay of the land it is necessary to place these treatments on private lands. Through the Wyden Amendment, federal funds may be used on private lands with the permission of the land owner. These treatments, besides protecting private structures also benefit federal lands by protecting water quality and fishery resources. NRCS will coordinate activities on private lands gaining permission and implementing treatments.

This BAER Plan was submitted to BLM - Redding Field Office and NPS - Whiskeytown National Recreation Area, in accordance with interagency Burned Area Emergency Stabilization and Rehabilitation guidelines. The team requested received an extension of time to submit the plan within 12 days of fire containment. The BAER Team was requested to evaluate all the lands within the burn area regardless of jurisdiction. That was accomplished and copies of the BAER Plan have been submitted to NRCS for distribution to local agencies.

Erv Gasser, National Park Service, Seattle, Washington 206-220-4263

PART A FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	French	Jurisdiction	Acres
Fire Number	CA-SHU-006398		
Agency Unit	Redding Area	Bureau of Land Management	7,153
Agency Unit	Whiskeytown NRA	National Park Service	409
Agency Unit		Sierra Pacific Industries	866
Agency Unit		Other private lands	4,895
Region	Pacific West		
State	California		
County(s)	Shasta		
Ignition Date/Manner	August 14, 2004 Cause unknown		
Zone			
Date Contained	August 20, 2004 at 2000		
Date Controlled	No Estimate	TOTAL	13,323

PART B NATURE OF PLAN

Type of Plan (check one box below)

Initial Submission	X
Update and Revising Initial Submission	
Supplying Information For Accomplishment To Date On Work Underway	
Different Phase Of Project Plan	
Final Report (To Comply With The Closure Of The EFR Account	

PART C EMERGENCY STABILIZATION OBJECTIVES

- Locate and stabilize severely burned conditions that pose a direct threat to human life, property, or critically important cultural and natural resources.

- Recommend post-fire emergency stabilization prescriptions that prevent irreversible loss of natural and cultural resources.

- Conduct immediate post-burn reconnaissance for fire suppression related impacts to threatened and endangered (T&E) species, and cultural sites.

- Develop monitoring specifications designed to document relative effectiveness of emergency stabilization treatments or whether additional emergency stabilization treatments are required.

PART D - SUMMARY OF APPROVAL AUTHORITIES BUREAU OF LAND MANAGEMENT

ACTIVITIES REQUIRING LINE OFFICER'S APPROVAL Fire Suppression Damages (charged to Fire Suppression)	• COST
S-1 Dozer line Repair	
S-2 Hand line Repair	
S-3 Repair roads impacted by Suppresssion	
S-4 Road Closure/Signs	
C-4 Finish Cultural Resource Assessment	$1,250

ACTIVITIES REQUIRING NATIONAL OFFICE APPROVAL Emergency Stabilization Requests (Charged to ES).	• COST
W-1 Floatable Debris Removal	$50,160
W-8 Early Warning System	$40,000
V-1 Non-Native Invasive Species Control	$39,064
V-2 Aerial Seeding	$382,760
V-3 Veg. Monitoring	$15,108
F-1 Tree Hazard Mitigation	$6,475
F-2 Tree Hazard Mitigation	$6,170
C-1 Cultural Resource Stabilization	$435
C-3 Increased Agency Presence	$20,000
O-1 Project Management	$228,594
SUBTOTAL	**$788,766.00**

PART D - SUMMARY OF APPROVAL AUTHORITIES NATIONAL PARK SERVICE

ACTIVITIES REQUIRING LINE OFFICER'S APPROVAL Fire Suppression Damages (charged to Fire Suppression)	• COST
S-1 Dozer line Repair	
S-2 Hand line Repair	
S-3 Repair roads impacted by Suppresssion	
S-4 Road Closure/Signs	
C-2 Cultural Resource Stabilization	$19,880
C-4 Finish Cultural Resource Assessment	$1,250
C-5 Native American Consultation	$500

ACTIVITIES REQUIRING REGIONAL OFFICE APPROVAL Emergency Stabilization Requests (Charged to ES).	• COST
V-1 Non-Native Invasive Species Control	$44,506
V-3 Veg. Monitoring	$9,896
F-1 Tree Hazard Mitigation	$5,332
F-2 Tree Hazard Mitigation	$2,672
C-1 Cultural Resource Stabilization	$495
C-3 Increased Agency Presence	$20,000
O-1 Project Management	$45,640
SUBTOTAL	**$128,541.00**

PART E SUMMARY OF ACTIVITIES

The SUMMARY OF ACTIVITIES table identifies emergency stabilization costs charged or proposed for funding from fire suppression rehabilitation, emergency stabilization, or rehabilitation funding sources. The total cost of the treatments excluding the costs absorbed by the fire (fire crew, labor and associated overhead) is displayed as either Fire Suppression Rehabilitation (**SR**), Emergency Stabilization (**ES**), Rehabilitation (**R**), or Agency Operations/Other (**OP/O**).

PART E -- BUREAU OF LAND MANAGEMENT

NO.	TREATMENT SPECIFICATION	UNIT	UNIT COST	# OF UNITS	COST BY FUND SOURCE			IMPLEMENTATION METHOD	SPECIFICATION TOTAL
					SR	ES	R		
S-1	Dozer line Repair	Miles		17.2				F	
S-2	Handline Repairs	Miles		3.7				F	
S-3	Repair roads impacted by suppression	Miles		5.0				F	
S-4	Road Closure/Signs			10				F	
W-1	Floatable Debris Removal	Mile	26,400	1.9		EWP, ES		C	$50,160
W-8	Early Warning System	Gage	$40,000	1		ES			$40,000
V-1	Non-Native Invasive Species Control	Acres	$265.74	147		ES		P, C	$39,064
V-2	Aerial Seeding	Acres	$280	1,367		ES		P, C	$382,760
V-3	Veg. Monitoring	Surveys	$1,250	15		ES		P	$15,108
F-1	Tree Hazard Mitigation	Tree	$202	50		ES		P, C	$6,475
F-2	Tree Hazard Mitigation	Inventory		1		ES		P, C	$6,170
C-1	Cultural Resource Stabilization	Site	$435	1		ES		P	$435
C-3	Increased Agency Presence	Acres	$2.75	7,350		ES		P	$20,000
C-4	Finish Cultural Resource Assessment	Acres	$50	225				F	11,250
C-4	Finish Cultural Resource Assessment	Sites	$4,502	2				F	4,502
0-1	Project Management	months		12		ES		P, C	$228,594
									$804,518.00
TOTALS			-				-		

PART E SUMMARY OF ACTIVITIES

The SUMMARY OF ACTIVITIES table identifies emergency stabilization costs charged or proposed for funding from fire suppression rehabilitation, emergency stabilization, or rehabilitation funding sources. The total cost of the treatments excluding the costs absorbed by the fire (fire crew, labor and associated overhead) is displayed as either Fire Suppression Rehabilitation (**SR**), Emergency Stabilization (**ES**), Rehabilitation (**R**), or Agency Operations/Other (**OP/O**).

PART E – NATIONAL PARK SERVICE

NO.	TREATMENT SPECIFICATION	UNIT	UNIT COST	# OF UNITS	COST BY FUND SOURCE			IMPLEMENTATION METHOD	SPECIFICATION TOTAL
					SR	ES	R		
S-1	Dozer line repair	Miles		1.2				F	
S-2	Hand line repair	Miles		0.5				F	
S-3	Repair roads impacted by suppression	Miles		3.0				F	
S-4	Road Closure/Signs			2				F	
V-1	Non-Native Invasive Species Control	Acres	$263.35	169		ES		P, C	$44,506
V-3	Veg. Monitoring	Surveys	$1,250	5		ES		P	$9,896
F-1	Tree Hazard Mitigation	Tree	$202	22		ES		P, C	$5,332
F-2	Tree Hazard Mitigation	Inventory		1		ES		P, C	$2,672
C-1	Cultural Resource Stabilization	Site	$495	1		ES		P	$495
C-2	Cultural Resource Stab. Suppression	Site	$6,626.67	3		F		P, C	$19,880
C-3	Increased Agency Presence	Acres	$21.75	460		ES		P	$20,000
C-4	Finish Cultural Resource Assessment	Acres	$50	25		F		P, C	1,250
C-5	Native American Consultation	Site	$500	1		F		C	$500
0-1	Project Management	months		4		ES		P, C	$45,640
									$150,171.00
TOTALS							-		

PART E SUMMARY OF ACTIVITIES

The SUMMARY OF ACTIVITIES table identifies emergency stabilization costs charged or proposed for funding from fire suppression rehabilitation, emergency stabilization, or rehabilitation funding sources. The total cost of the treatments excluding the costs absorbed by the fire (fire crew, labor and associated overhead) is displayed as either Fire Suppression Rehabilitation (**SR**), Emergency Stabilization (**ES**), Rehabilitation (**R**), or Agency Operations/Other (**OP/O**).

PART E – NATURAL RESOURCES CONSERVATION SERVICE

NO.	TREATMENT SPECIFICATION	UNIT	UNIT COST	# OF UNITS	COST BY FUND SOURCE			IMPLEMENTATION METHOD	SPECIFICATION TOTAL
					SR	ES	R		
S-1	Dozer line Repair	Mile				F			
S-2	Hand line Repair	Miles		3.2				F	
S-3	Repair roads impacted by suppression	Miles		31				F	
W-1	Floatable Debris Removal	Mile	$26,400	3.6		EWP		C	$95,040
W-2	Flood Hazard Warning Signs	Signs	146.75	8		ES		M, C	$1,174
W-3	Post-Flood Event Road Cleanup		$2,400			EWP		C	$60,000
W-4	Culvert Eval. & Cleaning	Miles	$2,296	25		EWP		C	$57,400
W-5	Structural Protection (K-Rails)	K-Rail	$805.98	51		ES		C	$41,105
W-6	Structural Protection (Sandbags)	Sandbag	$3.32	18,000		ES		C	$59,860
W-7	Ditch Cleaning	Storms	$30,056	5		EWP		P, C	$150,280
V-2	Aerial Seeding	Acres	$280	1,071		ES		P, C	$299,884
F-1	Tree Hazard Mitigation	Tree	$202	57		ES		P, C	$14,250
F-2	Tree Hazard Mitigation	Inventory		Included with BLM		ES		P, C	$2,500
									$781,493.00

PART F - SPECIFICATIONS

		Specification
OPERATIONS		
	S-1	Dozerline
	S-2	Handline
	S-3	Suppression Road Repair
	S-4	Road closures-Gates/Blockages
WATERSHED		
	W-1	Floatable Debris Removal
	W-2	Flood Hazard Warning Signs
	W-3	Post Flood Event Road Cleanup
	W-4	Culvert Evaluation/Clean/Remove/Replace/Install
	W-5	Structural Protection - K-Rails
	W-6	Structural Protection - Sandbags
	W-7	Hydro-Mulch
VEGETATION		
	V-1	Non-native Invasive Species Control
	V-2	Revegetation
	V-3	Treatment Effectiveness Monitoring
FORESTRY		
	F-1	Tree Hazard Mitigation
	F-2	Long Term Tree Hazards
CULTURAL		
	C-1	Cultural Resource Emergency Stabilization
	C-2	Cultural Resource Stabilization - Suppression
	C-3	Increase Agency presence
	C-4	Finish Cul Res Assessment
	C-5	Native American Consultation
ADMINISTRATION		
		Implementation Leader/Administrative Support
		Planning Cost

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**DOZER LINE REPAIR**	**JURSIDICTIONS:**	**NPS, BLM-**
PART E: LINE ITEM:	**S-1, Dozer line Repair**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.2.13 Wildland Fire Suppression Activity Damage Rehabilitation**	**SPECIFICATION TYPE:**	**FS**

I. WORK TO BE DONE

A. General Description:

Repair of suppression constructed "Dozer line" is necessary to avoid excessive soil erosion and restore natural landscape surface water flows. Repair will also serve to restrict undesired access by off-highway vehicles, motorcycles, and "all-terrain vehicles" (ATVs), and provide for re-establishment of pre-incident road closures where affected by suppression access needs.

B. Location (Suitable) Sites:

Reference Suppression Impacts Map, for location of known dozer line, Appendix III. Additional lines should be repaired as they are discovered in the field. All newly discovered lines should be mapped.

C. Design/Construction Specifications:

1. Return soil side-cast berms, recover "fill" materials and replace in "cut" banks along dozerline blending disturbed areas with natural contours. This specification is best achieved with use of an excavator with 2 to 3 cubic yard bucket and opposable thumb, with capabilities of working on steep slopes (50-60%) and capable of having a 30 to 35 ft. reach.

2. Compacted soils from intensively used areas from suppression equipment should be scarified.

3. Waterbar spacing should be installed according to the following standards depending upon slope and soil susceptibility to erosion with waterbar spacing decreasing on steeper slopes. Generally:

   a. Waterbars are to be built on slopes greater than 5%.

   b. Waterbars should be skewed horizontally from the fall line of the slope (not the dozer) approximately 15 to 20 degrees from horizontal and drained away from the burned areas if possible.

   c. Waterbars are spaced as follows:

Slope	Spacing
1-20%	100 feet
21-40%	50 feet
≥41%	25 feet

   d. Utilize natural rolls and dips whenever possible.

   e. Spread branches, wood, rock, sod, or other materials to naturalize the dozer line and further retard soil movement. Scattered materials should be randomly placed along the dozer line.

   f. Hand crews may be used to construct waterbars on slopes greater than 50% (with little to no rock) or in areas too hazardous for safe excavator use.

   g. Hand crews may be used to augment scattering of woody debris/slash to naturalize the dozer line and further retard erosion, striving to achieve a minimum of 30% surface cover.

   h. Remove all trash and equipment associated with suppression operations.

   i. Close-off dozer line access at all road crossings by creating 3' high "tank traps".

j. In Divisions A/B, no heavy equipment or vehicle use on Old Lewiston Turnpike.

4. Approximately 197 acres of dozer lines require reseeding and mulching on BLM managed lands. The 6 acres of dozer line on NPS managed lands will not be reseeded, but allowed to re-vegetate naturally. Reseeding should be accomplished by ATV mounted or hand seed spreaders. In cases where ATVs are used, a section of chain link fence should be dragged behind to help incorporate the seed. List below is the native seed mix to be used and quantity of seed required per acre:

Name	Scientific Name	Rate: lbs/ac
Regreen	Triticum aestivum x Elytrigia elongata	10
California brome	Bromus carinatus	7
Blue wild rye	Elymus glaucus	7
Sky lupine	Lupinus nanus	1

It is recommended that electric seed spreaders be purchased to mount on the ATVs for the reseeding effort.

Mulch must be certified weed-free wheat or rice straw, delivered as dry bales. The recommended application rate is 2-3 bales/1000 sq. ft., requiring an 80 - 90% coverage of bare ground to a depth of 1-3 inches thick.

D. Purpose of Treatment Specification:

To prevent surface and gully erosion on lands disturbed by dozerline. Waterbars are designed to retain sediment and become inconspicuous over 4 to 6 year timeframe, limit unauthorized vehicular access, and provide long-term stabilization to existing adjacent roads. Dozers are not suited to re-contour dozer suppression lines on moderate to steep slopes or in timbered vegetation types and may (if used) increase soil/vegetation disturbance. Dozers are also not suited to replace large woody debris back onto the dozer line when re-contouring, instead excavators and back hoes are more efficient in this effort.

E. Treatment Effectiveness Monitoring

Visually inspect line after rain events and correct any erosion problems.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Cost charged to fire suppression account – not tracked in this plan	F
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	acres	F	392	F	F	C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression	ES = Emergency Stabilization	P = Agency Personnel Services
ESR = Emergency Stabilization & Rehab.	R = Rehabilitation	C = Contract
OP/O = Agency Operating Fund	FS = Fire Suppression	EFC = Emergency Fire Contract
EWP = Emergency Watershed Program		FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	F

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Operations Assessment - Appendix I, Fire Suppression Map – Appendix III

IV. UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	17.2 miles (197.2 acres)	F
NPS	1.2 miles (5.9 acres)	F
PRIVATE, SPI & U.S.F.S	21.9 miles (189 acres)	F
TOTAL	40.3 miles (392.1 acres)	F

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**HAND LINE REPAIR**	**JURSIDICTIONS:**	**BLM, NPS**
PART E: LINE ITEM:	**S-2, Hand Line Repair**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.2.13 Wildland Activity Damage Rehabilitation**	**SPECIFICATION TYPE:**	**FS**

IV. WORK TO BE DONE

A. General Description:

Repair of suppression constructed "hand lines" is necessary to avoid erosion that would result in gullies and to restore natural surface flows.

B. Location (Suitable) Sites:

Reference Fire Suppression Impacts Map for specific locations, Appendix III. Additional handline should be repaired as they are discovered in the field. All newly discovered line should be documented and repaired.

C. Design/Construction Specifications:

1. Use hand tools only – chainsaw included.
2. Trenching (if any) should be filled in and the handline restored to blend with the undisturbed soil contours. Berms, topsoil, and organic matter should be pulled back onto the handline. Green trees/branches, dead limbs, and cut downed logs are to be scattered onto the handline to obliterate evidence of the lines as much as practical.
3. Waterbar spacing should be every 50 feet depending upon slope and soil susceptibility to erosion with Waterbar spacing decreasing on steeper slopes. Generally:

SLOPE	SPACING
0-5%	400 feet
6-10%	300 feet
11-20%	200 feet
21-40%	100 feet
41-60%	50 feet or less

4. Waterbars should be skewed horizontally from the fall line of the slope (not the handline) approximately 15 to 20 degrees from horizontal and drained away from the burned areas if possible. Waterbars should not prevent the natural drainage pattern of the adjacent landscape. Waterbars are only intended to stabilize disturbance and should gradually disappear, blending with the adjacent terrain within a 2 to 4 year timeframe.
5. Utilize natural rolls and dips whenever possible.
6. Scatter branches, wood, rock, sod, pine needles, or other material to naturalize the fire line and further retard mineral soil movement. Scattered material should be randomly placed over the handline. Strive for 65% to 85% ground cover on areas treated with scattered materials to prevent soil erosion.
7. Remove all trash, equipment, and flagging.

D. Purpose of Treatment Specification:

To prevent surface and gully erosion along the length of the handline.

E. Treatment Effectiveness Monitoring

Visually inspect hand line subsequent to rain events and correct any drainage problems identified.

V. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
Handline rehabilitated by fire crews assigned to the fire – cost not tracked in ESR Plan	F
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
TOTAL CONTRACT COST	F

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	miles		7.4		F	FC
2005						
2006						
TOTAL	miles		7.4		F	FC

FUNDING SOURCES	**SPECIFICATION TYPE**	**METHOD OF COMPLETION**
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	

4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	F

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

VI. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Operations Assessment – Appendix I and Fire Suppression Map – Appendix III

IV. UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	3.7 miles	F
NPS	0.5 miles	F
PRIVATE	3.2 miles	F
TOTAL	7.4 miles	F

Suppression - Hand Line





INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	**REPAIR ROADS IMPACTED BY SUPPRESSION ACTIVITIES**	**JURSIDICTIONS:**	**BLM, NPS, SHASTA Co.**
PART E: LINE ITEM:	**S-3 Suppression Road Repair**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.2.13 Wildland Fire Suppression Activity Damage Rehabilitation**	**SPECIFICATION TYPE:**	**F**

WORK TO BE DONE

A. General Description:

Emergency repair and stabilization of pre-existing roads is necessary to provide for safe public & private access, and to avoid erosion gullies and ponding on road surfaces due to blockage of road drainage channels by dozer line berms or by road surface degradation caused by intensive use by Suppression forces. The intent is not to improve the road, but to re-establish and strengthen drainage structures capable of resisting functional failure from higher than normal (estimated) burned area sheet and channel erosion flows, and to facilitate the hardening of the road surface. Repair and stabilization is needed to maintain reliable access into the burned area such as existed prior to the wildfire event.

B. Location (Suitable) Sites:

All roads directly degraded or impacted by "Wildfire Suppression" activities. Listed are those roads used by suppression forces, see the "Road Repair and Closure Map" for the location of affected road segments, Appendix III.

Shasta County Roads	1. County Line Road (mix of BLM, Private, local gov't) 2. Trinity Mountain Road 3. Highland Ridge Road 4. Tom Green Mine Road 5. French Gulch Road 6. Cline Gulch Road
National Park Service	1. Merry Mountain Road 2. Slate Creek Road 3. Pitman Spur Road
BLM	1. North County Line Road

C. Design/Construction Specifications:

1. Pull berms on outside edge of road including side cast material back onto the grade surface. Separate woody debris from side cast material and dispose off site if necessary.
2. A general recommendation is to out-slope roads 5-10 degrees.
3. Clean "drain" ditches to restore rolling grade dip functions.
4. Harden or restore existing drainage surfaces and structures (waterbars, rolling grade dips, and natural drains) with dips or raised berms capable of facilitating existing traffic flows and vehicle types.
5. Construct rolling grade dips or waterbars as necessary to accelerate stabilization of road surfaces impacted by

suppression forces.

6. Clean culvert inlets/outlets with backhoe and/or hand crews as needed to maintain hydraulic capacity.

7. In extreme dry climates or soil conditions compaction of rolling grade dips may be difficult or impossible without the addition of water. Auxiliary equipment such as water truck (with spray nozzle) may be needed to facilitate re-establishment of road conditions, which were degraded by "Wildfire Suppression" activities.

D. Purpose of Treatment Specification:

This action is consistent with natural resource protection methods that incorporate State and Federal "Best Management Practices (BMPs), which mitigate and reduce watershed and water quality impacts from sources of sediment. This action is also consistent with the "Incident Objectives", specifically item #2 Protect environment and cultural resources whenever possible. Protection of these resources (roads) as used by "Suppression" activities will ensure continued access into the burned area as needed to implement emergency repair activities, while providing access to private and public facilities.

E. Treatment Effectiveness Monitoring

Visually inspect line after rain events and correct any erosion problems.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
Work to be accomplished by fire crews assigned to fire suppression repair or hired under contract for fire repairs activities	F
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
Work to be completed by equipment assigned to fire suppression repair.	F
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Mobilization and demobilization of equipment to individual job sites.	F
TOTAL CONTRACT COST	F

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	miles	$2,000 (BLM & Co.) $7,000 (NPS)	36 3	$93,000	F	C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression Rehabilitation ES = Emergency Stabilization R = Rehabilitation EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	F
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Appendix I, Operations Assessment. See Appendix III, Road Repair and Closure Map

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	5 miles	$10,000 (F)
NPS	3 miles	$21,000 (F)
SHASTA COUNTY	31 miles	$62,000 (F)
TOTAL	39 miles	$93,000 (F)

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	**Emergency Road Closures**	**JURSIDICTIONS:**	**BLM, NPS**
PART E: LINE ITEM:	**S-4 Road Closures**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.3.3.1 Minor facilities**	**SPECIFICATION TYPE:**	**FS**

WORK TO BE DONE

A. General Description:

Replace two pre-existing gates on the NPS boundary which were destroyed by fire suppression activities. Construct ten road or dozer line closures on BLM lands for the protection of human safety and emergency stabilization treatments from damage resulting from unauthorized off-highway-vehicles (OHVs). Prior to the fire event, many of the former miner's trails and old skid roads on BLM lands were overgrown with chaparral vegetation and/or severely eroded as to make them impassable by off-highway-vehicles. Dozers used during suppression activities opened several of these abandoned roads and created other openings. Some of these road traces lead to mine sites with open shafts & hazardous materials, which have become "attractive nuisances" now that the fire has removed vegetation which previously obscured them from view. The intent is provide for safe recreational use of BLM lands, but also allow the necessary timeframe for stabilization of soils and recovery of native vegetation, while protecting exposed sensitive archeological sites from looting.

B. Location (Suitable) Sites:

See Roads Repair & Temporary Closure Map for specific locations, Appendix III.

C. Design/Construction Specifications:

1. Replace the two NPS boundary gates with the standard steel pipe design used at Whiskytown National Recreation Area.
2. BLM closures will consist of a suite of closure types based on site conditions. They may include heavy duty steel pipe gates (NPS style), earthen tank traps, boulders, guard rail, or a combination of devices designed to deny access.
3. Excavating equipment will be required to construct the closure and contour the surrounding site. Berms created by fire suppression activities will be spread over the site, rocks, sticks, roots, and other materials will be randomly placed to retard soil erosion and reduce visibility.
4. Place signs (12) at each site explaining the purpose and need for the temporary closure.
5. Replace NPS boundary sign on Trinity Mountain Road destroyed by suppression activities.

D. Purpose of Treatment Specification:

The replacement of the two pre-existing gates NPS gates will protect the park from unauthorized entry. The purpose of the BLM closures is to allow emergency stabilization treatments to become established, which will retard soil erosion and promote rapid recovery of native vegetation. By controlling access, the visiting public is prevented from entering dangerous areas. Closures will also: 1) protect private in-holdings; 2) prevent access into sensitive archeological sites; 3) allow protection of emergency stabilization treatments; 4) provide conditions for natural recovery of native vegetation; and 5) provide for safety of visiting public.

E. Treatment Effectiveness Monitoring

Visually inspect area treated and make repairs as needed.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Work to be performed under contract.	F
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	**Closure** **Signs**	$2,000 BLM $2,500 NPS $800 $400	10 BLM 2 NPS 12 BLM 2 NPS	$35,400	F	C
2005						
2006						
TOTAL						

FUNDING SOURCES	**SPECIFICATION TYPE**	**METHOD OF COMPLETION**
F= Fire Suppression Rehabilitation ES = Emergency Stabilization R = Rehabilitation EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	

4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Appendix I Operations Assessment and Road Repair & Closure Map Appendix III

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	10 closures 12 signs	$20,000 (F) $9,600 (F)
NPS	2 closures 2 signs	$5,000 (F) $800
PRIVATE	0	0
TOTAL	12 closures 14 signs	$25,000 (F) $10,400 (F)

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**CLEAR STREAM CHANNELS AND FLOODPLAINS OF FLOATABLE DEBRIS**	**JURSIDICTIONS:**	**BLM, PVT**
PART E: LINE ITEM:	**W-1, Floatable Debris Removal**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.3.9.2 Watershed & Property Protection**	**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

Remove floatable debris and vegetation from stream channels, stream banks, and floodplains. Crews and heavy equipment will be used to remove debris to maximize channel capacity and eliminate floatable debris that could be transported downstream and block culverts or divert flows out of channels. Debris includes dead standing trees in channel, downed trees, branches, household trash, etc.

B. Location (Suitable) Sites:

See Watershed Treatment Map in Appendix III.

C. Design/Construction Specifications:

8. Remove floatable debris from stream channels and adjoining floodplains by hand or with an excavator and haul out of the floodplain to prevent the debris from being mobilized in flood events.
9. Household debris and other trash should be recycled or disposed of appropriately at landfills or transfer stations.

D. Purpose of Treatment Specification:

To maximize flood channel capacity and eliminate obstructions that could block culverts, cause overland flows, damage bridges, roads or other structures.

E. Treatment Effectiveness Monitoring

Inspect stream channels after flood events to remove newly deposited floatable debris.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Labor crew, excavator, front-end loader, dumpsters, and transport @ $26,400/mile of channel x 1.9 miles (BLM) =	$50,160
Labor crew, excavator, front-end loader, dumpsters, and transport @ $26,400/mile of channel x 3.6 miles (PVT) =	$95,040
TOTAL CONTRACT COST	**$145,200**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	Mile	$26,400	5.5	$145,200	EWP, ES	C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression	ES = Emergency Stabilization	P = Agency Personnel Services
ESR = Emergency Stabilization & Rehab.	R = Rehabilitation	C = Contract
OP/O = Agency Operating Fund	FS = Fire Suppression	EFC = Emergency Fire Contract
EWP = Emergency Watershed Program		FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

VII. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I and Watershed Treatment Map Appendix III.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	1.9	$50,160
NPS		
PRIVATE	3.6	$95,040
TOTAL	5.5	$145,200

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**INSTALL FLOOD HAZARD WARNING SIGNS**	**JURSIDICTIONS:**	**PVT**
PART E: LINE ITEM:	**W-2, Flood Hazard Warning Signs**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.10 Public Health and Safety**	**SPECIFICATION TYPE:**	**ES**

VIII. WORK TO BE DONE

A. General Description:

Flood hazard warning signs should be developed for immediate installation on roads entering the burned area and where streams cross roads downstream of the burned area for the protection of life and property. These signs are necessary to inform the public of immediate danger posed by flash floods generated by storms.

B. Location (Suitable) Sites:

On Trinity Mountain Road, Highway 299, and French Gulch Road. See Watershed Treatment Map, Appendix III.

C. Design/Construction Specifications:

1. All signs will be constructed of DDO plywood with black lettering on a reflectorized yellow background with wording that states:

> **WARNING**
>
> This Area Prone to Flash Floods – Falling Rock
>
> Do Not Enter During Rainfall

2. Flash flood warning signs will be rectangular, reflective signs (38-inches X 36-inches) and will be mounted with 4 carriage bolts per sign on two steel U channel posts.

D. Purpose of Treatment Specification:

To provide warning to residents and the general public about potential floods and falling rock on roads.

E. Treatment Effectiveness Monitoring

IX. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
TOTAL PERSONNEL SERVICE COST	

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
Ten-foot steel U channel posts w/ 2 per sign @ $14.00/post x 16 =	$224
4 3/8 inch carriage bolts/nuts/washer assembles per sign @ $3.70 each x 8 =	$30
TOTAL MATERIAL AND SUPPLY COST	**$254**
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Contract labor installation @ $65/sign x 8 signs =	$520
Contract sign production @ $50/sign x 8 signs =	$400
TOTAL CONTRACT COST	**$920**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	Sign	$146.75	8	$1,174	ES	M,C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	M,C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services	M = Materials/Supplies	T = Travel	C = Contract	F = Suppression

X. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I and Watershed Treatment Map Appendix III.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM		
NPS		
PRIVATE	8	$1,174
TOTAL	8	$1,174

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**POST-FLOOD EVENT ROAD CLEANUP**	**JURSIDICTIONS:**	**PVT**
PART E: LINE ITEM:	**W-3 Post-Flood Event Road Cleanup**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.9.2 Watershed & Property Protection**	**SPECIFICATION TYPE:**	**ES**

XI. WORK TO BE DONE

A. General Description:

During major storm events, road-stream crossings and other sections of roadways can be expected to flood. Flood events will erode or deposit sediment and debris on the roadway making them impassible and unsafe. This specification provides for the clearing of sediment and debris from roadways after major storm events.

B. Location (Suitable) Sites:

Open roads within the fire area (Trinity Mountain Road, roads on east side of French Gulch, Tom Green Road, French Gulch Road, Highland Ridge Road, and Cline Gulch Road).

C. Design/Construction Specifications:

1. Roads should be patrolled after storms to determine locations where work is needed.
2. Use front-end loader and dump truck to clear debris and sediment from roadways after major storm events.
3. Deposit any removed debris out of the floodplain to high ground, but not back into the channels they came from, to prevent its transport back into channels and onto roadway.

D. Purpose of Treatment Specification:

To provide for public access and safety on roadways after major storm events.

E. Treatment Effectiveness Monitoring

Inspect roadways after storm events to determine if further treatment is needed.

XII. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Excavators, front-end loaders, dump truck, graders @ $800/hour x 75 hours (5 storm events) =	$60,000
TOTAL CONTRACT COST	**$60,000**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	mile	$2,400	25	$60,000	EWP	C
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression	ES = Emergency Stabilization	P = Agency Personnel Services
ESR = Emergency Stabilization & Rehab.	R = Rehabilitation	C = Contract
OP/O = Agency Operating Fund	FS = Fire Suppression	EFC = Emergency Fire Contract
EWP = Emergency Watershed Program		FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
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2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM		
NPS		
PRIVATE	25	$60,000
TOTAL	25	$60,000

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**CULVERT EVALUATION AND CLEANING**	**JURSIDICTIONS:**	**PVT**
PART E: LINE ITEM:	**W-4 Culvert Evaluation and Cleaning**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.21 Watershed & Property Protection Strategy**	**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

Culverts that are in areas at risk of flooding should be evaluated and cleaned if necessary to ensure maximum flow capacity. Any culvert replacement, installation, or removal needs should be identified. Subsequent to flood events culverts should be inspected and re-cleaned if necessary.

B. Location (Suitable) Sites:

Open roads within fire area.

C. Design/Construction Specifications:

1. Evaluate roads and identify culvert maintenance needs.
2. Re-establish inboard ditches on all open roads.
3. Shovel and flush debris from culverts and place outside of channel where it cannot re-enter stream channels.
4. Use backhoe and dump truck to remove debris and fill from channel and around culvert. Use water tender and/or fire engine to flush debris out of culverts.
5. Install 110 foot long 36" culvert at Bennett property.
6. Install 150 foot long 72" culvert at Daily property.
7. If culvert replacement, installation, or removal needs are identified, a supplemental funding request should be filed to request additional funding.

D. Purpose of Treatment Specification:

To maximize culvert and channel capacity to handle flood flows and protect road beds.

E. Treatment Effectiveness Monitoring

Visually inspect each culvert in flood prone areas subsequent to rain events and clean those that are blocked.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
TOTAL PERSONNEL SERVICE COST	

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Backhoe, engine, and dumptruck @ $250/hour x 80 hours =	$20,000
Culvert, backhoe, and underground utility clearance to install culvert at Bennett property =	$6,400
Culvert, excavator, hardened intake, trash rack, and underground utility clearance to install culvert at Daily property =	$31,000
TOTAL CONTRACT COST	**$57,400**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	Miles	$2,296	25	$57,400	EWP	C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

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2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required -- cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services	M = Materials/Supplies	T = Travel	C = Contract	F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM		
NPS		
PRIVATE	25	$57,400
TOTAL	25	$57,400

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**STRUCTURAL PROTECTION (K-RAILS)**	**JURSIDICTIONS:**	**PVT**
PART E: LINE ITEM:	**W-5, Structural Protection (K-Rails)**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.3.9.2 Public Life and Safety**	**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

Place K-Rail (Jersey) barriers around structures that are at risk of flooding to divert flows away from the structures in the event that stream channels overflow their banks.

B. Location (Suitable) Sites:

See Watershed Treatment Map, Appendix III and Specification Diagram Forms, Appendix V.

C. Design/Construction Specifications:

1. Complete cultural clearance for locations where K-Rails will be placed.
2. Install K-Rails at appropriate locations on the upstream or upslope side of structures utilizing a low-boy transport and front end loader.
3. K-Rails should be placed end-to-end together on level ground. 110 feet of the K-rails must be in 10' lengths (as opposed to 20 foot lengths). The remainder of the K-rails can be in either 10 or 20 foot lengths.
4. To maximize flood protection, K-Rails should be inter-pinned with 30-inch length, 8 gauge rebar.
5. Armour K-rails with 1 row of sandbags on outboard side.
6. K-Rails must not be placed in drainages.

D. Purpose of Treatment Specification:

Several homes and other facilities lie within flood and debris flow prone areas within and downstream of the burned area. Although emergency stabilization treatments cannot prevent flooding of or damage to structures during all magnitudes of storms, treatments can be effective in reducing flooding and damage. K-rails are an effective treatment where high velocity debris flows that may carry large debris such as boulders, limbs, etc. are expected to occur, not where low velocity flooding or sediment deposition may occur.

E. Treatment Effectiveness Monitoring

Inspect K-Rail performance after major flood events and add additional K-Rails or realign K-Rails to improve effectiveness where necessary.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
Cultural clearance: GS-12 @ $28/hour x 10 hours =	**$280**
TOTAL PERSONNEL SERVICE COST	**$280**

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Acquire and deliver K-Rails to sites with lowboy and front-end loader, install with front-end loader @ $875/20-foot K-Rail x 41 K-rails =	$35,875
Acquire and deliver K-Rails to sites with lowboy and front-end loader, install with front-end loader @ $450/10-foot K-Rail x 11 K-rails =	$4,950
TOTAL CONTRACT COST	**$40,825**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	K-Rail	$805.98	51	$41,105	ES	C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

XIII. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I, Watershed Treatment Map Appendix III, and Specification Diagram Forms, Appendix V.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM		
NPS		
PRIVATE	51	$41,105
TOTAL	51	$41,105

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**STRUCTURAL PROTECTION (SANDBAGS)**	**JURSIDICTIONS:**	**PVT**
PART E: LINE ITEM:	**W-6, Structural Protection (Sandbags)**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**6.3.9.2 Public Life and Safety**	**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

Place sandbags around structures that are at risk of flooding to divert flows away from the structures in the event that stream channels overflow their banks.

B. Location (Suitable) Sites:

See Watershed Treatment Map, Appendix III and Specification Diagram Forms, Appendix V.

C. Design/Construction Specifications:

1. Complete cultural clearance for locations where sandbags will be placed.
2. Purchase and fill sandbags and deliver to central location for placement.
3. Place sandbags at appropriate locations on the upstream or upslope side of structures.
4. Sandbags should be placed end-to-end in an interlocking manner and stacked. The site-specific specification diagram forms illustrate the configuration and height to stack the bags at each site.
5. Store any extra sandbags in locations where they can be easily deployed if needed.
6. Sandbags must not be placed in drainages.

D. Purpose of Treatment Specification:

Several homes and other facilities lie within flood and debris flow prone areas within and downstream of the burned area. Although emergency stabilization treatments cannot prevent flooding of or damage to structures during all magnitudes of storms, treatments can be effective in reducing flooding and damage. Sandbags are an effective treatment where low velocity flows or nuisance sediment deposits are expected to occur, not where higher velocity flows (i.e. boulders) may occur.

E. Treatment Effectiveness Monitoring

Inspect sandbag placement and height after major flood events and add additional sandbags or realign sandbags to improve effectiveness where necessary.

XIV. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
Cultural clearance: GS-12 @ $28/hour x 10 hours =	**$280**
TOTAL PERSONNEL SERVICE COST	**$280**

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Purchase and deliver sandbags and sand with trucks and install with crew @ $3.30/sandbag x 18,000 sandbags =	$59,400
TOTAL CONTRACT COST	$59,400

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	Sandbag	$3.32	18,000	$59,680	ES	C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I, Watershed Treatment Map Appendix III, and Specification Diagram Forms, Appendix V.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM		
NPS		
PRIVATE	18,000	$59,680
TOTAL	18,000	$59,680

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**DITCH CLEANING**	**JURSIDICTIONS:**	**PVT**
PART E: LINE ITEM:	**W-7 Ditch Cleaning**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.9.2 Watershed & Property Protection**	**SPECIFICATION TYPE:**	**ES**

XV. WORK TO BE DONE

A. General Description:

Improve the drainage and capacity of existing ditches that run through the town of French Gulch. Excavate sediment and remove vegetation. Evaluate culverts in ditch for maintenance or replacement.

B. Location (Suitable) Sites:

Fire ditch through French Gulch. See Watershed Treatment Map, Appendix III.

C. Design/Construction Specifications:

1. Complete cultural clearance for work on the ditches.
2. Ditches should be cleaned before the rainy season starts.
3. If necessary, remove existing items that may be obstacles to improving the drainage (debris, trash, etc.).
4. Use backhoe to excavate existing ditches.
5. Deposit any removed sediment and debris out of the channels and floodplains to high ground to prevent its transport back into channels and onto roadways.
6. Level off excess sediment and reshape slope where possible. Use front-end loader and dump truck to remove excess sediment where there isn't anywhere to store it along the ditch.
7. Shovel and flush debris and sediment from culverts that are in the ditch.
8. Inspect ditches after flood events and perform maintenance as needed.

D. Purpose of Treatment Specification:

Sediment eroding off burned slopes will deposit in the ditches. Increased flows will also run down the ditches. Cleaning the ditches will maximize their capacity to carry flows and store sediment.

E. Treatment Effectiveness Monitoring

Inspect ditches after large storm events to determine if further treatment is needed.

XVI. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
Cultural clearance: GS-12 @ $28/hour x 10 hours =	$280
TOTAL PERSONNEL SERVICE COST	**$280**

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Backhoe, front-end loader, and dump truck @ $300/hour x 500 hours (initial cleaning and 4 storm events) =	$150,000
TOTAL CONTRACT COST	**$150,000**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Storms	$30,056	5	$150,280	EWP	P,C
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P,C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

XVII. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I and Watershed Treatment Map Appendix III.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM		
NPS		
PRIVATE	5	$150,280
TOTAL	5	$150,280

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**INSTALL EARLY WARNING SYSTEM**	**JURSIDICTIONS:**	**BLM**
PART E: LINE ITEM:	**W-8, Early Warning System**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.10 Public Health and Safety**	**SPECIFICATION TYPE:**	**ES**

XVIII. WORK TO BE DONE

A. General Description:

Install an automated rain gage at the head of French Gulch that is connected to the National Weather Service and local emergency response dispatch centers. Local emergency service managers should use information generated from the rain gage to determine when evacuations and road closures are warranted.

B. Location (Suitable) Sites:

Upper watershed of French Gulch creek to measure precipitation from storms coming in from the northwest.

C. Design/Construction Specifications:

1. Identify site for rain gage. Site should be in the upper part of French Gulch creek on the northwest side to catch storms coming in from the northwest. Check with CDF to see if they have any rain gages or RAWS stations in the area that would provide warning for French Gulch creek.
2. Install one data collection instrument.
3. The weather stations will be programmed to relay "real-time" rainfall information to the National Weather Service. The National Weather Service will utilize the information to supplement existing forecasting efforts and provide information to the Office of Emergency Services or the Sheriff's Department.
4. The gage will be set to trigger a flash flood warning and evacuation of areas at risk when rain gages record a sustained rainfall rate of 0.15 inches in 30 minutes.
5. Sheriff's Department should develop an evacuation plan.

D. Purpose of Treatment Specification:

To provide warning to residents and people traveling Trinity Mountain Road that life threatening floods are likely to occur and allow for timely evacuations. Emergency Stabilization treatments cannot protect life and property from all size floods. The early warning system allows people to evacuate the area when flood hazards are imminent.

E. Treatment Effectiveness Monitoring

Monitor system's ability to provide adequate warnings in relation to flood and/or debris flows. Adjust trigger rainfall rate if necessary.

XIX. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
TOTAL PERSONNEL SERVICE COST	

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Identify location for rain gage. Rent or purchase automated rain gage and install in French Gulch. Operate system and issue flood warnings and evacuation information =	$40,000
TOTAL CONTRACT COST	$40,000

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	Gage	$40,000	1	$40,000	ES	C
2005						
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression	ES = Emergency Stabilization	P = Agency Personnel Services
ESR = Emergency Stabilization & Rehab.	R = Rehabilitation	C = Contract
OP/O = Agency Operating Fund	FS = Fire Suppression	EFC = Emergency Fire Contract
EWP = Emergency Watershed Program		FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

XX. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Resource Assessment Appendix I.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	1	$40,000
NPS		
PRIVATE		
TOTAL	1	$40,000

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	**Non-Native Invasive Species Control**	**JURSIDICTIONS:**	**NPS, BLM**
PART E: LINE ITEM:	**V-1, Non-Native Invasive Species Control**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:		**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

Control known non-native invasive and noxious weed species in burned areas and prevent the expansion of known populations into newly disturbed areas. Utilize integrated pest management practices (herbicides, biological mechanical and cultural control methods), as appropriate to control non-native invasive species.

B. Location (Suitable) Sites:

The areas of the French Fire that contain the majority of the weeds are along stream and road corridors. Additionally, dozer lines, hand lines, and areas that burned with high severity are new disturbances that are highly susceptible to new populations of exotics. There are approximately 169 acres of exotics in the burned area within Whiskeytown National Recreation Area. Within the BLM burned area there are approximately 147 acres of exotics that can be effectively treated. A Pesticide Use Permit (PUP) will be prepared by the BLM and NPS before herbicides are used in the burn area. See Non-Native Invasive Species Map, Appendix III.

C. Design/Construction Specifications:

1. Delineate treatment areas.
2. Use appropriate and approved herbicides to spray noxious weeds and non native invasive species.
3. Herbicides will be applied using ground application methods as approved by the respective land management agency.
4. Cutting of large *Ailanthus altissima* trees and shrubs and painting (wiping) stumps with triclopyr.
5. Small occurrences of non-native invasives such as *Verbascum thapsus, Centaurea solstitialis, Cirsium vulgare*, and *Hypericum* perforatum will be controlled by hand pulling or herbicide spot treatments. Any seedheads present will be bagged.
6. Weed wrenching or herbicide treatments of any large broom plants (*Cytisus scoparius, Genista monospessulana*, and *Spartium junceum*) .
7. Map and document areas treated.

D. Purpose of Treatment Specification:

Control spread of non-native invasive species into susceptible burned areas that will change the native plant composition. This specification will help to reduce competition for native vegetation recovering from the wildfire and to promote the establishment of seeded vegetation.

E. Treatment Effectiveness Monitoring

Monitor herbicidal control according to revegetation/control specification treatments. Document and GPS new infestations for inclusion into long-term integrated pest management programs.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
BLM: Project Manager: GS-11 @ $1067/week X 6 weeks	$6,402
BLM: Biological Science or Range Technician: GS-5 @ $582/week X 16 weeks	$9,312
NPS: Project Manager: GS-11 @ $1,067/week X 6 weeks	$6,402
NPS: Biological Science Technician: GS-5 @ 582/week X 12 weeks	$6,984
TOTAL PERSONNEL SERVICE COST	**$29,100**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
NPS: Backpack Sprayers: 4 sprayers @ $125 each	$500
NPS: Personal Protective Equipment (PPE): $100 per laborer X 4 laborers	$400
NPS: Weed Wrenches: 4 Weed Wrenches @ 200 each	$800
NPS: GPS unit: 1@ $500	$500
BLM: Weed wrenches: 4 Weed Wrenches @ 200 each	$800
BLM: GPS Unit: 1 @ $500	$500
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	**$3,500**
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
NPS: (Listed herbicides are not inclusive; other herbicides approved for use may be used) Herbicide: glyphosate @ $150/ 2.5 gallons X 2 (5 gallons) Herbicide: triclopyr @ $260/ 2.5 gallons X 2 (5 gallons) Herbicide: Spray adjuvant @ $40/ gallon: 5 gallons	 $300 $520 $200
TOTAL MATERIAL AND SUPPLY COST	**$1020**
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
NPS: 4 Wheel drive crew cab pickup: 12 weeks @ $500/month	$1,500
TOTAL TRAVEL COST	**$1,500**
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
NPS: Weed management crew @ $22/hour X 40 hours/week X 10 weeks X 3 members	$26,400
BLM: Professional Certified Pesticide Applicator @ $150/acre X 147 acres	$22,050
TOTAL CONTRACT COST	**$48,450**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	NPS: Acres BLM: Acres	$263.35 $265.74	169 147	$44,506 $39,064	ES ES	P, C P, C
2006						
TOTAL				$83,570		

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression Rehabilitation ES = Emergency Stabilization R = Rehabilitation EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P, C
3. Estimate supported by cost guides from independent sources or other federal agencies.	T
4. Estimates based upon government wage rates and material cost.	P, M
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
APPENDIX I, VEGETATION ASSESSMENT, APPENDIX III, NON-NATIVE INVASIVE SPECIES MAP

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	147 Acres	$39,064
NPS	169 Acres	$44,506
PRIVATE		
TOTAL	316 Acres	$83,570

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	**REVEGETATION**	**JURSIDICTIONS:**	**BLM**
PART E: LINE ITEM:	**V-2, Aerial Seeding**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:		**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

The need for reseeding, seed selection, and application rates were developed in consultation with BLM vegetation management staff. Aerial seeding will be completed with an Office of Aircraft Safety (OAS) carded aircraft and pilot. Seeding serves to establish ground cover on high and moderate severity sites to reduce erosion potential and help prevent invasion by undesirable plant species. A total of 2,438 acres are proposed for seeding, including 1,367 acres administered by BLM and 1,071 acres of private land.

B. Location (Suitable) Sites:

High and moderate severity and high vegetation mortality areas on steep slopes above the town of French Gulch and Trinity Mountain Road as delineated on the Watershed Treatment Map in Appendix III.

C. Design/Construction Specifications:

1. Seed mixture: All seed shall have no less than 80% germination and 90% purity. Inert matter shall be less than 10%. Seed vendor must provide written certification that the seed quality has been tested within the past 120 days and contains no noxious weed species. Seeds will be tested for purity, germination, inert matter, noxious and other weeds, and species. Before accepting delivery of shipment the seed contractor must provide written evidence (seed label and letter), to the Implementation Contracting Officer that the seed conforms to the purity and germination requirements in the specification and contract. Test methods specified in *Rules for Testing Seeds, Proceedings of the Association of Official Seed Analyst* would be acceptable for determining the germination rate. The seed may be randomly sampled upon delivery. The seed mix identified below is specified for this project. If certain species in the mix are not available, then the mix can be altered according to the specifications outlined in the Vegetation Assessment section of this plan or as approved by the Contracting Officer. No non-native perennial species will be used on BLM land.

Seed Mix: 25 PLS pounds per acre (36 PLS per square foot)

Species	lbs PLS/acre	% of mix
Regreen (*Triticum aestivum* x *Elytigia elongata*)	11.3	9
California brome (*Bromus carinatus*)	6.4	45
Blue wild rye (*Elymus glaucus*)	6.7	43
Sky Lupine (*Lupinus nanus*)	0.6	3

2. Delivery: Seed will be delivered to a designated location as determined by local agency staff. Delivered seed should be pre-mixed certified noxious weed free sold on a pure live seed (PLS) basis.
3. Storage: Seed should be applied as soon as possible after delivery. If immediate application is not possible, the seed should be properly stored, preferably near the project site. Stored seed should be protected from moisture, rodents, and theft.
4. Application: The application will be conducted by an OAS-carded aircraft under the terms outlined in the contract. The contractor is responsible for supplying all materials (except seed), supplies, equipment, personnel, mixing, loading, and transportation. It is recommended that the pilot will utilize Global Positioning System (GPS) equipment during application. Visible markers will be utilized as necessary for swath continuity within the treatment area.

D. Purpose of Treatment Specification:
This treatment is intended to establish vegetation on areas of high and moderate severity and high vegetation mortality effects on steep slopes. Seeding can be an effective erosion control technique that provides protection to downslope values at risk. Watersheds should be treated as a whole without regard for ownership in order to provide adequate protection to downstream values.
E. Treatment Effectiveness Monitoring
A separate specification for vegetation monitoring has been prepared. Vegetation will be monitored according to the strategies outlined in that specification.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
Contract Compliance Monitoring: **One GS-11 Natural Resource Specialist (3 weeks @ $1067/week)** **One GS-5 Biological Science or Range Technician (3 weeks @ $582/week)**	 **$3,201** **$1,746**
TOTAL PERSONNEL SERVICE COST	**$4,947**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	**$0**
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
Approximately 60,950 PLS lbs of seed mix @ $10.76/lb	**$655,845**
TOTAL MATERIAL AND SUPPLY COST	**$655,845**
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	**$0**
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Contracted seed application using fixed wing aircraft or helicopter, including all materials, supplies, equipment, personnel, mixing, loading, and transportation (2438 acres @ $9/acre) Independent seed testing (2 x $100)	 **$21,942** **$200**
TOTAL CONTRACT COST	**$21,962**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Acres	$280	2,438	$682,754	ES	P, C
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression Rehabilitation	ES = Emergency Stabilization	P = Agency Personnel Services
ES = Emergency Stabilization	R = Rehabilitation	C = Contract
R = Rehabilitation	FS = Fire Suppression	EFC = Emergency Fire Contract
EWP = Emergency Watershed Program		FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Appendix I, Soil and Watershed Assessment and Vegetation Assessment. See Appendix III, Watershed Treatment Map, Burn Severity & Watershed Response Map, and Vegetation Mortality Map.

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	1,367 acres	$382,760
NPS		
PRIVATE	1,071 acres	$299,884
TOTAL	2,438 acres	$682,754

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	**Vegetation recovery, noxious weed inventory, seeding success**	**JURSIDICTIONS:**	**BLM, NPS**
PART E: LINE ITEM:	**V-3 Vegetation Monitoring**	**FISCAL YEAR:**	**2004, 2005**
ESR REFERENCE #:		**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

1. Monitor for vegetation recovery/reestablishment within the burned area to determine if management objectives are being met and to identify any future planting or seeding needs. Monitor within two months of fire control to determine short-term shrub recovery and during the spring/summer of 2005 to help determine overall vegetation response to the fire.
2. Conduct seeding monitoring the first year following treatment to determine success of seeding treatments on areas of high vegetation mortality and having moderate to high burn severity, and on seeded dozer lines. (BLM lands only).
3. Monitor for new occurrences of undesirable plant species (noxious and exotic), within the burned area. Monitoring will occur in uninfested areas having a high potential for weed invasion. Monitor for success of noxious weed treatments.

B. Location (Suitable) Sites:

Monitoring for vegetative recovery will occur in areas with high vegetation mortality and moderate to high burn severity.

Monitoring for treatment effectiveness will include all seeded areas: east facing slopes west of Clear Creek and above the town of French Gulch, Trinity Mountain Road watershed, dozer lines, safety zones, etc. (see Watershed Treatment and Fire Suppression Impacts maps Appendix III).

Monitoring for noxious weeds will occur in areas with a high potential for weed invasion and in areas that have been treated for non-native invasive species. Conduct primary surveys along roads, dozer lines, safety zones, and burned areas adjacent to known weed occurrences. (See Non-Native Invasive Species map Appendix III).

C. Design/Construction Specifications:

1. For re-seeded areas establish at least one permanent transect with photo points in each reseeded area to determine at least one of the following: cover, height, density, and frequency. Line intercept can be used to measure shrub canopy cover and quadrat-sampling methods can be used to measure frequency. The method chosen will be determined by local Bureau of Land Management and National Park Service staff. Fire Effects monitoring protocols can be incorporated into the monitoring plan. At least one transect per plant alliance is recommended. There will be approximately 15 surveys/transects to be conducted on BLM lands and 5 on NPS.
2. In place of permanent (line intercept, pace frequency, etc), the following could be used:
Determine species composition, root depth and area, plant height and vigor; count seedlings per square foot–seeded species/native species/total # and compare to seeding rate for treatment success; estimate root mass/square foot–pull plants on representative area, measure diameter of root wad and test for hydrophobic layer in root mass to estimate effectiveness of grass roots in penetrating hydrophobic layer; estimate root cover area due to grasses and other species; photos should accompany data records as supporting documentation of findings; record other factors such as herbivory, surface erosion, etc
3. Collect data to describe the vegetation recovery from the fire. Compare reestablishment within burn area to a control area outside of burn. Permanent transects, photo points, or ocular estimates can be used.
4. Prepare annual reports and a final report documenting sampling methodologies, techniques, areas sampled, and summary of findings.
5. Conduct short-term monitoring on known noxious weed occurrences and in areas of potential spread within burned area to determine spread of noxious and invasive plant species. Monitoring protocols will be determined by local agency staff.
6. Locate, map, and document new weed occurrences within burned area using photography, topographic maps, and Global Positioning System (GPS) technology.
7. Initiate Agency approved control measures on new weed occurrences where monitoring demonstrates the

establishment or expansion of known weed populations.

8. Complete supplemental funding request for ESR funding (or cost-share through a Weed Management Area), for noxious weed control of new weed populations within the burned area.

D. Purpose of Treatment Specification:

This treatment is necessary to determine: 1) success of vegetation establishment and to evaluate if revegetation / vegetation recovery is satisfactory to meet management objectives; 2) seeding success and effectiveness of providing sufficient cover to protect the site from soil erosion; 3) if noxious weed and non-native invasive species are encroaching into disturbed and burned areas, if suppression and rehabilitations actions have spread noxious weeds that may potentially threaten the long-term health of native plant associations or impact short-term recovery of revegetation, and to monitor existing weed infestations.

E. Treatment Effectiveness Monitoring

This monitoring will determine the effectiveness of seedings and natural establishment of vegetation in conjunction with land stabilization treatments. Management decisions that will be based upon the monitoring results include: 1) the need for additional seeding and 2) the need for non-native species control. Additional seeding is justifiable if monitoring concludes that re-vegetation success is not achieved. If the criteria are not achieved, a supplemental funding request will be submitted. A supplemental funding request for non-native invasive plant control will also be submitted if monitoring reveals expansion of noxious weeds from existing locations and if new infestations are found in the burn area.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
BLM:	
GS-11 Botanist or Natural Resource Specialist @ $1,067/week X 2 weeks	**$2,134**
GS-7 Biological Technician or Range Technician @ $721/week X 8 weeks	**$5,768**
GS-5 Biological Technician @ $582/week X 8 weeks	**$4,656**
NPS:	
GS-11 Botanist or Natural Resource Specialist @ $1,067/week X 2 weeks	**$2,134**
GS-7 Biological Technician or Range Technician @ $721/week X 4 weeks	**$2,884**
GS-5 Biological Technician @ $582/week X 4 weeks	**$2,328**
TOTAL PERSONNEL SERVICE COST	**$19,904**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
BLM: Monitoring supplies: 1 digital camera, 1 GPS unit (equivalent to Garmin), fence posts, rebar, tapes, flagging, misc office supplies	$1,500
NPS: Monitoring supplies: 1 digital camera, 1 GPS unit (equivalent to Garmin), fence posts, rebar, tapes, flagging, misc office supplies	$1,500
TOTAL MATERIAL AND SUPPLY COST	**$3,000**

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
BLM: Vehicle: 1 vehicle X 100 miles/day X 15 days/month X 2 months X $0.35/mile NPS: Vehicle: 1 vehicle X 100 miles/day X 15 days/month X 2 months X $0.35/mile	$1,050 $1,050
TOTAL TRAVEL COST	**$2,100**
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Surveys	$1,250	20	$25,004	ES	P
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression Rehabilitation ES = Emergency Stabilization R = Rehabilitation EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P, M, T
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	15	$15,108
NPS	5	$9,896
PRIVATE		
TOTAL		**$25,004**

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	**Imminent Tree Hazard Identification & Mitigation**	**JURSIDICTIONS:**	**BLM, NPS, Private**
PART E: LINE ITEM:	**F-1 Tree Hazard Mitigation**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.4 Health & Safety**	**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

Assess and mitigate (fell / prune) fire-damaged or killed tree hazards posing an immediate threat to public safety or property along designated roads and off-road vehicle trails, within the community of French Gulch, and cultural sites within the French Fire perimeter.

B. Location (Suitable) Sites:

Fire-damaged or fire-killed trees within striking distance of publicly traveled roads and trails; homes, home sites and other developments, and cultural sites within perimeter of the French fire. See hazard tree mitigation map, Appendix III.

C. Design/Construction Specifications:

1. Assess potential tree hazards which have been structurally damaged or killed by fire within 1 – 1 ½ tree height distance of roadways / trails, homes home sites, other facilities which would receive a rating of 4 or greater according to the DOI BAER Field Reference Guidelines and the NPS Tree Hazard Rating System.
2. Mark trees with red flagging.
3. Document species, size and location (either with GPS or on map) of identified tree hazards.
4. Directionally fell tree hazards away from roads, homes, home sites and other structures. Avoid felling trees parallel to slope if possible.
5. Identify highly technical trees to be removed or pruned under contract. If tree cannot be safely felled / pruned without damage to property, hire professional faller or arborist to remove.
6. Limb, buck bole into 6 foot sections.
7. Pull slash at least 25 feet away from roads / trails; lop and scatter slash to a height of less than 18 inches; pull and pile slash 50 feet away from homes; home sites and other structures.
8. Flush cut stumps as low as possible.
9. Remove and dispose of remnant flagging.

D. Purpose of Treatment Specification:

To provide for public safety on roadways, public use trails, cultural sites and areas adjacent to other public uses.

E. Treatment Effectiveness Monitoring

Monitor to confirm all identified tree hazards (Hazard Tree Location Map) are mitigated in a timely manner (before end of calendar year) to minimize threats to life and property. Implementation Leader should document work completion for inclusion in Annual Accomplishment Report.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
BLM: Monitoring / Administration: GS-9/5 Forester @ $21.97 / Hr x 160 hrs	**$ 3,515**
NPS: Monitoring / Administration: GS-11/5 Park Ranger @ $26.56 / Hr x 40 hrs	**$ 1,062**
TOTAL PERSONNEL SERVICE COST	**$ 4,577**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
BLM: GSA Vehicle: 1 Mo @ $250 / Mo + 800 miles @ $0.20 / Mi	**$410**
NPS: GSA Vehicle: 1 Mo @ $360 / Mo + 250 miles @ $0.60 / Mi	**$510**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	**$920**
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
BLM: Misc. Supplies (flagging, Field notebooks, film, etc.)	$200
NPS: Misc. Supplies (flagging, Field notebooks, film, etc.)	$100
TOTAL MATERIAL AND SUPPLY COST	$300
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
Private: Arborist (Tree Service) 4 – Person Crew + Equipment (Aerial Lift): 57 trees $250 / tree	$14,250
NPS: Sawyer and Swamper: 20 trees X $200 / tree	$3,600
*2 trees X $30 / tree	
BLM: Sawyer and Swamper; 5 trees X $200 / tree	$60
* 45 trees X $30 / tree	$1000
*small diameter (less than 10 inches DBH) trees. NPS_Trinity Highway-Stone Cabin; BLM_Niagra Mill Site & Mining Camp, Summit Mill Site	$1,350
TOTAL CONTRACT COST	**$20,260**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	tree	$202.00	129	$26,057	ESR	P, C
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression Rehabilitation	ES = Emergency Stabilization	P = Agency Personnel Services
ES = Emergency Stabilization	R = Rehabilitation	C = Contract
R = Rehabilitation	FS = Fire Suppression	EFC = Emergency Fire Contract
EWP = Emergency Watershed Program		FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Forestry Resources Assessment and Hazard Tree Location Map

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	50	$6,475
NPS	22	$5,332
PRIVATE	57	$14,250
TOTAL	129	$26,057

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	**Long Term Tree Hazard Identification & Mitigation**	**JURSIDICTIONS:**	**BLM, NPS, Private**
PART E: LINE ITEM:	**F-2 Tree Hazard Mitigation**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.4 Health & Safety**	**SPECIFICATION TYPE:**	**ES**

WORK TO BE DONE

A. General Description:

Inventory, Identify, mark and fell long term tree hazards along: 1) designated off-road vehicle trails 2) Tom Green Mine, French Gulch, Highland Ridge, Countyline and other roads designated to be kept open 3) within the community of French Gulch. All within the French Fire perimeter

B. Location (Suitable) Sites:

Identity, mark and mitigate tree hazards within 1 – 1 ½ tree height distance of OHV trails; identified roads; homes, home sites and other developments within perimeter of the French fire.

C. Design/Construction Specifications:

1. Survey potential tree hazards which have been structurally damaged and / or killed by fire within 1 – 1 ½ tree height distance of roadways / trails, home, home sites, other facilities which would receive a rating of 4 or greater according to the DOI BAER Field Reference Guidelines and the NPS Tree Hazard Rating System.
2. Mark trees with orange "Danger" or red flagging, and paint a spot of orange or white paint on base of tree on side away from trail, road or home.
3. Document species, size and location (either with GPS or on map) of identified tree hazards.
4. Directionally fell tree hazards away from roads and homes, home sites and other structures. Avoid felling trees perpendicular to slope if possible.
5. Identify highly technical trees to be removed or pruned under contract. If tree cannot be safely felled / pruned without damage to property, hire professional faller or arborist to remove.
6. Limb, buck bole into 6 foot sections.
7. Pull slash at least 25 feet away from roads / trails, lop and scatter slash to a height of less than 18 inches; pull and pile slash 50 feet away from homes, home sites and other structures.
8. Flush cut stumps as low as possible.
9. Remove and dispose of remnant flagging.

D. Purpose of Treatment Specification:

To provide for public safety on roadways and public use trails, and areas adjacent to other public uses. See map in Appendix III.

E. Treatment Effectiveness Monitoring

Monitor to confirm all marked trees have been felled, bucked, and slash treated. All accomplishments should be included in Annual Accomplishment Report.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
BLM: Monitoring / Administration: GS-9/5 Forester @ 21.97 / Hr. X 160 Hrs	$3,515
NPS: Monitoring / Administration: GS- 11/5 Park Ranger @ 26.56 X 40 Hrs	$1,062
TOTAL PERSONNEL SERVICE COST	$4,577
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
BLM: GSA Vehicle_ 1 MO. @ $255 / MO + 800 miles @ $0.25 / MI	$455
NPS: GSA Vehicle_1 MO. @ $360/ MO + 250 miles @ $ 0.60 / MI	$510
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	$965
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
BLM: Misc. Supplies (flagging, field notebooks, tree marking paint (aerosol), etc)	$200
NPS: Misc. Supplies (flagging, field notebooks, tree marking paint (aerosol), etc)	$100
TOTAL MATERIAL AND SUPPLY COST	$300
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Private: Arborist (Tree Service) 4 – Person Crew + Equipment (Aerial Lift): *10 trees @ $250/ tree	$2,500
BLM: Sawyer and Swamper: *10 trees X $200 / tree	$2,000
NPS: Sawyer and Swamper; *5 trees X $200 / tree	
*estimate	$1000
TOTAL CONTRACT COST	$5,500

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	Haz Tree Inv		2	$11,342	ES	P, C
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression Rehabilitation	ES = Emergency Stabilization	P = Agency Personnel Services
ES = Emergency Stabilization	R = Rehabilitation	C = Contract
R = Rehabilitation	FS = Fire Suppression	EFC = Emergency Fire Contract
EWP = Emergency Watershed Program		FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Forestry Resources Assessment and Hazard Tree Location or Treatment Map

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	Hazard Tree Inventory	$6,170
NPS	Hazard Tree Inventory	$2,672
Private	Included with BLM	$2,500
TOTAL		$11,342

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**Cultural Resource Stabilization**	**JURSIDICTIONS:**	**NPS BLM**
PART E: LINE ITEM:	**C-1, Cultural Resource Stabilization**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.1 Cultural Resources**	**SPECIFICATION TYPE:**	**ES**

XXI. WORK TO BE DONE

A. General Description:

Three historic sites within the French Fire burn area have been assessed to be at risk from post fire effects. Such effects include compromised structural integrity of features from hazard trees and erosion due to increased runoff.

B. Location (Suitable) Sites:

CA-SHA-2715H (French Gulch Road Stone Cabin), the Niagra Mill and Mining Camp (CA-SHA-2291H), and the Summit Mine Mill site (CA-SHA-1694H). The locations of these sites are sensitive and confidential. Their protection from disclosure is provided under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).

C. Design/Construction Specifications:

1. CA-SHA-2715H (French Gulch Road Stone Cabin): The south end of the stone wall of this dugout has been damaged by the burnout and collapse of an oak that had emerged from the wall. A double row of twenty (20) sandbags placed in the cavity left by the oak will stabilize the wall until such time long-term rehabilitation/restoration can occur. The potential for increased runoff and subsequent erosion will be reduced by the scatter of five (5) bales of rice straw on the slope above the site. Lopping and scattering of removed hazard trees (see specification F-1) atop the scattered straw will further reduce runoff. A small area immediately adjacent to the structure's doorframe should be excavated to redirect the flow of water away from the feature.

2. CA-SHA-2291H (Niagra Mill): The down slope (north) foundation has been exposed by a fire killed tree root wad and is being undercut by active seepage from an adjacent spring. This condition will worsen as increased runoff due to post-fire effects is anticipated. Twenty (20) sandbags will be placed along the undercut portion of the foundation to stabilize the structure until such time that long-term rehabilitation/restoration measures can be put into place. Approximately twenty (20) hazard trees will be removed under specification F-1 and then lopped and scattered upslope from the mill site to inhibit slope destabilization above the mill and slow runoff. A stone structure located on a flat to the northwest of the mill is also at risk from damage from fire killed trees. Specification F-1 will provide for the removal of approximately twenty (20) trees located both within and surrounding this feature.

3. Summit Mill site (no trinomial): This large complex of late 19th and early 20th century hard rock mining activity includes the burnt over Summit Mill site. Two clumps of trees approximately three stems each, pose a risk to remaining cultural constituents at the mill by destabilizing the slope above the features. Specification F-1 will provide for the removal of these fire killed trees as the emergency stabilization treatment at this site.

D. Purpose of Treatment Specification:

Emergency stabilization treatments are designed to provide short-term and immediate resource protection until such time long-term rehabilitation and/or restoration can be designed, funded, and implemented.

E. Treatment Effectiveness Monitoring

Agency staff should make on-site inspections after significant runoff events and major wind events to monitor treatment effectiveness.

XXII. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
NPS Two GS-5 workers @ $12.82/Hour X Sixteen Hours X One Fiscal Year = BLM Two GS-5 workers @ $12.82/Hour X Sixteen Hours X One Fiscal Year =	$410 $410
TOTAL PERSONNEL SERVICE COST	$820
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
NPS Sandbags @ $3.00/Each X Twenty (20) X One Fiscal Year = Rice straw @ $5.00/Each X Five (5) bales X One Fiscal Year = BLM Sandbags @ $3.00 Each X Twenty (20) X One Fiscal Year =	$60 $25 $25
TOTAL MATERIAL AND SUPPLY COST	$110
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	NPS Site BLM site	$495.00 $435.00	1 1	$495.00 $435.00	ES ES	P P
2006						
TOTAL				$930.00		

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/M
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

XXIII. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Cultural Resources Assessment, Appendix I.

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**Cultural Resource Stabilization, Suppression**	**JURSIDICTIONS:**	**NPS**
PART E: LINE ITEM:	**C-2, Cultural Resource Stabilization, Suppression**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.1 Cultural Resources**	**SPECIFICATION TYPE:**	**FS**

XXIV. WORK TO BE DONE

A. General Description:

The Crystal Creek Ditch (NR# 74002359) was listed on the National Register of Historic Places (NRHP) in 1974. The water conveyance feature is part of a system dating to the 1850s or 1860s, although the impacted segment probably dates to about 1913. Site CA-SHA-3631H consists of a historic-period Native American encampment that includes historical artifacts, terrace features, and the Kate Camden gravesite that is a contributing element (Feature #14) of the NRHP listed Tower House Historic District (NR# 73000257). Site CA-SHA-1356H is a segment of the historic-period Tower Wagon Road that is associated with the NRHP listed Tower House Historic District.

All three sites were impacted by the construction of a dozer line. Prescribe treatment for three cultural resource sites (archeological and historical) that were affected by fire suppression activities.

B. Location (Suitable) Sites:

Site CA-SHA-3631H is a historic gravesite of Native American origin. This site was affected during fire suppression activities. Crystal Creek Ditch and CA-SHA-1356H are both historic-period linear features that pass near site CA-SHA-3631H. Such locations are exempt from public disclosure under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA). The NPS maintains records on the location of sensitive cultural resources, and will provide, as necessary such information to law enforcement officers, tribal consultants, and professional archaeologists having oversight for compliance with the implementing regulations under the NHPA.

C. Design/Construction Specifications:

1. Implement treatment at site CA-SHA-3631H as follows:
   - Archeological damage assessment to include documentation of surface cultural materials and features, surface collection of cultural materials within the impacted area, screen a sample of earthen berms, and sub-surface test for Feature #2 located within the impacted area.
   - Pull in trees and brush piled on the site during fire line construction using an excavator. The excavator will place the downed trees and manzanita within the disturbed area to cover the exposed portion of the site, reduce the potential for erosion, and prevent the site area from being used as a parking area.
   - Earthen berms will be pulled in and the impacted area re-contoured by a hand-crew. Brush piled on the site not moved by the excavator will be scattered in the impacted area by the hand-crew.

2. Implement treatment at the Crystal Creek Ditch as follows:
   - Earthen berm pushed into the ditch will be pulled in and the impacted portion of the ditch will be re-contoured by a hand-crew to allow water to flow in the ditch in the same fashion as before the impact.
   - Markers or barriers will be placed along the utility road where it crosses the ditch to prevent further impacts to the ditch.
   - The metal flume segment will be placed in its' previous orientation to the water ditch take-out.

3. Implement treatment at CA-SHA-1356H as follows:
   - Document the portion of the site that was impacted by dozer line construction.
   - Avoid further impacts to the site during all stabilization activities.

*All stabilization activities will be monitored by a qualified archeologist.

D. Purpose of Treatment Specification:

Stabilize cultural resource sites to minimize or negate the potential for erosion and unauthorized collection of artifacts.

Assess damage to cultural resource sites to mitigate suppression impacts.
E. Treatment Effectiveness Monitoring
NPS cultural resource and law enforcement staff will monitor the site as defined in the specification for Increased Agency Presence.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
1. Equipment operator (excavator) ($250/day x 2 days) 2. Supervision for equipment operator ($400/day for ½ day) 3. 20-man hand-crew ($2250/day for one 8-hour day) 4. Archeological monitor (GS-11 @ 32.50/hour x 24 hours) 5. Curatorial Intern ($100/day for 10 days)	1. $500 2. $200 3. $2250 4. $780 5. $1000
TOTAL PERSONNEL SERVICE COST	**$4730**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
CAT 315 Excavator with thumb ($700/day x 2 days)	$1400
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	**$1400**
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
1. Fuel for CAT 315 Excavator 2. Misc. archeological field supplies 3. Curatorial supplies	1. $100 2. $500 3. $300
TOTAL MATERIAL AND SUPPLY COST	**$900**
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
Transportation for excavator to and from work site ($200 x one round trip)	$200
TOTAL TRAVEL COST	**$200**
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
1. Archeologist ($85/hour for 50 hours) 2. Archeological Technician ($55/hour for 80 hours) 3. Archeological Aid ($35/hour for 80 hours) 4. Native American Monitor ($50/hour for 24 hours)	1. $4250 2. $4,400 3. $2,800 4. $1,200
TOTAL CONTRACT COST	**$12,650**

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Site	$6626.67	3	$19,880.00	F	C & P
2006						
TOTAL						

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P, M, T, & C
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

XXV. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Cultural Resources Assessment, Appendix I.

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**Increased Agency Presence**	**JURSIDICTIONS:**	**NPS BLM**
PART E: LINE ITEM:	**C-3, Increased Agency Presence**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.1 Cultural Resources**	**SPECIFICATION TYPE:**	**ES**

XXVI. WORK TO BE DONE

A. General Description:

Looting and vandalism are known to have occurred within the French Fire burn area prior to the fire incident. Three sites assessed during field reconnaissance efforts showed evidence of looting. Reduced ground cover as the result of fire effects expose cultural resources locations to increased risk from such activities. Such risks can be minimized through law enforcement patrols and on selected sites and enforcement of area closures. These efforts can be supplemented by increased vigilance on the part of uniformed agency personnel and volunteer archaeological site stewards. Law enforcement officers will take action on artifact collectors and looters.

B. Location (Suitable) Sites:

Archaeological sites that are known to exist within the perimeter of the French Fire, near roads within the fire and along easily accessible exterior dozer lines. The locations of these sites are sensitive and confidential. Their protection from disclosure is provided under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).

C. Design/Construction Specifications:

1. Coordinate patrols with NPS and BLM management, the archaeologists and site stewards, and the law enforcement officers from the respective agencies.

2. Undertake systematic and discretionary patrols, make contact as appropriate, and take action against violators.

D. Purpose of Treatment Specification:

Enforce area closures, and to protect exposed, sensitive cultural resources and deter looters. Special attention will be given to resources that are known to be subject to active looting. Patrols should continue until public interest decreases, and re-growth has served to obscure previously exposed artifacts and features (six months).

E. Treatment Effectiveness Monitoring

NPS and BLM staff will monitor for effectiveness of efforts to dissuade looting and vandalism.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
NPS Site protection GS-11 @ $19.23/HR X 520 Hours X .5 Fiscal Year =	$10,000
BLM Site protection GS-11 @ $19.23 HR X 1040 Hours X .5 Fiscal Year =	$20,000
TOTAL PERSONNEL SERVICE COST	**$30,000**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	NPS acres BLM acres	$21.75 $2.75	460 7350	$10,000.00 $20,000.00	ES ES	P P
2006						
TOTAL				$30,000.00		

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

XXVII. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Cultural Resources Assessment, Appendix I.

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Finish Cultural Resource Assessment	**JURSIDICTIONS:**	NPS BLM
PART E: LINE ITEM:	C-4-, Finish Cultural Resource Assessment	**FISCAL YEAR:**	2005
ESR REFERENCE #:	6.3.1 Cultural Resources	**SPECIFICATION TYPE:**	ES/F

XXVIII. WORK TO BE DONE

A. General Description:

Fire suppression activities conducted during the French incident resulted in construction of more than seventeen miles of dozer line on NPS and BLM managed lands. Approximately half of these lines were inventoried for the presence of cultural resources during fire suppression. The other 8.5 miles, as well as staging areas, safety zones, drop points, and helispots need to be assessed for cultural resources. The Sybil Mill site, a known and partially documented resource, was completely burned over during the fire incident. This mill site is severely damaged and needs to be recorded before the site's demise, due to soil destabilization resulting from the loss of the mill timbers. Due to time constraints, the Cans-Down-The-Hillside site (CA-SHA-1694H), which also includes the Brunswick Mine, tram, and mill site complex, was not assessed for risks from post fire effects.

B. Location (Suitable) Sites:

Dozer lines, not surveyed during the fire incident, as well as all staging areas, safety zones, drop points, helispots, and any other ground disturbance resultant from suppression efforts that occur within NPS or BLM managed lands.

The Sybil Mill site was severely damaged by the fire. It is positioned on a high slope gradient and will be subject to significant erosion. The Cans-Down-The-Hillside site is distributed across a large area above Summit Gulch. The locations of these sites are sensitive and confidential. Their protection from disclosure is provided under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).

C. Design/Construction Specifications:

1. Conduct a complete pedestrian archaeological inventory of all dozer lines, staging areas, safety zones, drop points, helispots, and any other areas subject to ground disturbance resultant from fire suppression activities.
2. Complete site and damage assessment forms, photo-document, and GPS all cultural resources damaged by fire suppression activities.
3. Prepare individual treatment plans appropriate to the significance of the resource and level of disturbance or damage.
4. Update site record, photo-document, and GPS location of Sybil Mill site.
5. Assess post fire risks to the Cans-Down-The-Hillside site (CA-SHA-1694H).
6. Prepare any needed supplemental requests for emergency stabilization funding.

D. Purpose of Treatment Specification:

1. Identification, evaluation, protection, and mitigation, as necessary, of adverse effects to cultural resources from suppression.
2. Adequately document the vestiges of the burnt over Sybil Mill, before it is succumbs to the forces of erosion.
3. Determine if post fire effects pose a risk to the integrity of the Cans-Down-The-Hillside site (CA-SHA-1694H).

E. Treatment Effectiveness Monitoring:

Agency archaeologists will ensure that specification elements are implemented, as prescribed or adjusted, to meet specification objectives.

XXIX. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
2 GS-11 Archaeologists @ $23.45/Hours X 96 Hours X 1 Fiscal Year =	$4,502
TOTAL PERSONNEL SERVICE COST	$4502
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
	$0
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	$0
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
	$0
TOTAL MATERIAL AND SUPPLY COST	$0
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
	$0.00
TOTAL TRAVEL COST	$0
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Contract Archaeologist(s) @ $50.00/acre X 250 acres X 1 Fiscal Year =	$12,500
. TOTAL CONTRACT COST	$12,500

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	NPS Acres BLM Acres BLM Sites	$50.00 $50.00 $4502.00	225 25 2	$11,250.00 $ 1,250.00 $ 4,502.00	F F ES	C/P C/P P
2006						
TOTAL				$17,002.00		

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C/P

3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

XXX. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Cultural Resources Assessment, Appendix I.

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**Native American Consultation**	**JURSIDICTIONS:**	**NPS**
PART E: LINE ITEM:	**C-5, Native American Consultation**	**FISCAL YEAR:**	**2005**
ESR REFERENCE #:	**6.3.1 Cultural Resources**	**SPECIFICATION TYPE:**	**ES**

XXXI. WORK TO BE DONE

A. General Description:

Pursuant to Section 106 of the National Historic Preservation Act, as amended (NHPA), Federal undertakings that may affect Historic Properties require the lead agency to consult with affected tribes as equal partners. Therefore, local tribes must be consulted concerning any effects that may occur on Historic Properties of Native American origin that are located in areas subject to emergency stabilization/suppression treatments.

B. Location (Suitable) Sites:

Site CA-SHA-3631 is a historic gravesite of Native American origin. This site was affected during fire suppression activities. Such locations are exempt from public disclosure under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).

C. Design/Construction Specifications:

1. Consult with affected federally recognized tribe. (Redding Rancheria).
2. Consult with interested parties (federally unrecognized tribe) (Wintu).

D. Purpose of Treatment Specification:

Native American consultation will occur as part of the Section 106 process. The professional archaeologist, in charge, shall ensure that such consultation meets the implementing regulations under the NHPA, and that the NPS is in full compliance with Section 106 for this federal undertaking.

E. Treatment Effectiveness Monitoring

SHPO concurrence shall suffice to demonstrate NPS has met its requirement for tribal consultation and compliance with Section 106 of the NHPA.

XXXII. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
N/A	$0
TOTAL PERSONNEL SERVICE COST	**$0**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
N/A	$0
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	**$0**

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
N/A	$0
TOTAL MATERIAL AND SUPPLY COST	$0
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
Tribal representatives travel @ $250.00 X 2 Round Trips X 1 Fiscal Year =	$500
TOTAL TRAVEL COST	$500
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
	$0
TOTAL CONTRACT COST	$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Site	$500	1	$500	F	C
2006						
TOTAL				$500		

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	T
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

XXXIII. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Cultural Resources Assessment, Appendix I.

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	IMPLEMENTATION LEADER & PROJECT MANAGEMENT	**JURSIDICTIONS:**	BLM, NPS, PVT
PART E: LINE ITEM:	0-1 PROJECT MANAGEMENT	**FISCAL YEAR:**	2004 -2005
ESR REFERENCE #:	8.5 Project Management	**SPECIFICATION TYPE:**	ES

WORK TO BE DONE

A. General Description:

Hire Implementation Leader for 12 months to develop contract specifications, monitor contractor performance, and complete project accomplishments. Hire Administrative Assistant to process contract, maintain project documentation, and track expenditures. Hire GIS specialist to document various map data layers, organize data, and share data between involved agencies.

B. Location (Suitable) Sites:

See other treatments.

C. Design/Construction Specifications:

1. Implementation Leader will coordinate all aspects of emergency stabilization including administering contracts, documentation of treatments installed, providing accomplishment report, submitting supplemental requests for funding, ensuring the completion of all approved treatments, and coordinating treatments with other agencies and private landowners.
2. Implementation Leader will coordinate ordering and storage of supplies and equipment, on-the-ground implementation of treatments including site orientation of contractors, developing daily/weekly work plans for contractors/crews, and supervising work.
3. Implementation leader will continue media outreach, community meetings, and agency coordination.
4. At completion of the funding period the implementation leader will prepare a final accomplishment report

D. Purpose of Treatment Specification:

The implementation leader will develop contract specifications, coordinate contractor access to remote closed refuge property, coordinate all aspects of project implementation, inspect subcontractor work, and report accomplishments.

E. Treatment Effectiveness Monitoring

Coordinate monitoring activities for all treatments. Complete and distribute monitoring reports.

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item **Do not include contract personnel costs here (see contractor services below).**	**COST/ITEM**
BLM Administrative Assistant GS-5 @ $1,272 per month X 12 months	$15,264
BLM Implementation Leader GS-12 @ $4,088 per month X 12 months	$58,665
NPS Implementation Leader GS-12 @ $4,088 per month X 4 months	$16,352
NPS Administrative Assistant GS-5 @ $1,272 per month X 4 months	$5,088
GIS Specialist GS-12 @ $4088 / month X 12 months	$58,665

Contract and Budget Processing and Administration (see other	$77,000
TOTAL PERSONNEL SERVICE COST	**$231,034**
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	**COST/ITEM**
BLM Misc. equipment rental @ $5,000 X 2	$10,000
NPS Misc. equipment rental @ $5,000 X 1	$5,000
Building or Trailer Rental in French Gulch @ $1,100 / month x 12 months	$13,200
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	**$28,200**
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
BLM Misc. materials and supplies @ $6,000	$6,000
NPS Misc. materials and supplies @ $3,000	$3,000
TOTAL MATERIAL AND SUPPLY COST	$9,000
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
BLM Travel to State Office for reporting/coordination	**$3,000**
NPS Travel to Regional Office for reporting/coordination	**$3,000**
TOTAL TRAVEL COST	**$6,000**
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Months	$22,853	12	$274,234	ES	C/P
2006						
TOTAL	Months	$22,853	12	$274,234	ES	C/P

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression Rehabilitation ES = Emergency Stabilization R = Rehabilitation EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/C/M
3. Estimate supported by cost guides from independent sources or other federal agencies.	

4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Resource Assessments Appendix I

UNITS TREATED AND COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
BLM	12 Months Project Management	$228,594
NPS	4 Months Project Management	$45,640
PRIVATE		
TOTAL		$274,234

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	**PLAN PREPARATION**	**JURSIDICTIONS:**	**BLM-RAO NPS-WTNRA**
PART E: LINE ITEM:	**Plan Preparation**	**FISCAL YEAR:**	**2004**
ESR REFERENCE #:	**5.4.2 ESR PLAN**	**SPECIFICATION TYPE:**	**ES**

XXXIV. WORK TO BE DONE

A. General Description:

Prepare the Emergency Stabilization (ES) plan for the French Fire.

B. Location (Suitable) Sites:

Plan has been prepared to address all land ownerships within the French Fire including BLM, NPS, USFS and private. French Fire is in the community of French Gulch approximately 20 miles northwest of Redding, CA.

C. Design/Construction Specifications:

1. Conduct a detailed assessment of burn severity, its impacts to lands and the threats to life and property; protect critical cultural and natural resources.
2. Write specifications based on assessment recommendations.
3. Submit plan for approval and secure funding from appropriate sources.
4. Per policy, complete annual reports with monitoring narratives and cost details.

D. Purpose of Treatment Specification:

To prepare a comprehensive ESR plan to manage or mitigate the fire impacts in order to protect life, property and critical cultural and natural resources.

E. Treatment Effectiveness Monitoring

Per policy, an annual and final accomplishment report will be prepared with detailed costs and monitoring narratives and will be completed within 7 days of fire containment (DM 620, Chapter 3).

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).			COST/ITEM
Resource Group	**Total Hours**	**Total Costs**	
Archaeology/Cultural Resources	540	$23,436	**$23,436**
Compliance/Documentation	364	$16,412	**$16,412**
Watershed	757	$29,995	**$29,995**
GIS	759	$32,885	**$32,885**
Leader/Admin Support	736	$26,284	**$26,284**
Operations	364	$13,048	**$13,048**
Vegetation	495	$19,337	**$19,337**
Forestry	427	$19,967	**$19,967**
Wildlife	394	$16,998	**$16,998**
Mine Safety	461	$18,255	**$18,255**
Cost figures above reflect salary, lodging, and travel costs.			
TOTAL PERSONNEL SERVICE COST			**$216,617**

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
Helicopter Rental and Equipment purchase	**$7,000**
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	**COST/ITEM**
Misc. Office supplies- Paper, ink, plotter supplies	$2,000
TOTAL MATERIAL AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	**COST/ITEM**
Rental Vehicles, Per Diem, Airfare	**$39,400**
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	**COST /ITEM**
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	Acres	$19.89	13,323	$265,017	ES	P
2005						
2006						
TOTAL	Acres	$19.89	13,323	$265,017	ES	P

FUNDING SOURCES	SPECIFICATION TYPE	METHOD OF COMPLETION
F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program	ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression	P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P,M,T
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

XXXV. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan

U.S. DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY STABILIZATON PLAN

FRENCH FIRE

PART G TEAM ORGANIZATIONS, TEAM MEMBERS, RESOURCE ADVISORS

BAER TEAM MEMBERS

POSITION	TEAM MEMBER / AGENCY
Team Leader	David Smith, FWS
Team Leader	Erv Gasser, NPS
Wildlife	Gavin Lovell, BLM
Environmental Protection & Documentation Specialist	Richard Hadley, FWS
Documentation Specialist - T	June Boynton, BIA
Graphic Information System (GIS)	Luther Arizana, BIA
GIS	Jerry Barnes, Passamaquoddy
GIS	Bob Beckwith, BIA
GIS - T	Jennifer McCollom, NPS
GIS	Annette Parsons, BLM/USFS
Vegetation Specialist	Mike Dolan, BLM
Vegetation Specialist – T	Jennifer Gibson, NPS
Vegetation Specialist - T	Windy Bunn, NPS
Vegetation Specialist - T	Joe Molter, BLM Botanist/Range Specialist
Vegetation Specialist - T	Michael Commons, NPS
Operations Specialist – Mine Safety	Chris Holbeck, NPS
Operations Specialist	Maury Williams, BIA

Operations Specialist	John Perez, NPS
Cultural Resource Specialist	Dan Hall, BIA
Cultural Resource Specialist	Chuck James, BIA
Cultural Resource Specialist – T	Dr. Eric Ritter, BLM
Cultural Resource Specialist - T	Joe Svinarich, NPS
Forestry	Fred vonBonin, BLM
Forestry	Wayne Waquiu, BIA
Vegetation Specialist	Jim Youtz, BIA
Wildlife - T	John Henderson, BLM
Watershed	Becca Smith, USFS
Watershed	Marsha Davis, NPS
Watershed	Shauna Jensen, USFS
Watershed	Brian Rasmussen, NPS
Assistant	Vanessa Stanger, NPS
Recreation - T	Bill Kuntz
Recreation - T	Sky Zaffarno, BLM

RESOURCE ADVISORS: (Note: Resource Advisors are individuals who assisted the BAER Team with the preparation of this plan. See Part H of this plan for a full list of agencies and individuals who were consulted or otherwise contributed to the development of this plan.

NAME	AFFILIATION / SPECIALTY
Francis Berg	BLM, Redding Field Office , Assistant Field Manager
James Barnes	Archaeologist, BLM
Andy Suppiger	BLM
Dave Cook	BLM, Information Technology Specialist
Stace Hallstrom	BLM, Administration
Traci Hallstrom	BLM, Administration
Russ Weatherbee	NPS, Wildlife Biologist
Gretchen Ring	NPS, Botanist
Paul DePrey	NPS, Chief of Natural Resources
Irvin Fernandez	BLM, Wildlife Biologist
Jen Ballard	USFWS, Wildlife Biologist
Rick Bennett	BLM, Natural Resource Specialist
Heidi Crowell	USFWS, Wildlife Biologist
Steve Femmel	NPS, Whiskeytown NRA, Forester,

PART H -- CONSULTATIONS

NAME DISCIPLINE AGENCY	TELEPHONE NO.
Frances Beg, Assistant Field Manager, Bureau of Land Management	(530) 224-2120
Jen Ballard, Wildlife Biologist, U.S. Fish & Wildlife Service, Red Bluff Office	(530) 527-3043
Rick Bennett, Biological Technician, Bureau of Land Management	(530) 224-2100
Jennifer Gibson, Ecologist, National Park Service, Whiskeytown NRA	(530) 242-3457
Irvin Fernandez, Wildlife Biologist, Bureau of Land Management	(530) 224-2100
Heidi Crowell, Wildlife Biologist, U.S. Fish & Wildlife Service, Redding Field Office	(530) 527-3043
Russ Weatherby, Wildlife Biologist, National Park Service, Whiskeytown NRA	(530) 242-3457
Larry Ball Bureau of Reclamation, Redding Office	(530) 275-1554
Bob Bailey, District Conservationist, NRCS, Redding	(530) 226-2574
Jeff Tenpas, USDA Forest Service, Sonora, California	(209 532-3571
Christine Mai, USDA Forest Service, Placerville, California	(530) 621-5261
Brad Rust, USDA Forest Service, Redding, California	(530) 226-2427
Steve Bachman, USDA Forest Service, McCloud, California	(530) 964-3701
Larry Costick, USDA Forest Service, Davis, California	(530) 759-1707
Cindy Podziadlo, USDA Forest Service, Placerville, California	(530) 621-5200
Todd Golder, Soil Conservationist, NRCS, Redding, California	(530) 518-3994
Andy Suppiger, GIS Specialist, Bureau of Land Management	(530) 224-2183
John Borjic, Forester, Bureau of Land Management	(530) 224-2150
Kelly Williams, Wildlife Biologist, Bureau of Land Management	530) 224-2120
Nick Kroencke, Forester, Sierra Pacific Industries	(530) 378-8126
Ron Rogers, Geologist, BLM, Redding Field Office	(530) 224-2100
Paul DePrey, Natural Resource Specialist, NPS	(530)-242-3445
Jim Hutton, Fire Management Officer,	(530)-945-1185
Michael Commons, Bio-Tech, NPS	(530)-359-2369

PART H -- CONSULTATIONS
Page 2

Brian Rasmussen, Geologist, Whiskeytown NRA	(530) 242-3444
Walter Herzog, Fire Management Officer, BLM	(530)-945-1185
Chuck Schoendienst, CDF Rehab Specialist	(530)-200-2506
Glenn Barley, CDF Rehab Specialist	909-553-7133
Fred Hoffman, Ditch Board, City of French Gulch	(530)-359-2376
Wayne Pero, Maintenance Supervisor, NPS	(530)-242-3423
Tom Schneider, Road Maintenance Supervisor, Shasta Co.	(530)-245-6797
Joe Tyler, Equipment Operator, BLM	(530)-224-2100
Sky Zaffarno, OHV Recreation Specialist, BLM	(530)-224-2126
Windy Bunn, Bio-Tech, NPS	(530)-242-3441
Joe Molter, Natural Resource Specialist, Bureau of Land Management	(530) 224-2130
Gretchen Ring, Botanist, National Park Service	(530) 359-2368
Paul Kjos, Deputy Ag Commissioner, Shasta County Dept. of Agriculture	(530) 224-4949
Chris Glover, GIS Specialist, Western Shasta Resource Conservation District	(530) 365-7332
Sue Canon, US Geological Survey, Denver, CO	(303) 273-8604
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APPENDIX I -- RESOURCE ASSESSMENTS

OPERATIONS

SOILS & WATERSHED

VEGETATION

FOREST RESOURCES

WILDLIFE

CULTURAL RESOURCES

MINE SAFETY

INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN
FRENCH WILDFIRE

OPERATIONS ASSESSMENT

I. OBJECTIVES

- Identify, inventory, and map fire and suppression impacts including areas adjacent to the fire that were adversely affected by fire suppression activities.
- Prescribe measures to mitigate fire suppression impacts and coordinate with personnel to implement repairs.
- Ensure compliance of suppression repairs with standards developed by the Burned Area Emergency Response (BAER) Team and host agencies.
- Provide oversight for the implementation of short-term emergency stabilization treatments prescribed by the BAER Team.
- Communicate with Incident Management Team (IMT), state & county officials, federal agencies and private landowners to insure acceptable stabilization and repair techniques are implemented.
- Protect cultural and natural resources during suppression repair effort.

II. ISSUES

- Important cultural and natural resources affected by fire suppression
- Fire line impacts to soils and vegetation.
- Off-Highway-Vehicle use in burn area.
- Implement short-term emergency stabilization treatments to protect watershed resources and reduce risk to human health and safety.
- Identify road surface damage on NPS and BLM lands.
- Access damage to signs on NPS and BLM lands.
- Identify mine structures and shafts disturbed by suppression actions.

III. OBSERVATIONS

The French Fire started on Saturday, August 14, 2004, at approximately 1422 hours. The cause is still under investigation. The origin was on the west side of Trinity Mountain Road, approximately 1 mile north of Hwy 299E within the Whiskeytown National Recreation Area. The Shasta Trinity Emergency Command Center dispatched the Initial Attack resources.

Whiskytown National Recreation Area (WNP) Engine 2 was the first to arrive on the scene and reported 10 acres burning with the fire on both sides of Trinity Mountain Road. The fire was spreading rapidly under the extreme burning conditions, resulting in repeated showers of embers and erratic fire behavior.

Fire engines protected buildings in the town of French Gulch and battled numerous structure fires, while Shasta County Sheriff Deputies evacuated residences.

The fire spotted to the east across Clear Creek and quickly consumed 300 acres within the first hour and was approaching the mobile home park. By the end of the initial burning period that evening, the fire had burned approximately 3,100 acres and destroyed 27 structures. The fire continued to grow significantly over the next few days until favorable weather conditions and a large fire fighting force of crews and machines were able to contain the blaze at 13,323 acres on Friday, August 20, 2004.

Fire suppression activities sometime adversely impact important cultural and natural resources. Fire suppression hand and dozer line disturbs soils which makes them available for transport by wind and water. The loss of soil and vegetation can result in erosion which can deposit sediment in water courses and may adversely impact aquatic organisms. Roadways in the area that were designed for light to moderate vehicle traffic have been adversely impacted by heavy fire suppression forces. The burned area, in the aftermath of the fire, may be unsafe for visitors and staff. This is especially true on many of the narrow one-lane dirt roads and in burned forests containing hazardous snags.

Operations coordinated aerial reconnaissance and logistical support for BAER team members. Operations staff served as the liaison between the Incident Management Team (IMT) and the BAER team. Daily briefs were conducted on fire status, weather, fire line hazards, communications, and other related safety conditions.

Reconnaissance Methodology and Results

On August 18, 2004, Operations Specialists, working with the IMT Resource Advisors, assessed fire suppression actions that may have adversely affected cultural and natural resources. Operations staff conducted aerial reconnaissance and ground surveys of all suppression impacts including hand lines, dozer lines, backfires, road damage, staging areas, helispots, drop points, as well as assessed the degree of resource impacts. Information gathered from field reconnaissance and shared with local resource advisors, was formulated into treatments in conjunction with other BAER Team disciplines. All known or suspected locations of dozer line, hand line, drop points, helispots and any other suppression related damage was surveyed and mapped.

Rehabilitation treatments for hand lines, dozer lines, road damage, emergency road closures, and signage, were developed and then reviewed by local agency representatives before implementation. Dozer line repairs completed by the IMT were surveyed and additional recommendations were provided to the IMT Rehabilitation Supervisor.

Findings

The French Fire burned 13,323 acres between August 14 and August 20th, 2004. Suppression forces contained the fire by building 40 miles of dozer line and 7 miles of hand line, and tactical use of numerous miles of existing primary and secondary roads. At the peak of suppression activity the following resources were on the fire: 42 dozers, 58 hand crews, 105 engines, 32 water tenders, 22 aircraft, and support equipment. Due to the extreme fire behavior, steep terrain, and concerns for fire fighter safety, dozers, engines and aircraft, were utilized heavily during the early stages of the fire. Fire lines were built across varied topography including ridge topes and slopes in excess of 50%. Approximately 13 miles of dozer line exceeded 120 feet in width (ten blades wide). An estimated 39 miles of primary and secondary roads were utilized by suppression forces, and numerous former logging and mining roads were reopened to allow access for suppression equipment. There were 11 drop points, 3 helispots and 1 staging area, used for fire suppression with some of these locations experiencing adverse impacts. Table 1 summarizes fire suppression impacts by jurisdiction.

Table 1 – Suppression Impacts by Jurisdiction

JURISDICTION	DOZER LINE	DOZER LINE ACREAGE	DAMAGED ROADS	BURNED ACRES	Hand line	Drop-points
BLM	12-48' = 5.4 mi 60-108' = 4.4 mi 120'+ = 7.4 mi	197.2 ac	5 mi	7153 ac	3.7 mi	3
NPS	12-48' = 1.2 mi	5.9 ac	3 mi	409 ac	0.5 mi	2
USFS	12-48' = 1.4 mi	6.0 ac	N/A	0 ac	0	1
COUNTY	N/A	N/A	31 mi	N/A	N/A	N/A
PRIVATE	12-48' = 11.2 mi 60-108' = 3.8 mi 120'+ = 5.6 mi	183.3 ac	N/A	5761 ac	3.2 mi	5
TOTAL	**40.3 miles**	**392.5 acres**	**39 miles**	**13,323 ac**	**7.4**	**11**

Of the general impacts in Table 1 above, the following describes more specific suppression findings:

- Dozer line has disturbed soils and vegetation on 392.5 acres.
- Numerous closed roads on BLM were opened for fire access. Many of these roads lead to abandoned mines and cultural sites.
- NPS boundary signs and 2 gates on the Merry Mountain and Slate Gulch roads were destroyed by suppression activities.
- Roads administered by Shasta County, BLM and NPS, have been degraded by heavy traffic from vehicles and dozers.
- Soils and vegetation were impacted at the French Creek staging area (NPS property), and all helispots and drop points.
- The burned area represents unsafe conditions on BLM and NPS lands within the Clear Creek drainage.

Stabilization and rehabilitation of fire suppression impacts is necessary to protect human safety and property, to inhibit the invasion of noxious weeds, to minimize fragmentation of ecological areas, to prevent unauthorized use of off-highway-vehicles, to reduce erosion and sedimentation in waterways, and to return secondary roads to pre-incident conditions.

As of August 27, 2004, approximately 1/3 of the dozer lines had been repaired to BAER standards. Rehabilitation of fire impacted signs, area closures, gates and roads is necessary to provide for visitor safety. The BLM and NPS will continue to implement rehabilitation Specifications as outlined below and shown in Appendix III, Fire Suppression Impacts Map and Road Repair & Tree Hazards Map.

IV. RECOMMENDATIONS

A. Fire Suppression Rehabilitation

1. Management

a. Dozer Line Repair:

Situation: Suppression dozer line was constructed across several jurisdictions. Suppression impacts caused surface disturbance to soil and vegetation on 393 acres within the fire perimeter and adjacent contingency lines.

Recommendation: Repair dozer line in a timely manner, in accordance with agency and BAER Plan standards. See Dozer Line Repair specification S-1, Part F.

b. Hand Line Repair:

Situation: Suppression hand line was constructed across several jurisdictions. Suppression impacts caused varying amounts of surface disturbance to soil and vegetation within the fire perimeter and adjacent areas.

Recommendation: Repair hand line that has potential to cause resource damage from runoff and erosion. Repair in a timely manner, in accordance with agency and BAER Plan standards. See Hand line Specification S-2, Part F.

c. Repair Roads Impacted By Suppression Activities

Situation: Approximately 39 miles of primary and secondary roadways were adversely impacted during the suppression action by vehicles and heavy earth moving equipment accessing the fire area. Many of the roads have berms of rock, dirt and vegetative debris, piled on the outboard edge, which will lead to ponding in low spots and increase erosion on steep grades

Recommendation: Roadways should be graded to remove the outboard berm and restore drainage features. Repairs should be made as soon as possible before the arrival of fall rains. See Repair Roads Impacted by Suppression Activities S-3, Part F.

d. Emergency Road Closures

Situation: BLM has several roads which had been previously closed and rehabilitated. Numerous other routes were created during fire suppression activities to provide access to the fire. Ten sites have been identified for closures (See Appendix III, Road Repair & Tree Hazards Map) to protect visitors from unsafe post-fire conditions, and to prevent unlawful off-highway-vehicle use and looting of archeological sites.

Recommendations: Replace two NPS boundary gates and signs. Ten roads were opened for suppression vehicles to access the fire. These sites need to be closed with earthen barriers or gates. Signs will be placed at each site explaining the purpose of the temporary closure.

B. Emergency Stabilization

1. **Management**
   None

2. **Monitoring**
   None

C. Rehabilitation

1. **Management**
   None

2. **Monitoring**
   None

D. Management Recommendations (non-specification related)

1. Ensure rehabilitation specifications are clearly understood by new crews assigned to treatment work. Provide a copy of the specification and diagram to each crew boss or

supervisor assigned to rehabilitation.

2. Suppression impacts and associated rehabilitation actions need to be completed prior to the closing of the suppression account.

3. Provide for safety of personnel assigned to implementation of the Emergency Stabilization Plan.

4. Map additional suppression related damage found, document and repair to agency and BAER Plan standards.

V. CONSULTATIONS

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INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

FRENCH FIRE

SOIL AND WATERSHED RESOURCE ASSESSMENT

I. OBJECTIVES

- Assess overall watershed changes caused by the fire, particularly those that pose substantial threats to human life and property, and critical natural and cultural resources. This includes evaluating changes to soil conditions, hydrologic function, and watershed response to precipitation events,
- Develop maps of soil burn severity and watershed response,
- Identify potential flood and erosion source areas,
- Identify potential threats to life, property, cultural, and natural resources in relation to flood and erosion source areas,
- Develop treatment recommendations if necessary, and
- Identify future monitoring needs.

II. ISSUES

- Potential threats to human life and property within and downstream of the French Fire from potential increases in overland flow that could cause accelerated surface erosion, debris and mud flows, and flooding. These include numerous houses, businesses, Whiskeytown Lake, and roads within and downstream of the fires.
- Threats to cultural resources from increased flow and sediment deposition.
- Changes in water quality due to increased suspended sediment from increased soil erosion within the fire areas. Changes in water quality due to mine tailings being mobilized by increased flows.

III. OBSERVATIONS

A. Background

1. Physiography

The French Fire is located within the Clear Creek watershed in Shasta County, California, approximately fifteen miles west of Redding. The watershed lies along the eastern flank of the Trinity Mountains. Clear Creek is part of the Upper Sacramento River Basin, and is an important tributary of the Sacramento River. The watershed collects and provides a high value water supply, which is distributed to customers throughout California and used for industrial, domestic, and agricultural uses.

The Clear Creek watershed is approximately 35 miles long, ranges from five to 12 miles wide, and covers a total area of approximately 249 square miles, or 159,437 acres. Elevations in the upper watershed range from 6,209 feet at the top of Shasta Bally to approximately 976 feet at the Whiskeytown Dam spillway. The main stem of Clear Creek flows generally southward from its headwaters near Slate Mountain to its confluence with the Sacramento River just south of Redding.

The Whiskeytown Dam hydrologically divides the Clear Creek watershed into both upper and lower watershed areas. The upper watershed drains an area of approximately 200 square miles, between Slate Mountain in the north and Whiskeytown Dam; the lower watershed drains approximately 49 square miles between Whiskeytown Dam and the Sacramento River.

2. Geology and Mining

The majority of the watershed affected by the French Fire is underlain by fine-grained sedimentary and metasedimentary rocks of the Mississippian Bragdon Formation. These consist mainly of shale, mudstone, and siltstone, and some phyllite. Although not predominant in the burned area, intrusive rocks, quartz veins and sheared and faulted contacts are found in places where the Bragdon formation directly overlies the Copley greenstone, indicative of the deformation and mineralization caused by the intrusion of the Shasta-Bally Batholith. Within the burned area the Bragdon Formation dips moderately to steeply to the north. Consequently, north facing slopes have the greatest risk of becoming unstable. Slope failure can lead to mudflows, debris flows, slumping and landslides. Evidence of landslides and debris flows can be seen on the north facing slopes of French Gulch Creek.

Historic mining sites are scattered between the East Fork of Clear Creek and Whiskeytown Lake in the historic mining region known as the French Gulch District. Gold mining began in 1849 and historically ore, lode, and placer mining yielded large amounts of gold. Other minerals mined included chromite, copper, iron ore, and talc. The American Mine in French Gulch is the only active mine remaining in the watershed.

3. Soils

According to the Shasta County soil survey (USDA NRCS, 1974), the dominant soil types in the burned area are the Maymen and Marpa series, accounting for nearly 60 percent of the area. Another 14 percent is mapped as Colluvial Land (predominantly gravels, cobbles, and stones). The Maymen soil is shallow (less than 20 inches to fractured sedimentary rock). The Marpa soil is moderately deep (20 to 40 inches to fractured metasedimentary rock). Field observations confirmed the dominance of these soil types, and the presence of from 40 to 90 percent angular gravels on the surface of the soils in most areas within the burn.

The soil erosion hazard is defined as the susceptibility of soil to surface erosion. That is, the susceptibility of the soil surface to detachment of soil particles by wind, water, or gravity, and the transport of these particles off-site. Factors affecting surface erosion susceptibility include soil texture (percent silt, sand, clay), soil structure, organic matter, slope steepness, and amount of soil cover including litter, duff, and rock fragments. Slopes in the watershed range from 0 to over 70 percent, with steeper slopes dominating. The majority of the fire area is classified as high to very high erosion hazard.

4. Climate

Rainfall in the watershed is seasonal and also varies with elevation; summers are hot and dry and winters are cool with moderate rainfall. Although no climate data centers exist near the head of the watershed, climate data has been collected at the Whiskeytown Lake for the last 38 years, over the period of record between 1960 and 1998. Mean monthly temperatures at Whiskeytown Lake range from 46 degrees in winter to 77 degrees in the summer; the lowest monthly average temperatures of 36 degrees occur in December and January, while the highest average temperature of 95 degrees occur in July and August.

Average annual precipitation measured at Whiskeytown Lake is approximately 63 inches, with roughly 80% of the total precipitation falling in the six month period between November and April. The isohyetal map shows the pattern of annual precipitation across the upper Clear Creek watershed. Precipitation in the watershed is greatest in the mountain ranges flanking the

watershed and is relatively lower in a band that somewhat follows the orientation of Clear Creek. Average annual precipitation amounts in the watershed range from 45 inches in the lower elevations near Whiskeytown Lake, to 85 inches near Cline Gulch along the eastern edge of the watershed. Storms of several days duration and moderate intensity come in from the Gulf of Alaska. Summer thunderstorms come from the south and occur 1 or 2 days per month in the summertime. Snowfalls at Whiskeytown Lake have been measured during the months of November through March; annual average total snowfall at Whiskeytown Lake is 4.1 inches. Although no specific data exist on snowfalls in the higher elevations of the upper watershed, snowfalls certainly occur in the flanking ranges during the winter months and snow often remains on the uppermost peaks well into June.

A typical winter storm event in the area of French Gulch consists of a 2 to 3 day storm event quickly followed by a 1 to 2 day storm event (Matthews, personal communication 2004). Under such conditions soils become saturated during the first event and during the second event infiltration quickly exceeds runoff resulting in flooding of the area.

According to the National Weather Service, Sacramento Office, the long-term weather outlook for this year, 2004-2005, is near normal precipitation for months of November, December and January. For the months of February, March, and April, precipitation is expected to be drier than normal by 5-10%.

5. Hydrology and Water Quality

Flows on Clear Creek were measured downstream of French Gulch between 1950 and 1993. Streamflow in the upper watershed is characteristic of the Mediterranean climate of Northern California, with highest discharge during the wet, winter months and lower discharge during the summer and fall months. Mean monthly discharge during a normal year does not get above 600 cfs. The highest peak discharge measured over the forty-three year record was 14,600 cfs in January 1974.

The Whiskeytown Dam regulates stream flows on Clear Creek. The reservoir formed by the Whiskeytown Dam, commonly referred to as Whiskeytown Lake, is the single largest hydrological feature in the watershed. Built by the BOR in 1962 as part of the Central Valley Project, Whiskeytown Lake stores approximately 240,000 acre-feet of water and has a surface area of approximately 3,220 acres.

While the dam prevents the upstream migration of anadromous fish to historic spawning grounds located in the upper watershed, water quality and suspended sediments in releases from the dam can affect salmon and other aquatic resources downstream of the dam. Geologic, biologic and hydrologic characteristics upstream of the dam can also affect the storage potential in Whiskeytown Lake and hence the timing and magnitude of downstream flow releases, which have the potential to affect physical and biological conditions downstream of the dam.

The California Division of Water Resources has established five water quality monitoring stations along upper Clear Creek and one station located in Whiskeytown Lake near Whiskeytown Dam. These stations became operational in October 1997. Water quality concerns include coliform bacterial levels in waters downstream of septic systems used by residents of French Gulch and the Clear Creek Mobile Estates just downstream of French Gulch. Acid mine drainage is also of concern along a reach of Willow Creek due to drainage from the Greenhorn Mine west of the Tower House area. The National Park Service also conducts bacterialogical monitoring at the Whiskeytown Lake where occasional problems associated with the septic systems have occurred in the past.

B. Reconnaissance Methodology

The purpose of a burned area assessment is to determine if the fire caused emergency watershed conditions and if there are values at risk from these conditions. If emergency

watershed conditions are found, and values at risk are identified, then the magnitude and scope of the emergency is mapped and described, values at risk and resources to be protected are analyzed, and treatment prescriptions are developed to protect values at risk. Emergency watershed conditions include both hydrologic and soil factors. The most significant factor is loss of soil cover which leads to erosion and changes in hillslope hydrologic function in the form of decreased infiltration and increased runoff. Such conditions lead to increased flooding, sedimentation and deterioration of soil condition.

Burned area evaluations included:

- Identifying fire-caused changes in soil properties and hydrologic function;
- Determining areal extent and strength of hydrophobic soil conditions;
- Determining post-fire infiltration rates;
- Verifying the Burned Area Reflectance Classification (BARC) image to create the soil burn severity and watershed response maps;
- Identifying sediment source areas and erosion potential;
- Determining current channel and culvert capacities; and
- Identifying potential threats to human life, property, and critical natural and cultural resources.

The Interagency BAER Team hydrologists, soil scientist, and geologists conducted aerial reconnaissance flights and field visits to review resource conditions after the fire. The main objectives of the field visits were to 1) develop soil burn severity and watershed response maps to identify potential flood and erosion source areas; 2) identify and inventory values at risk, 3) identify the physical and biological mechanisms that are creating risks; 4) review channel morphology and riparian conditions; 5) inspect hillslope conditions; and 6) determine needs for emergency stabilization. Values at risk are properties, capital improvements, and cultural resources located within or downstream of the fire that may be subject to damage from flooding, ash, mud and debris deposition, and hillslope erosion. Values at risk for the French Fire include:

- Homes, businesses, and other structures,
- Whiskeytown Lake
- Roads and highways.
- Howell's alkali grass

A Burned Area Reflectance Classification (BARC) is a satellite-derived map of post-fire changes in spectral reflectance. This is used in combination with field observations to develop a map of post-fire soil and watershed condition. Landsat imagery was acquired August 20, 2004 and was used in combination with a pre-fire Landsat image from a similar time of year to produce the BARC for the French Fire. The BARC map was evaluated by field visits and helicopter reconnaissance to produce the final soil burn severity and watershed response maps. The soil burn severity map was used to model post-fire erosion rates, and the watershed response map was used to predict the hydrologic response of the watersheds.

1. Soil Burn Severity

Soil burn severity is not the same concept as fire intensity and fire severity as recognized by fire behavior specialists. Fire intensity and fire severity relate to fire behavior and fire effects on overstory vegetation and ground fuels, respectively while soil burn severity relates specifically to effects of the fire on soil conditions (e.g., amount of surface litter and duff, infiltration rate, erodibility, soil structure). Although soil burn severity is not based primarily on fire effects on vegetation, post-fire vegetative conditions and pre-fire vegetation density are among the indicators used to assess soil burn severity, and are among the primary factors affecting post-fire spectral response upon which the BARC classification algorithm is based. In combination with field observations, a soil burn severity map is produced by adjusting the BARC map as necessary.

Table 1. Definitions of Terms Commonly used in Soil and Watershed Burned Area Assessments.

Term	Definition
Fire Intensity	Rating based on temperature, flame length, rate of spread, heat of combustion and total amount and size of fuel consumed. Accounts for convective heat rising into the atmosphere and fire effects to the overstory.
Fire Severity	Rating based on temperature, moisture content of duff and fuels lying on the ground, heat of combustion of conductive and radiant heat penetrating into the soil and affecting soil characteristics.
Soil Burn Severity	Rating of fire impacts on soil productivity and erosion rate, and the potential for vegetation recovery. Burn severity is delineated on topographic maps as polygons. Classes of burn severity are High, Moderate, Low and Very Low-Unburned.
Watershed Response	A quantitative evaluation of the amount of soil cover; amount and distribution of impermeable surfaces (rock outcrop, hydrophobic soils), and canopy conditions. Classes of burn severity are High, Moderate, Low and Very Low-Unburned.
X-year Storm Event	Rainfall occurring with a specific probability (1 in X chance) based on historical data. For example, the 10-year storm has a 1 in 10 (10%) chance of occurring in any given year, while the 100-year storm has a 1 in 100 (1%) chance of occurring in any given year.
X-year Flood	Stream discharge with a specific probability of occurring (1 in X chance) base on historical data. The 100-year flood may or may not occur as a result of a 100-year rainfall; the two are independent.

In some cases, there may be complete consumption of vegetation by fire, with little effect on soil properties. In general, denser pre-fire vegetation with a deeper litter layer results in longer heat residence time, hence more severe effects on soil properties. For example, deep ash after a fire usually indicates a deeper litter layer prior to the fire, which generally supports longer residence times. Increased residence time promotes the formation of water repellent layers at or near the soil surface, loss of soil organic matter, and loss of soil structural stability. The results are increased runoff and soil particle detachment by water and wind, and transport off-site.

Soil burn severity parameters include changes in litter and duff, loss of soil structure, destruction of fine and very fine roots in the surface horizon, and development of hydrophobic (water repellent) soil surfaces. Changes in litter/duff conditions as affected by the fire were noted and compared to pre-fire conditions. Water repellency was evaluated by determining if water repellency was present, and if so, the depth and thickness of the water repellent layer was noted.

2. Soil Erosion

Erosion potential was calculated in annual tons/acre using the Revised Universal Soil Loss Equation (RUSLE) in a Geographic Information System (GIS) environment. It is important to recognize that the results of this model (soil movement in tons per acre) are modeled numbers only, and are not based on measured erosion values in this specific area. While the model uses the best available data for the burned area, the figures may not represent actual absolute amounts of soil movement. It is the difference in numbers between pre-fire and post-fire conditions that is of interest in evaluating any experienced increase in erosion due to the fire.

The input layers from the GIS included vegetation, soils, soil burn severity, rainfall factor, and slope steepness and length. vegetation layer came from the California Statewide vegetation coverage. Soils information was gathered from the Soil Survey of Shasta-Trinity Forest Area, California (USDA 1983).

The RUSLE equation: A (tons/acre) = $R*K*LS*C$

Where:

A is the soil movement expected in tons/acre,
R is the rainfall factor,
K is the soil erodibility value taken from the soil survey,
LS is the slope factor accounting for slope steepness and length, and
C is the cover factor.

GIS was used to model erosion potential within the fire. The input layers for the GIS included vegetation, soils, soil burn severity, rainfall factor, and slope steepness and length. The layers were in a 30-meter cell-size grid environment. The vegetation layer came from the California

Statewide vegetation coverage (Cal-Veg). Soils information came from the Soil Survey of Shasta County Area, California (USDA NRCS 1974) and from the Soil Survey of the Shasta-Trinity Forest Area, California (1984). Soil Burn Severity came from the Landsat-derived soil burn severity map that was field validated. The rainfall factor was derived from rainfall regions for RUSLE (Wischmeier, 1974) and from the 2-year 6-hour precipitation in the burned area obtained from the NOAA web site (http://www.noaa.gov). The other RUSLE inputs are incorporated spatially using a Digital Elevation Model (DEM) for the *LS* factor and by calculating *C* factors for each different vegetation type in conjunction with burn severity (i.e., a polygon of chaparral classified as moderate soil burn severity is attributed with a different cover factor than a polygon of chaparral in high soil burn severity, etc). The RUSLE soil erosion modeling process is detailed in Appendix V.

3. Watershed Response

The major determining factor influencing runoff and erosion from burned hillslopes is the amount of disturbance to the forest floor that protects the underlying mineral soil (Robichaud 2000). The unburned forest floor consists of a litter layer (leaves, needles, fine twigs, bark flakes, matted dead grass, mosses and lichens, O1 soil horizon) and a duff layer (partially decomposed remnants of the material in the litter layer, O2 soil horizon) (Martin and Moody 2001). These layers absorb most of the rainfall, provide storage of water and obstruct the flow of water on hillslopes. The combustion process converts the forest floor into ash and charcoal. Ash and small soil particles seal soil pores (Morin and Banyamini 1977, Neary et al. 1999), decreasing the infiltration rate (Fuller et al. 1995, Barfield et al. 1981) and increasing potential runoff and erosion. When the charcoal and ash are removed from the hillslope by post-fire runoff or wind, the soil is left bare and susceptible to rain splash and overland flow.

Overland flow occurs as a result of rainfall that exceeds soil infiltration capacity and the storage capacity of depressions. On the unburned forest floor, overland flow follows a myriad of interlinking flow paths that constantly change as organic material (litter and duff layers) and inorganic material (rock) are encountered (Huggins and Burney 1982). Consumption of the forest floor by fire alters the path of overland flow by reducing the overall length of the flow path, resulting in the concentration of flow into a shorter flow path. This concentration of overland flow increases the hydraulic energy of the flow and can result in rill erosion. At the watershed scale, the reduction of hillslope flow path lengths and the formation of rills that have a high water conveyance capacity reduce the times of concentration or the amount of time for overland flow to reach a defined point within the watershed.

Overland flow is also influenced by the fire induced water repellency (hydrophobicity) of the soils. The reduction of infiltration due to water repellency can increase overland flow (DeBano et al. 1967). Infiltration curves for water repellent soils reflect increasing wetability over time once the soil is placed in contact with water. Water repellency decreases (hence Infiltration increases) with time because the hydrophobic substances responsible for hydrophobicity are slightly water soluble and slowly dissolve, thereby increasing wetability. In general, hydrophobicity is broken up or is sufficiently washed away within one to two years after a fire (Robichaud, 2000).

Raindrops striking exposed mineral soil with sufficient force can dislodge soil particles and small aggregates. Once soil particles are detached by splash erosion they are more easily transported in overland flow. Surface erosion is defined as the movement of individual soil particles by a force, and is initiated by the planar removal of material from the soil surface (sheet erosion) or by concentrated removal of material in a downslope direction (rill erosion). Surface erosion is a function of four factors: 1) susceptibility of the soil to detachment, 2) magnitude of external forces (raindrop impact or overland flow), 3) the amount of protection available by material that reduces the magnitude of the external force (soil cover), and 4) the management of the soil that makes it less susceptible to erosion (Foster 1982, Megahan 1986).

Cannon et al. 2000 found that the generation of debris flows at Storm King Mountain, Colorado, started with significant sheetwash, rill, and rainsplash erosion and transport of burned mineral soil and dry-ravel materials from hillslopes high within contributing areas. Cannon et al. 2004 discussed some common landscape factors in burned areas where debris flows occurred. These included threshold values for percent of the watershed burned at moderate and high severity, basin gradient, underlying geologic characteristics, and storm event intensity and duration. These studies found that debris flows generated from runoff-dominated processes tend to originate in 0 and 1st order channels and hollows.

Pre and Post-Fire Flow Modeling

Pre- and post-fire flows were modeled using a modified Rational Equation run in the ArcView software environment. The modified Rational Formula is intended to accurately calculate peak flows for watersheds up to 640 acres in size. The model has accurately predicted peak flows for watersheds up to 5000 acres in size (2003 So. Cal. Fires Burned Area Emergency Rehabilitation Assessment, 2003). It is recommended that peak discharges calculated for watersheds larger than 5000 acres in size be used for comparative purposes only. The primary reason for the size limitation of the modified Rational Formula is the assumption that rainfall is distributed equally over the entire watershed. Peak flows modeled for the French fire are intended to accurately represent expected peak flows but there are no data specific to the analysis area watersheds with which to validate model-generated flows.

The peak flow rate is calculated using the following equation:
$Q = C' I A$
Q= peak flow rate (cubic feet per second)
I = rainfall intensity (inches per hour)
C' = runoff coefficient calculated as described below (dimensionless)
A = drainage area (acres)

Rainfall Intensity

A grid of precipitation values derived directly from NOAA isohyetal maps for California (NOAA, 2004) was used for each storm recurrence interval and duration. For the French Fire analysis, the 2-year, 10-year, and 50-year recurrence interval storms of 6-hour and 24-hour duration storm events were modeled.

Time of Concentration

$Tc = 0.60 \times T_l$

where:
Tc = the time of concentration (hours)
T_l = the lag time (hours)

Lag time is calculated using the following method developed by the Natural Resources Conservation Service:

$$T_l = (L^{0.8}(S_c + 1)^{0.7}) / (1900 \times S^{0.5})$$

where:
T_l = lag time (hours)
L = greatest flow length in watershed (feet)
S_c = Storage coefficient = 1000/CN - 10 (inches)
CN = Curve number
S = Average watershed slope (percent)

Flow length and average watershed slope are calculated from the DEM and grids derived from the DEM. Curve number is input as a grid.

Runoff Coefficient

$C' = C + C_s + C_i$
$C_s = ((0.8 - C)\,[\ln(S - 1)]S^{0.5}) / 56$

$$C_i = \frac{1}{[0.80 - \frac{C + C_s}{e^I}] \times [1 - 1 + \ln(i + 1)]}$$

where:
C' = runoff coefficient

C = base runoff coefficient
C_s = slope adjustment factor
C_i = rainfall intensity adjustment factor
S = average ground slope of the incremental drainage (percent)
i = rainfall intensity (inches/hour)

The slope adjustment factor accounts for the fact that steeper slopes generate higher flows than shallow slopes. The intensity factor accounts for more intense storms producing more runoff.

The pre-fire and post-fire curve numbers were selected from the Flow Model Curve Number Table (Appendix V) which was correlated to vegetation types within the fire area. The curve numbers in the table are grouped by hydrologic soil group. The hydrologic soil group refers to the infiltration potential of the soil after prolonged wetting. Pre-fire runoff coefficients are based upon the unburned runoff coefficient in Table 2. The unburned coefficient was derived from a conifer vegetation type and all other runoff coefficients are relative to the unburned conifer condition. For example, conifer has a natural unburned runoff coefficient of 0.10 where as chaparral has a runoff coefficient of 0.13 because the litter layer produced by chaparral vegetation can store less water relative to the litter and duff layer of a conifer forest.

The post-fire runoff coefficients (Table 3) used in the model were determined from research conducted at experimental plots in the Bitterroot National Forest (Robichaud 2000). Hydraulic conductivity rates in mm/hr were measured from simulated rainfall events applied several days after a prescribed burn. The simulator rained at a rate of 94 mm/hr on randomly located one meter square plots on natural (unburned), low severity, high severity, and high severity plus strongly hydrophobic soil plots, with three replications. Hydraulic conductivity rates (K) were reported as a range of values but the lowest number in each range for varying burn severity type was used to calculate the runoff coefficient. K values were subtracted from the total simulated rainfall to determine the amount of runoff and then divided by the rainfall rate to calculate percent runoff. Moderately burned areas were extrapolated from the low and high severity values.

Table 2. Unburned Runoff Coefficients

Vegetation Name	**Coefficient**
Barren	0.55
Grass	0.20
Shrub/Grey Pine/Brewer Oak/Live Oak	0.18
Chaparral	0.13
Ponderosa Pine/Douglas Fir/Mixed Conifer/Knobcone Pine/White Oak/Black Oak	0.10

Table 3. Post-Fire Runoff Coefficients

Plot	**K (mm/hr)**	**Runoff rate (mm/hr)**	**% Runoff**	**Runoff coefficent**
Natural (unburned)	85	9	10	0.10
Low severity	60	34	36	0.36
Moderate severity	43	52	55	0.55
High severity with strong hydrophobicity	25	69	73	0.73

Bulked flows were calculated to account for sediment and debris that could be entrained in the post-fire peak flows. During the torrential rains of 1978 and 1980, the bulking factor for some Southern California watersheds where the entire watershed burned at high burn severity ranged from 200% to 500% (Shuirman et al., 1985). The watersheds modeled in the French Fire had a mix of burned and unburned areas. Therefore, post-fire peak flows for areas of high watershed response were increased 150%. Moderate watershed response area flows were increased 100% and low watershed response areas were increased 30%. The bulking equation is as follows:

Post-fire peak flow (cfs) + (Post-fire peak flows (cfs) x % of high watershed response area x 0.7) + (Post-fire peak flow (cfs) x % of moderate watershed response area x 0.5) + (Post-fire peak flow (cfs) x % of low watershed response area x 0.2) (Table 7 - Burn Severity by Watershed)

Pre and post-fire flows were modeled for several watersheds. Appendix III contains a map of the Analysis Watersheds. The watersheds selected for modeling were based on values at risk identified by the BAER Team members.

C. Findings

1. Soil Burn Severity and Watershed Response

Table 5 displays a summary of soil burn severity acres and percentages by class for the French Fire. Watershed response, in this case, was the same as soil burn severity. This was due primarily to the predominance of soils with extremely gravelly surfaces along with very strong granular surface soil structure. The gravel surface armor and strong soil structure result in an abundance of macropores into which water can infiltrate. Also, field observations indicated very little water repellency on most areas of moderate soil burn severity.

A soil burn severity and watershed response map is included in Appendix III.

Table 4. Acres by Soil Burn Severity

Soil Burn Severity	Acres	Percent
High	465	3
Moderate	4,108	31
Low	4,310	32
Very Low and Unburned	4,440	33
Total	13,323	100

The French Fire was dominated by very low to moderate soil burn severity. The soil burn severity classification is determined by changes in soil parameters including duff and litter cover, organic matter and fine roots, soil structure, and infiltration rate. Soil burn severity classes in the French Fire area are described below:

Table 5. Soil Burn Severity Classes

Soil Burn Severity	Characteristics
Unburned to Very Low Soil Burn Severity	Unburned areas intermixed with very low severity ground fire. Vegetation canopy, ground cover, and soil characteristics are only very slightly altered from unburned conditions, if at all.
Low Soil Burn Severity	<30% mineral soil, ash and rock > 2 inches; >70% forest canopy intact, some may be slightly scorched. Shrub canopy may be scorched but not consumed. Grasses may be consumed above the ground but roots are viable.
Moderate Soil Burn Severity	30-70% mineral soil, ash and rock > 2 inches; up to 80% rock < 2 inches; 50%-70% forest canopy scorched but not consumed, scorched needles will drop and provide ground cover ; 0%-30% shrub canopy intact. Unburned and recognizeable charred leaf litter and twigs remain beneath a very thin ash layer in shrub areas; up to 80% rock <2 inches on surface; strong soil structure; water repellency is not continuous and is and weak to moderate.
High Soil Burn Severity	>70% mineral soil, ash and rock > 2 inches; <30% forest canopy intact; deep ash layer in forested areas; 0%-5% shrub canopy intact and only large fuels remain; water repellency is discontinuous but where present is strong at the ash/soil interface.

Areas of high soil burn severity are very limited in the French Fire. They tend to be limited to areas where pre-fire vegetation consisted of dense stands of conifers and/or hardwoods, and in concave slope positions where deep layers of litter and duff had accumulated. These areas showed the effects of longer periods of intense heat as observed by the complete loss of organic surface materials and a deep ash layer. A discontinuous, thin water repellant layer was noted at the soil surface that will reduce infiltration in these areas. Surface soil structure does not appear to have been significantly altered and intact fine and very fine roots were common. Post-fire runoff and erosion are expected to increase significantly over pre-fire levels in high soil burn severity areas due to the loss of organic ground cover.

Appendix IV contains photos showing examples of low, moderate, and high burn severity classes.

The watershed response map in Appendix III includes four classifications that are similar to the soil burn severity classification: Unburned-Very Low, Low, Moderate, and High. The watershed response classes are based upon the primary factors driving watershed response – the condition of the ground cover and soils and the condition of the canopy. The classes are as follows:

Table 6. Watershed Response Classifications

Watershed Response	Characteristics
Low watershed response	<30% mineral soil exposed, ash and rock >1 inch and >70% canopy intact
Moderate watershed response	30%-70% mineral soil exposed, ash and rock >1 inch and 30%-70% canopy intact
High watershed response	>70% mineral soil exposed, ash and rock >1 inch and <30% canopy intact

The watershed response map is the same as the soil burn severity map in the case of the French Fire. The majority of the fire was mapped as low to moderate watershed response. The primary watershed response of this fire is expected to include: 1) an initial flush of ash; 2) sediment deposition in low gradient stream reaches and 3) increases in peak flows that could potentially cause flooding downstream of the fire. Debris flows may also occur. The potential for increased peak flows, debris and mud flows, and sediment deposition will be the highest during the first winter after the fire. The modeled storm that produces the largest increase in peak flows from pre-fire conditions is the 2-year, 6-hour storm. The 2-year, 6-hour storm for the area surrounding the community of French Gulch produces 1.8 inches of rain and has a 50 percent chance of occurring during the first winter after the fire. Vegetation recovery is expected to be rapid with annual forbs and grasses providing cover in the early spring. By the second winter season, annual forbs and grasses and sprouting chaparral species should provide sufficient cover to reduce areas of watershed response that were high to moderate or low and areas of watershed response that were moderate to low or to pre-fire/unburned conditions, as sprouting chaparral vegetation begins to produce brush crowns and a duff/litter layer.

2. Erosion Potential

Soils within the fire occurring on steep slopes and in areas of moderate and high soil burn severity have an increased potential for accelerated rill and sheet erosion during precipitation events. Burned areas may also be highly susceptible to wind erosion since protective vegetative groundcover no longer exists. The dominance of gravel armor on soil surfaces in much of the burned area, however, will mitigate this significantly.

The results of the pre- and post-fire RUSLE model are presented on the Erosion Potential Maps in Appendix III. The results of the model showed that the majority of the fire area before the burn experienced erosion rates between 1 to 2 tons per acre annually. Modeled post-fire erosion rates increased in areas of low and moderate soil burn severity to between 1 to 10 tons per acre. Post-fire erosion in areas of high soil burn severity ranged between 2 to 50 tons per acre, with the highest erosion potential values on areas of steep slopes (greater than 50% slope). Overall, the weighted average modeled for pre-fire soil movement within the burned area was 1.3 tons/acre; post-fire weighted average was 3.4 tons/acre.

3. Debris Flow Potential

The RUSLE equation models only surface erosion. It does not predict landslide or debris-flow type of events. Debris flows are among the most deadly and destructive hillslope processes, and are more likely in recently burned watersheds. Debris flows occur suddenly, move rapidly, and carry tremendous force, often moving house-sized boulders along in their path.

Some of the analysis watersheds in the burned area are potential debris flow areas. Evidence of past debris flows can be found along the tributaries flowing into French Gulch from the north facing slope. According to Cannon et al. (2004), runoff-dominated debris flows in burned areas tend to originate in basins with the following characteristics:

- more than 65% of the watershed is in moderate and high burn severity classes;
- average basin gradient exceeds a specific threshold (Figure 15.9, Canon et al. 2004);
- sediments and metasediments underlie the area;
- rainfall duration is at least 30 minutes to 24 hours with an intensity of at least .16 inch/hr

Five of the analysis watersheds meet these criteria under the conditions of a 2-year storm event. These are Cemetery South (by houses CC14 and CC15), French Gulch Park South, Niagra, Opposite Cline Gulch, and School House (Appendix III contains a map of Potential Debris Flow Areas). A small tributary watershed identified as Lower French Gulch Trib was also evaluated due to its location above an identified value at risk. It was determined to meet the criteria for producing a debris flow. Debris flows are very dangerous and improvements at the mouths of these drainages are subject to significant damage. There is a potential for loss of life for people in structures or on roadways in these locations.

Further, according to Cannon (2004, personal. communication), slopes where underlying sedimentary bedding planes are parallel to the slope are at increased risk for landslide-generated debris flows. This is the case with the north-facing slopes above French Gulch creek, across which traverse the Tom Green Road. The small basin identified as Lower French Gulch Tributary is on a north-facing tributary and could endanger property at the base.

3. Peak Flows

An analysis comparing pre-fire and post-fire peak runoff is shown in the Discharge Analysis Tables. These tables illustrate predicted changes in peak runoff and time of concentration that could result from burned hillslopes. Flood potential will decrease as hillslopes re-vegetate by increasing ground cover and providing organic matter to the forest floor that will gradually increase soil infiltration capacity and hillslope roughness. Hillslopes dominated by grasses will fully recover within 1 to 3 years. Where shrubs were the dominant vegetation, full recovery should occur within 5 years. Recovery of forested ecosystems may take decades.

Table 7 summarizes the chance of various return interval events occurring within 5 years after the fire. This "Risk" analysis evaluates the chance that an event of "T" recurrence interval will be equaled or exceeded in "n" years after the fire.

Table 7. Summary of "Risk" of Equal or Exceeded Recurrence Intervals within a 5-Year Period

Return Interval "T"	Risk within 1 year	Risk within 2 years	Risk within 3 years	Risk within 4 years	Risk within 5 years
2	50%	75%	88%	94%	97%
10	10%	19%	27%	34%	41%
25	4%	8%	12%	15%	18%
50	2%	4%	6%	8%	10%
100	1%	2%	3%	4%	5%

Peak flow increases for the 6 hour and 24 hour storm events with recurrence intervals of 2, 10, and 50 years range from 1 cfs to 704 cfs. (See Discharge Analysis Tables). Watersheds of particular concern are the analysis area watersheds used for peak flow calculations within the model. Of particular concern is French Gulch near its confluence with Clear Creek.

Peak flows, as modeled, are expected to increase by a factor of 1.7. In most cases, this increase will not result in damage to life or property but may produce what is generally called nuisance sediment or water. In the case of French Gulch near its confluence with Clear Creek, increases in peak flows by a factor of 1.7 are expected to cause the stream to overflow its banks resulting in significant damage to property at that location and potential loss of life.

Table 8. Discharge Analysis for the 2-year, 6-hour and 10-year, 6-hour storms.

Watershed	Acres	Pre-fire Time of Concentration (hrs)	Post-fire Time of Concentration (hrs)	Pre-fire **2yr6hr** Discharge (cfs)	Post-fire **2yr6hr** Discharge (cfs)	Post-fire **2yr6hr** Bulked Flow (cfs)	Pre-fire **10yr6hr** Discharge (cfs)	Post-fire **10yr6hr** Discharge (cfs)	Post-fire **10yr6hr** Bulked Flow (cfs)
French Gulch Park North	22	0.216	0.170	3	4	6	5	6	7
Cemetery South	23	0.280	0.187	3	4	5	4	5	7
Niagra	37	0.250	0.163	5	7	10	7	9	13
School House	41	0.205	0.085	6	8	12	8	11	16
French Gulch Park South	57	0.280	0.146	8	11	16	11	15	21
Salt Grass	67	0.310	0.219	9	11	15	12	15	19
Northern Culvert	76	0.306	0.333	11	12	13	15	15	17
Daily at Highland Ridge Road	117	0.424	0.327	15	19	25	20	26	33
Daily	158	0.567	0.456	21	25	31	28	34	42
Opposite Cline Gulch	162	0.389	0.207	23	33	49	31	44	65
Summit Mine	235	0.335	0.264	30	40	51	40	53	68
Slaughterhouse Gulch	264	0.558	0.424	35	45	56	47	60	75
Dutch Gulch	1189	0.955	0.781	152	197	241	203	264	322
French Gulch	5809	1.699	1.393	754	951	1177	1008	1271	1572

Table 9. Discharge Analysis for the 50-year, 6-hour and 2-year, 24-hour storms.

Watershed	Acres	Pre-fire Time of Concentration (hrs)	Post-fire Time of Concentration (hrs)	Pre-fire **50yr6hr** Discharge (cfs)	Post-fire **50yr6hr** Discharge (cfs)	Post-fire **50yr6hr** Bulked Flow (cfs)	Pre-fire **2yr24hr** Discharge (cfs)	Post-fire **2yr24hr** Discharge (cfs)	Post-fire **2yr24hr** Bulked Flow (cfs)
French Gulch Park North	22	0.216	0.170	6	7	9	2	2	3
Cemetery South	23	0.280	0.187	5	7	9	1	2	3
Niagra	37	0.250	0.163	9	12	16	3	4	5
School House	41	0.205	0.085	10	14	21	3	5	7
French Gulch Park South	57	0.280	0.146	14	19	27	5	6	9
Salt Grass	67	0.310	0.219	16	19	24	5	6	8
Northern Culvert	76	0.306	0.333	19	19	21	6	6	7
Daily at Highland Ridge Road	117	0.424	0.327	25	32	42	8	11	14
Daily	158	0.567	0.456	35	43	52	11	14	17
Opposite Cline Gulch	162	0.389	0.207	39	54	81	13	18	27
Summit Mine	235	0.335	0.264	51	67	85	17	22	28
Slaughterhouse Gulch	264	0.558	0.424	59	75	94	20	25	31
Dutch Gulch	1189	0.955	0.781	255	330	403	84	110	134
French Gulch	5809	1.699	1.393	1266	1592	1970	418	528	653

Table 10. Discharge Analysis for the 10-year, 24-hour and 50-year, 24-hour storms.

Watershed	Acres	Pre-fire Time of Concentration (hrs)	Post-fire Time of Concentration (hrs)	Pre-fire **10yr24hr** Discharge (cfs)	Post-fire **10yr24hr** Discharge (cfs)	Post-fire **10y24hr** Bulked Flow (cfs)	Pre-fire **50yr24hr** Discharge (cfs)	Post-fire **50yr24hr** Discharge (cfs)	Post-fire **50yr24hr** Bulked Flow (cfs)
French Gulch Park North	22	0.216	0.170	3	3	5	4	4	6
Cemetery South	23	0.280	0.187	2	3	5	3	4	6
Niagra	37	0.250	0.163	4	6	8	5	7	10
School House	41	0.205	0.085	5	7	10	6	9	13
French Gulch Park South	57	0.280	0.146	7	9	13	9	12	17
Salt Grass	67	0.310	0.219	8	10	12	10	12	15
Northern Culvert	76	0.306	0.333	9	10	11	12	12	13
Daily at Highland Ridge Road	117	0.424	0.327	13	16	21	16	20	26
Daily	158	0.567	0.456	17	21	26	22	27	32
Opposite Cline Gulch	162	0.389	0.207	19	27	40	24	34	51
Summit Mine	235	0.335	0.264	25	33	42	32	42	53
Slaughterhouse Gulch	264	0.558	0.424	29	37	47	37	47	59
Dutch Gulch	1189	0.955	0.781	126	164	201	158	206	251
French Gulch	5809	1.699	1.393	628	792	980	786	991	1226

4. Values at Risk

Values at risk from increased erosion, flood or debris flows include human life, safety, and property and critical natural and cultural resources. The BAER Team members conducted a rapid assessment of life and property values at risk within and downstream of the fire. A values at risk map was created for the French Fire (see Appendix III). Each value at risk on the map is labeled with an ID number. The Potential Watershed Risk to Structures and Recommended Treatments Table lists each site and provides a short description of what is at risk and recommended treatments.

Field reviews within and downstream of the burned area confirm that threats to life exist within and around the fire. Ninety-six homes and other structures were evaluated in the field for flooding and/or debris flow risks. Nine were identified at very high risk; five were a high risk; sixteen were at moderate risk; forty-three were at low risk; nineteen had no risk and four were undetermined and need further evaluation by the NRCS.

Roads on federal and private land, County roads, and State Highways are also at risk of flooding or being inundated with debris. Unimproved roads within the influence of the fire are at risk of failing and may result in debris flows and flooding of homes within and around the town of French Gulch. This risk exists within the watershed under unburned conditions given the right storm event. Post-fire conditions have slightly to moderately increased this pre-existing risk.

Threats to property also exist. Numerous structures are located in or near the floodplains and on alluvial fans within the burned area or downstream. Natural stream channels through the town of French Gulch have been diverted into ditches, confined to culverts, filled in and built upon. The close spacing of structures in town, predominantly houses, doesn't allow much room for surface hydrology to function without interfering with these developments. Properties at highest risk to flooding and debris flows are located on the floodplain of French Gulch Creek, on alluvial fans, especially near their apex, and along ditches receiving diverted stream flow.

Roads in the area often have culverts or other drainage features that are inadequate to pass expected post-fire flood flows which will threaten these structures and create road hazard situations. One such drainage feature is a historic fire ditch that meanders through the west side of the community of French Gulch. It now functions as a water supply and irrigation ditch for the town. This ditch is confined to culverts in several places, and runs under at least one building. Several side ditches tier off of the fire ditch to distribute water to properties on the east side of Main Street. These side ditches are confined to culverts underneath Main Street, but also have areas where property owners have placed shortened culverts in the ditches to function as "foot bridges" in their yards, or have inserted concrete grade control structures to retain water during low flow. The fire ditch also captures surface runoff from channels draining the slopes on the west side of town. Under normal conditions the fire ditch and side ditches require frequent and routine maintenance to keep them clear of sediment and vegetation in order to maintain adequate flow through the length of the community. Residents routinely deal with over-ditch flow and sediment deposition in their yards and garages after storms. Consequently, the network of low capacity ditches that now intercepts surface water runoff is inadequate to accommodate significant storm flow, and especially any increases in runoff and sediment due to the fire. Another threatened road area is the approach and bridge across French Gulch Creek. While the bridge has at least five feet of clearance, any log or debris jams at the bridge could create flood water diversion onto the road and around the bridge.

Cultural resource sites examined were located outside of areas at risk of increased erosion and sedimentation. No degradation of the sites is expected due to increases in erosion or flow as a result of the fire.

Water quality degradation is also expected in streams within and downstream of the burned area. Capacity in Whiskeytown Lake may be reduced as increased sediment loads are deposited in the lake.

A rare species (Howell's alkali grass) is present at the mouth of a small watershed in the southern portion of the fire. Peak flows and sediment deposition are not expected to increase significantly over pre-fire conditions in this watershed.

Table 11. Potential Watershed Risk to Structures and Recommended Treatments.

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC01	High (flooding, sediment)	3 culverts above house 1 culvert at Main St.	Sandbag south bank of channel (4 high, 2 wide @ base) from culvert just above house to where channel bends away from house
CC02	Low (nuisance sediment)	South inboard ditch from watertower road may deposit nuisance sediment on driveway & lawn	None
CC03	Low (nuisance sediment from sheet wash; may be some hazard trees	House at base of 45 degree slope; river cobble retaining walls	None
CC04	Low (nuisance sediment from sheet wash; may be some hazard trees)	House burned down; prospect adit in backyard at base of slope	None
CC05	High (flooding, sediment)	24-inch culvert (storm drain) runs under property to drain tributary	None (Owner declined treatments, such as sandbags)
CC06	High (flooding, sediment)	Property burned over; # of structures undetermined; human debris scattered over site & in channel; potential hazmat site	Property needs to be cleaned of debris Install 2 K rails between burned shed and channel just above Graves property line.
CC07	High (flooding, sediment)	House intact, outbuildings burned Owner declined having treatments placed on his property.	Remove from channel: floatable debris, brush, fence, standing dead trees, short culvert, foot-bridge and culvert at side parkway to allow flows to pass. Remove floatable items from lawn Sandbag 40 feet of south bank of channel from upper end of stone levee to lower end (4 high, 2 wide @ base) Install 90 feet of K rails above house between cemetery road and bluff edge
CC08	Low (nuisance sediment)	House burned; site and Niagara Street could be compromised if flooded	Clean out fire ditch
CC09	Low (nuisance sediment)	House burned; 2 burned vehicles; potential hazmat site	Clean out fire ditch
CC10	Low (nuisance sediment)	---	Clean out fire ditch
CC11	Low (nuisance sediment)	---	None
CC12	Low (nuisance sediment)	---	None

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC13	Low (nuisance sediment)	---	None
CC14	Moderate (flooding, sediment)	---	Trim oleanders along channel; remove fencing adjacent to channel and floatable materials; sandbag 225 feet along back fence around to along driveway to just past house at CC15
CC15	Moderate	House may be in original channel; garage positioned okay; back shed & red shed may be flood targets; drainage has been diverted to ditch along North property line.	Pull concrete footbridge; cut pine tree down; clean channel of vegetation, cobbles at bottom of channel (retain cobbles on sidewalls of channel); remove wooden beam along driveway; remove fence from across channel; sandbag around back of red shed, along top of channel bank around shed, along driveway to just past house (200 feet)
CC16	Low (nuisance sediment)	---	None
CC17	---	---	None
CC18	Low (nuisance sediment)	Burned structure behind PO; potential hazmat site	None
CC19	Low (nuisance sediment)	Burned structure; potential hazmat site	None
CC20	Low (nuisance sediment)	Burned structure; potential hazmat site	None
CC21	None	Burned structure (trailer?) Potential hazmat site	None
CC22	Low (nuisance sediment)	Burned structure (garage); 2 burned cars, 1 truck & a delivery truck potential hazmat site	None
CC23	Low (nuisance sediment)	Burned structure (garage?); burned truck; potential hazmat site	None
CC24	Low (nuisance sediment)	Burned structure	None
CC25	Low (nuisance sediment)	Standing house	None
CC26	Moderate (flooding & sediment)	House with detached shed below alluvial fan of small watershed; fire ditch runs behind house; back part of shed is built over the fire ditch	Clean out ditch draining alluvial fan; remove floatable debris from site; remove wooden foot bridge; seed watershed/alluvial fan

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC27	Low (nuisance sediment)	---	None
CC28	Low (nuisance sediment)	---	None
CC29	Low (nuisance sediment)	Most nuisance sediment should be intercepted by an old road bench above fire ditch (dry)	Clean fire ditch filled of sediment & debris to increase channel capacity
CC30	Low (nuisance sediment)	Most nuisance sediment should be intercepted by an old road bench above fire ditch (dry)	Clean fire ditch filled of sediment & debris to increase channel capacity
CC31	Low (nuisance sediment)	Most nuisance sediment should be intercepted by an old road bench above fire ditch (dry)	Clean fire ditch filled of sediment & debris to increase channel capacity
CC32	Low (nuisance sediment)	Burned structure; garage intact; Most nuisance sediment should be intercepted by an old road bench above fire ditch (dry)	Clean fire ditch of sediment & debris to increase channel capacity
CC33	Very High (flooding, sediment)	---	Clean all culverts on property; clean ditch along N side of property; fill in small extension ditch off of fire ditch in middle of backyard; install K rails and sandbag along fire ditch and along south side of yard to driveway
FG01	Very High	Visited owner three times to impress upon them the seriousness of their homesite to flooding and debris. Owner declined having treatments placed on his property.	Clean debris and floatable material from French Gulch channel and floodplain; remove rock gabions from French Gulch; sandbag 45 feet along ditch of mtn road; replace culvert under property with larger culvert.
CC34	None	Located on crest of small ridge	None
CC35	High (flooding, sediment)	Owner maintains part of channel, but it is overgrown with wild grape near the house	Remove floatable debris from channel and floodplain (bails of wire, plastic pipe, etc.) Clear vegetation from channel bottom to increase channel capacity Remove fence from across channel Sandbag channel bank near house and highway
CC36	High (flooding, sediment)	Historic flooding from Daily's drainage	Sandbag N, W & S sides (380 feet) of property to protect from flooding & debris from two drainages (CC35 & CC40)
CC37	Low (house site) High (driveway)	Lower drive way may be compromised by flooding & sediment	None
CC38	Moderate (flooding, sediment)	historic flooding from Daily's drainage	Sandbag CC40 side of property line fence
CC39	Moderate (flooding, sediment)	Historic flooding	Treat property at CC40

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC40	Very High to Extreme	Historic flooding and debris	Replace culvert with 5-foot culvert; replace trash rack; clean property of floatable debris; remove fence across channel; install K rails and sandbags; maintain treatments after each storm event
CC41	Low	House and structures okay; lower driveway may have flooding & sediment	Treat property at CC40
CC42	High (flooding, sediment)	Historic flooding	Sandbag between flood wall and hillslope, and at driveway
CC43	Moderate (flooding, sediment)	---	Treat drainages across the highway
CC44	High (flooding, sediment)	House burned; 3 culverts along driveway that may not carry flows; uppermost culvert = 36 inches	None; driveway and culverts should be re-engineered if owner decides to rebuild on the site,
CC45	Moderate (flooding, nuisance sediment)	Burned truck and debris near channel; need to maintain driveway easement to property at CC44 (may need to be surveyed)	Clean out channel: remove dead standing tree from channel; remove floatable debris; pull earthen berm out of middle of channel and back to edge of driveway, but off of easement; place K rails between driveway and channel (~120 feet)
CC46	Low (nuisance sediment)	House burned	None; access easement needs to be maintained through CC45 property
CC49	None	---	None
CC50	None	---	None
CC51	None	---	None
CC52	None	---	None
CC53	Low (nuisance sediment)	Woody debris in road ditch	Remove floatable woody debris from ditch; clean out culvert and pound out outlet
CC54	Low (nuisance sediment)	---	None
CC55	Moderate (flooding, sediment)	36-inch oblong culvert from across the street runs under home	Clean culvert; clear channel above culvert; clear vegetation below culvert

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC56	Low (nuisance sediment)	---	Clean inboard ditch across the street; clean culvert; remove vegetation from culvert outlet
CC57	Low (from inboard ditch across street)	---	Clean inboard ditch across the street
CC58	Low (nuisance sediment)	---	None
CC59	Moderate (flood, sediment)	Culvert runs through property from Nukka property across street; potential flooding from Niagara watershed	Sandbag in front of house
CC60	Moderate (flood, sediment)	Culvert runs through property from Nukka property across street; potential flooding from Niagara watershed, esp. to garage	No one at home; NRCS needs to assess structure for protection treatment(s)
CC61	Moderate (flood, sediment)	Culvert runs through property from Nukka property across street; potential flooding from Niagara watershed	No one at home; NRCS needs to assess structure for protection treatment(s)
CC62	Low (nuisance sediment)	---	None
CC63	Low (nuisance sediment)	---	None
CC64	Low (nuisance sediment)	---	Keep canal clean of sediment
CC65	Low (nuisance sediment)	---	Keep canal clean of sediment
CC66	Low (nuisance sediment)	---	Keep canal clean of sediment
CC67	Low (nuisance sediment)	House burned	Keep canal clean of sediment
CC68	Low (nuisance sediment)	---	None
CC69	Moderate (flooding, nuisance sediment)	Culvert under Main St. transmits flow from fire ditch and runoff from channel between CC14 & CC15 to ditch paralleling driveway at CC69; historic flooding to garage	Sandbag between driveway and ditch, and between ditch and house (210 feet total); remove culvert in middle of ditch and replace in kind after threat has diminished.

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC70	Low (nuisance sediment)	---	None
CC71	Low (nuisance sediment)	---	None
CC72	Moderate (flooding, nuisance sediment)	Historic flooding and sediment deposition on front yard	Clean sediment and vegetation from ditch; remove 2 concrete grade structures from ditch; remove fence from around tree in front yard; sandbag between ditch and house from driveway to culvert in back of side yard
CC73	Moderate (flooding, nuisance sediment)	Not home; neighbor at CC72 said he would explain situation to CC73 resident	Sandbag between ditch on CC72 and driveway from street to past house, and at property line with CC74
CC74	Moderate (flooding, nuisance sediment)	---	Sandbag between ditch and house
CC75	None	---	None
CC76	None	---	None
CC77	None	---	None
CC78	None	---	None
CC79	None	---	None
CC80	None	Wooded shed N of bar	None
CC81	None	bar	None
CC82	None	---	None
CC83	None	Burned house behind bar	None

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC84	None	Trailer	None
CC85	None	gray shed	None
CC86	None	---	None
CC87	Undetermined	Children at home did not grant permission to assess property until parents returned. NRCS will have to assess property for flood risk and protection treatments	see comments; also, rock diversion structure in French Gulch under bridge that diverts flow to culvert and then ditch on property will have to be removed. This diversion obstructs high flows and prevents trout from getting up French Gulch.
CC88	Low	---	Clean out culvert and inboard ditch
CC89	Low	Historic flooding (low level)	Clean inboard ditch across road
CC90	High (flooding, debris)	Kirk Heim (Principal) – interested in any rehab project K-8 students could do	Install no parking signs along road; install flood/debris hazard warning signs on road on either side of school area; clean culverts and inboard ditch; remove floatable debris; re-position fence corner to oblique angel near bus garage; replace 36-inch culvert with a 48-inch culvert; install K rails from school driveway entry to far side of garage driveway; re-locate garage driveway access through an offset in the K rails so that the school garden is still protected by the K rail.
CC91	Moderate (flooding, sediment)	Sheet flow occasionally flood barn	Clean out ditch below embankment with school yard; install low water crossing at tailing terrace drop-off to Clear Creek; install ~120 feet of sandbags around three sides (N, E, S) of barn
CC92	High (flooding, debris)	2 burned houses on apex of alluvial fan to Johns Gulch; cordoned off with No Trespassing tape	NRCS needs to assess property for specific risks and protection treatments
CC93	Low (nuisance sediment)	several small drainage channel behind house	NRCS needs to assess property for specific risks and protection treatments
CC94	Low (nuisance sediment)	Next to church; several small drainage channel behind house	NRCS needs to assess property for specific risks and protection treatments
CC95	Undetermined	Old mine site?	NRCS needs to assess property for specific risks and protection treatments
CC96	Undetermined	A small cluster of structures	NRCS needs to assess structure for protection treatment(s)

House Number	Potential Watershed Risk	Comments	Recommended Treatments
CC97	Undetermined	---	NRCS needs to assess threats to stream crossings along road

Treatments Considered but Not Recommended

Other than high burn severity areas on slopes above values at risk that will be aerial seeded, no extensive areas of upland watershed/erosion control treatments have been identified (e.g. log erosion barriers, straw wattles, straw mulching, etc.). There are several reasons for this situation. 1) Many of the burned hillslopes do not lend themselves to treatments such as contour felled logs, straw wattles, or log erosion barriers due to the steepness of slope, the amount of surface rock, the undulating soil surface or the lack of trees. 2) Very little hydrophobic soil conditions are found in the burned area. The widely scattered hydrophobic soils that do exist are expected to break-up during an intense rainstorm. 3) The vegetation is expected to recover rapidly which will quickly reestablish ground cover. 4) Lack of feasibility of installing treatments prior to the expected first damaging rain.

An early warning system is recommended for homes and roads at risk of floods and debris flows in French Gulch Creek. Early warning systems are not recommended for homes at risk of floods and debris flows that are at the base of very small watersheds. A flood or debris flow would impact these structures very quickly and early warning systems would not provide the residents adequate warning. Storms in the burned area tend to be widespread and predictable days in advance. Information in this plan has been discussed with the Shasta County Sheriff's Department who will coordinate any evacuations.

IV. RECOMMENDATIONS

A. Emergency Stabilization

The Values at Risk table identifies each treatment site by its value at risk ID number and provides a short description of the treatment recommended at each site.

1. Floatable Debris Removal:

Situation: Woody debris (cut trees or logs and standing dead trees) as well as man-made objects are present in channels and adjacent floodplains. This debris can become entrained in flood flows, reducing channel capacity and may create debris jams in the channel or plug culverts or bridges. These jams can divert the flow out of the channel increasing flooding.

Recommendation: Remove floatable debris from stream channels and adjoining floodplains and haul out of the floodplain to prevent the debris from being mobilized in flood events. Household debris and other trash should be recycled or disposed of appropriately at landfills or transfer stations.

See Part F; Specification W-1, Floatable Debris Removal

2. Flood Hazard Warning Signs:

Situation: Trinity Mountain Road and Highway 299 cross stream channels that are at risk of flooding and mud and debris flows. Some of these roads are also exposed to potential falling and rolling rocks off of the burned area. Residents and the general public need to be aware of these potential hazards.

Recommendation: Install flood and rock fall warning signs on roads at locations designated on the Watershed Treatment Map.

See Part F; Specification W-2, Flood Hazard Warning Signs

3. Post-Flood Event Road Cleanup

Situation: During major storm events, road-stream crossings and other sections of roadways can be expected to flood. Flood events will erode or deposit sediment and debris on the roadway making them impassible and unsafe.

Recommendation: Inspect roads after flood events and perform maintenance as necessary.

See Part F; Specification W-3, Post-Flood Event Road Cleanup

4. Culvert Evaluation and Cleaning

Situation: Existing culverts may not be in adequate condition to pass expected increased flows from the burn area. Two culverts were identified as being undersized for post-fire expected flows.

Recommendation: Evaluate roads within and downstream of the burn area and identify maintenance needs. Culverts that are plugged should be cleaned to ensure maximum flow capacity. Subsequent to flood events, culverts should be inspected and re-cleaned if necessary. Any culvert replacement, installation, or removal needs should be identified and a supplemental funding request filed to request additional funding if necessary. Slopes below outlets of culverts and rolling dips (particularly if new culverts are installed) should be examined to ensure that water is not discharged onto sensitive slopes, mill tailings, or other roads below in such a way that increased erosion results. The two culverts identified as being undersized should be replaced.

See Part F; Specification W-4, Culvert Evaluation and Cleaning

5. Structural Protection (K-Rails)

Situation: Several homes and other facilities lie within flood and debris flow prone areas within and downstream of the burned area. Although emergency stabilization treatments cannot prevent flooding of or damage to structures during all magnitudes of storms, treatments can be effective in reducing flooding and damage. K-rails are an effective treatment where high velocity debris flows that may carry large debris such as boulders, limbs, etc. are expected to occur, not where low velocity flooding or sediment deposition may occur.

Recommendation: Place K-rails (Jersey barriers) in strategic locations around the structures to divert floods, mudflows and rolling rock away from the structures. Diagrams of where the K-rails should be placed at each site are shown on the Specification Diagram Forms in Appendix V.

See Part F; Specification W-5, Structural Protection (K-Rails)

6. Structural Protection (Sandbags)

Situation: Several homes and other facilities lie within flood and debris flow prone areas within and downstream of the burned area. Although emergency stabilization treatments cannot prevent flooding of or damage to structures during all magnitudes of storms, treatments can be effective in reducing flooding and damage. Sandbags are an effective treatment where low velocity flows or nuisance sediment deposits are expected to occur, not where higher velocity flows (i.e., boulders) may occur.

Recommendation: Place sandbags in strategic locations around the structures to divert floods, mudflows and rolling rock away from the structures. Diagrams of where the sandbags should be placed at each site are shown on the Specification Diagram Forms in Appendix V.
See Part F; Specification W-6, Structural Protection (Sandbags)

7. Ditch Cleaning

Situation: The fire ditch and other ditches that run through French Gulch have not been maintained on a regular basis. Runoff and sediment coming off the slopes above French Gulch will collect in the ditches. The ditches need to be cleaned out and the culverts unplugged in order to maximize their capacity to carry flows and store sediment.

Recommendation: Clean debris and sediment from the fire ditch and other ditches that run through French Gulch. Unplug culverts within ditches.

See Part F; Specification W-7, Ditch Cleaning

8. Early Warning System

Situation: French Gulch Creek contains several residences, French Gulch Road, and Trinity Mountain Road. The canyon is narrow with very steep side slopes. Predicted flood and debris flows as a result of the French Fire are likely to flood portions of the valley. Emergency stabilization treatments cannot protect human life or property from all magnitudes of floods and debris flows. Therefore, residents and visitors to flood prone areas need timely warning in order to evacuate the hazard area.

Recommendation: Install an automated early warning system rain gauge at the top of the French Gulch Creek watershed to measure precipitation from storms coming in from the northwest. The station should programmed to relay "real-time" weather information to the National Weather Service. This information should be relayed to the Shasta County Sheriff's Department. The trigger point for the early warning system was determined by considering the peak flow at which life and property are threatened near the mouth of French Gulch Creek. The peak flow that is expected to result in flooding is 1,177 cfs and is generated by a 2-year, 6-hour storm. The rainfall for the 2-year, 6-hour storm is 1.8 inches which equates to 0.3 inches per hour, or 0.15 inches per 30 minutes of rainfall assuming a uniform intensity. The post-fire time of concentration for this watershed is 1.4 hours. Therefore, a trigger point of 0.15 inches per 30 minutes of rainfall was selected to allow for adequate notice and evacuation.

See Part F; Specification W-8, Early Warning System

9. Aerial Seeding

Situation: Pre-burn ground cover was consumed by the fire in several areas resulting in moderate to high watershed response. Expected increases in overland runoff and erosion will threaten values at risk. Seeding accelerates development of root structure, ground cover and organic matter to replace what was burned in the fire. All of these are usually associated with flood and debris flow source areas, and therefore mulching has a secondary benefit of controlling flood peaks and reducing the probability of debris flows.

Recommendation: Apply seed aerially to slopes above values at risk as identified on the Watershed Treatment map in Appendix III.

See Part F; Specification, Aerial Seeding

B. Management Recommendations (Non-Specification)

Insure that the community of French Gulch and visitors to the area are well informed of the post-fire flooding and debris flow safety hazards that may impact structures and roads. Methods to achieve this include, public meetings, news releases, brochures, letters to residents at risk, information posted on public buildings, and flood hazard warning signs.

Construct a fence along the fire ditch from its point of diversion to the water supply intake to prevent access and illegal dumping. This will help protect the quality of the drinking water supply.

Monitor fecal indicators above Whiskeytown Lake in order to protect the drinking water supply.

CONSULTATIONS

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Numerous residents in French Gulch	

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INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

FRENCH FIRE

VEGETATION RESOURCE ASSESSMENT

I. OBJECTIVES

Evaluate and assess fire and suppression impacts to vegetation resources.

Identify emergency stabilization, and monitoring needs supported by specifications to aid in vegetation recovery and soil stabilization.

Evaluate the potential for non-native invasive plant species encroachment into native plant communities within the fire area and determine rehabilitation and monitoring needs.

Determine effects of fire and suppression impacts to Threatened & Endangered and sensitive plant species.

Provide management recommendations to assist in vegetation recovery and species habitat protection and rehabilitation.

ISSUES

Short and long-term impacts of the fire and suppression actions on plant communities and vegetation resources.

Natural recovery and revegetation of heavily impacted areas (e.g. dozer and hand lines and opening of old roads).

Potential for invasion and spread of non-native invasive plant species.

Fire and suppression impacts to the rare salt grass *Puccinellia howellii*.

III. OBSERVATIONS

This assessment addresses the concerns of agency staff and provides an overview of the affected vegetation resources and known and potential impacts of fire and suppression activities on U.S. Department of the Interior administered lands within the fire area. The findings and recommendations contained in this assessment were compiled from personal interviews and meetings with staff representing the Bureau of Land Management – Redding Field Office (BLM), National Park Service – Whiskeytown National Recreation Area (NPS), U.S. Fish and Wildlife Service – Red Bluff Office (USFWS), Natural Resources Conservation Service – Redding Service Center (NRCS), Western Shasta Resource Conservation District (RCD), Shasta County Department of Agriculture, private landowners, and Burned Area Emergency Response (BAER) Team specialists as well as literature reviews and field reconnaissance, including satellite imagery and aerial and ground surveys.

A. Background

1. Fire Background

The French Fire started in the early afternoon on Saturday, August 14, 2004. The fire rapidly grew to over 3,000 acres within the first 4 hours and exhibited extreme and erratic fire behavior. By 6:00 PM the fire burned over the community of French Gulch, damaging or destroying 26 structures. Burning conditions were extreme with dead fuel moisture nearing historical minimums and the Energy Release Component (ERC) reaching historical maximums. The high temperatures and low dead and live fuel moistures combined with steep terrain contributed to rapid rates of spread in the first two days of the fire. The fire

progressed rapidly through the chaparral, oak, and grey and knobcone pine vegetation types in the lower elevations. Fire spread slowed considerably in subsequent days as suppression actions continued and the fire reached the higher elevation Douglas-fir, Ponderosa pine, and mixed conifer types. On August 20 the fire was contained at 13,323 acres.

2. Vegetation Communities

French Gulch is located within the Klamath Mountain physiographic province and is an area of significant diversity due to proximity to the Cascade Range, Coast Range, and Sacramento Valley. The diverse plant communities intergrade with one another in such a way that distinct boundaries are seldom observed. This patchy vegetation pattern reflects a broad range in elevation, rugged topography, diverse soil types, and a history of natural and human disturbance. For the purposes of this document, the following plant communities were identified through a combination of the USDA's Remote Sensing Lab CALVEG project and the Whiskeytown Fire Management Plan Environmental Impact Statement:

1. Northern Mixed Chaparral Alliance
2. Montane Mixed Chaparral Alliance
3. Knobcone Pine Alliance
4. Foothill Grey Pine Alliance
5. Ponderosa Pine Alliance
6. Mixed Conifer/Pine Alliance
7. Douglas-fir Alliances
8. Oak Alliances
9. Riparian Alliances

Table 1 identifies the total acreage by vegetation alliance and ownership within the French Fire and the following sections describe the plant communities, their distribution, typical plant species, and responses to fire.

Table 1. Acres burned in the **French** Fire by vegetation type and ownership.

Vegetation Type	BLM	NPS	Private	Total	% of Total
Northern Mixed Chaparral	1244.1	182.3	1487.8	2914.2	21.9
Montane Mixed Chaparral	117.7	0	10.2	127.9	1.0
Knobcone Pine	213.4	100.7	176.8	490.9	3.7
Foothill Grey Pine	1483.1	22.5	1360.8	2866.4	21.5
Ponderosa Pine	143.8	10.9	340.9	495.6	3.7
Mixed Conifer Pine	651.7	0	903	1554.7	11.7
Pacific Douglas-fir	1577.2	0	430.4	2007.6	15.1
Douglas-fir-Ponderosa Pine	171.9	0	95.5	267.4	2.0
Oak	1535.2	70.8	876.1	2482.1	18.6
Dry Grass/Herbs	13.8	20.6	33	67.4	0.5
General Barren	0.6	0.5	47.8	48.9	0.4
Total	**7152.5**	**408.3**	**5762.3**	**13323.1**	

Northern Mixed Chaparral Alliance:
This alliance is a mixture of low-elevation chaparral species that vary in species composition and vegetation structure from distinct monocultures to combinations of shrub and small tree species that intergrade with other plant communities. Thick, leathery, oily leaves that form a highly flammable leaf litter layer characterize chaparral species. Such characteristics enable chaparral plants to withstand extremes in temperature and precipitation, as well as the periodic consumption by fire. This broad-leaved community is diverse, ranging from dense, impenetrable thickets to open, mixed shrub-oak woodlands.

Chaparral communities in this area are dominated by white leaf manzanita (*Arctosytaphylos viscida*), ceanothus species (*Ceanothus* spp.), chamise (*Adenostoma fasciculatum*), toyon (*Heteromeles arbutifolia*), yerba santa (*Eriodictyon californicum*), and poison oak (*Toxicodendron diversilobum*). Oak and pine species are also sparsely scattered throughout many of the drier areas, and occur with some density on wetter sites and north and northeast facing slopes. The thick layer of leaf litter and lack of light results in a sparse herbaceous understory of species such as brodiaea (*Brodiaea* spp.), wild onion (*Allium* spp.), chaparral honeysuckle (*Lonicera interrupta*), creeping sage (*Salvia sonomensis*), and Indian warrior (*Pedicularis densiflora*). Common exotic grasses include rye (*Lolium perenne*), cheatgrasss, and fescues (*Vulpia* spp.). Some stands of chamise and whiteleaf manzanita are nearly devoid of an herbaceous layer but have a high cover from rocks less than 1 inch in diameter.

Montane Mixed Chaparral Alliance:
Montane chaparral usually occurs above 3,000 feet in elevation and is dominated by greenleaf manzanita (*Arctostaphylos patula*), combined with pinemat manzanita (*Arctostaphylos nevadensis*), mountain whitethorn (*Ceanothus cordulatus*), huckleberry oak (*Quercus vaccinifolia*), and bush chinquapin (*Chrysolepsis sempervirens*). Understory species in this community are usually absent, and this community appears to be the result of past crown fire in forest vegetation, as well as logging of mixed conifer forests at high elevations on highly erosive soils.

Role of Fire (both Northern mixed and Montane mixed): Although fire-return intervals in chaparral vary among sites, most shrublands are adapted to relatively infrequent but recurring fires. Fires are characteristically intense, removing all or most of the above ground biomass. Chaparral is highly flammable and also possesses various adaptations to fire, including the abilities to sprout massively and quickly from thickened root bases even after severe burning and produce a heavy crop of seedlings from fire-resistant and fire-stimulated seeds that germinate following fire. Chaparral typically exhibits a highly specialized post-fire flora. The short-lived species may grow mostly, or only after fire, and exist as dormant seed between fires. Vegetative responses vary and are determined by a complex interaction of temperature, soil moisture, heat duration, depth of burn, and season of burn. Plants that regenerate from underground rhizomes or bulbs may be more or less dormant between fires typically grow vigorously after fire, and may exhibit fire-dependent, or fire enhanced reproduction.

In some areas of the chaparral plant community, species composition following fire closely resembles what was there before the fire, which suggests that chaparral is the climax community. Such communities recover quickly from fire and regain dominance soon after. In other areas, however, the absence of fire or occurrence of low severity fire allows the slow development of an overstory tree canopy that can eventually dominate a site. This process is highly pronounced in the montane chaparral community, where shrub species face competition with tree species. Therefore it takes high severity fire effects to remove the tree species and allow the establishment of chaparral. After initial establishment, periodic moderate to high severity fires help maintain the chaparral by killing trees before they shade out the shrubs, whereas alternative fire regimes allow the trees to regain dominance.

Successful seedling establishment of many plant species in chaparral plant communities does not occur in the absence of fire. Fire return intervals in chaparral appear to be quite variable, depending upon local site conditions, proximity to areas of American Indian use, and elevation. Chaparral fire return intervals generally have been estimated to be 20-50 years with ranges of approximately 10-100 or more years.

Knobcone Pine Alliance:
Knobcone pine communities range from about 1,000 to 2,000 feet in elevation. Stands of knobcone pine are typically even-aged, and range from dense stands with few other associate tree species to open communities co-dominated by black oak, with scattered grey pine (*Pinus sabiniana*), ponderosa pine (*Pinus ponderosa*), and other occasional hardwood and softwood species. The understory is variable, but typically dominated by white leaf manzanita, with toyon, poison oak, coffeeberry (*Rhamnus spp.*), yerba santa, and ceanothus species. The ground cover when present can be quite diverse, consisting of a blend of perennial and annual grasses, with herbaceous species such as buckwheat (*Eriogonum spp.*), bracken fern (*Pteridium aquilinum var. pubescens*) and everlasting (*Antennaria spp.* and *Gnaphalium*

spp.) in more open areas. The knobcone pine community often intergrades with the ponderosa pine, mixed oak woodland, and chaparral plant communities.

Role of Fire: Knobcone pine is a serotinous species; most cones remain closed until opened by the high temperatures from fire. While this closed-cone characteristic is more pronounced in this species than the other closed-cone pines and cypress, the species does succeed in the absence of fire and is common on disturbed sites. The structure and species composition of this plant community is indicative of moderate to high frequency stand-replacing fires that results in the domination of fire-dependent species. A continuous fuel layer from the surface to tree crowns frequently exists in the knobcone pine community. This continuous fuel profile promotes a high severity crown fire system under typical fire season conditions. Knobcone pines are susceptible to moderate to high intensity fire due to their thin bark. Continued production and accumulation of cones throughout its lifetime ensures that large quantities of seed are released following such fires. A long-term benefit of this type of fire for the knobcone pine is the restrictive role it plays in soil development processes. Essentially, this process limits establishment of many plant species that would otherwise compete with the knobcone pines. Little information is available about low severity fire effects on this species.

Foothill Grey Pine Alliance:
Grey Pine (*Pinus sabiniana*) forms prominent open or sparse stands throughout the foothills of Whiskeytown and French Gulch. These stands are usually diverse and associated with Blue Oak (*Quercus douglasii*) but also with Canyon Live Oak (*Quercus chrysolepsis*) in some areas. The understory is primarily composed of poison oak, red bud (*Cercis occidentalis*), yellow starthistle (*Centaurea solstitialis*), and annual grasses.

Role of Fire: Fire is a natural component of the blue oak-grey pine community, with a fire return interval averaging at 15 to 30 years. Fires in this community are characterized as intense but of light or moderate severity, with vegetation and fuels extremely dry in summer. Grey pine is highly flammable and the needles contain ether extracts. It is a heavy resin producer, with the wood, bark, cones, and needle sheaths all containing pitch. Despite the resinous nature of this pine, larger trees remain fairly fire resistant due to thick bark and self-pruned trunks, which can withstand moderate severity fires. Also, seed regeneration is favored following fire.

Ponderosa Pine Alliance:
Ponderosa pine (*Pinus ponderosa*) forests range from approximately 1,500 to 3,000 foot elevations. Ponderosa pine is the dominant tree in this community with Douglas fir (*Pseudotsuga menziesii*), dogwood (*Cornus spp.*), canyon live oak, and other scattered hard and softwood species present to a lesser extent. Black oak (*Quercus kelloggii*) is co-dominant with ponderosa pine in many areas. The understory shrub component includes manzanita, ceanothus species, poison oak and toyon. Other shrubs, herbaceous species and grasses are quite similar to those in the mixed conifer discussion above, with the exception that the lower elevation ponderosa pine communities have more annual and exotic grass cover, which may contribute to increased fire frequency. The ponderosa pine forests in this area are often intermingled with mixed oak woodlands.

Role of Fire: In the West, these forests have a well-known, almost famous intrinsic relationship with fire with frequent lower elevation understory fires in the pre-settlement ponderosa pine type. Pacific ponderosa pines have numerous adaptations to fire, including a thick bark and open crown structure that allows this species to survive fires. This species also has a self-pruning mechanism that reduces the chance of crown fires. Other adaptations include deep roots, high foliar moisture content, insulated bud scales, medium to light lichen growth, and seedlings that grow optimally in soil seedbeds that are cured by fire.

In general, mature ponderosa pine is resistant to low and moderate intensity fires, while most other overstory conifer species are able to survive low intensity fires. Young saplings and seedlings are usually killed by fire, so relatively few small trees become large trees. The historic role of fire in this plant community was complex, varying over time and across the landscape. Under a natural fire regime, these

factors promoted mosaics of even and uneven aged stands and structural diversity. The isolated high intensity patch burns provided for a mosaic forest where a mix of shrub and tree species predominated.

Research has shown that before suppression, most ponderosa pine stands experienced low intensity surface fires with a fire frequency ranging from 6-19 years in different parts of its range. Research conducted by Skinner (in prep.) found that the median fire return intervals for the ponderosa pine-mixed conifer forests in the nearby Klamath Mountains were 7-15 years with a range of 3-55 years. This forest type may be difficult to rapidly regenerate to conifer species following wildfire, due to the prolific response of oak sprouting following crown mortality.

Mixed Conifer/Pine Alliance:
The mixed conifer community includes ponderosa pine, Douglas-fir (*Pseudotsuga menziesii*)--the 2 dominant tree species--incense cedar (*Calocedrus decurrens)*, sugar pine (*Pinus lambertiana*), and white fir (*Abies concolor*). Subcommunities contain species that are less dominant but regionally plentiful such as white alder (*Alnus rhombifolia*). In areas of dense forest canopy, the understory shrubs are either sparse or scattered and consist of tan oak (*Lithocarpus densiflorus vars. densiflorus and echinoides*), greenleaf manzanita (*Arctostaphylos patula*), dogwood (*Cornus spp.*), western azalea (*Rhododendron occidentale*), snowbush (*Ceanothus cordulatus*), and sierra gooseberry (*Ribes roezlii*).

The ground cover in the mixed conifer plant community is composed of grasses, ferns, sedges, and some unique herbaceous species such as parsley fern (*Cryptogramma acrostichoides*), twinflower (*Linnea borealis var. longiflora*), and bride's bonnet (*Clintonia uniflora*). The forest floor vegetation layer consists of low-growing lichens and mosses.

Role of Fire: Fire is an important ecological process in the development of mixed conifer forest types. It is generally well recognized that frequent, low intensity fires historically characterized similar ecosystems in the western United States. These fires occurred across the landscape on an 8-12 year interval. Small scale, high intensity fires did occur in isolated patches with some regularity, but historically were extremely rare. The frequent, low-intensity fires maintained moderate to low quantities of dead and down woody fuels, and favored the development of herbaceous understory species such as iris (*Iris spp.*), locoweed (*Astragulus gambelianus*), milkmaid (*Cardamine californica*), bedstraw (*Galium spp.*), rattlesnake plantain (*Goodyera oblongiflora*), and several other orchids (*Piperia spp.*).

The role of fire in the development and maintenance of the mixed conifer forest has changed as aggressive fire suppression curtailed slow moving ground fires. Populations of shade tolerant fir and incense cedar are not being controlled by fire, and there are few distinct breaks in the continuity of the understory vegetation. The incidence and subsequent influence of fire has been minimal over the last century. The result of this alteration in the historic fire regime combined with logging and mining is difficult to assess accurately, but some generalizations can be made based upon the limited available research.

Douglas-fir Alliances:
Douglas-fir shares canopy dominance with Ponderosa pine at elevations between 2,000 - 5,500 feet in dried sites of the Klamath Mountains. Incense cedar, sugar pine, and white fir may occasionally be present as co-dominants. California black oak, canyon live oak and bigleaf maple are often present in the understory, while tanoak is usually absent. This plant community can integrade with the mixed conifer-pine plant community. Pacific Douglas-fir is the dominant overstory conifer over a large area of the Klamath Mountains. These stands integrade with Douglas-fir/ponderosa Pine Alliance. Sugar pine is often found in this alliance, with tanoak a common associate on mesic sites. In many areas, tanoak dominates the understory. Canyon live oak is also a co-dominant and black oak may also be found.

Role of Fire: Pacific Douglas-fir is more fire resistant than many of its associates and can survive moderately intense fires. Adaptations include a thick, corky bark on the lower bole and roots which protects the cambium from heat damage. In addition, Douglas-fir occupies forests with varied fire regimes. In general, the size and severity of natural fires tend to decrease, while fire frequency increases southward from western Washington to northern California. In mixed evergreen forests of southern

Oregon and northern California, fires occurred at frequencies of 5 to 25 years. Where Douglas-fir is serial, its great longevity allows it to maintain itself as a canopy dominant until the next catastrophic fire.

Oak Alliances:
Mixed oak woodland communities cover a large portion of the French Gulch and Whiskeytown area. The lower elevation oak communities are dominated by black oak, canyon live oak and interior live oak. Small communities of valley oak are found near Clear Creek. Higher elevation communities are dominated by black oak and/or canyon live oak with scattered ponderosa pine and other hardwood and conifer species. Redbud (*Cercis occidentalis*) is found in open areas, and shrub understory species include manzanita, toyon, poison oak, wild rose (*Rosa spp.*), and several ceanothus species. Common herbaceous species include wild dandelion (*Agoseris spp.*), Indian paintbrush (*Castilleja* spp.) Indian warrior (*Pedicularis densiflora*), penstemon (*Penstemon spp.*), California Indian Pink (*Silene californica*), iris, monkeyflower (*Mimulus spp.*), California poppy (*Eschscholzia californica*), milkweeds (*Asclepias spp.*), columbine (*Aquilegia formosa*), woolly sunflower (*Eriophyllum lanatum*), lupine (*Lupinus spp.*) mule ears (*Wyethia spp.),* brodiaea (*Brodiaea spp.*), and yarrow (*Achillea millefolium*).

Blue oak grasslands appear to have distinct boundaries that are probably a result of soil properties and past land use practices. The dominant species is blue oak (*Quercus douglasii*) that is associated with scattered grey pine and interior live oak. Shrubs are widely spaced and include manzanita, yerba santa, ceanothus, and poison oak. The ground cover includes annual and perennial grasses such as ripgut brome, dogtail grass, yellow starthistle, fescues, wild oat (*Avena fatua*), and nut sedge (*Cyperus strigosis*). The blue oak grassland community can be seen in distinct patches on the south-facing slopes along Highway 299 near Crystal Creek Road.

Role of Fire:
The natural fire regime in mixed oak plant communities varies considerably depending on the species composition and vegetation structure specific to each site. Black oak is capable of abundant crown sprouting following fire, as light surface fires trigger succession through sprouting (Chang 1996). The frequency and vigor of resprouts is lower with increasing fire severity. Oaks are highly variable in their response and resistance to fire because of differences in their bark thickness, tree structure, and sprouting response. Understory composition and the degree of fire intensity also influence individual survival.

One factor causing fire damage to oaks is the fact that most associated species are susceptible to fire damage. Canyon live oak and interior live oak have fairly thin bark and are easily top-killed by fire. However, light surface fires trigger succession in live oak species through sprouting. Increased fire severity results in increased overstory tree mortality, particularly among interspersed pine species. Vigorous resprouting from black oak root crowns was observed three weeks after the extremely hot "Whiskey" wildland fire in August 1999. Other adaptations of black oak include the need for bare or almost bare soil required for acorn germination; a soil condition that results from light or moderate severity fires. Frequent low-severity fires promote a open appearance in mixed oak woodlands similar to the mixed conifer forest, although the mixed oak woodlands can have higher structural diversity and a less distinct gap between ground fuels and overstory tree canopy than is seen in mixed conifer forests.

Blue oak communities are generally thought to benefit from fire. Acorn survival and germination may be negatively affected by fire but there is a positive association between blue oak ages and fire dates, suggesting post fire sprouting. The sensitivity of blue oaks to high intensity fires is not well understood; low intensity fires have little effect on the overstory tree canopy in the blue oak woodland, although above ground portions of other low growing plant species can be largely consumed. Moderate intensity fires result in varied levels of crown scorch. Frequently, large trees or stems of trees would be consumed in this type of fire, but sprouting subsequent to such fires is often quite high. The result is rapid recovery of the overstory or development of small pockets of young trees.

Infrequent fire regimes favor development of woody shrub species, while frequent fire intervals favor greater cover by grasses and forbs. Changes in the understory vegetation, primarily in the prevalence of annual exotic grass species may have an influence on the behavior of the current fire regime, but

sufficient data does not exist to make this determination. It is suspected that fire exclusion for an extended period of time enables shrub species and associated tree species such as grey pine to gain in total cover, but data has not been collected to confirm this near the fire area. Some studies indicate that fire suppression is the main reason for lack of oak regeneration and sapling survival.

Riparian Alliances:
The Clear Creek watershed comprises one of the largest watersheds for the Sacramento River. The riparian communities vary in species composition and vegetation structure depending on elevation, steepness of slope, aspect, and quantities and timing of the water source. Although vigorous and well vegetated, little data is available on the vegetation of the riparian communities. Tree species occurring on canyon slopes and seasonal ravines primarily consist of Douglas-fir, canyon live oak, dogwood, bigleaf maple (*Acer macrophyllum*), and scattered mixed conifers. On canyon bottoms and more moist sites tree species include Fremont's cottonwood (*Populus fremontii*), black cottonwood (*Populus balsamifera ssp. trichocarpa*), willow (*Salix spp.),* White alder (*Alnus sp.*), and Oregon ash (*Fraxinus latifolia*).

Understory species are quite variable. Native shrub species include California blackberry (*Rubus ursinus*), wild grape (*Vitus californica*), western azalea (*Azalea spp.*), miner's dogwood (*Cornus sessilis*), spice bush (*Calycanthus occidentalis*), button willow (*Cephalanthus occidentalis var. californica*), snowberry (*Symphoriocarpos albus var. laevigatus*), and California wild rose (*Rosa spp.*), with chaparral species such as buckeye and snowdrop bush (*Styrax officinalis*) mixed in along the periphery. The understory is a combination of Indian rhubarb (*Darmera peltata*), grasses such as slender hair grass (*Deschampsia elongata*) and rattlesnake grass (*Briza spp.*), Horsetails (*Equisitum spp.*), sedges, rushes, ferns, cattails (*Typha* spp.), and herbaceous species such as soaproot (*Chlorogalum pomeridianum*), California pipevine (*Artistolchia californica*), buttercups, (*Ranunculus spp.*), phacelia (*Phacelia spp.*), monkeyflower, smartweed (*Polygonum spp.*), mugwort (*Artemesia douglasiana*), miner's lettuce (*Claytonia perfoliata and Montia parviflora),* self-heal (*Prunella vulgaris*), dock (*Rumex spp.*), and violets (*Viola spp.*).
The exotic Himalaya blackberry chokes a significant portion of the riparian community. Other common exotic species include black locust (*Robinia pseudoacacia*), cut-leaf blackberry, plantains (*Plantago spp.*), and mulleins (*Verbascum thaspus and V. blattaria*). A willow-scrub riparian plant community can be seen along upper Clear Creek, and white alder riparian forests line streams in deep, steep-sided canyon bottoms above about 2,000 feet.

Role of Fire: The role of fire in riparian areas is uncertain, as minimal data is available (Agee 1994). The assumption can probably be made that fire regularly affected most forest zone riparian areas prior to fire suppression, although more moist conditions would offer some protection. Species-specific effects of fire on individual plants vary, although most riparian plants are not adapted to high intensity fire. Some species, such as pacific yew, are quite sensitive to temperatures generated in even low-intensity fire. Willow species appear to sprout vigorously and grow rapidly following fire or other disturbances. Skinner (1997) found that in areas with intermittent streams in the upper Klamath Mountains, fires appear to have burned with a frequency similar to the surrounding uplands. Skinner's work found a range of fire return intervals within these riparian areas to be 6-47 years, with a median fire return interval of 13 years.

Other Alliances:
The CALVEG data layer mapped much of the vegetation in and around the town of French Gulch as various pine vegetation types. This area and the adjacent flats are actually a mix of urban forests that can be classified as Non-native/Ornamental Conifer/Hardwood. Some of the native plant alliances intergrade with this vegetation type.

Non-Native Invasive Species

Many non-native invasive plants are present within the burned area of the French Fire. In addition, areas surrounding the fire contain large populations of invasive plants that will begin to invade the burned area.

The California Invasive Pest Plant Council (Cal-IPC) lists the most problematic invasive plant species in the state (Bossard et al. 2000). The California Department of Agriculture (CDFA), Pest Exclusion Branch, has assigned ratings (A, B, C and Q) to noxious weeds and has a weed eradication program that guides the County Agricultural Commissioners in controlling listed noxious weeds.

The most invasive wildland pest plants from the "widespread" Cal-IPC List A-1 that occur within the burn area are Himalaya blackberry (*Rubus discolor*), Scotch broom (*Cytisus scoparius*), and yellow starthistle (*Centaurea solstitialis*). Within the burn area, the most invasive wildland pest plant that occurs from the "regional" Cal-IPC List A-2 is tree of heaven (*Ailanthus altissima*). Wildland pest plants of lesser invasiveness from the Cal-IPC List B, within the burn areas, include bull thistle (*Cirsium vulgare*) and common mullein (*Verbascum thapsus*). Other noxious weeds suspected to be in the fire are Klamath weed (*Hypericum perforatum*), French broom (*Genista monspessula*), and Spanish broom (*Spartium junceum*). Yellow starthistle, French broom, Scotch broom, and Klamath weed are CDFA "C" rated pests; The other weeds are not rated by CDFA.

The areas within Whiskeytown National Recreation Area were thoroughly surveyed prior to the fire; however, BLM had not performed extensive exotic plant surveys in this area prior to the fire. Pre-fire infestations were most concentrated within the Clear Creek valley and the French Gulch Creek valley.

Threatened & Endangered and Sensitive Plants

A list of T & E and sensitive plant species potentially impacted by the fire and suppression activities was obtained on August 20, 2004 from U.S. Fish and Wildlife Service, Red Bluff Office. The list was reviewed with BLM and NPS agency representatives to determine which species occurred within the fire area. Two species of concern were identified near the fire area—Canyon Creek stonecrop (*Sedum paradisum*) and Howell's alkali grass (*Puccinellia howellii*). The only previously identified population of Canyon Creek stonecrop is located well north of the fire area and was unaffected by fire or suppression activities. The only known global location of Howell's alkali grass is located on the south side of Hwy 299 along the fire perimeter. The fire did not cross the highway onto the alkali grass site and suppression impacts were averted by NPS resource advisors on scene during the fire. However, the fire did burn the hillside north of the highway directly above the site.

An additional species of concern within the burn area is blue/valley elderberry (*Sambucus mexicana*). Blue elderberry is a species of concern because it is the host plant for the federally listed threatened valley elderberry longhorn beetle. Approximately 20 elderberry shrubs are known to occur on NPS land near Trinity Mountain Road within the burned area. There are also known scattered elderberry occurrences on BLM land within the fire perimeter.

B. Reconnaissance Methodology

Remote sensing, aerial surveys, ground surveys, and consultation with local resources were utilized for reconnaissance of the impacted area. The Interagency BAER Team held consultation meetings with BLM Redding Field Office and NPS Whiskeytown National Recreation Area personnel to identify potential issues of concern and determine priority areas for resource assessment. Data on vegetation resources, non-native invasive plant species, and local agency seeding and rehabilitation strategies was obtained during these meetings.

Ground surveys were conducted on August 19 through 23 to refine and calibrate aerial survey (August 20), data and determine fire effects to vegetation. Ground reconnaissance included hiking to remote areas and recording observations on plant community types, burn mortality, non-native invasive species, and suppression damage. The BAER vegetation specialists also visited recent burned areas on adjacent lands to observe post-fire response.
A vegetation classification map was obtained from the CALVEG project conducted by the Remote Sensing Lab of the USDA Forest Service. This map was refined using ground surveys and local agency knowledge. Vegetation resource impacts and mortality were assessed using a combination of aerial and ground surveys and pre and immediate post fire LandSat imagery.

C. Findings

Vegetation Mortality

The degree of fire-related vegetation mortality was determined using a combination of satellite imagery, aerial reconnaissance, and ground surveys. A Landsat 5 Image was acquired on August 20, 2004 and compared with pre-fire imagery to create a Burned Area Reflectance Classification (BARC) reflecting the degree of change from pre-fire condition. This image was verified by aerial and ground reconnaissance observations and refined as necessary. Vegetation mortality was classified into the following four categories based on immediate post fire mortality of the above-soil plant parts:

Low (0-25%) mortality
Moderate Low (26-50%) mortality
Moderate High (51-75%) mortality
High (76-100%) mortality

These classifications do not imply long term vegetation mortality or recovery potential. Resprouting and releafing from epicormic plant parts or root crowns will occur based on specific plant physiological characteristics, degree of injury, climatic conditions, and the presence of other damaging agents. Table 2 summarizes the post fire response of some typical non-forest trees and shrubs found within the burn area. Vegetation recovery will occur naturally on the majority of the fire, especially in the northern mixed chaparral (dominated by chamise and whiteleaf manzanita) and oak woodland alliances.

Table 2. Post fire vegetation response of typical non-forest species within the French fire.

Species	Response
Blue elderberry (*Sambucus mexicana*)	Sprout
Blue oak (*Quercus douglasii*)	Sprout
California black oak (*Quercus kelloggii*)	Sprout
Canyon live oak (*Quercus chrysolepis*)	Sprout
Ceanothus species (*Ceanothus spp.*)	Seed
Chamise (*Adenostoma fasciculatum*)	Sprout/Seed
Greenleaf manzanita (*Arctostaphylos patula*)	Sprout/Seed
Oregon white/Brewers oak (*Quercus garryana*)	Sprout
Poison oak (*Toxicodendron diversilobum*)	Sprout
Toyon (*Heteromeles arbutifolia*)	Sprout
Whiteleaf manzanita (*Arctostaphylos viscida*)	Seed
Willow species (*Salix spp.*)	Sprout/Seed

Table 3 outlines immediate post-fire vegetation mortality by vegetation type and ownership. High vegetation mortality was recorded on 36% of the burn area, moderate/high mortality effects were found on 22% of the burn area, moderate/low mortality was recorded on 29% of the burn area, and low mortality effects were found on 13% of the burn area. The majority (83%) of the high vegetation mortality ratings fall within vegetation types that respond well to fire disturbance (see Table 4 and the Vegetation Communities description above). These types are predominantly composed of species that vigorously resprout or reseed following fire events, and no significant long term mortality is expected in these areas.

Fire Suppression Damage to Vegetation

Dozer and hand lines were constructed throughout the fire on agency and private lands. Dozer line width ranged from 12-120+ feet wide with wider safety zones built in along the lines. Effects to vegetation will

vary depending on the size of the line. On the smaller lines, vegetation is expected to recover, but it will need a longer recovery period than areas affected by fire alone. Soil and vegetation returned to these sites during rehabilitation should facilitate natural recovery of the lines; however, a greater opportunity exists for non-native invasive species to establish during the extended recovery period. On the wider dozer lines, it is unlikely that a sufficient quantity of native material will be available to allow for natural recovery of the sites. Seeding and mulching will be needed on these lines to facilitate recovery and slow the spread of non-native invasive species along the lines. The majority of the suppression impacts to vegetation occurred on BLM and private land (see Table 5); however, NPS land was impacted as were some U.S. Forest Service lands (not analyzed in this assessment).

Table 3. Acres in each vegetation mortality class by ownership and vegetation type within the French Fire.

	High (76-100%)			Mod High (51-75%)			Mod Low (26-50%)			Low (0-25%)		
Vegetation	**BLM**	**NPS**	**Private**	**BLM**	**NPS**	**Private**	**BLM**	**NPS**	**Private**	**BLM**	**NPS**	**Private**
Northern Mixed Chaparral	654.0	70.0	780.8	284.1	68.5	437.2	193.9	38.3	210.9	112.0	5.4	58.9
Montane Mixed Chaparral	66.6	0.0	3.5	25.4	0.0	4.1	16.6	0.0	1.6	9.2	0.0	1.0
Knobcone Pine	118.4	27.3	106.5	60.4	35.7	36.8	31.0	22.1	28.8	3.7	15.6	4.6
Foothill Grey Pine	531.4	2.6	563.5	315.5	10.1	280.4	389.5	7.5	338.1	246.6	2.3	178.8
Ponderosa Pine	66.6	2.1	102.1	21.6	2.4	76.6	40.2	2.6	105.6	15.3	3.8	56.6
Mixed Conifer Pine	90.2	0.0	198.4	131.0	0.0	274.7	271.9	0.0	363.5	158.6	0.0	66.4
Douglas-fir	218.4	0.0	33.5	233.9	0.0	64.7	720.4	0.0	236.1	404.6	0.0	96.2
Douglas-fir/Ponderosa Pine	65.5	0.0	18.2	42.1	0.0	25.7	52.7	0.0	42.8	11.7	0.0	8.8
Oak	506.7	43.0	512.5	273.1	15.6	119.4	517.9	10.7	182.1	237.5	1.6	62.0
Dry Grass/ Herbs	3.1	2.3	3.7	4.1	5.4	7.7	4.7	5.6	14.1	2.0	7.4	7.5
Total	**2320.9**	**147.3**	**2322.7**	**1391.2**	**137.6**	**1327.3**	**2238.7**	**86.7**	**1523.6**	**1201.2**	**36.2**	**540.8**

Table 4. Vegetation mortality acres and percent by class and vegetation type.

	High (76-100%)		Mod/High (51-75%)		Mod/Low (26-50%)		Low (0-25%)	
Vegetation Type	**Acres**	**Percent**	**Acres**	**Percent**	**Acres**	**Percent**	**Acres**	**Percent**
Northern Mixed Chaparral	1504.9	31.4	789.8	27.7	443.1	11.5	176.3	9.9
Montane Mixed Chaparral	70.1	1.5	29.5	1.0	18.1	0.5	10.2	0.6
Knobcone Pine	252.3	5.3	132.9	4.7	81.8	2.1	23.9	1.3
Foothill Grey Pine	1097.4	22.9	606.0	21.2	735.1	19.1	427.8	24.1
Ponderosa Pine	170.8	3.6	100.7	3.5	148.4	3.9	75.7	4.3
Mixed Conifer Pine	288.6	6.0	405.7	14.2	635.4	16.5	225.0	12.7
Douglas-fir	251.9	5.3	298.6	10.5	956.4	24.8	500.7	28.2
Douglas-fir/Ponderosa Pine	83.7	1.7	67.7	2.4	95.5	2.5	20.5	1.2
Oak	1062.2	22.2	408.1	14.3	710.7	18.5	301.1	16.9
Dry Grass/ Herbs	9.1	0.2	17.1	0.6	24.4	0.6	16.8	0.9
Total	**4790.9**		**2856.1**		**3849.0**		**1778.1**	

Table 5. Suppression lines (miles) by ownership.

Line Type	BLM	NPS	Private
Dozer			
12-48 ft	5.4	1.24	11.16
60-108 ft	4.41	0	3.81
>120 ft	7.42	0	5.54
Hand	3.71	0.54	3.15
Total	**20.94**	**1.78**	**23.66**

Non-native Invasive Species

Exotic invasive plants exist throughout the burned area, and are widespread throughout Shasta County. Consequently, it is not appropriate for the BAER emergency stabilization program to restore native ecosystems that were severely degraded prior to the wildfire. However, agency personnel may submit a rehabilitation plan to address the restoration of the native plant communities. A rehabilitation plan should be submitted as quickly as possible to be considered for funding next fiscal year. The BAER Team vegetation specialists evaluated the documented pre-fire invasive plant populations to determine whether they pose a threat to reestablishment of native plant communities. Those populations that are most likely to pose a threat are recommended for immediate post-fire control. The recommendation section of this assessment contains a discussion of the treatment specifications.

Monitoring for the establishment of invasive plant populations is also recommended and is supported by funding specifications. Specifications have been prepared for monitoring the following priority locations: all roadsides, dozerlines, hand lines, and areas that burned under high severity. The BAER Team obtained maps of known invasive plant populations within the NPS burned area. There were no maps or surveys completed for the BLM land burned. On Monday, August 23 and Tuesday, August 24 of 2004, a BAER Team vegetation specialist performed a rapid survey of the burned areas outside the NPS land. The survey was conducted along main roadsides within the burn including Trinity Mountain Road, Cline Gulch Road, Highland Ridge road, and French Gulch Road. Additionally spur-roads within the town of French Gulch and some access points along Clear Creek were surveyed. The data collected was used to create a map for management purposes. It is assumed that there are many populations of invasive plants that were completely burned and were not located, further supporting the justification to monitor for additional invasive plant populations. Occurrences of yellow starthistle were located along Highland Ridge Road and near a dozer line near the top of Highland ridge. An occurrence of puncture vine was located and pulled near the Howell's alkali grass site along side Highway 299.

Threatened & Endangered and Sensitive Plants

A range of burn severity and vegetation mortality was observed on the north side of highway 299 above the Howell's alkali grass site, the only known global population. Burn severity to soils ranged from very low to moderate on the slopes above the site and vegetation mortality ranged from low to high. On the lower oak woodland dominated slopes, both severity and mortality were low; however, the mixed chaparral and chamise dominated upper slopes burned with moderate severity and received high vegetation mortality ratings. The threat of impacts to the site was analyzed by the BAER Team watershed and vegetation specialists and in consultation with the NPS Botanist. The findings for the watershed above the Howell's alkali grass site were that peak flows and sediment deposition are not expected to increase over pre-fire conditions in this watershed.

The blue elderberry on NPS land was in a moderate severity and moderate high to high vegetation mortality area. An elderberry occurrence in the mixed conifer on private land near DP9 was in a moderate-low vegetation mortality area. Elderberry responds to fire by resprouting, so the effect on this species should be minimal as outlined in the Wildlife Assessment section of this report. There were no known occurrences of the Valley Elderberry Longhorn beetle within the fire area and there is little or no habitat for the beetle.

IV. RECOMMENDATIONS

A. Fire Suppression Repair

The dozer and hand lines constructed during suppression actions are recommended for repair to pre-fire conditions based on agency specifications. Hand lines and dozer lines less than 48 feet wide should be rehabilitated by pulling the native soil and brush back over the lines and allowing for natural recovery. The dozer lines 60 or more feet wide on slopes greater than 30% are recommended for seeding and mulching in addition to pulling native materials back over the lines. The seed mix is proposed to be as follows: Regreen - 11.3 pounds pure live seed per acre (lbs PLS/ac); California brome - 6.4 lbs PLS/ac; blue wild rye - 6.7 lbs PLS/ac; sky lupine - 0.6 lbs PLS/ac. The seed mix was obtained from agency representatives and should come from a local stock (preferable) or from the same ecological subregion. Recommended mulch should be certified weed free straw or rice straw, if available. Specific information on the applicable dozer line repair specifications can be found in the Operations Assessment section of this report.

B. Emergency Stabilization

V-1 Invasive Species Control

A specification has been prepared to control non-native invasive plants. Invasive plant species with the potential to re-vegetate NPS and BLM lands within the burned area will be treated by mechanical, hand, and herbicidal methods. Approximately 316 acres of non-native invasive plants are recommended for treatment within the burned area: 169 acres on NPS land and 147 acres on BLM land. Treatments should be made according to agency policy/plans.

Common mullein (*Verbascum thapsus*), bull thistle (*Cirsium vulgare*), and yellow star thistle (*Centaurea solstitialis*) will either be hand pulled, bagged and properly disposed of, or receive spot treatments of approved herbicides. Glyphosate (such as the Roundup Pro™ formulation), is recommended for spot foliar application of tree of heaven, Scotch broom, and Himalaya blackberry. Triclopyr (such as he Garlon 4™ formulation), is recommended as a stump treatment after cutting tree of heaven and Scotch broom. Herbicide will be applied with backpack, hand sprayers, ATV, or truck. The Transline™ formulation of clopyralid has been found to be an effective herbicide to control yellow starthistle in Modoc and Lassen Counties and somewhat in NE Shasta County.

V-2 Revegetation

A specification has been prepared for aerial seeding in areas of high vegetation mortality and high and moderate severity (2,438 acres) above the town of French Gulch and along Trinity Mountain Road. The Watershed Treatment Map in Appendix III outlines areas to be treated under this specification. Seeding will provide the erosion control benefits that are needed to protect values at risk within the town. The seed mix will be composed of native grass and forb species specified by BLM agency representatives and one fast-growing hybrid non-native species. The hybrid non-native, Regreen, was included in the mix to provide immediate protection of the watershed and downslope values of life and property. This non-native is short-lived and sterile and is expected to provide short term benefit without the possibility of long-term establishment. The BLM has made the determination to use Regreen as outlined in BLM Manual Supplement H-1745-1, Native Plant Materials Handbook.

According to BLM agency policy (USDI 2001), local native plant materials are to be used whenever feasible. The French Fire is located in the M261Ai ecological unit subsection of California (Miles and Goudey 1997), and seeds from this subsection should be used, if available. If seeds from this subsection are unavailable, a semi-local source can be used. Acceptable semi-local sources can be found along the Northern Sacramento Valley and foothills, north of Willows, or in the Southern Klamath Region, specifically subsections M261Fa, M261Am, M261Ac, M261Ar, M261Ca, M261Cb, M261Dl, 262Ab, and 262Aa.

Seeding of BLM and private lands (1,367 and 1,071 acres respectively), will be accomplished under Emergency Stabilization and as allowed through the Wyndam Amendment. The seeding is for protection of water quality and fisheries down drainage on federal lands (BLM and NPS).

The BLM should consider using seed coating technologies for mycorrhizal obligate species that are to be seeded in the burn area. Mycorrhizal fungi would provide an added advantage to species that are to be seeded, especially in the root to shoot ratio helping to promote faster root development. Using this technology could also help to enhance any micro flora and fauna that was reduced or eliminated in the moderate-high to high vegetation mortality and high burn severity areas within the burned area.

V-3 Vegetation Monitoring
A specification has been prepared to monitor revegetation/vegetation recovery, seeding success, effectiveness of non-native invasive species control, and invasion of non-native species into burned areas (see seed mix and rate above, Fire Suppression Repair). Monitoring will occur on seeded areas, dozer lines, hand lines, safety zones, and known and potential sites of non-native species invasion. Monitoring will identify whether management objectives are being met within the burned area, and assist in determining when and where additional treatments will be needed. Monitoring methodology will be determined by BLM and NPS staff using generally accepted monitoring techniques. Annual reports and a final report documenting sampling methodology, area sampled, and summary of findings will be submitted.

New and expanding occurrences of non-native invasive species should be documented using photography, topographic maps, and/or GPS technology. Agency approved control measures should be initiated on new occurrences and supplemental funding should be requested to control spread within the burned area.

C. Management Recommendations (non-specification related)

Threatened and Endangered/Sensitive Plant Surveys
The BLM and NPS should survey for T&E and sensitive species within the burned area. With shrub crown cover now removed from much of the area, sensitive plant species that are seral or fire dependent could exhibit themselves within the burn area. Surveys during the 2005 field season should be conducted to determine if species not known to exist are present. If any T&E or sensitive species are located, fire effects studies should be initiated as there is very little information on fire effects to rare plants.

Fire Effects Vegetation Monitoring
The agencies should establish post fire effects studies within the different burned plant alliances in the burned area. Unburned areas should be used as controls. The gathering of fire effects information within various plant community types will increase the knowledge base of the relationship between flora and plant communities and wildfires on BLM and NPS lands. Methodologies such as FIREMON or other agency approved protocols is recommended.

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INTERAGENCY
BURNED AREA EMERGENCY REHABILITATION TEAM

FRENCH FIRE

FOREST RESOURCES ASSESSMENT

I. OBJECTIVES

- To address needed stabilization, rehabilitation and restoration treatments for forest resources on Bureau of Land Management lands within the French Fire.
- To address treatments to ensure safety of the public when traveling public roads and OHV trails.
- To address extent of fire damaged or killed commercial timber and potential salvage.
- To provide recommendations for long-term forest rehabilitation activities and management considerations.

II. ISSUES

- Imminent and Long-Term Tree Hazards
- Salvage of Fire Damaged & Killed Commercial Trees
- Reforestation of Commercial Forest Lands
- Long-Term Effects on Forest Health

III. OBSERVATIONS

A. Background

The French Fire began on August 14, 2004 south of the community of French Gulch. On the first day it burned in a northerly direction, and by 6:00 PM had burned over the community of French Gulch, damaging or destroying 26 residential and commercial structures. On the following day, the fire burned east towards Merry Mountain and then to the west towards County Line Road. On August 20 the fire was contained at 13,323 acres, however interior islands continued to burn within the fire perimeter on the west side for several days. Cool, cloudy weather on August 21 prevented a proposed operation to burn out unburned interior islands by cooling the fire activity in these areas.

B. Vegetation

The Vegetation Resource Assessment contains a detailed description and summary of the vegetation types within the French Fire. Below is a brief description of the commercial timber types:

- Pacific Douglas-fir
  Pacific Douglas-fir dominates this monotypic coniferous forest type, in association with canyon live oak, bigleaf maple and other hardwood species. These forests are found at mid-elevations on cool, moist or shaded sites with deep soil development. Timber growth productivity is highest of all commercial forest types found within the fire area. This type is relatively shade intolerant and regenerates readily due to favorable growing site characteristics, if seed sources are present and other vegetation competition is not inhibiting.

  Ponderosa Pine
  This forest type is dominated by ponderosa pine, in association with a mix of oak species. This forest type occupies the lowest elevation and driest commercial timberland sites found on the fire area. This type is shade intolerant and may be difficult to rapidly regenerate to conifer species

following wildfire, due to the prolific response of oak sprouting regeneration following crown mortality. Timber growth productivity is less than the other commercial forest types within the fire, but species value is usually highest.

Douglas-fir/ Ponderosa Pine
This forest type that occupies sites intergrading between the Pacific Douglas-fir and ponderosa pine forest types.

Mixed Conifer/ Pine
This type consists of mixed coniferous species, dominated by Douglas-fir and ponderosa pine, and sub-dominated by other conifers such as sugar pine, white fir and incense cedar. Black oak and canyon live oak are minor associated species. This forest type is found at slightly higher elevations and more mesic sites than the ponderosa pine type, and on less productive sites than the Pacific Douglas-fir type. Growth productivity is high, but slightly less than the Pacific Douglas-fir type. Conifer regeneration response following disturbance is mixed, depending upon local site characteristics and percentage of oak species and other competing vegetation

Table 1. Acres of Commercial Timber Strata by Ownership within the Fire Perimeter

Agency	Timber Type	Acres
BLM	Pacific Douglas-fir	1,577.21
	Douglas-fir-Ponderosa Pine	171.92
	Mixed Conifer Pine	538.69
	Ponderosa Pine	143.76
NPS	Ponderosa Pine	11.11
Private	Pacific Douglas-fir	430.43
	Douglas-fir-Ponderosa Pine	95.49
	Mixed Conifer Pine	895.78
	Ponderosa Pine	339.88
TOTAL		**4,204.27**

C. Management Direction

This assessment summarizes fire effects to forest resources on all land ownerships. Hazard tree surveys were conducted along major roadways within all ownerships. Though private timberlands were involved in the fire, this assessment does not address management issues on those lands.

Management direction varies with ownership:

Private Lands
For Sierra Pacific Industries lands, the primary management is timber production following California State Forest Practice Rules. Sierra Pacific Industries timberlands were involved in the fire and company foresters are currently assessing damage and preparing salvage sales. For private non-industrial lands, management ranges from ranching and residential/recreational use to periodic timber harvests for income.

USDI, Bureau of Land Management (1993 Redding Resource Management Plan)
General management objectives for BLM lands within the area of the fire include:

1) Recover merchantable timber mortality through salvage according to marking guidelines and other mitigations.

2) Regenerate the most significant tree species to meet ecological, managerial, social, and economic considerations.

3) Maintain forest qualities that consider multiple-use values and that will preserve recreation, wildlife, and aesthetic values.

Management policy governing wildland fire suppression and management directs that emergency rehabilitation activities will be conducted according to site-specific Best Management Practices for burned areas that prevent or reduce potential damage to the soil or watershed.

BLM Public land management goals include:

1) Use the interdisciplinary approach to survey burned areas and determine the need for emergency or long-term rehabilitation. Aggressively mitigate adverse effects on burned areas when necessary.

2) Accomplish the evaluation of rehabilitation areas by a rehabilitation specialist or interdisciplinary team. A formal plan for mitigating potential resource damage will be developed from their findings and recommendations. Treatments are to be initiated before damage-causing storms occur or as soon as possible.

USDI, National Park Service
The Whiskeytown National Recreation Area (WNRA) has policy direction in the current Resources Management Plan consistent with national NPS policy on hazard tree management. This policy states "Some constraints exist in a National Recreation Area on allowing natural processes to operate when such processes pose a hazard to visitors or employees." Project Statement WHIS-N-630.001 was approved in 1995 to implement a hazard tree management plan on WNRA lands. Hazard tree identification procedures utilize the standardized national guidelines.

D. Tree Damage and Mortality

Numerous factors influence post-fire tree mortality, including: season the damage occurred, pre-fire tree vigor/site quality, extent of crown damage, extent of cambium damage, post-fire stand density/competition, post-fire climatic conditions and insect/disease damage. The following guidelines were derived largely from research by Wagener (1961) and other sources as noted:

Season: Conifers are most susceptible to fire damage early in the growing season because retention of sufficient green foliage is necessary to carry the tree through the remainder of the growing season and provide some food reserves for the following year. Should the fire occur just as buds were beginning to elongate, even moderate levels of crown scorch can be expected to have serious effects on tree vigor and mortality levels. Fires that occur after buds set have much less impact on tree survival.

Tree Vigor/Site Quality: Younger, more vigorous trees on good sites have a better chance of survival than mature trees on poor sites.

Crown Damage: The amount of live crown remaining, as distinguished by green foliage, is the most important single factor in survival of fire-scorched conifers. Green needle bases indicate that the surrounding parts of the crown are still alive; conversely, darkened needles and needles "frozen" in position in the direction of the fire run are unmistakable indicators that the surrounding crown is dead. The minimum green foliage requirement for vigorous ponderosa pine survival of an early season burn is estimated to be 35% of the pre-fire crown. In species with slender twigs and small terminal buds, as in Douglas fir, foliage kill and bud and twig kill are approximately the same as that which will be present in succeeding years. The minimum post-fire survival criteria for moderately vigorous trees, those growing on a poor site, or following a mid-season fire are 40 to 45 percent of the pre-fire crown.

Cambium Damage: Based on preliminary results, Ryan (1990) has reported that, in the absence of significant crown injury, most trees survive up to 25 percent basal girdling, whereas few survive more than 75 percent basal girdling.

Post-Fire Stand Density and Competing Plants: Potter and Foxx (1979) reported decreased recovery as stand density increased above 130 trees per acre. Another contributing factor cited for poor recovery was competition from seeded grasses.

Bark beetle populations may build up as a result of the fire, possible posing a threat to live trees within and outside the fire area. Ponderosa pines are most at risk, primarily from western pine beetle (Dendroctonus brevicomis). There is evidence of bark beetle attack by both western pine beetle and red turpentine beetle (D. valens) on fire-killed trees less than a week after they were burned. Red turpentine beetle is not an aggressive pest and is not responsible for tree mortality. Bark beetle infestations are more likely to occur the same season following a spring fire, and fire-damaged pines are most susceptible to successful bark beetle attack for two or more years following the fire (Miller and Keen, 1960). Those trees with both heavy foliage scorching and moderate to severe cambium kill are especially vulnerable (Miller, 1929; Salman, 1934). Bark beetles bred successfully in weakened trees or killed trees with intact cambium.

IV. RECONNAISSANCE METHODOLOGY & RESULTS

BAER Team Foresters conducted aerial reconnaissance on August 19 and 22, and further on-the-ground reconnaissance on August 20 and 21, 2004 to assess forest mortality and timber salvage potential. A BAER Team Forester and NPS resource advisor conducted surveys for hazard trees during August 21 through 23, 2004.

A. Tree Hazards

Hazard tree surveys were conducted along major roadways within all ownerships. Major roads open to the public and/or emergency suppression/rehabilitation crews, were surveyed from vehicles and on foot. Imminent tree hazards – those that pose an immediate threat to the safety of suppression crews, rehabilitation personnel, agency personnel and the general public – were identified using the USDI-National Park Service, Tree Hazard Rating System. Tree Hazards recommended for mitigation were designated with red flagging. Felling of these trees has been initiated with suppression Class C rated fallers.

B. Forest Mortality

Mortality levels were determined for all ownerships using 30-meter resolution LANDSAT imagery, and truthed by ground and aerial reconnaissance. 256 reflectance values were grouped into four classes: Low, where < 25 % of the trees are dead or expected to die within 3 years; Moderate Low, where between 26% and 50% of the trees are dead or expected to die within 3 years; Moderate High, where between 51% and 75% of the trees are dead or expected to die within 3 years and; High, where greater than 75% of the trees are dead or expected to die within 3 years.

C. Potential Salvage

The commercial timber types were developed from CALVEG data. After consultation with the BLM foresters, the commercial types were determined to be mixed conifer/pine, Pacific Douglas-fir, Ponderosa Pine and Douglas-fir/Ponderosa pine. Acreages within each type are listed in Table 1.

BAER Team Foresters conducted a preliminary assessment of potential timber salvage areas on BLM lands. Potential salvage areas containing apparent sufficient timber volume and value were delineated during this process. As with the Lowden fire five years earlier, forest inventory and/or

stand exam data for timber stands within the fire area was not available. The agency's continuous forest inventory data files were found to be empty. Volume estimates were extrapolated from data from timber sales in the area dating from the 1980s and 1990s, where on selective timber harvests, approximately 50% of the volume was removed. The timber sales removed between 11 and 14.5 MBF per acre. A Sierra Pacific Industries forester estimated volumes per acre on their lands ranged between 10 and 25 MBF per acre, which correlates with the timber sale data. These volumes per acre were multiplied by the acres of each timber type and then by the estimated mortality level of each type. Estimated mortality volume indicates probable feasibility for an economically viable commercial timber salvage sale. But these quantities should be viewed as a preliminary estimate only.

Though private timberlands were also involved in the fire, this assessment does not address management issues on those lands. Approximately 866 acres of Sierra Pacific Industries timberlands were involved in the fire, and corporate foresters are currently assessing damage and preparing salvage sales. Other private land holdings total 4,895 acres, some of which are commercial forestlands. Sierra Pacific Industries has already begun preparation for salvaging their lands.

D. Findings

Forest mortality is reported in the Vegetation Resources Assessment and shown on the Vegetation Mortality Map. Mortality levels are summarized for forest type strata and land ownership for all areas within the French Fire perimeter.

Tree Hazards

A BAER forester and NPS resource advisor identified approximately 23 imminent tree hazards adjacent to roadways, and structures within the community of French Gulch. An additional 106 trees were designated for felling or pruning within this calendar year because of potential public safety issues or protection of cultural resource values. These trees were marked for felling by red flagging, and marked for pruning by lime green colored flagging with the term "trim" or "prune" written on the flagging. Marked trees are depicted on the Hazard Tree Location or Treatment Map. Trees that may be susceptible to mortality are also identified and designated with both flagging colors. These trees will be monitored as long-term hazards.

Table 2. Tree hazards identified within French Fire

REMOVE						
Jurisdiction	Size (Dbh)					
	0-12"	14-24"	26-36"	38-48"	50+"	TOTALS
BLM	47	3	n/a	n/a	n/a	50
NPS	7	10	5	n/a	n/a	22
Private	23	19	5	2	n/a	49
TOTALS	77	32	10	2	n/a	121
*PRUNE						
Jurisdiction	Size (Dbh)					
	0-12"	14-24"	26-36"	38-48"	50+"	TOTALS
Private	n/a	2	3	2	1	8
TOTALS	n/a	2	3	2	1	8

*prune trees were flagged with lime green color flagging.

Potential Salvage - A rough estimate of the potential salvage on BLM lands is approximately 14 million board feet. The actual salvage amount may vary greatly, based on constraints as developed by the interdisciplinary team during the environmental assessment process.

Insufficient data was available for private lands to make an estimate of potential salvage.

Forest Health – After a fire, bark beetle insect activity is generally expected to increase. The level of the increased activity is dependent on individual tree damage, stand density, fire damage, aspect and drought conditions. Trees in stands that survived the fire and were partially damaged in the form of needle scorch and/or cambium kill are most susceptible. The damaged needles reduce the amount of photosynthesis that can take place and thus reduces the amount of sugars the tree produces for growth and system maintenance. The damaged cambium causes a reduction in the amount of sugars that can be transported to the roots. This in turn causes a reduction in the efficiency of the roots in uptaking water needed for transpiration, respiration and pitching out insects.

Small pockets of recent mortality were seen in ponderosa pine, between the fire and Hoadley Mountain to the west. Local foresters have reported that insect activity overall in the area is near endemic levels and that the area is not experiencing a severe drought.

Table 3. Acres of Potential Commercial Timber Salvage on BLM Lands within the fire perimeter

Commercial Timber Type	Acres	Mortality Class	% Mortality Multiplier *	Volume per Acre (BF)	Total Volume (BF)
Douglas-fir-Ponderosa Pine	5.21	1	0.125	15,000	9,769
	45.55	2	0.375	15,000	256,219
	41.01	3	0.6	15,000	369,090
	52.28	4	0.95	15,000	744,990
Mixed Conifer Pine	32.71	1	0.125	15,000	61,331
	238.64	2	0.375	15,000	1,342,350
	121.18	3	0.6	15,000	1,090,620
	81.22	4	0.95	15,000	1,157,385
Pacific Douglas-fir	130.35	1	0.125	20,000	325,875
	402.12	2	0.375	20,000	3,015,900
	176.9	3	0.6	20,000	2,122,800
	174.63	4	0.95	20,000	3,317,970
Ponderosa Pine	3.12	1	0.125	8,000	3,120
	19.61	2	0.375	8,000	58,830
	12.89	3	0.6	8,000	61,872
	17.02	4	0.95	8,000	129,352
Totals	**1,554.44**				**14,067,473**

*** These values were multiplied by the acres & volumes per acre. The values were determined as follows: 0.125 and 37.5 are the midpoints between 0-25% and 2-50% mortality. 0.6 is a point between 51-75% that the BAER foresters determined was the closest approximation of the mortality level in that category. 0.95 is a point between 76-100% that the BAER foresters determined was the closest approximation of the mortality level in that category.**

Salvage of Dozer Lines – Of more than 34 miles of dozer line built to contain the fire, approximately 13.2 miles are within commercial timber types with the majority, 6.85 miles, on BLM lands. As these lines are repaired, the commercial trees are being set aside. It is recommended that these dozer lines be salvaged. Any repaired areas disturbed by salvage efforts should be returned to their condition prior to salvage.

Potential Reforestation – The BLM Redding Resource Management Plan calls for reforestation of areas greater than five acres. Approximately 240 acres were estimated to need reforestation based on a silviculturist's determination that these areas would not reforest naturally within 10 years. Potential reforestation areas on private lands were not determined. Table 3 lists potential reforestation areas on BLM lands by timber type. Marginal or noncommercial forest types are not recommended for reforestation activities.

Table 4. Potential Reforestation areas greater than 5 Acres on BLM Lands

Agency	Timber Type	Acres
Bureau of Land Management	Douglas-fir-Ponderosa Pine	34.26
	Mixed Conifer Pine	52.72
	Pacific Douglas-fir	140.56
	Ponderosa Pine	12.82
TOTALS		**240.36**

V. RECOMMENDATIONS

A. Specification Related Treatments

F-1 Imminent Tree Hazard Identification & Mitigation
Complete survey and mitigation of imminent hazard trees along roads, OHV trails and within the community of French Gulch.

F-2 Long-Term Tree Hazard Identification & Mitigation
To provide for public safety, continue to assess and monitor roadways, OHV trails and other areas adjacent to public use.

B. Non-Specific Management Recommendations

Salvage of Commercial Timber – It is recommended that commercial timber killed or likely to die within three years be salvaged and that the environmental analysis for that project be started immediately. An issue to be discussed should be minimization of impacts to the already damaged watersheds while maximizing, to the extent possible, the capture of volume.

Due to the damage to the French Gulch drainage and the neighboring drainages, it is recommended that a helicopter logging system be used to salvage in order to minimize further impacts to these drainages. Poor logging practices would only exacerbate the potential for further damage and prolong recovery time, whereas well-designed practices could potentially reduce soil erosion. It is imperative that there be coordination and cooperation with all disciplines to recover the maximum amount of value while maintaining protection for the community of French Gulch. Helicopter logging systems are also best suited for efficient and rapid recovery of

scattered timber mortality pockets. This system would facilitate maximum timber utilization without the exacerbating watershed effects that would result from construction of additional roads, skid trails and other ground disturbing activities associated with alternative harvest systems.

Treatments should be identified for post salvage soil stabilization. Possible treatments may be (1) slash from salvage operations in some units may be lopped and scattered and (2) windrow or contour felling could be conducted after salvage for soil stabilization on slopes less than 40%. Other treatments may also be identified. Lopping and scattering slash would also facilitate its drying out to minimize potential insect brooding sites.

Post salvage, there may still be a significant amount of pole and small sawlog sized trees remaining within the salvage area and within the fire perimeter. Within the next three years, these trees will decay and will begin to get blown over by high winds, broken by snow loads or just fall over. This will create a fuels problem that will have to be monitored and possibly mitigated by prescribed fire or by mechanical or hand piling.

Salvage of Fuelwood – It is recommended that the BLM examine different methods of making fuelwood generated from hazard tree felling available to local residents. Possibilities are to cut and leave material on site and allow residents to access the site, (2) cut and move the material to a roadside location for residents to access and three, (3) cut and remove material to a central location.

There will also be considerable public interest in salvaging fire-killed standing preferred tree species for fuelwood. It is recommended that the agency interdisciplinary team develop a plan that provides for public use within the fire area, while providing adequate protection for soil stabilization and natural recovery processes. Some areas may require or benefit from a period of deferred use prior to permitting fuelwood harvest activities. Some large areas of standing dead trees such as oak species are likely to contain sufficient volume for commercial fuelwood sales. These opportunities should also be evaluated by agency forestry staff and reviewed by the interdisciplinary team to determine feasibility.

Reforestation – Timber mortality pockets greater than 5 acres in size have been identified as needing reforestation. The aggregate total of these sites is approximately 240 acres. A certified silivculturist has determined that due to the severity of the fire, these areas are not likely to reforest within 10 years. It is recommended that funding be found to reforest these areas within the next two years before brush and grasses capture the sites. The species mix and spacing should be determined by a certified silviculturist and should meet management objectives.

Pioneering brush and grasses are expected to compete with planted seedlings on most sites within three years. This competition should be monitored and mitigated as necessary to ensure survival of seedlings.

Animal competition (deer, elk, gophers, cattle) should also be monitored and mitigated as necessary.

Fuels Program – It is recommended that an aggressive fuels program be developed to treat stand densities, fuel loadings and ladder fuels within the fire area, the Shasta-Trinity and all other management areas of the BLM Redding Field Office Area. The Whiskeytown National Recreation Area has documented the high fire frequency of the area. In the west, in general, fires over the past few years have been much larger and more catastrophic than in the past. An aggressive fuels program using a landscape approach must include harvesting of timber to thin stands such that a fire can pass through as a low impact ground or surface fire rather than a stand replacing crown fire. It must also include prescribed fire on large blocks (greater than 500 acres) and the acceptance of increased levels of mortality from prescribed and wildland fire-use fires.

Shaded Fuel Breaks - It is recommended that the existing and proposed fuelbreaks be investigated for effectiveness. An initial and cursory examination shows that 200-foot wide fuelbreaks in a landscape of chaparral and brush may be ineffective at stopping or altering the intensity of a wildfire in that fuel type. These types of fuel breaks are likely to be more effective in coniferous forest types.

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INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

FRENCH FIRE

WILDLIFE RESOURCE ASSESSMENT

I. OBJECTIVES

- Assess effects of the fire and suppression actions to federally listed Threatened and Endangered species and their habitats on federal lands.
- Conduct Section 7 emergency consultation with the Fish and Wildlife Service.
- Prescribe emergency stabilization and rehabilitation measures and/or monitoring.
- Assess effects of proposed stabilization and rehabilitation actions to listed species and their habitats.

II. ISSUES

- Two federally listed species and/or habitats occur within the fire area.
- Potential effects to these species from the fire and suppression rehabilitation actions.
- Potential effects to these species from emergency stabilization actions.

III. OBSERVATIONS

A. Background

The French Fire burned approximately 13,323 acres between August 14th and August 20th, 2004 on Bureau of Land Management (BLM), National Park Service (NPS), and private lands. The fire began on August 14, 2004 at approximately 1422 hours along the French Gulch Road with no determined cause at this point in time. The fire began at an elevation of 1,285' and ran to the top of the ridge separating Shasta and Trinity County with a maximum elevation of 4,905' on Eastman Peak over a distance of seven miles with an average slope of +10% between those points. Access to much of the fire area was limited by this broken and dissected topography. Two distinct fuel models existed throughout the area. The first of these could be characterized as Fuel Model 4, Chaparral Brush. Crown closure was estimated to be at least 95% and consisted mostly of chamise and manzanita. This was the predominant spread model on the South, West, and East side of the fire. There were scattered patches of grass within the brushy areas but were not a significant factor in the fires spread. To the north of fire, Fuel Model 10, Timber with Litter and Understory was the predominant fuel model. Lighter fuels on the West side of the fire burned in through the chamise very readily. During the second day of the burn, the fire stopped advancing to the West but continued towards the top of the ridge to the North and East. As the fire approached about 3,500' in elevation, the fuels transitioned to a timber slash model (FM 10). As the fire advanced into this model, the influence of fire weather factors was modified by the tree canopy. Wind speeds were reduced to 30% of the 20' wind speeds, temperatures were decreased 15° and humidity increased by 20% all inhibiting fire growth. As the fire progressed through the timber, spread rates slowed and fire intensity decreased. The fire was contained on August 20, 2004 at 2000 hours.

Approximately 40 miles of dozer line which varied from 12-120 feet wide, and 7.4 miles of handline were constructed to suppress the fire. Approximately 4,206 acres of backfire operations were also conducted to suppress the fire (see Fire Suppression Impacts map). Additional suppression actions included use of 15.1 miles of existing roads, dropping of 89,000 gallons of retardant, and helicopters water drops of 1,899,000 gallons of water in various locations, in an effort to suppress the fire and protect private property. Water was obtained from Clear Creek, Whiskeytown Reservoir, and ponds

located near the Trinity River designated by Federal personnel as free from impacts to federally listed species.

Within the burn area, fire effects to the vegetation were mapped High, Moderate and Low. The Vegetation Mortality Map illustrates the spatial relationship between these areas.

VEGETATION MORTALITY OR TOP KILL	ACRES
HIGH 76 -100%	4,791
MODERATE HIGH 51-75%	2,856
MODERATE LOW 26-50%	3,849
LOW 0-25%	1,778
UNCLASSIFIED	49
TOTAL	13,323

The French Gulch Fire Area is located 14 miles west of Redding, California immediately north of Whiskeytown Reservoir. The regional climate is hot with an average annual precipitation of 50 inches. Maximum summer temperatures exceed 100 degrees Fahrenheit during July and August. This area is characterized by steep slopes and narrow canyons. Elevation within the fire area ranges approximately from 1200 to 4900 feet above sea level.

The fire area has some perennial streams and many ephemeral drainages. Approximately 5 miles of perennial stream were burned to some degree which varied from a light underburn to complete fuel consumption.

Common wildlife in this area include species typical of riparian, shrub, and conifer dominated habitats in the Pacific Northwest.

FRENCH FIRE SPECIES LIST

A species list was obtained from the Fish and Wildlife Service, Red Bluff Fish and Wildlife Office, on August 20, 2004. Jen Ballard, Wildlife Biologist, compiled the list from the Sacramento FWS Web site and determined which species and/or critical habitats which may occur within the fire area. The list was again reviewed on August 23 and 24, 2004, by Biologists Jen Ballard (FWS), Heidi Crowell (FWS), Russ Weatherby (NPS) and Irvin Fernandez (BLM) to finalize the addressed species and to discuss those that are not addressed, and why. The following federally listed species occur, have habitat within the fire area, or were potentially affected by fire suppression actions:

SPECIES	SCIENTIFIC NAME	LISTING STATUS
Northern Spotted Owl	*Strix occidentalis caurina*	T
Bald Eagle	*Haliaeetus leucocephalus*	T

The following species were identified by the FWS as potentially occurring within or near the French Fire Area. Through post fire reconnaissance and consultation with local experts, it was determined that these species and their critical habitat were not affected by the fire. No habitat within or adjacent to the fire area and/or inventories prior to the fire determined absence. Federally listed fish species (Salmon and Steelhead) occur downstream from Whiskeytown dam in lower Clear Creek and in the Sacramento River drainage. There are no adverse effects to T&E fish as a result of the French Fire. In the event the effects determination changes in the future, the issues will be addressed through consultation with appropriate entities. National Marine Fisheries Service (NMFS) was given a courtesy call by NPS, but no informal consultation was done due to the no effect determination for T&E fish species.

SPECIES	SCIENTIFIC NAME	LISTING STATUS	REASON FOR NOT ADDRESSING SPECIES IN THIS REPORT
California red-legged frog	*Rana aurora draytonii*	T	Limited habitat; No reported occurrences; Not affected by the fire.
Valley Elderberry Longhorn Beetle	*Desmocerus californicus dimorphus*	T	No known occurrences within the fire area; Little to no habitat; Nearest suitable habitat is >20 miles away.
Northern Spotted Owl Critical Habitat	*Strix occidentalis caurina*	T	No critical habitat designation in fire area.
Delta Smelt	*Hypomesus transpacificus*	T	No suitable habitat; No reported occurrences; Not affected by the fire.
Central Valley Steelhead	*Oncorhynchus mykiss*	T	No suitable habitat; Nearest occurrences are downstream of the fire area below Whiskeytown Lake dam; Not affected by the fire.
Central Valley spring-run Chinook Salmon	*Oncorhynchus tshawytscha*	T	No suitable habitat; Nearest occurrences are downstream of the fire area below Whiskeytown Lake dam; Not affected by the fire.
Winter-run Chinook Salmon	*Oncorhynchus tshawytscha*	E	No suitable habitat; Nearest occurrences are downstream of the fire area below Whiskeytown Lake dam; Not affected by the fire.
Coho Salmon, So OR/No CA	*Oncorhynchus kisutch*	T	Not in fire area and not in this watershed.

E = Endangered
T = Threatened

B. Reconnaissance Methodology and Results

Information for this assessment is based on a review of relevant literature, BLM and NPS wildlife sighting and habitat inventory information, consultation with Fish and Wildlife Service (FWS), and personal communication with BLM and NPS management personnel. Information on the effects of the fire came from interviews with fire suppression personnel and fire area reconnaissance on August 19th – 25th, including a helicopter flight over the fire area on August 20th. To better understand the species and habitat information briefly discussed in this wildlife assessment, it is important to review the French Fire BAER Vegetation and Watershed Assessment. That report contains more detailed descriptions of pre-fire vegetation and post fire vegetative recovery estimates.

The purpose of this assessment is to discuss the potential effects of fire, suppression actions and rehabilitation and proposed emergency stabilization activities to federally listed species. Only a few of the total array of species that may occur in the area are discussed in this report. The list of species to be addressed was developed from documents referenced in this report and input from FWS, BLM, and NPS personnel.

This assessment is not intended to definitively answer the many specific species effects questions that are inevitably raised during an incident such as the French Fire. The focus of this assessment is to determine the potential for immediate, emergency actions that may be necessary to prevent further impacts to federally listed species occurring on Federal lands.

C. Findings

1. Biological Assessment for Federally Listed Species

Direct effects as described in this report refer to individual mortality or disturbance which results in flushing, displacement or harassment of the animal. Indirect effects refer to modification of habitat and/or prey species and possible subsequent effects to the species.

NORTHERN SPOTTED OWL:

Northern spotted owls (NSO) typically nest in a variety of dense, closed canopy habitats. Nesting and roosting habitat is defined as conifer stands with greater than 40 percent canopy closure and trees greater than 21" diameter. Foraging and dispersal habitat is defined as stands with greater than 50 percent of the canopy at 40 percent closure and trees greater than 11" diameter. There were no designated critical habitat and no Late Successional Reserves (LSR) burned, and both are located over 0.5 miles away. There have been sightings of single individuals within 1.5 miles to the northwest of the burn perimeter, but no sightings inside. There are no known pairs or territorial singles within that same distance. The fire and associated suppression actions occurred outside of the seasonal restriction dates of February 1 to July 31 for activities that cause disturbance to NSO during the breeding season.

Using the best available data, potential suitable northern spotted owl habitat was determined through field reconnaissance and analysis of habitat types and canopy density from CALVEG 2000 (CDF 2001). Wildlife habitat types associated with northern spotted owl habitat include Klamath mixed conifer (KMC), Douglas fir (DFR), montane hardwood conifer (MHC), white fir (WFR), Ponderosa pine (PPN), and montane hardwood (MHW). Based on field visits, reviewing digital orthophoto quadrangles, and GIS analysis of habitat types, some habitat types (MHC, WFR, PPN, and MHW) were removed from analysis. These habitat types were excluded because they were not present and the area west of French Gulch maintains a spatial habitat arrangement that does not support an NSO. KMC and DFR habitat types displayed in the habitat wildlife map in appendix III, overestimate NSO habitat due to the existing spatial habitat arrangement.

DIRECT EFFECTS: If any owls were present in the area during this incident it is likely that they were able to escape the fire which burned through most of the area during the day, resulting in no mortality. Because surveys have occurred in only a small portion of the suitable owl habitat within the immediate and adjacent fire perimeter, it is not possible to determine if any owls were present. However, based on historic sightings and reconnaissance of the fire area and immediate vicinity it is likely that no owls occurred within the fire perimeter because, although suitable, the habitat appears to have low functional qualities. These stands were single story with understory vegetation consisting of various brush, forb and grass species. Much of the habitat adjacent to the fire area is higher quality, occurs in more contiguous stands, and has less human development with associated uses.

INDIRECT EFFECTS: Northern spotted owl prey species located in the fire area were directly affected if unable to escape the flames, and indirectly affected in terms of habitat loss. The majority of the identified NSO habitat within the fire area was classified either unburned or low burn severity.

The burn pattern was a mosaic which left large portions of the NSO habitat intact. Of the 3,255 acres of potential northern spotted owl habitat only 52 acres burned in the high burn severity category (greater than 60% vegetation mortality).

POST FIRE OBSERVATIONS: No NSO were observed or heard during post fire reconnaissance. Limited monitoring of adjacent known sites occurred during the past breeding season with no detection. Pre-fire condition of habitat appeared to be of low quality based on all of the information provided and observation of the spatial arrangement of the habitat related to urban development, industrial timberlands, and proximity to adjacent NSO habitat. Remaining post fire habitat quality and function is further degraded by increased fragmentation and close proximity to private lands.

BALD EAGLE

DIRECT EFFECTS: No bald eagles nest sites are known to occur within the fire area. The area immediately adjacent to Clear Creek is considered a foraging area for eagles with possible perch trees along the riparian corridor. Some of these perch sites may have been removed during the fire. The fire also opened up the canopy along the creek in places making it more accessible to eagles. No bald eagles were reported within the area immediately prior to or during the French Fire. Although eagles use this area they would not have remained during the fire, therefore, there are no direct effects to bald eagles.

INDIRECT EFFECTS: Bald eagles forage and use perch trees in the area. Other perch trees may also have been lost following the fire due to power and communication companies removing trees to maintain power line corridors.

Fish are a major prey item in the bald eagle diet, which occur in the perennial streams within and downstream from the burn area. The potential impacts to the native fish population are minimal above the dam, and no effect below the dam.

POST FIRE OBSERVATIONS: Bald eagles have not been observed in the area during or after the fire.

2. Other Species of Importance

Federal Candidate Species

Pacific Fisher (*Martes pennanti pacifica*)

Fishers are among the most habitat-specific mammals in North America, living in landscape mosaics of conifer-dominated forest stands, and avoiding open areas that have no overstory or shrub cover (Buskirk and Powell 1994). Late successional mid to low elevation coniferous forests provide most suitable habitat because they provide abundant potential den sites and prey (Allen 1983). The presence of large deciduous trees, such as oaks, also appears to be important. Fishers den in a variety of protected cavities, brush piles, logs, and under upturned trees. Hollow logs, trees, and snags are especially important habitat components (Zeiner et al. 1988). Forest type is probably not as important to fishers as structural characteristics, such as dense canopies, and large trees, snags, and down logs. Riparian areas are also important (Seglund 1995). Fishers may be extirpated from much of their historical range in Washington, Oregon, and California (Zielinski et al. 1995). Trapping at the end of the 19th century severely reduced fisher populations, but the reasons for the lack of recovery in the species in the absence of trapping are unclear. Factors may include loss of suitable habitat from logging, fire suppression, fragmentation of habitat, and disturbance and mortality from roads. Distribution and populations of fishers are not known at Whiskeytown, but the Wildlife Observation Database, dating from the early 1970's to present, reports numerous fisher observations in the park and along County Line Road on BLM and private parcels. It is likely that fishers occur at Whiskeytown and BLM lands where suitable habitat exists.

Potential Impacts from the French Fire. The portion of the French Fire within the boundary of Whiskeytown National Recreation Area burned primarily within a mixed chaparral vegetation community which lacks most of the habitat characteristics typical of areas sustaining fishers. BLM lands within Douglas fir and Klamath mixed conifer habitats downslope from County Line Road within the burn perimeter is suitable habitat for fishers. Fishers have been documented to occur just south of the fire area along Crystal Creek Road and it is likely that some use of the burned area in the higher elevations occurred as well. Post-fire planting of conifers and appropriate deciduous trees could help the area develop the habitat characteristics normally associated with fisher use. The French Fire left snags, which will create downed logs, cavities, and upturned trees for future natal denning for fisher.

BLM Sensitive Species and Federal Species of Concern

Foothill yellow-legged frog (*Rana boylii*)

Foothill yellow-legged frogs are dependent on permanent water and are found in or near rocky streams in a variety of habitats, including mixed chaparral, valley-foothill hardwood, valley-foothill hardwood conifer, ponderosa pine, mixed conifer, and wet meadow types (Zeiner et al. 1988). Unlike most other ranid frogs in California, this species is rarely encountered far from permanent water (Zeiner et al. 1988). Exotic bullfrogs (*Rana catesbeiana*), which are prevalent at Whiskeytown, have been implicated in the observed reduction of foothill yellow-legged frog populations in the Sierra (Moyle 1973). Foothill yellow-legged frogs are fairly common in the perennial streams that feed Whiskeytown Reservoir.

Potential Impacts from the French Fire. The French Fire burned some riparian habitats along Clear Creek that are inhabited by foothill yellow-legged frogs. The post-fire increase in sediment to Clear Creek will also likely adversely affect yellow-legged frogs. Increases in sedimentation will adversely impact egg masses, tadpoles, and adults. Long-term negative impacts may be decreased by use of accepted soil stabilization techniques where possible. Dozer lines and handlines should also be rehabilitated to decrease post-fire erosion and sedimentation. Caution should also be taken to insure that post-fire chemical treatment of invasive plant species does not impact water quality.

Federal Species of Concern

Northwestern pond turtle (*Clemmys marmorata marmorata*)

The northwestern pond turtle is associated with permanent or nearly permanent water in a wide variety of habitat types (Zeiner et al. 1988). Pond turtles require basking sites such as partially submerged logs, rocks, mats of floating vegetation or open mud banks. Hibernation in colder areas is passed underwater in bottom mud. Two distinct habitats may be used for oviposition. Along large slow-moving streams, eggs are deposited in nests constructed in sandy banks. Along foothill streams, females may climb hillsides, sometimes moving considerable distances to find a suitable nest site (Storer 1930). Whiskeytown contains both habitat types and both types of sites are likely used for oviposition. For BLM lands, US Geological Survey will conduct reptile and amphibian surveys in fiscal year 2005 to determine suitable habitat for turtles.

Potential Impacts from French Fire: The area along Clear Creek that burned during the French Fire is habitat for the northwestern pond turtle. The French Fire likely had little direct impact to pond turtles, however some nest sites were likely destroyed by the heat associated with high intensity fires. Post-fire conditions may actually be more favorable for pond turtle nesting as more sunlight reaches the forest floor (Bury, B. Pers. Comm. with Russ Weatherby, NPS). Minor indirect effects due to a short term decrease in post-fire forage may be likely.

IV. RECOMMENDATIONS

A. Fire Suppression Rehabilitation

1. Management: None
2. Monitoring: None

B. **Emergency Stabilization**

1. Management: None
2. Monitoring: None

C. **Management Recommendations** (non-specification related)

1. Emergency consultation should be completed by BLM and NPS Biologists.
2. Ensure mine closures include bat friendly gates in bat habitat should this action be taken in the future.
3. Conduct post fire species surveys to identify potential fire effects to special status species and game species.

DETERMINATIONS OF EFFECT TO THREATENED SPECIES

NORTHERN SPOTTED OWL (NSO)

FIRE EFFECTS: There are no known occurrences of NSO, individuals or nests, within the French Fire burn perimeter. There have been sightings of single individuals within 1.5 miles of the burn perimeter to the northwest, but no sightings inside. There are no known pairs or territorial singles within the 1.5 mile buffer from the burn perimeter. The highest elevations of the burn contains some marginal foraging habitat but the burning of this should not affect NSO populations based on the minimal amount of habitat which was consumed and the low burn severity at which it burned.

SUPPRESSION ACTION EFFECTS: Burnout operations took place as a suppression action and were located in potential foraging habitat of NSO. There was 2,146 total acres of burnout within potential foraging habitat for NSO with 1,518 acres located on BLM lands. Because the burn was spotty and of low severity, few large diameter trees and habitat were lost as a result of this suppression action, impacts to NSO are insignificant. The determination for Northern Spotted Owl is **May Affect, Not Likely to Adversely Affect.**

PROPOSED EMERGENCY STABILIZATION ACTION EFFECTS: No suppression rehabilitation or emergency stabilization actions will adversely affect NSO habitat although some proposed stabilization measures, such as those associated with revegetation, would be beneficial. The determination for Northern Spotted Owl is **May Affect, Not Likely to Adversely Affect.**

BALD EAGLE

FIRE EFFECTS: No bald eagles nest sites are known to occur within the fire area. The area immediately adjacent to Clear Creek is considered to be a foraging area for eagles and some perch sites may have been removed by the burn. Also, the fire opened up some of the canopy along the creek in places making it more accessible to eagles. These sites were primarily located on lands in private ownership.

SUPPRESSION ACTION EFFECTS: Suppression actions had no known effect on bald eagle or their habitat. Therefore the determination is **No Effect.**

PROPOSED EMERGENCY STABILIZATION ACTION EFFECTS: All of the proposed suppression rehabilitation and emergency stabilization measures should have no affect on the bald eagle. Removal of hazard trees, if any, will only affect trees that would fall over time due to the fire (fire effect). Some proposed stabilization measures, such as those associated with revegetation, would be beneficial. Therefore, the determination is **May Affect, Not Likely to Adversely Affect.**

SUPPRESSION REHABILITATION AND EMERGENCY STABILIZATION MEASURES (detailed information documented in Specifications, Part F)

The following are suppression rehabilitation and emergency stabilization actions proposed by other disciplines on the Burned Area Emergency Response team (see Appendix I for assessments).

SUPPRESSION REHABILITATION ACTIONS
Rehabilitate dozerline
Rehabilitate hand line
Regrade roads used by suppression forces
Road closure – gates

BURN AREA EMERGENCY STABILIZATION TREATMENTS
Ditch cleaning
Culvert evaluation/cleaning/replacement
Post flooding road cleanup
Flood hazard warning signs
Structure protection/K-Rails
Structure protection /sandbags
Floatable debris removal
Early warning system
Revegetation/Seeding
Non-native species control
Vegetation monitoring
Cultural Resource Stabilization
Suppression Resource Stabilization
Increased agency presence
Finish cultural assessment
Native American consultation
Long term tree hazards
Tree hazard mitigation
Project Management
Planning costs

V. CONSULTATIONS

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Jennifer Gibson, Ecologist, National Park Service, Whiskeytown NRA	530-242-3457
Irvin Fernandez, Wildlife Biologist, BLM, Redding Field Office	530-224-2100
Heidi Crowell, Wildlife biologist, Fish and Wildlife Service, Red Bluff Office	530-527-3043
Russ Weatherby, Wildlife Biologist, National Park Service, Whiskeytown NRA	530-242-3457

VI. REFERENCES

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VII. ATTACHMENTS

- U. S. FWS Species list dated August 20, 2004 for the French Fire at French Gulch in Shasta County, California.
- T&E Species and Critical Habitat Map
- Emergency consultation documentation on file at the BLM and NPS Office.

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INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN

FRENCH FIRE

CULTURAL RESOURCE ASSESSMENT

I. OBJECTIVES

Assess damages to known historic and prehistoric cultural resources as the result of fire behavior

Assess damages to known historic and prehistoric cultural resources as the result of fire suppression activities

Assess potential risks to known/documented cultural resources as the result from the effects of fire (e.g. erosion, flooding, and exposure to looting and/or vandalism.

Assess potential risks to known cultural resources as the result of emergency stabilization activities.

Conduct a cultural resource inventory of land disturbance activities associated with the French Fire and recommend treatments to meet legal requirements for structures and sites adversely affected by suppression activities.

Coordinate with Federally recognized Tribes.

II. ISSUES

- Are cultural resources known to exist within the fire perimeter?
- Have known/documented resources been subject to direct or indirect effects of fire?
- What are the requirements for emergency stabilization and/or protection?
- Do proposed emergency stabilization measures for other resources pose a risk to known cultural resources?
- If so, what measures may be employed to mitigate adverse effects to those resources?
- Consultation with appropriate parties to meet legal compliance and tribal consultation.

III. OBSERVATIONS

A Background

The French Fire occurred in an area sporadically researched by archaeologists. The following information comes from timber sale surveys (Swidler 1982, Ritter 1996), and overviews of the surrounding area (Bevill and Nilsson 2001, Emberson 2000, Griffen, Fitzpatrick and King 1994).

Prehistory: The earliest known human occupation in the northern Sacramento River drainage is the Borax Lake Pattern which extends from 8000 - 5000 B.P. This time-period is characterized by large, wide-stemmed projectile points with square or concave bases, milling slabs and hand-stones. Within the area affected by the French Fire, projectile points often have concave bases and large serrations on their blades.

The Squaw Creek Pattern extends from 5000 to 3000 B.P. and represents a cultural adaptive shift towards using a broader food resource base. Contracting stem, leaf-shaped, and diamond-shaped projectile points, milling stones, hand-stones, and the bowl mortar and pestle characterize this time period. Incised stones are also reflective of the

Squaw Creek Pattern. Increased cultural deposits from this time period indicate a growing population during this phase.

The Whiskeytown Pattern extends from 3000 – 1700 B.P. and represents an increased reliance on riverine resources while continuing to use upland resources. This pattern is characterized by medium to large side-notched or corner-notched projectile points, notched pebbles interpreted as net weights and continued use of milling stones, hand-stones, and mortars and pestles. At the Tower House Archeological District leaf-shaped projectile points and incised slate continue to be used.

The Tehama Pattern extends from 1800 to 700 B.P. and represents the continued mobile subsistence pattern of exploitation of foothill and riverine resources. The bow and arrow was introduced during this time, as evidenced by small to medium notched or small barbed projectile points. These, along with hopper mortars and pestles, milling stones and hand-stones, and small notched pebbles are characteristic of this time period.

The Augustine Pattern extends from 1500 to 150 B.P. and represents the influx of Wintu groups that focused on exploitation of acorn and riverine resources. Artifact assemblages characteristic of this pattern include small corner-notched, triangular, Gunther Barbed or Desert Side-notched projectile points, clam shell disc beads, bead drills, magnesite cylinders, stone pendants, *Olivella* and *Dentalia* beads, *Haliotis* pendants, bone awls, and gaming bones.

Prehistoric settlement patterns within the French Fire area are not well known. Chronologically there is at least 7,500 years of use and occupation in the general area. The oldest known site in the area is at Tower House, just outside the fire perimeter along Clear Creek. Another site, slightly more recent, is also located along Clear Creek north of the fire. Regionally, major ridges were used for transportation and travel from around 5,000 years ago to more recent times. The County Line Ridge, which was a perimeter fireline, has a site having both flaked and ground stone material. From about 1500 B.P. (proto-Wintu), expansion into the French Gulch-Whiskeytown areas is evident in a series of small residential camps along Clear Creek and French Gulch.

Ethnography: The French Gulch area was occupied in the historic period (beginning in 1826) by the Wintu, who are linguistically a member of the Penutian language family. Their territory covered parts of present-day Trinity, Shasta and Tehama counties (La Pena 1978). The upper Trinity River lies within the heart of the territory, which may have recently been occupied seasonally due to severe winter weather. Theodoratus (1982:156) identifies the valley and drainage of Clear Creek as being occupied by the *Klabalpom* group of the Wintu. Du Bois (1935) indicates a trail linked the French Gulch area to the Lewiston vicinity and also observed that since the arrival of Euroamericans French Gulch was little occupied by the native population.

Major subsistence resources in the ethnographic period are known to have been salmon and steelhead, as well as the larger mammals including deer and black bear. Smaller mammals and birds were utilized as well. Utilized plants included black oak and valley oak acorns, buckeye, and a multitude of annual plant resources.

The Wintu of the project area were subjected to the same patterns of cultural decimation and dislocation that occurred elsewhere in California with the introduction of infectious diseases beginning with contact with non-Indians in the 1820s and culminating with the discovery and exploitation of gold and other natural resources after 1850. Traditional use areas and residential sites were destroyed by agricultural and mining activities. This disturbance has considerably altered the archaeological landscape. Recently, timber harvest, reservoir construction and continued residential expansion of the area has continued to modify the land so that little unaltered prehistoric cultural landscape remains.

History: The French Fire encompasses the town of French Gulch and a significant portion of the French Gulch Mining District, and is considered "the most important lode gold district in the Klamath Mountains" (Clark, 1979:136). Major P.B. Reading discovered

gold in Clear Creek in 1848, just south of the currently burned area, after a visit to Sutter's mill and the new discoveries of gold there. His findings led to the development of the French Gulch mining district, which was a prominent locus of the northern California "Gold Rush". It includes mines that are among the earliest lode mines in the state. These mines are among the highest producers in Shasta County with the total output of the district (including portions not within the burned area) is estimated at more than $30 million (Clark 1979:136).

French Gulch, a tributary to Clear Creek, was originally prospected in 1849 by French miners, for whom the gulch and town were named. Placer mining has continued since its inception, with deposits in some places having been worked over several times. The first activity followed gold discovery in the 1850s. The diggings were then reworked by Chinese miners in the 1860-70's before and/or after hydraulic mining took place. Finally the diggings were dredged where favorable ground was available in the first half of the 20th Century (Albers 1965:34).

Following the discovery of gold in the region, settlements began to appear. In French Gulch the first settlement was Morrowville (also known as Morrowtown), located along French Gulch just west of Clear Creek. Morrowville gave way to the town of French Gulch, along Clear Creek, in 1856 as miners hydrauliced through the placer deposits underneath many of Morrowville's buildings. The town of French Gulch, however, remains to this day. The town has three historic cemeteries and is on the National Register of Historic Places. Within the Clear Creek and French Gulch areas are a considerable number of unrecorded mining features.

The development of the French Gulch mining district soon led to discovery of lode gold. The Washington Mine was discovered in 1852 making it one of the oldest gold mines in the state. It has operated intermittently into the 21th century, and has been one of the highest producers in Shasta County (Clark 1979:136-137). Following the Washington Mine discovery, French Gulch developed a complex of hard-rock mines. Major lode mines and mine complexes within the French Gulch area include: the Washington mine (1852), Franklin (1852), Niagra (1857), Highland (Hightower) (1869), as well as the Sybil, Brunswick, Niagra Summit, St. Jude, Philadelphia, Summit, and Tom Green, among others.

Mining in Shasta County followed the typical pattern of mining in the West, with boom and bust cycles attendant on discovery, technological developments (including overlapping placer gold recovery including panning, ground sluicing, hydraulicing and dredging, as well as hard rock mining), and economic and political factors. The periods of heaviest activity included the early 1850's, following the discovery of gold; the early 20th century from about 1900–1914; the Depression era to World War II, and post-World War II. While the first and last periods are typical of mining in the region the early 20th Century boom was tied to the development of copper mining in the region and contributed to the greatest period of prosperity in mining in the county (Lydon 1974:3). Today both lode and placer mining continue intermittently in the district.

B. Reconnaissance Methodology

Preservation of human life and property is the first priority in wildfire suppression. Protection of natural and cultural resources are the second priority, and fire suppression efforts included contributions by affected federal and state archaeologists to assist fire fighters to avoid damage to cultural resources when possible.

The French Fire started on August 14, 2004 and spread rapidly north and west from its origin in Clear Creek Canyon, south of the community of French Gulch. Extreme burning conditions and fire behavior characterized the first days of the fire, which was contained

by August 20, 2004. Fire behavior led to areas of low to high burn severity, with some islands of unburned vegetation remaining within the fireline perimeter.

The French Fire burned 13,323 acres, and destroyed 26 residences. It also burned through the National Register Historic District of French Gulch, as well as through the drainages and hillsides above this community. This area contains approximately 28 known/documented sites on Bureau of Land Management and National Park Service lands, and additional sites related to historic mining and American Indian habitation that are located on private property.

From August 15-18, 2004, Joe Svinarick, NPS Archaeologist was assigned to the French Fire as a NPS Resource Advisor. On August 16, 2004, CDF archaeologist Richard Jenkins was assigned to the fire. His primary mission was to minimize damage to known prehistoric and historic archaeological sites on private lands during fire suppression and fire suppression repair activities. Jenkins obtained site records from the State Historic Preservation Office and consulted with the Native American Heritage Commission to determine if any areas of special concern were listed in the incident area (none were reported). He also contacted the Wintu Tribe and Toyon-Wintu Center; they had no further information. During this time Eric Ritter, BLM Archaeologist, began assembling site information and reviewed fire perimeter activities on Federal lands.

Jenkins was joined on August 17 by CDF Archaeologist Chuck Watford and they began flagging known sites within the path of dozer line construction. While their focus was on private land they also flagged BLM sites as appropriate. Watford departed on August 18th. That day Joe Svinarick, NPS, transitioned to the BAER Team. BLM archaeologists Eric Ritter and James Barnes assumed a more active role in the incident on August 19th and inspected historic sites on BLM parcels within the fire area. James Barnes then left the fire on August 23rd.

The Northern BAER Team was ordered to the French Fire on Tuesday, August 17, 2004. South Zone Alternate BAER Archaeologist Dan Hall arrived at the fire on August 18, 2004 and was joined by North Zone BAER Archaeologist Chuck James on August 20th. Dan Hall met with the CDF, BLM, and NPS archaeologists to discuss on-going strategies for assessing sites within the fire line and surveying 18.4 miles of dozer line, 10 drop points, a staging area and a helispot, as well as other areas disturbed by suppression activities related to the fire. The fire was contained August 20th at 8:00 p.m. Kate Winthrop, BLM Fire Archaeologist, joined with the BAER Team on August 23, 2004. Survey and assessment work continued until August 26. During this time 19 sites were assessed and 9.92 miles of dozer line and two drop points were surveyed. From August 26 to August 29, BAER archaeologists developed the cultural resource specifications and assessment.

Table 1. French Fire Cultural Resource Group

Name	Home Office	Work Period
James Barnes	BLM, FFO, Folsom, CA	8/18/04 – 8/23/04
Dan Hall	BIA, PRO, Sacramento, CA	8/19/04 – 8/27/04
Chuck James	BIA, NWRO, Portland, OR	8/20/04 – 8/30/04
Richard Jenkins	CDF, Redding, CA	8/16/04 – 8/26/04
Eric Ritter	BLM, RFO, Redding, CA	8/18/04 – 8/30/04
Joseph Svinarich	NPS, Whiskeytown, CA	8/15/04 – 8/30/04
Kathryn Winthrop	BLM, Washington, DC	8/23/04 – 8/30/04

During the assessment of fire suppression damage and for fire and watershed related impacts to cultural resources on Federal lands, the BAER archaeologists were asked to provide: a) descriptions of the nature and extent of fire effects of fire suppression-related damages, if any; b) assessments of the risks to cultural resources derived from fire related impacts and increased erosion threats or other watershed-related fire effects; and c) recommendations of actions or treatments for emergency resource stabilization.

Incident related damage to cultural resources falls into three broad, sometimes overlapping categories:

- Fire related impacts: This includes damage to artifacts, features and sites from the fire itself such as burning and charring, or destabilization and destruction of structures and features. It also includes potential effects to cultural resources from burned or weakened trees that may fall on or disrupt site deposits, destruction of organic elements, and increased susceptibility to looting and surface collection due to greater site visibility.

- Suppression related impacts: These are impacts to cultural resources from fire suppression activities such as dozer line construction, staging areas, fire camps, etc. Fire suppression restoration efforts may also cause impacts to cultural resources.

- Watershed related impacts: These impacts result from the increased chances for water and sediment transport following wildfires.

The BAER archaeologists visited 19 of the 28 known/documented cultural resource sites. Visual inspection was the primary method used to determine effects. At one site, a prehistoric lithic scatter that was bull-dozed, six shovel tests were used to determine if further assessment or repair was indicated. Due to time limitations, it was not possible to fully inspect all areas where fire suppression may have affected cultural resources, or to assess all 28 known/documented sites for potential fire effects. These efforts will continue on an as-needed basis until watershed stabilization occurs.

C. Findings

The French Fire cultural resource assessment addresses possible effects to the 19 documented/known archaeological sites that were visited. All of these sites are within the fire perimeter and were affected by fire or suppression activities. Notably, mill-related superstructures at the Brunswick, Sybil, and Summit Mines were burned while many cabins were bypassed by the fire or protected by fire retardant (Fire and Ice) drops.

Table 2. Site Assessment Summary

Jurisdiction / Sites	Documented Sites	Sites Assessed	Treatment Recommended	
			Suppression	Emergency Stabilization
BLM	22	13	---	3
NPS	6	6	3	1
Total	28	19	3	4

Sites Assessed (BLM): CA-030-1509 (Hoboe Mine), CA-SHA-1351 (Sybil Mine and Mill Bin), CA-SHA-2291 (Niagra Mill Site), Brunswick Mine, Washington Mill, CA-SHA-2721 (Queen's Draw prehistoric site), CA-SHA-1350 (prehistoric site), CA-030-1510 (mill site), CA-030-1506 (Morrowville town site), CA-030-1507 (Black Tom Mine), CA-SHA-2765H (Lewiston Turnpike), 45-003091H, CA-SHA-1039H (Stage Stop).

Sites Not Evaluated (BLM): CA-030-1508 (Pack Trail), CA-SHA-1694H (Lower Brunswick can scatter), CA-SHA-1349H, Highland Ridge Trail, Scorpion Mine, Tom

Green Mine, Philadelphia Mine, CA-SHA-1352H (Wooden V-shaped Flume), CA-SHA-3217/H (obsidian flakes).

Sites Assessed (NPS): CA-SHA-1356H (Camden Toll Road), CA-SHA-2692H (Crystal Creek Ditch), CA-SHA-2714H, CA-SHA-2715H (French Gulch Road Stone Cabin), CA-SHA-3631/H (Kate Camden Gravesite, proto-historic site), CA-SHA-3633H (Coggins Sawmill Foundation).

Sites Not Evaluated (NPS): None

If during the completion of the cultural resource assessment, additional emergency stabilization treatments are identified, they will need to be submitted as a supplement to this BAER Plan.

IV RECOMMENDATIONS

Five specifications were prepared to address known and potential effects to cultural resources. Specifications C-1, C-3, C-4, and C-5 may be accomplished by force account or contract. Specification C-2 is to be accomplished by fire suppression funds.

A. Emergency Stabilization Specifications

C-1, Cultural Resource Stabilization

Three historic sites within the French Fire burn area have been assessed to be at risk from post fire effects. Such effects include compromised structural integrity of features from fire killed trees that can jeopardize structural foundations and erosion due to increased runoff. Sandbags, rice straw and tree removal (under Specification F-1) will prevent short-term loss of the sites until they can be more adequately assessed.

C-2, Cultural Resource Stabilization, Suppression

Three sites were impacted by the construction of a dozer line during fire suppression. Treatments are prescribed for these affected sites. The Crystal Creek Ditch (NR# 74002359) was listed on the National Register of Historic Places (NRHP) in 1974. The water conveyance feature is part of a system dating to the 1850s or 1860s, although the impacted segment probably dates to about 1913. Site CA-SHA-3631H consists of a historic-period Native American encampment that includes historical artifacts, terrace features, and the Kate Camden gravesite that is a contributing element (Feature #14) of the NRHP listed Tower House Historic District (NR# 73000257). Site CA-SHA-1356H is a segment of the historic-period Tower Wagon Road that is associated with the NRHP listed Tower House Historic District.

C-3, Increased Agency Presence

Looting and vandalism are known to have occurred within the French Fire burn area prior to the fire incident. Three sites assessed during field reconnaissance efforts showed evidence of past looting. Reduced ground cover as the result of fire effects expose cultural resources locations to increased risk from such activities. Such risks can be minimized through law enforcement and/or Agency patrols at selected sites, signing, and enforcement of area closures. These efforts can be supplemented by increased vigilance on the part of uniformed agency personnel and volunteer archaeological site stewards. Law enforcement officers will take action on artifact collectors and looters.

C-4, Finish Cultural Resource Assessment

Fire suppression activities conducted during the French incident resulted in construction of 18.4 miles of dozer line on NPS and BLM managed lands. Slightly over half of these lines were assessed for the presence of cultural resources during fire suppression. Eight and a half miles (8.5), as well as a staging area, safety zones, drop points, and a helispot remain to be assessed for cultural resources. The Sybil Mill site, a known and partially documented resource, was completely burned over during the fire incident. This mill site is severely damaged and needs to be recorded before the site's demise, due to soil

destabilization resulting from the loss of the mill timbers. Due to time constraints, the Cans-Down-The-Hillside site (CA-SHA-1694H), which also includes the Brunswick residential, tram, and mill site complex, needs to be assessed for risks from post fire effects. The Emergency Post-Fire Inspection Record should be used for this assessment (see Appendix V).

C-5, Native American Consultation

Pursuant to Section 106 of the National Historic Preservation Act, as amended (NHPA), Federal undertakings that may affect Historic Properties require the lead agency to consult with affected tribes as equal partners. Therefore, local tribes must be consulted concerning any effects that may occur on Historic Properties of Native American origin that are located in areas subject to emergency stabilization/suppression treatments. Site CA-SHA-3631 is a historic grave site of Native American origin. This site was affected during fire suppression activities (Specification C-2). Such locations are exempt from public disclosure under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).

B. Management Recommendations (Non-Specification Related)

While wildland fire has the potential to adversely affect cultural resources, it also offers the unique opportunity to perform inventories in areas that were previously inaccessible. Additionally, in areas where fire has effectively removed the ground cover, archaeological sites may be exposed that were not previously visible on the surface. Funding for these suggested activities should come from the agencies operating program or other funding sources. Given these conditions, the following non-specification recommendations are offered:

BLM

A systematic and comprehensive cultural resources inventory and site documentation in areas of high site probability should be carried out within the burn area.

The extensive mining ditch system has been partially exposed in the burn area. It is an ideal opportunity to record these features through aerial photography and by an on-ground condition assessment.

The French Gulch Mining District played an important role in the California Gold Rush and subsequent mining development. Its significance should be researched for possible inclusion onto the National Register as a thematic district.

Unburned brush and trees that have grown up adjacent to the Washington Mill and other historic mills and structures have a potential to destroy the wooden components of these sites during future fire events. It is recommended that a plan be considered to schedule removal of this type of fire hazard.

NPS

Illegal mining on NPS land has rerouted a small drainage and left a "coyote hole" approximately 7 ft. deep at SHA-2714H. The drainage should be assessed and re-channeled, if appropriate, and the coyote hole filled in.

Site CA-SHA-2715H (French Gulch Road Stone Cabin) has a pre-existing crack in the roof near the front of the structure that extends down the rock walls. A historical architect should be consulted to determine what stabilization efforts would be appropriate to keep this structure from collapsing.

Scotch Broom has invaded Site CA-SHA-2715H. This site should be considered for vegetation management.

Brush inside the Kate Camden Grave fence should be removed and the brush cut back from outside the fence for a minimum distance of 5 feet.

Brush has nearly masked remaining portions of the Camden Toll Road. This alignment should be marked to avoid future impacts. Brush clearing to maintain visual continuity of the alignment should be considered, as appropriate .

V. CONSULTATIONS

James Barnes, Archaeologist, Bureau of Land Management, Folsom, CA

Francis Berg, Assistant Field Officer, Bureau of Land Management, Redding, CA

L. Finley, local resident, French Gulch, CA

Richard Jenkins, Archaeologist, California Department of Forestry, Redding, CA

Hans Kruetzberg, CA State Historic Preservation Office, Sacramento, CA

Eric Ritter, Archaeologist, Bureau of Land Management, Redding, CA

Joanne Williams, local resident, French Gulch, CA

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INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN
FRENCH FIRE

MINE SAFETY

I. Objectives

- Determine if fire behavior or fire suppression activities have created an imminent human safety hazard at mine sites in the burned area
- Determine if fire behavior or fire suppression activities will increase the transport of mill tailing from known mill sites within the burned area

Issues

- Imminent safety hazards at mine shafts or adits
- Transport of contaminants from Mill sites to aquatic resources

II. Observations

A. Background: French Gulch

The French Gulch mining district lies astride the Shasta-Trinity County line in the general vicinity of the town of French Gulch and includes the Deadwood area to the west. It is the most important lode-gold district in the Klamath Mountains. French Gulch was originally prospected in 1849 by French miners, from whom the town received its name in 1856. Clear Creek, which drains the area, yielded large amounts of placer gold at this time. The Washington Mine, discovered in 1852, was the first quartz mine worked in Shasta County. From around 1900 to about 1914 the output for the district averaged between $300,000 and $500,000 worth of gold per year. There was some activity during the 1920's and 1930's, and there has been minor prospecting and development work since. The value of the total output of the district is estimated at more than $30 million. The district is underlain predominantly by slate, shale, and siltstone of the Bragdon Formation (Mississippian). Copley Greenstone (Devonian) lies to the northeast and south, and, to the southwest, there is quartz diorite of the Shasta Bally batholith. In addition, numerous porphyritic quartz diorite and diorite dikes, locally known as "birdseye porphyry", occur. The quartz veins usually strike west, with a few northwest exceptions, and range from a few inches to several feet thick: They are predominantly in the rocks of the Bragdon Formation and often occur near or adjacent to the dikes, which apparently have had some effect on the localization of the ore bodies. The latter consist of numerous parallel stringers rather than a single massive vein. Calcite is commonly present in the veins. The ore contains coarse, free gold usually associated with considerable pyrite and smaller amounts of galena, sphalerite, arsenopyrite, chalcopyrite, and occasionally scheelite. Numerous high-grade pockets have been recovered here. A number of large ore bodies occur in the district, several of which were more than 1000 feet long.

B. Reconnaissance Methodology and Results

Mine sites were identified and targeted for survey using the French Gulch Quadrangle, existing mine claim records, the *Economic Geology of the French Gulch Quadrangle (Albers 1965)* and the personal knowledge of the local resource area mineral geologist. Identified and previously unrecorded mine sites were surveyed from the air and on the ground using a standardized survey process. The process consists of identifying known mines by reviewing available literature regarding mines in the district and completing aerial and on the ground surveys of known and previously unrecorded mines. On site surveys record the historic or casual mine name, location of the mine, site recorder, date recorded, access route, whether the mine is active or abandoned, load, placer or mill, area of disturbance, an itemized accounting of the mine openings, a list of potential hazards, if the site has waste rock or mill tailings present, environmental impacts, cultural resource potential, frequency of visitor use and potential hazard mitigation methods. A site sketch is made during the visit, photos documenting the site are taken, and a relative

hazard rating is derived from a formula incorporating relative ease of access and a human health hazard rating.

EXAMPLE

MINED LANDS FIELD INVENTORY DATA SHEET

Inspected By Holbeck and Rogers **Date 8/20/04**

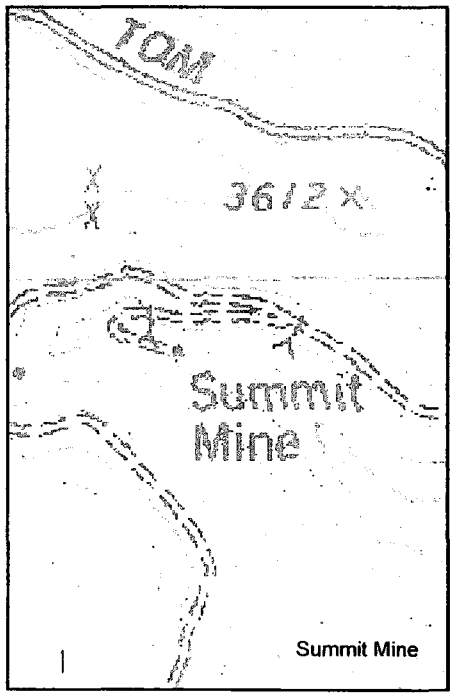
A) **Site Name: Summit Mine and Mill**
Location: State **CA** County **Shasta** Watershed Name **Summit Gulch**
USGS quadrangle **French Gulch** UTM Coordinates **4506509N x 0525734E**
Township, Range, Section, and ¼ Section **T33N R7W Sec 19 NW of NE**
Access Route (describe) **Tom Green Mine Road**

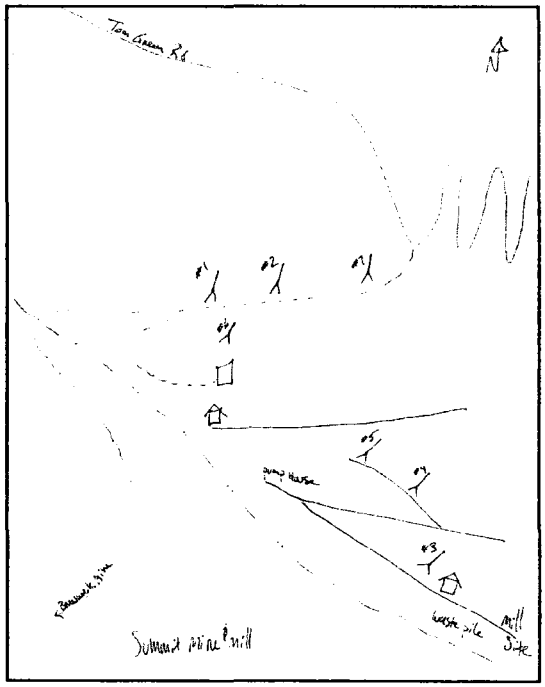
B) **Operation Type:** Load ☒ Mill ☒
Operation Status: Abandoned ☐ Active ☐ Patented ☐ Claimed Inactive ☒

C) **Size of Surface Disturbance** <1 Acres

D) **OPENINGS – DO NOT GO INTO ABANDONED UNDERGROUND MINES**

ID #	OPENING (e.g. adit, shaft, pit)
#1	**Adit, closed with a metal gate**
#2	**Adit, collapsed**
#3	**Open, depth unknown**
	Mill site and tailings below building site are in the stream bottom





E) **HAZARDS:** If the following exist, place a check mark next to the item. Where applicable, write the number of the opening with which the hazard is associated.

1. ☒structures

2. ☒ debris

3. ☐ highwall – average length height benches? (y/n) describe:

4. ☐ unstable rock (describe rock type)

5. ☐ pools (describe size, number, location)

6. ☐ explosives – DO NOT TOUCH (describe type if known)

7. ☒ machinery (describe type, number)

8. ☐ hazardous substances – DO NOT OPEN CONTAINERS (describe: e.g. fuels, lubricants, chemicals, transformers; drums, containers, storage tanks; altered soil, vegetation, water; dumps, fill areas)

9. ☐ subsidence features (describe)

10. ☐other

Notes on hazards:

11. ☐mill tailings [describe number, location, and approximate dimensions (length x width x height)]

12. ☒waste rock [describe number, location, and approximate dimensions (length x width x height)]

F) **RESOURCE IMPACTS:** Include all areas associated with the mine, such as access roads, waste rock piles, refuse piles, etc. Place check marks next to the items that apply.

1. Water

1. ☐Water is flowing out of mine workings (adits, shafts, pits, etc.). pH
2. ☐Water is standing in mine workings (adits, shafts, pits, etc.). pH
3. ☐Water is flowing through or over the tailings/waste rock pile (if it exists).
4. ☐The ground or stream bottom is discolored around the site.
5. ☐There is evidence of aquatic life in the drainages near the site.
6. Estimate the distance to the nearest drainage:

2. Sediment

1. ☐During runoff, sediment from the site is transported by water into a nearby drainage or stream channel.
2. ☐Other evidence of erosion (specify, e.g. gullies, scarps, cracks)

3. Vegetation

1. Characterize the vegetation: healthy ☐, struggling ☐, dead ☐, nonexistent ☐
2. If there is vegetation damage, state why you think it is damaged, and try to quantify the amount of damage.

3. ☐The tailings/waste rock pile (if it exists) is revegetating naturally.

4. Wildlife

1. ☐Wildlife inhabit or visit the site. (Look for droppings, tracks, and nests. This is especially important in underground sites since evidence of animal habitation is a good clue about the air quality. Specify types of wildlife, paying special attention to endangered species, e.g., bats, rodents.)

2. ☐No wildlife use detected.

5. Visual

1. Characterize the visibility of the site: easily seen ☐, seen when pointed out or sought ☒, hidden ☒
2. ☒Site is visible from visitor facilities, or well-visited roads, trails, or viewpoints.
   From what distance is the site easily visible?

G) **Cultural resource potential?** (y/n) **Y** (describe)

If applicable, Describe interpretive potential.

H) **Visitor/staff use?** (y/n)

1. Frequency of visitation/use (high/medium/low) **LOW** (describe evidence)

2. Rescue information:

I) **Potential mitigation/closure/reclamation methods:**

1. If you were to design a reclamation plan for this site, what would you do? Check the appropriate boxes and describe below if necessary:

☐Cable nets (bolted over entrances)
☐Bulkheads (e.g. rock and mortar or formed concrete installed in entrances)
☐Polyurethane foam (PUF) (expands 30X when installed; earthen backfill at surface)
☐Gates
☐Explosives (blast openings closed)
☐Backfill shafts, pits, entrances
☐Fences
☐Install warning signs
☐Recontour
☐Topsoil or other soil amendments
☐Revegetate, either by seeding or transplanting
☐Stabilize deteriorating structures
☐Destroy deteriorating structures
☐No action – The site is naturally reclaiming and poses no resource impacts or safety hazards.
☐Other

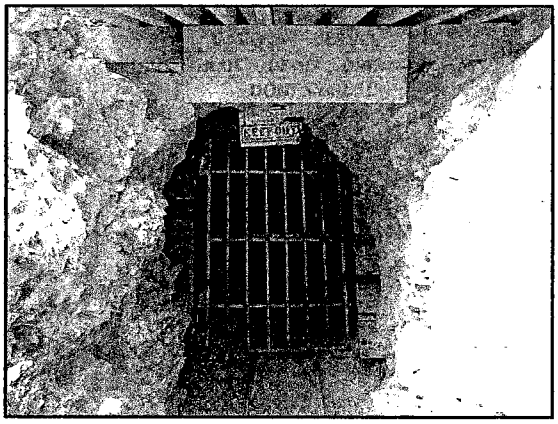
Describe details: **No action**

2. Mitigation status: none ☒; temporary measures – fence ☐, sign ☐, other ; hazards adequately mitigated (y/n) **Y**; reclamation complete (y/n)
Comments:

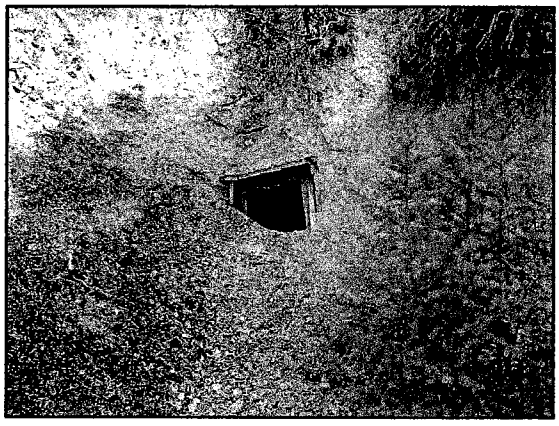
J) On an attached piece of paper, draw a **SKETCH MAP** of the site. Show map orientation, approximate scale, access route, drainages in the vicinity, and the location of each hazard. (Identify each opening by its number as indicated in section D.)

K) Attach **LABELED PHOTOGRAPHS** of the site, including photographs of hazards, resource impacts, access routes, and anything else that might be useful. PHOTOGRAPHS HELP TREMENDOUSLY IN EVALUATING MANAGEMENT OPTIONS.

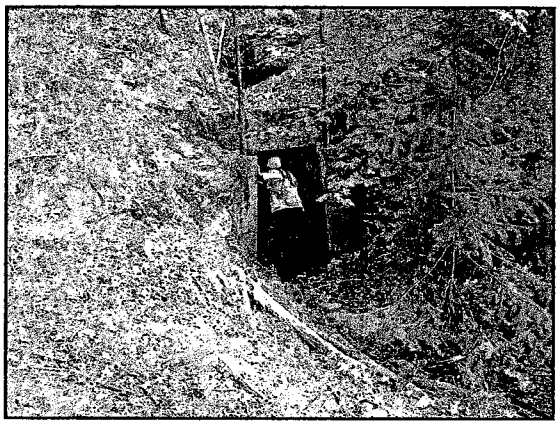
L) Hazard Rating (0-6) **2** Access Rating (0-10) **3** Natural resource rating (H/M/L) **M**



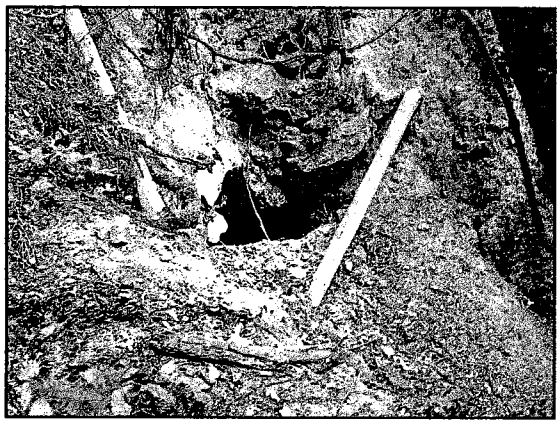
Adit #1



Adit #2



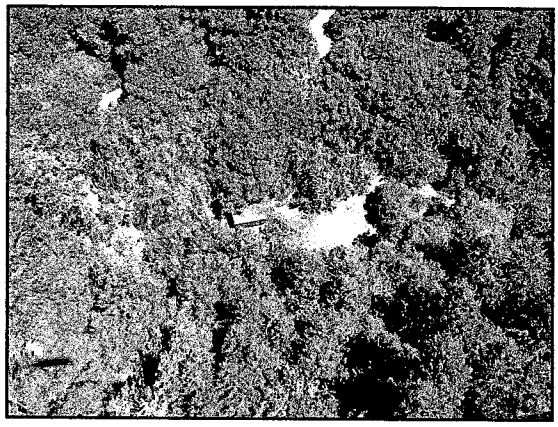
Adit #3



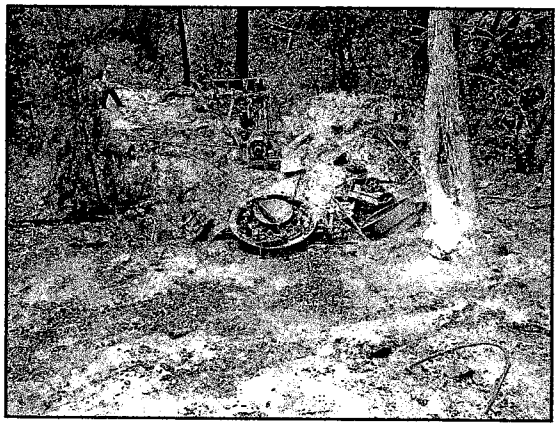
Adit #5



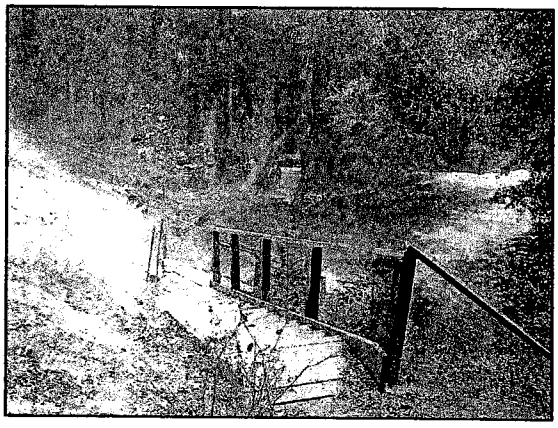
Francis Surveys!



Mill Pile Overview



Mill Site Overview



Structure 1

Relative Hazard Rating

Ranking System for Hazards

	Danger Rating Associated With Hazard
5 Pts	·Any coal mine ·Vertical shafts, winzes, or underhand collapsed stopes > 20' ·Irrespirable air ·Instantaneous fatal injury could occur due to mine-related hazard
4 Pts	·Large unstable structures ·Deep pools of water from which it would be difficult to climb out. ·Potential fatal injury could occur ·Major collapse zones
3 Pts	·Radiation potential ·Large stopes overhead – seemingly stable ·Highwalls > 20' drop-off not apparent from above ·Serious injury could occur
2 Pts	·Highwalls > 20' – drop-off apparent from above ·Rubble around but rock is generally stable ·Moderate injury could occur
1 Pt	·Minimal injuries could occur like tripping, bumping head, cutting oneself ·Highwalls < 20' in area where such drop-offs are common naturally ·minimal injury possible
0 Pts	·No inherent hazards; no injury potential above normal condition

* Add 1 point for any site that has an adit > 500' in length

Difficulty of Access

	Type of Access	**Method of access**
5 Pts	Good road with mine as the specific destination	2 wheel drive vehicle
4 Pts	Good dirt road without specific destination	4 wheel drive vehicle
3 Pts	Dirt road without specific destination	4x4 SUV or OHV
2 Pts	Jeep trail	2 wheeled OHV or ·Moderate hike < 5 mi
1 Pt	Not on a road or path	·Moderate to hard hike < 5 mi
0 Pts	Not on a road or path, not visible from access an point	Hard hike > 5 mi

Mines were evaluated for a change in the condition of safety directly attributable to fire effects or suppression impacts. Mines were located and visited with the help of the Redding Field Office recreation planner and mineral geologist.

C. Findings

Load mines within the burned area generally consist of underground workings accessed by surface adits with the rare shaft as an exception. Most of the mine openings surveyed were collapsed or collapsing at the portal. Many of the mines surveyed have safety exclosures such as gates, installed in the adit portal. None of the mines surveyed showed evidence of fire related damage that has compromised the condition of safety at the mine, meaning, no supporting timbers, shoring, or other supports were damaged.

Washington Mill Site

Two large terraces constructed of mill tailings were identified by Rogers at the Washington mill site. A road accessing the lower terrace to the West is concentrating storm water run off onto the lower terrace and transporting tailings down gradient into Scorpion Gulch. This road should be recontoured to direct storm water away from the tailings. Storm water run off is not likely to increase as a result of the French Fire because the watershed above the mill is burned at a low to moderate intensity and a road network above the mill redirects water away from the mill. The road drainage condition at the mill is preexisting and not directly associated to the fire.

Washington Adits

There are two adits at the west end of the Washington mine property on public land. The portal in Adit #1 is stabilized with a large culvert. The culvert is not connected to the underground workings as a collapse blocks the entrance. Adit #2 is collapsed making the underground workings inaccessible.

Lower Dutch Gulch

A mine complex at the intersection of French Gulch road and Dutch Gulch trail is more visible because the vegetation that once obscured the openings is now burned away. Four previously unrecorded openings were surveyed, none of the openings were altered by the fire or are likely to represent significant underground workings due to the limited amount of waste rock present on the site.

Three Sisters Mine

The Three Sisters mine in Dutch Gulch was once a significant mine in the area according to Albers. Today it consists of two open, partially collapsed adits and one securely covered pit. None of the openings were altered by the fire or represent an imminent safety hazard.

Three Finger Jack

The Three Finger Jack mine is found between the Three Sisters mine and the Lower Dutch Gulch complex. The mine consists of two collapsed adits and one prospect. Adit #2 is open and partially collapsed. Limited waste rock on site indicates the openings are not likely to be extensive.

Section 18 Center

A mine site located in the center of section 18 was surveyed. The site was likely once a significant mine in the area. Significant waste rock is present on the site. Today the mine consists of one open adit of unknown depth. The condition of safety at the site has not been altered by the French fire.

Boswell Gulch

The mine site in Boswell Gulch consists of one open, collapsing adit and one prospect. The adit is associated with a significant waste rock pile indicating extensive underground workings. The toe of the waste pile intersects an OHV trail accessed from the French Gulch OHV staging area. The French fire has not altered the condition of safety at the site.

Left of the Boswell

A single opening was found left of the Boswell Gulch mine. A moderate waste rock pile exists indicating a limited extent of underground workings. The French fire did not alter the site, or change its condition of safety.

Black Tom Mine

The Black Tom mine, North West of the Washington mine complex was once a significant mine in the area. One open partially collapsed adit remains today. The opening is gated, but collapse of the portal has compromised the safety gate and a curious visitor could pass around the gate to enter the mine. A significant waste rock pile indicates likely extensive underground workings. The French Fire has not altered the condition the opening at the mine.

Tom Green Mine

The Tom Green mine in Scorpion Gulch was once one of the more significant mines in the area. Today four of the five major adits are collapsed. Adit #1 is open and stabilized with a large culvert. The culvert is secured with a locked gate. The #1 adit connects to the lower level of the Summit mine, more than 1000 feet to the South. The French Fire did not alter the opening.

Summit Mine

The Summit mine in Summit Gulch consists of more than 10 openings with thousands of feet of underground workings on multiple levels. The Summit was the site of a major milling operation. Many of the openings at the mine are gated, but many more are open and collapsing. There is little evidence of mill tailings on site as the mill is located close to the bottom of the drainage where storm water has carried away the tailings. A building below Adit #1 burned on 8/21 and the mill site below adit #3 burned. None of the openings were altered by the fire and the condition of safety at the mine was not changed by the fire.

Brunswick Mine

The Brunswick mine, west of the Summit mine consists of two collapsed adits and a mill site. The mill site is below the standing building and is marked by concrete footings. The building was protected by air attach forces on 8/20 when the fire burned close to the mine. The collapsed openings were no altered by the French fire.

Section 10 Adits

The section 10 adits were probably once part of the Highland or Hightower Mine fond a short distance to the southwest. Adit #2 is open and collapsing. Limited waste rock on site indicates the mine is not likely

to have extensive underground workings. The condition of safety at the mine has not changed as a result of the French Fire.

Tom Neil Prospects

Two prospects northeast of the Tom Neil private property were surveyed. No openings were found. The mill tailings at the private mill site were observed from the air and are not in jeopardy of being transported from the site by storm water run off.

Philadelphia Mine and Mill

The Philadelphia mine and mill located east of the Washington mill has one secure gated adit of significant depth. A roller mill is also found on site. Water running out of the adit drains through the waste rock pile and mill tailings leading to Scorpion Gulch. The water should be redirected away from the waste pile to mitigate the transport of potential contaminants into Scorpion Gulch. The mill site and tailings were evaluated to determine if the effects of the French Fire would cause an increase in the transport of mill tailings off site. The slopes above the Philadelphia mill burned at a low to moderate intensity, and a road network above the mill carries storm run off away from the tailings.

Hoboe Mine

The Hoboe mine, east of the Philadelphia consists of one secure gated adit and a small structure. A moderate to significant waste pile exists on the site indicating the underground workings may be significant.

Niagara Mine and Mill

The Niagara mine site consists of one securely gate adit, stabilized by a large culvert. The adit, low in the drainage is one among many collapsed adits that once accessed this significant mine site. An abandoned mill site, below French Gulch road has an accompanying mill tailings pile that is not subject to transport from storm water due to its location on the hill side. The Niagara mill is below the Sybil, or Accident mine located above French Gulch road in the southeast corner of section 12.

Mine or Mill Name	Location
Washington Mill Site	T33N, R7W, Sec 17 SW+SE of NW
Washington Adits	T33N, R7W, Sec 17 SW of NW
Lower Dutch Gulch	T33N, R7W, Sec 15 SW, Sec 16 SE
Three Sisters	T33N, R7W, Sec 16 SE of NE
Three Finger Jack	T33N, R7W, Sec 16 NE of SE
Section 18 Center	T33N, R7W, Sec 18 NE of SW
Boswell Gulch	T33N, R7W, Sec 8 NW of SE
Black Tom	T33N, R7W, Sec 8 SW of SW
Tom Green	T33N, R7W, Sec 18 SW of SE
Summit	T33N, R7W, Sec 19 NW of NE
Brunswick	T33N, R7W, Sec 19 SW of NE
Section 10 Adits	T33N, R7W, Sec 10 SW of NW
Left of the Boswell	T33N, R7W, Sec 10 NE of SW
Tom Neil Prospects	T33N, R7W, Sec 10 SW of SE
Philadelphia	T33N, R7W, Sec 17 SW of NE
Hoboe Mine	T33N, R7W, Sec 17 NE of SE
Niagara Mine and Mill	T33N, R7W, Sec 7 SE of SW

- 20 mine sites were surveyed for safety hazards

- No open shafts were found in the burned area
- 7 safely gated adits were observed and recorded
- ~18 partially open adits of unknown depth and complexity were found and surveyed
- 5 mills sites with evidence of significant milling activity were recorded
- No mill sites were observed in clear jeopardy of fire related mill tailings transport

Site surveys and relative hazard ratings did not show a changed condition of safety or imminent fatally hazardous condition at any of the mine or mill sites directly attributable to the effects of the French Fire. A changed condition of safety would include burned timbers or other support members that stabilize the opening of an adit or shaft, an unsafe opening that is more visible or accessible as a result of cover vegetation removed from the effects of the fire, or storm water run off that, as a result of the fire effects would increase the transport of potential contaminants from a known mill site to a human health related target such as a water body. Seventeen sites were visited, five having evidence of milling activities.

The Centennial Gulch and Sybil mines were not surveyed and could represent significant underground workings or cultural resource value according to Albers.

IV. **Recommendations**

A. **Management Recommendations** (non-specification related)

- ~18 partially open adits do not represent an imminent threat to human life and do not require emergency closures to prevent accidental loss of human life
- Spring water running out of the Philadelphia Mine should be directed away from the waste pile and mill tailings it currently filters through leading to Scorpion Gulch.
- Preliminary water quality sampling on Clear Creek (USGS and others, draft 2003) and its tributaries have shown metals contamination from mines in the area. Clear Creek and its tributaries should be monitored for increased metal transport due to increased flows over mine sites due to fire effects.
- Two large terraces constructed of mill tailings were observed and recorded at the Washington Mill site. An access road at the west end of the tails is culling the lower terrace and transporting tailings down gradient to Scorpion creek. These tailings may contribute to the metal contaminants recorded in the clear creek drainage. The access road should be recontoured to direct storm water run off away from the mill tailings.
- Unsecured explosives were observed in a con-ex box at the Washington Mill site by Walter Herzog, Redding BLM. The mine claimant should be encouraged to safely store or dispose of these explosives.

V. CONSULTATIONS

Ron Rogers, Geologist, Redding field office BLM
Francis Berg, Assistant Field Manager, Redding field office BLM
Sky Zaffarno, Recreation Specialist, Redding field office BLM
BAER Team Watershed Group
Walter Herzog, FMO, Redding field office BLM
Dr. Eric Ritter, Archeologist, Redding field office BLM
Brian Rasmussen, Geologist, Whiskeytown NRA

VI. REFERENCES

Clark, William B., GOLD DISTRICTS OF CALIFORNIA, BULLETIN 193 California Division of Mines and 1970 Geology, Sacrament, California
Albers, John P. ECONOMIC GEOLOGY OF THE FRENCH GULCH QUADRANGLE, Special Report 85, California Division of Mines and Geology, 1965, San Francisco, California

Chris Holbeck, National Park Service, Voyageurs National Park, 218-283-9821

APPENDIX II – ENVIRONMENTAL COMPLIANCE

Decision Document to Support Emergency Stabilization Activities
For

FRENCH FIRE BURNED AREA EMERGENCY STABILIZATION PLAN

U.S. Department of the Interior
Bureau of Land Management, Redding Resource Area
&
National Park Service, Whiskeytown National Recreation Area
Shasta County, California

Purpose and Need for the Action

This plan identifies specific emergency stabilization and monitoring actions designed to mitigate the potential for loss of life, property, and damages to resources that may result from post-fire conditions within and below the French Fire burned area. The French Fire burned area may generate increased in run-off and potential mud and debris flows in the populated French Gulch and Clear Creek drainages. Increased run-off and mudflows have the potential to mobilize contaminated mine tailings within these drainages and transport contaminated sediments into the Whiskeytown Lake. Emergency stabilization treatments are required to minimize potential risk to life, property, and sensitive natural and cultural resources within and down-stream of the burned area.

Plan Conformance

All treatments proposed in the French Fire Burned Area Emergency Stabilization Plan that are prescribed, funded, or implemented by Federal agencies on Federal, State, or private lands are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with the guidelines provided by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508). This Appendix documents the Burned Area Emergency Response (BAER) Team, Bureau of Land Management, and National Park Service consideration of NEPA compliance requirements for emergency stabilization and monitoring actions for treatments prescribed on Federal lands within the French Fire burned area in Shasta County, California. The compliance documentation includes U.S. Department of the Interior funded treatments to be implemented on private lands within the French Fire ncies has agreed to assume responsibility for completion of required environmental compliance documentation for private land treatments including National Historic Preservation Act consultations.

The BAER Team, Environmental Protection Specialist has review the French Fire Emergency Stabilization Plan for consistency with existing approved land management plans. After consultation with agency compliance staff it has been determined that all emergency stabilization treatments proposed are consistent with existing plans. However, the BLM State Office has rquested that an updated site specific noxious weed control environmental assessment be prepared to prior to implementation of noxious weed control actions on BLM lands (see further information below). Plans and associated NEPA Compliance documents reviewed included the following:

Whiskeytown National Recreation Area, Fire Management Plan, Final Environmental Impact Statement, Record of Decision, August, 2004.

Whiskeytown National Recreation Area, Resource Management Plan (1997)

Whiskeytown National Recreation Area, Strategic Plan, 2000-2005

Bureau of Land Management, Redding Resource Area Management Plan, (1992)

Bureau of Land Management, Redding Resource Area, Fire Management Plan Draft (2004)

Vegetation Management for Noxious Weed Control and Riparian Enhancement in Shasta, Tehama, Butte, and Siskiyou Counties, Environmental Assessment (1999)

Compliance with the National Environmental Policy Act

This plan has been developed by the U.S. Department of the Interior, Burned Area Emergency Response Team, comprised of representatives from the Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), U.S. Fish and Wildlife Service (FWS), National Park Service (NPS), and U.S. Forest Service (FS). The Team consulted with numerous other agencies, organizations, and individuals with subject matter expertise applicable to the proposed treatments (see consultation section below).

The proposed actions in this plan are emergency actions not having significant environmental impacts in accordance with 516 DM 5.8 based on the following considerations:

1. **Executive Order 11593. Protection and Enhancement of Cultural Environment and National Historic Preservation Act (NHPA).** The BAER Team archeologists have initiated necessary consultation with the California State Historic Preservation Office (SHPO) regarding treatments proposed in the French Fire Burned Area Emergency Stabilization Plan. Should the BAER plan be modified to improve treatment effectiveness or adapt to changing conditions individual agencies will be responsible for continued SHPO consultations.

2. **Executive Order 11988. Floodplain Management.** Several structures in the community of French Gulch existing within the 100 year floodplain and have previously been impacted by flood events (100 year flood in December 1982). This plan proposes placement of sandbags and temporary cement barriers on the floodplain above these structures to divert potentially damaging flood events. The impacts of these treatments would be imperceptible and temporary in nature and will be removed subsequent to the winter storm season. There would be no long-term effect from these treatments

3. **Executive Order 12372. Intergovernmental Review.** Coordination and consultation is ongoing with affected Tribes, Federal, and local agencies. A copy of the plan will be disseminated to all affected agencies (see agency consultation list below).

4. **Executive Order 12892. Federal Actions to Address Environmental Justice in Minority and Low-Income Populations.** All Federal actions must address and identify, as appropriate, disproportionally high and adverse human health or low-income populations, and Indian Tribes in the United States. The actions proposed in this plan have been designated to protect properties in the community of French Gulch and has been developed in consultation with local and county government agencies. It has been determined that the actions proposed in this plan will result in no adverse human health or environmental effects for minority or low-income populations and Indian Tribes.

5. **Endangered Species Act.** The BAER Team Wildlife Biologist, on behalf of the local agencies, has initiated consultation with the U.S. Fish and Wildlife Service, Division of Ecological Services, Red Bluff, California regarding actions proposed in this plan and their potential affect on federally listed species and has determined that there is no affect. Individual agencies are responsible for continued consultation should planned actions be modified.

6. **Secretarial Order 3127. Contaminants and Hazardous Waste.** Contaminated sites associated with mining are known to occur within the French Fire Burned Area on both private and BLM lands. Each site has been evaluated for potential increased run-on and

run-off and it has been determined that no treatments are necessary (see Watershed and Mine Safety Assessments).

7. **Clean Water Act.** Any alteration to streams or waters of the United States requires compliance with Section 404 of the Clean Water Act. The Interagency BAER Team has prescribed and recommended minor alterations to the drainages within the French Fire burned area including replacement of culverts and cleaning of debris from channels. These minor alterations are exempted from Section 404 Permit 37 – Emergency Watershed Protection and Rehabilitation. However, any additional treatments prescribed subsequent to approval of this plan may require consultation with the U.S. Army Corps of Engineers.

8. **Clean Water Act.** Federal Ambient Air Quality Primary and Secondary Standards are provided by the National Ambient Air Quality Standards (NAAQS), as established by the U.S. Environmental Protection Agency (EPA) (Clean Air Act, 42 U.S.C. 7470, et seq., as amended). Treatments prescribed in the French Fire will have short-term negligible impacts to air quality that would not differ from routine land use and management practices for the area. Long-term, treatments proposed in the plan would be expected to have a beneficial impact to air quality through stabilization of ash and soil within the French Fire burned area.

Cumulative Impact Analysis: Cumulative effects are the environmental impacts resulting from incremental impacts of a proposed action, when added to other past, present, and reasonably foreseeable future actions, both Federal and nonfederal. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The emergency stabilization treatments for the French Fire burned area, as proposed in this plan do not result in an intensity of impact (i.e. major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the management and recovery plans and associated environmental compliance documents of the Bureau of Land Management and National Park Service, and categorical exclusions listed below.

No direct or indirect unavoidable adverse impacts to the biological or physical environment would result from the implementation of the French Fire Burned Area Emergency Stabilization Plan. The implementation of emergency noxious weed control proposed in the plan would not result in any adverse effect on natural and cultural resources of the burned area. Conversely, implementation of the plan would be expected to result in a cumulatively beneficial effect by reducing the potential for noxious weed invasion and ensuring the recovery of native vegetation with the burned area.

Applicable and Relevant Categorical Exclusions

Applicable Department of the Interior Categorical Exclusions

Part 516 DM 2, App. Activities (such as reseeding or planting, fence construction, culvert repair, installation of erosion control devices, and repair of roads and trails) necessary for the rehabilitation of habitat, watersheds, historical, archeological, and cultural sites and infrastructure impacted by wildfire and/or wildfire suppression. Such activities: Shall be conducted consistent with agency and Departmental procedures and land and resource management plans; and Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure.

Note: While BLM has an approved Environmental Assessment for noxious weed treatments this plan includes funding to complete an updated site specific EA for this treatment. Implementation of this treatment is contingent upon completion of this updated EA. While this plan has identified potential timber salvage on BLM lands timber salvage is outside the scope of the Burned Area

Emergency Stabilization program and will require separate environmental compliance analysis and documentation.

Applicable Bureau of Land Management Categorical Exclusions

516 DM 6 App. 5.4C(3) Seeding or reforestation of timber sales or burn areas where no chaining is done, no pesticides are used and there is no conversion of timber type or conversion of non-forest to forest land.

516 DM 6 App. 5.4 G(2) Installation of routine signs, markers, culverts, ditches, waterbars, gates, or cattleguard on/or adjacent to existing roads.

516 DM 6 App.5.4.G(3) Temporary closure of roads.

516 DM 6 App.5.4.H(8) Installation of minor devices to protect human life.

National Park Service rehabilitation actions are fully covered by the Whiskeytown NRA, Fire Management Plan, FEIS approved on August 26, 2004.

Decision and Rationale on Action

I have decided to implement actions proposed in the French Fire Burn Area Emergency Stabilization Plan. In addition, I have reviewed the plan conformance statement and have determined that the proposed actions are in conformance with the approved land use plan and with the exception of the noxious weed treatments (see discussion above), no further environmental analysis is required.

Implementation Date

This project will be implemented on or after September 7, 2004 pending National Park Service and Bureau of Land Management funding approval.

S. W. Anderson — Aug 30, 2004

Manager, Redding Field Office, Bureau of Land Management — Date

Jim T. Milestone — Aug 30, 2004

Superintendent, Whiskeytown National Recreation Area, National Park Service — Date

Consultations

National Park Service

Paul DePrey, Chief of Resources, Whiskeytown NRA
Stephen Femmel, Natural Resources Specialist, Whiskeytown NRA
Jennifer Gibson, Ecologist, Whiskeytown NRA
Jim Hutton, Fire Management Officer, Whiskeytown NRA
Jim Milestone, Superintendent, Whiskeytown NRA
Brian Rasmussen, Geologist, Whiskeytown NRA
Gretchen Ring, Botanist, Whiskeytown NRA
Teri Tucker, Compliance and Planning Coordinator, Whiskeytown NRA
Russ Weatherbee, Wildlife Biologist, Whiskeytown NRA

Bureau of Land Management

Diana Brink, State Burned Area Emergency Response Coordinator, State Office
Steve Anderson, Area Manager, Redding Resource Area
Francis Berg, Chief Resources Management, Redding Resource Area
Walter Herzog, Fire Management Officer, Redding Resource Area
Dr. Eric Ritter, Archeologist, Redding Resource Area
Irvin Fernandez, Wildlife Biologist, Redding Resource Area

National Resource Conservation Service

Bob Bailey, Regional Conservationist, Redding, California

California State Historic Preservation Officer, Sacramento, California

APPENDIX III -- MAPS

- THREE DIMENSIONAL
- OWNERSHIP
- FIRE PROGRESSION
- SUPPRESSION IMPACTS
- ROAD REPAIR & TREE HAZARDS
- SOIL BURN SEVERITY & WATERSHED RESPONSE
- VALUES AT RISK
- WATERSHED TREATMENTS
- WATERSHED TREATMENTS AROUND STRUCTURES
- ANALYSIS WATERSHEDS AND POTENTIAL DEBRIS FLOWS
- EROSION POTENTIAL PRE AND POST FIRE
- POTENTIAL SALVAGE & REFORESTATION AREAS
- VEGETATION MORTALITY
- PRE-FIRE VEGETATION
- NON-NATIVE INVASIVE SPECIES
- MILL AND MINE SITES
- THREATENED & ENDANGERED SPECIES

APPENDIX IV -- PHOTO DOCUMENTATION

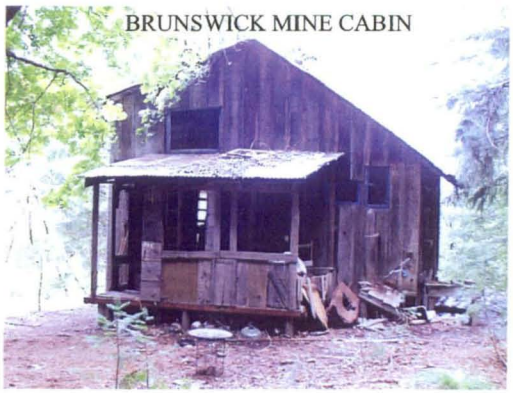



DON CARLSON
KEEP OUT



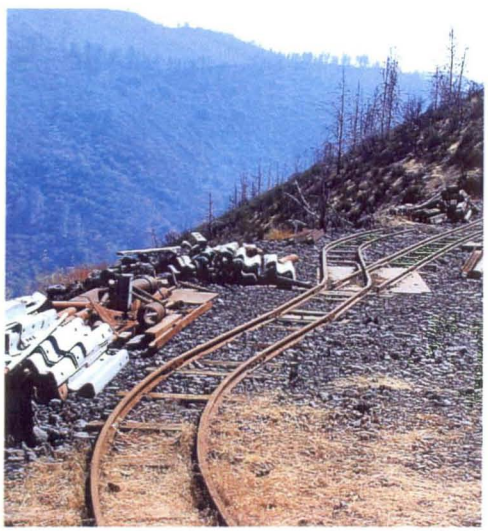



Post Fire Mine Safety Inspections


BRUNSWICK MINE CABIN


SUMMIT MINE ROTARY MILL

HISTORIC MINE RESOURCES & FRENCH GULCH OF THE PAST



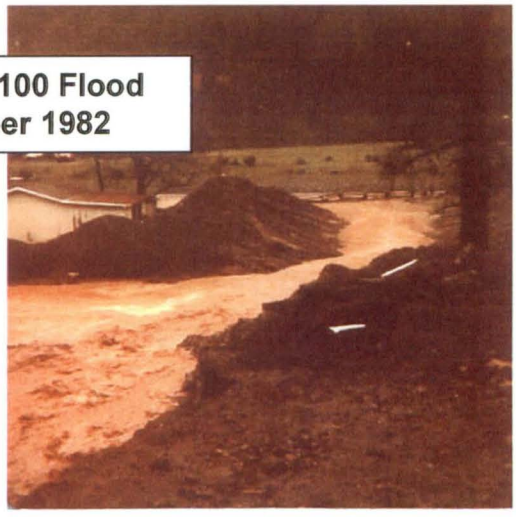






Slope Conditions August 2004 Above French Gulch





French Gulch 100 Flood Event December 1982



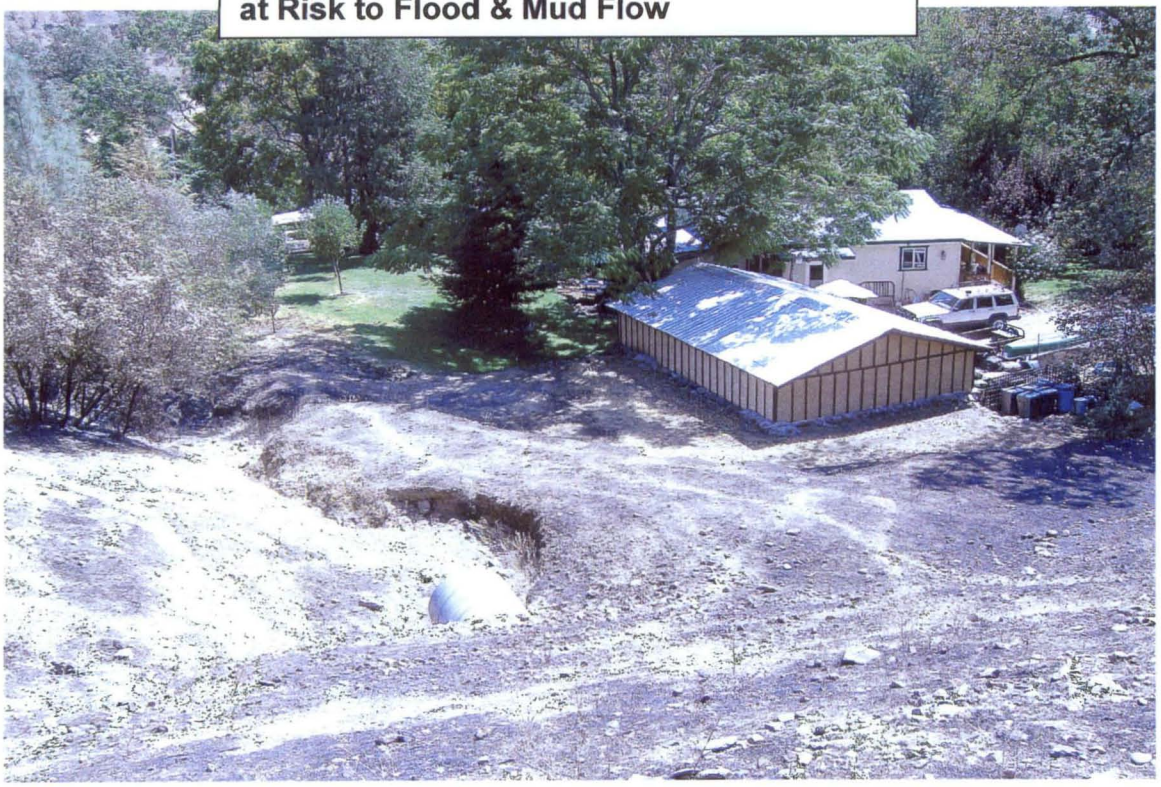


1982 Post Flood Damage

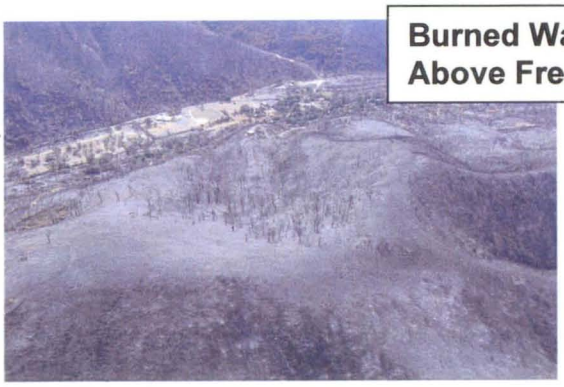


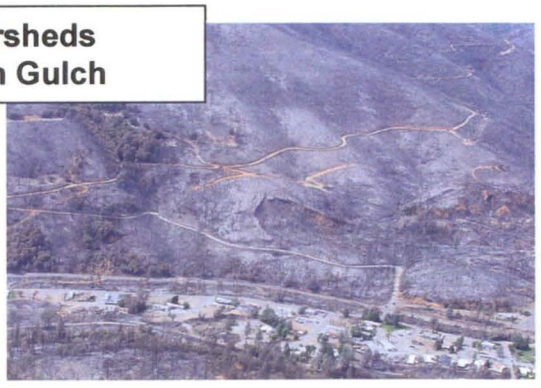


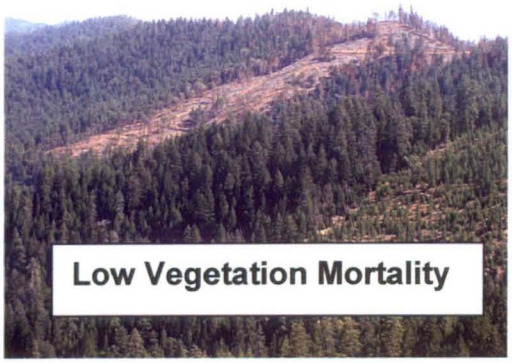
Existing Drainage Issues and Resources at Risk to Flood & Mud Flow



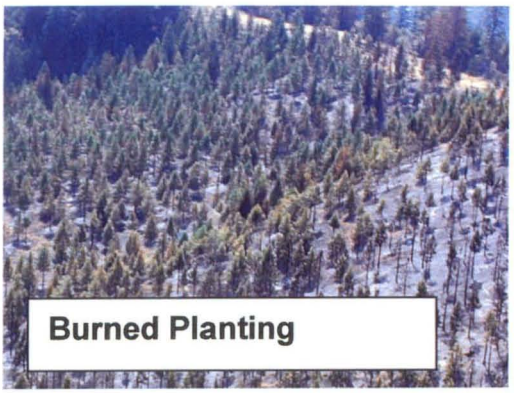
Burned Watersheds Above French Gulch







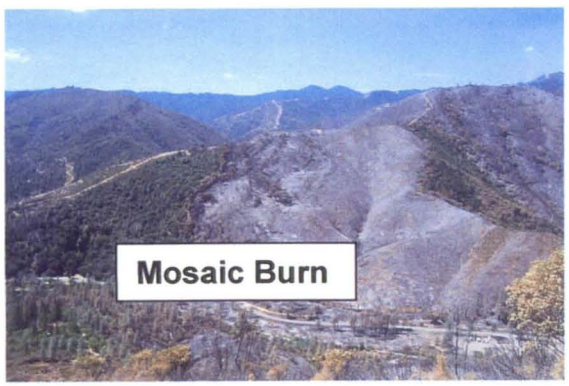
Low Vegetation Mortality



Burned Planting



Not all Was Lost –
Chipmunk in Burn Area



Mosaic Burn



Low Burn Severity

APPENDIX V – SUPPORTING DOCUMENTATION

Delegation of Authority from Superintendent, Whiskeytown NRA, to BAER Team

Delegation of Authority from Redding Field Office Manager, BLM to BAER Team

Interagency News Release

Resident Request for Emergency Stabilization Treatment

Brochure: Your Guide to Flash Flood Preparation

Bureau of Land Management – 1745 – Native Plant Materials Manual

USDOI Request for Formal Bid for Stabilization Seed Mix

USDOI Request for Aerial Seeding Solicitation for Bid

USDA FACT SHEET – Reseeding Grasses and Clovers on Burned Acres

U.S. Fish & Wildlife Service, Red Bluff Office – Species List

Western Shasta Resource Conservation District request to USDA Natural Resources Conservation Service

Response from Scott Stewart

Response from Conservaseed

Response from S & S Seeds

Response from Pacific Coast Seed

Response from Hedgerow Farms

Response from Agassiz Seed & Supply

Material Safety Data Sheet

- FIRE-TROL® GTS-R
- FIREOUT®ICE

Cultural Resources Emergency Post-Fire Site Inspection Record

Acres of Soil Burn Severity by Watershed

RUSLE Soil Erosion Modeling Process

Flow Model Curve Numbers

Catchment Area and Channel Gradient for Watersheds above Values at Risk

Specification Diagram Form

Cost Risk Analysis Summary

Record Searchlite News Article: BLM approves fire funds

MEMORANDUM

Reply To: Office of the Superintendent, National Park Service, Whiskeytown National Recreation Area

Subject: Delegation of Authority, Burned Area Emergency Stabilization and Rehabilitation

To: David N. Smith, Burned Area Emergency Response Team Leader

You are hereby delegated authority and responsibility to establish an Emergency Stabilization Plan outlining emergency treatment measures and standards necessary to mitigate fire and suppression damage resulting from the French Fire. You will also identify and direct mitigation measures that are immediate in nature and that should be completed by the suppression organization. All rehabilitation activities will be conducted within the framework of provisions contained within Part 620: Department of Interior Manual Chapter 3; National Park Service policy, and sound resource management practices.

Your primary responsibility is to organize and direct your assigned resources to establish and complete both short and long-term measures to protect the resources of the Whiskeytown National Recreation Area from further damage and start the process of recovery. You are to work in cooperation with the Incident Management Team, which is in charge of incident suppression and you will coordinate your activities with Brad Lutts, Incident Commander. I am also directing the IMT Incident Commander, through copy of this delegation, to assist you and your team in the rapid assessment and implementation of emergency stabilization measures to protect the lives, property and critical natural and cultural resources of Whiskeytown National Recreation Area. This assistance from the IMT will include aerial reconnaissance assistance, ordering of supplies, materials, equipment, and personnel, and implementation of treatments where feasible to complete your task. You are accountable to me, or in my absence, my designated representative.

Mr. Paul DePrey, Resource Chief will represent me as Line Officer when I am unavailable. Colleen Howe is designated as principle fiscal oversight and business management contact for the Agency.

Jim F. Milestone — Aug 18, 2004

Jim Milestone, Superintendent, Whiskeytown National Recreation Area Date

Cc: Brad Lutts, Incident Commander

United States Department of the Interior

Bureau of Land Management
Redding Field Office
355 Hemsted Drive
Redding, California 96002-0910
email caweb360@ca.blm.gov, *phone* (530) 224-2100, *telefax* (530) 224-2172

IN REPLY REFER TO: 1524(P)

AUG 1 8 2004

Memorandum

To: Northern Team Leader, Burned Area Emergency Response team

From: Field Manager, CA-360

Subject: Delegation of Authority, Burned Area Emergency Stabilization and Rehabilitation

You are hereby delegated authority and responsibility to establish an Emergency Stabilization Plan outlining emergency treatment measures and standards necessary to mitigate fire and suppression damage resulting from the French Fire. You will also identify and direct mitigation measures that are immediate in nature and that should be completed by the suppression organization

Your primary responsibility is to organize and direct your assigned resources to establish and complete both short and long-term measures to protect the town of French Gulch from watersheds above the community containing public lands administered by the Bureau of Land Management (BLM). Your secondary responsibility is to identify potential threats to human safety due to the exposure by the fire of mining features, especially shafts and adits. Thirdly, you are to identify roads or trails opened by the fire which comprise a threat to human users or compromise natural recovery Lastly, you are to identify impacts to and necessary protective measures for natural resources and, especially, cultural resources affected by the wildfire, suppression activities or resultant watershed deterioration.

You are to work in cooperation with the Incident Management Team which oversees suppression efforts. You will coordinate your activities with Brad Lutts, Incident Commander and/or his appropriate designee(s). You are accountable to me, or Francis Berg, Assistant Field Manager, who will represent me when I am unavailable.

Francis Berg

~~for~~Steven W. Anderson, Redding Field Office Manager Acting

8/25/04

Date

National Park Service
U.S. Department of the Interior

Whiskeytown National
Recreation Area

P.O. Box 188
Whiskeytown, CA 96095
530-242-3400 phone
530-246-5154 fax

Bureau of Land Management
U.S. Department of the Interior

Redding Field Office

355 Hemsted Drive
Redding, CA 96002
(530) 224-2100 phone
(530) 224-2172 fax

Interagency News Release

August 24, 2004
For Immediate Release
Steve Thede 530- 242- 3450
Francis Berg 530- 224- 2100

Burned Area Emergency Response Team Working on French Fire

The National Interagency Burned Area Emergency Response Team (BAER Team) has been hard at work since last Thursday assessing the effects and damage from the French Fire and looking at what emergency actions will be necessary to protect homes and property against flooding and mudslides that will be more likely this winter with so much less vegetation available to soak up the rains and stabilize the soil.

The Federal BAER Team will work with, and follow up on rehab work already underway and being done by the California Department of Forestry and Fire Protection (CDF) and other State Agencies. The purpose of the Federal team is to make a thorough, rapid and comprehensive assessment of resources that have been affected, or which could be affected by the fire until the land is able to recover. While the emphasis is on developing a plan to address public lands, it is recognized that all the areas affected, regardless of ownership, are interrelated and need to be addressed holistically. The team will produce a thorough report, with recommendations and specifications for treatments. These will be used by the agencies and others to develop the most efficient and effective emergency stabilization projects for the burned area, and acquire funds to accomplish the work.

The team consists of scientists and experts from the Bureau of Land Management, National Park Service, US Forest Service, Bureau of Indian Affairs, and the US Fish & Wildlife Service and include a full range of disciplines including a geologist, hydrologist, soil scientist, archaeologist, environmental compliance specialist, geographic information system specialist, a wildlife biologist, and vegetation, operations and documentation specialists. They will look at the potential threats to life, property, critical infrastructure and natural and cultural resources resulting from the fire. Each team will draft a section of the overall report that will also include the interrelationship between the different specialties.

Many issues have already been identified. Of particular concern on the French Fire, are soil erosion when the rains come this winter, affects of the suppression efforts including the repair of the dozer fire lines that were necessary to fight this intense fire, repair and protection of roads and culverts, and threats to the remaining structures, especially in the town of French Gulch. In addition, fire intensities at ground level will be assessed and mapped, which will help determine the need for revegetation and other efforts.

While fire is a natural process that this area has experienced and recovered from countless times in the past, there are things which can be done to speed the recovery, especially where human activities have affected the landscape or where human activities or structures will be affected. This BAER team will help determine those needs, and speed the process of obtaining the funding needed to begin the recovery process.

- NPS & BLM-

FRENCH FIRE BURNED AREA EMERGENCY STABILIZATION

RESIDENT REQUEST FOR EMERGENCY STABILIZATION TREATMENT

Name:	
Address:	
City/State/Zip Code:	
Telephone Number:	
Assessor Parcel #:	

Permission is hereby granted to burned area emergency stabilization team members to enter my lands for the purposes of conducting emergency stabilization assessment.

Property Owner's Signature	**Date**

POTENTIAL EMERGENCY STABILIZATION TREATMENT			
Place check next to any potential treatment below that you would authorize on your property if needed			
Ditch Cleaning		Grass Seeding	
Hazard Tree Removal		Mulch/Hydromulch	
Debris Removal		Sand Bagging	
Protective Barricade		Construct Catch Basin	

Permission is hereby granted to conduct the emergency stabilization treatments checked above.

Property Owner's Signature	**Date**

Please return form to the U.S. Department of Agriculture, Natural Resources Conservation Service, District Conservationist, 3644 Avtech Parkway, Suite C, Redding, California 96002. Telephone (530) 226-2574 Fax: (530) 226-2567. If you have questions please call the above number.

The burned area within the French Fire has suffered major vegetation loss and some of the burned soils may repel water more than normal. These factors combine to create a risk of flash flooding in the burned area. Until the area recovers, little will stop the waters from coming down the canyon. While numerous efforts are being taken to reduce the risks to life and property downstream of the fire, residents in the area should take their own steps to protect themselves and their property.

This publication was prepared by: The Burn Area Emergency Response Team (BAER) with assistance from
The American Red Cross
(800) 435-7669
And FEMA (800) 621-FEMA

For additional information visit:
www.fs.fed.us/baer
www.fema.gov
www.nrcs.usda.gov

Your Guide

To

Flash Flood Preparation

Preparing for flood waters after the French Fire 2004



Know What to Expect

- Know your area's flood risk.
- If it has been raining hard in the drainages uphill from your community, be alert to the possibility of a flood.
- Listen to the local radio station for bulletins.

Reduce Potential Flood Damage by:

- Raising your furnace, water heater and electric panel if they are in areas of your home that may be flooded.
- Removing all floatable debris from streambeds above culverts.
- Clearing dirt and debris from culverts.
- Dumping refuse in designated sites.

Prepare a Family Disaster Plan

- Keep insurance policies, documents and other valuables in a safe place.
- Check to see if you have insurance that covers flooding.
- Know where you could go if you need to evacuate. Also, get an extra map and mark two alternate ways to reach that destination.

Assemble a Disaster Supplies Kit Containing:

- First aid kit and essential medicine
- Canned food and a can opener
- At least three gallons of water per person
- Special items for infant, elderly or disabled family members
- Battery-powered radio and flashlight, with extra batteries for each
- Written instructions for how to turn off electricity, gas and water if authorities advise you to do so.

When a Flash Flood Begins

- Evacuate immediately. You may only have seconds to escape. Act quickly.
- Move to higher ground away from rivers, streams, creeks and storm drains.
- Do not drive or walk through flooded areas.
- Stay away from downed power lines and electrical wires. Electric current passes easily through water.
- Watch out for animals – especially snakes.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CALIFORNIA STATE OFFICE

MANUAL TRANSMITTAL SHEET

Manual

Manual Transmittal Sheet

Release	CA 1-242
Date:	09/13/2001

Subject: **1745 - Native Plant Materials Manual**

1. Explanation of Material Transmitted: The material contained in this Manual Supplement complements Handbook H-1745 and provides policy and guidance for the use of native plant materials in California.

2. Reports Required: None

3. Materials Superseded: None

4. Filing Instructions: File as directed below.

REMOVE:	INSERT:
None	CA Release 1-242

Signed by:
James Wesley Abbott
Acting State Director

Authenticated by:
Louise Tichy
Records Management

Table of Contents

.01 Purpose
.02 Objectives
.03 Authority
.04 Responsibility
.05 Policy

.01 Purpose. The purpose of this Manual Supplement is to provide policy and guidance specific to the use of native plants and plant seed in restoration and other revegetation projects. The maintenance of diverse native plant communities of California on a long-term basis is an essential part of preserving ecosystem health and productivity, and the introduction of persistent non-natives is clearly contrary to this goal.

Whenever plant materials are used in management activities such as erosion control, water quality, or restoration projects (including reclamation and rehabilitation), consideration needs to be given to long-term plant community stability and integrity. The selection of genetically appropriate native seeds and plants which achieve the purpose of the planting is therefore a concern. These guidelines establish policy on the use of native plant materials on BLM lands under the jurisdiction of the California State Office.

.02 Objectives. The objectives are:

A. To maintain and restore native plant communities with emphasis on the local genetic composition.

B. To use local plant materials for vegetation projects such as erosion control, fire rehabilitation, forage enhancement, water quality, and restoration whenever feasible and appropriate.

C. To prevent the introduction of undesirable vegetation into native plant communities.

D. To develop improved techniques for native plant restoration.

.03 Authority.

A. The Federal Land Policy and Management Act of 1976, as amended (43#U.S.C. 1701 et seq.).

B. Executive Order 13112 of February 3, 1999.

C. Departmental Manual 235.1.1.A., General Program Delegation, Director, Bureau of Land Management

D. BLM Manual 1203.3, Redelegation of Authority in State Directors.

E. BLM Manual 1745 - Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants.

.04 Responsibility.

A. The State Director is responsible for:

1. Overall implementation of the policy on the use of Native Plant Materials in California.

2. Periodically reviewing the policy and handbook and revising as appropriate.

B. Field Managers are responsible for:

1. Implementing the policy on the use of Native Plant Materials in their respective areas of jurisdiction.

.05 Policy. The policy of BLM-California is as follows:

A. To the maximum extent possible, germplasm of native species that is adapted to specific
abiotic and biotic site conditions shall be used in revegetation efforts.

B. Use of non-local, native or non-native plant materials will occur only when no other feasible alternative exists, or unusual ecological circumstances dictate that their use is superior.

C. All revegetation projects shall incorporate good practices of early planning, peer evaluation, maintenance, monitoring, and annual reporting to ensure project success. This policy applies to BLM projects and all projects that occur on BLM land (ROWs, easements, etc.)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CALIFORNIA STATE OFFICE

Release
CA 1-243

Date:
09/13/2001

Subject: **H-1745-1 Native Plant Materials Handbook**

1. Explanation of Material Transmitted: This release transmits the Bureau of Land Management's (BLM) CA Handbook, Use of Native Plant Materials in California. It provides policy and guidance specific to the use of native plant and plant seed in restoration and other revegetation projects to ensure the preservation of healthy and productive ecosystems. It directs the use of local plant materials for vegetation projects whenever feasible and appropriate, and gives guidance on improved techniques for native plant restoration. It also provides guidance to prevent the introduction of undesirable vegetation while emphasizing the use of local genetic composition when restoring native plant communities.

2. Reports Required: None

3. Materials Superseded: None

4. Filing Instructions: File as directed below.

REMOVE:	INSERT:
None	CA Release 1-243

Signed **James Wesley Abbott**
Acting State Director

Authenticated By
Louise Tichy
Records Management

USE OF NATIVE PLANT MATERIALS IN CALIFORNIA

(Illustration)

BLM MANUAL HANDBOOK-1745

H-1745-NATIVE PLANT MATERIALS HANDBOOK

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H-1745-NATIVE PLANT MATERIALS HANDBOOK

CHAPTER I

I. INTRODUCTION

This handbook provides direction on the use of native plants and plant seed in restoration and other revegetation projects. The maintenance of diverse native plant communities on a long-term basis is an essential part of preserving ecosystem health and productivity, and the introduction of persistent non-native plants is clearly contrary to this goal. The handbook expands on the policy elaborated in California BLM Manual Supplement 1745 and establishes the procedures to be used in complying with that policy.

Whenever plant materials are used in management activities such as erosion control, water quality, or restoration projects (including reclamation and rehabilitation), consideration needs to be given to long-term plant community stability and integrity. The selection of genetically appropriate native seeds and plants which achieve the purpose of the planting is therefore a concern. These guidelines establish policy on the use of native plant materials on BLM lands under the jurisdiction of the California State Office.

H-1745-NATIVE PLANT MATERIALS HANDBOOK

H-1745-NATIVE PLANT MATERIALS HANDBOOK

CHAPTER II

II. GENERAL GUIDELINES

A. Planning Stage:

1. Vegetation projects must be planned and evaluated early - preferably several years before the project start date. Seed set may not occur every year, or it may be sparse, so seed collection and stockpiling should begin as early as possible. If nursery grown seedlings are required, allow plenty of time for seed stratification and growing out. Early consideration should also be given to soil stockpiling, erosion control methods, and on-site planting and maintenance activities.

2. Determine the purpose of the planting and set your revegetation goals. If the disturbance has not yet occurred, take measurements of plant composition, density, and cover. Use soil surveys, if available, and look at soil series and ecological sites within the project area as well as the potential natural communities of the site. If this baseline information is not available for the project area, try to find a reference area that is undisturbed and ecologically similar to the project area. Decide what sort of progress can realistically be made toward the desired plant community, and what time-scale you will use to measure progress reports being used to record methodology and results.

3. Determine the desired plant species, the collection method (seeds or cuttings), the amount needed, and the planting method (seeding or transplanting). If nursery services are required, keep in mind that some nurseries require a year or more advance notification.

4. Determine through literature review and personal contacts techniques applicable to the life form you are collecting material from, transplanting, and/or seeding.

5. Develop quality standards for collecting, storing, growing, and outplanting.

6. Develop plans for long-term maintenance and yearly monitoring of the restored area.

7. Develop a contingency plan in case the plant materials become unavailable or fail to survive in the field. Seed availability may be a limiting factor for some species, so several different species should be considered. It is wise to try a variety of restoration methods to increase the odds of success and to determine the best overall method.

8. Maintain an ongoing stock of seed or vegetative materials from frequently used local species in each elevation band within a subsection (see II.D.1, below) if possible, in order to aid

in the success of unexpected restoration projects. Meticulous records must be kept on the source of all materials. A central collection facility may be more advantageous if the source areas are carefully controlled and monitored.

B. Project Review:

All restoration planning efforts must include coordination with Field Office Restoration Coordinators to ensure that the project is feasible and the appropriate plants and methods are used. Coordination with State Office Restoration Coordinators and knowledgeable individuals in other Federal and State agencies and the academic community is also highly desirable.

C. Natural Regeneration:

If there is an ample seed source and suitable conditions, natural regeneration should be encouraged. Topsoil should be salvaged and re-spread if possible, as native seeds and microbiota can often be preserved (if storage length is limited). Erosion control can often be achieved in the interim stage through the use of weed-free mulches such as native grass straw, barley straw, rice hulls, bark, and almond shells.

D. Plant Material Collection:

1. Local Plant Source: To the maximum extent possible, seeds and plants used in restoration, erosion control, fire rehabilitation, forage enhancement, and other projects shall originate from local sources. Local sources often possess genotypes that are adapted to the local environment, leading to higher short-term and long-term success rates. "Local" refers to sources within or as close as possible to the project area and within the same subsection (as shown on the Ecological Units of California map; see definitions), and elevation band (within 500') as the project area. Collections should also be made within the same vegetation series and general soil type.

If the plant population is known to be genetically rare, occurs on an unusual soil (e.g., serpentine), is found in an extreme environment (high temperature, low precipitation, etc.), or has distinct morphological characteristics that may be genetically based, then seeds/cuttings shall only be taken from these local variants. For example, a restoration effort on serpentine soil would use only seeds/cuttings collected on serpentine soil from within the same subsection and elevation band. In addition, disjunct plant populations may be genetically distinct and seeds/cuttings should be taken from within the disjunct population. Riparian

species should be collected from riparian areas immediately upstream or downstream, or within sub-watersheds within the same subsection and at similar elevations. If a locally rare species is desired for use in revegetation and can only be collected from the wild, consider whether the local populations can support the impacts of collecting seed or propagules.

These guidelines can and should be tailored to individual species. Variation observed within a species is not always due to population differences; it could be a result of individual plant differences, individual seed differences (from the same plant), and collection date differences. The use of common gardens, outplantings, and genetic analysis can be helpful in determining the presence and distribution of ecotypes, and should be done by experienced personnel. Large phenotypic plasticity would indicate that wide seed collection zones would be allowable, while large genetic variability would indicate the use of local ecotypes. Research on the genetic variability of commonly used revegetation species is therefore recommended and encouraged. (Extreme caution should be used in interpreting the results of 1) an isozyme study alone or 2) poorly researched taxa.) As ecotype information becomes available, restoration coordinators should develop seed collection "eco-zones" that will be incorporated into future versions of this policy.

2. Semi-local Plant Source: If sufficient numbers of widely-spaced source plants are unavailable within the same subsection, additional collection should occur in several well distributed sub-populations that have similar environments and are within adjacent subsections within the same section as the project area. Semi-local collection sites should be matched carefully to the project area in terms of elevation, vegetation series, aspect, slope, rainfall, annual temperature patterns, frost dates, and soil type. If plant materials are not available within the same section, consider postponing the project until native sources become available.

3. General: Try to use several (~ 50 or more) unrelated (spaced at least 1/4 mile apart) source plants within the collection area in order to maximize genetic diversity. Collect in areas that match the ecological characteristics of the project area. Only use healthy source plants. Collect seed when it is mature and still on the plant (if possible). For those plants that disperse their seed quickly at maturity, spreading sheets beneath the parent plant is advised. Obtain cuttings at the appropriate time of year and from material that is not too soft. Rapidly growing soft tissue is high in nitrogen and will not produce the auxins needed to root as opposed to more mature, woodier tissue that contains higher ratios of stored carbohydrates. Try to collect an equal number of seeds/cuttings from each source plant. Document the location of all source populations, track the plant materials taken from each population until they reach the field, and monitor the performance of each collection over time. This applies to commercial sources as well. When contracting out for seed collection, make sure the collector

is well known, knowledgeable, and respected, and only pay for pounds of PURE LIVE SEED. If collected seeds are grown out in a nursery, make sure that the contract states that the seeds are government property, and cannot be used for commercial purposes. No federally-listed or proposed species shall be used for revegetation without proper coordination with the Fish and Wildlife Service. Consult with the California Department of Fish and Game if state-listed species are being considered for use.

E. Commercial Sources:

If local or semi-local plant sources are unavailable, commercial sources of native plants may be used. Plant materials should be bred and/or grown under environmental conditions that are similar to the project area. Ideally, plant sources should be within the same section as the project area. Plant materials should only be moved from one section to another after careful evaluation. Only use commercial sources if the genetic origin is known. Above all, make sure to ask seed companies where the seed was collected, instead of telling them where you need it from! Be sure that nursery produced native seed was not grown under conditions that could have allowed hybridization with other species or other collections of the same species. Commercial sources should be used as an interim measure, using short-lived species, while adequate supplies of local or semi-local plant materials are being collected or grown.

F. Non-Natives:

Although native plants should always be given first consideration, there are certain situations where non-natives may be desired. For example, on highly disturbed sites that have had their physical characteristics altered so that native vegetation can no longer survive, it may be necessary to use non-natives to help restore site stability. Other examples that have been cited include noxious weed control and emergency situations. In cases where the use of non-native vegetation is desired, a justification shall be submitted for approval by the State Director (as outlined in BLM Manual 1745 - Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants). All non-native vegetation used should be non-invasive and ideally be short-lived, have low reproductive capabilities, or be self-pollinating in order to prevent gene flow into the native community. One good example is sterile oats, which provide erosion control and will fade out in one year without cultivation (although they do release seed if disturbed). Non-native vegetation should not compete with the naturally occurring native plant community, invade plant communities outside the target area, persist in the target ecosystem over the long term, or exchange genetic material with local native plant species. One approach to selecting such species may be to use genera that do not occur in the target area as there is less likelihood of genetic exchange between genera than between species within a genus. The use of non-natives should be considered as an interim

measure only, while local or semi-local sources are developed. Cultivars of native plants produced outside of California require the same justification as non-natives. Non-natives listed in the Department of Food and Agriculture's Noxious Weed Species list or the California Exotic Pest Plant Council's list of wildland weeds shall not be considered for use under any circumstances.

G. Seed Quality:

All seeds/plants used for BLM projects shall be tested for weeds, pests and diseases, and shall be processed, stored, and conditioned properly. Due to the threat of complete project failure, 0% weed species and other crop species is required in seed mixtures (see BLM Manual 9015 - Integrated Weed Management). However, if it can be shown that a certain percent of contamination of a weed species or other crop species does not interfere with native plant establishment and is not persistent in the environment, then this level will be raised on a species basis.

H. Seed Storage:

Seed storage requirements are highly variable for each species. Generally, each 1% reduction in seed moisture and each 10 ° F reduction in seed temperature doubles the life of the seed. If you wish to store the seeds for 3-5 years at ambient temperatures, dry the seeds to between 5-8% moisture content before tightly sealing in durable containers. For longer storage, dry to 2.5-5% moisture. Make sure you properly label each container with information on species, location of source plant, environmental information, date of collection, and the collector, as a minimum.

I. Planting and Maintenance:

1. If direct seeding, consider using pits or imprinted areas to improve germination, mulches to improve survival, and cracked wheat to reduce granivory. High seeding rates are usually recommended, since direct seeding success rates are lower than transplanting.

2. If transplanting, consider using a variety of container sizes, and try to transplant quickly (preferably in one day). If containers are limited, place more near the windward side of the project area to maximize effectiveness.

3. Plant at an optimal time - usually at the start of the rainy season. A knowledgeable restoration specialist should be consulted if irrigation will be necessary.

4. Permits for projects involving restoration must contain a requirement for maintenance and monitoring of the restored area.

5. Track the success or failure of all restoration projects. An annual report on the status of all restoration projects is required. Even failed efforts yield useful information.

H-1745-NATIVE PLANT MATERIALS HANDBOOK

CHAPTER III

III. ANNUAL REVIEW

This policy will be reviewed by Field Office and State Restoration coordinators on at least an annual basis, at which time the annual reports will be reviewed as well. The current guidelines for seed collection zones and seed purity are general, and future revisions will be needed to outline regional or species-specific standards.

CHAPTER IV

IV. DEFINITIONS

Ecological Units of California: Map developed by the Forest Service and Natural Resource Conservation Service in 1994. Subsection units have similar surficial geology. lithology, geomorphic process, soil groups. Subregional climate, and potential natural communities.

Exotic or Non-native Species: One that was introduced through human activity.

Genetically Local Source: Plant material that originated at or within the same subsection and elevation band as the project site.

Native Plant: One that occurs and has evolved naturally in California, and in the project area, as determined by climate, soil, and biotic factors, and that was not introduced by human activity.

Revegetation: A general term for renewing the vegetation on a project site, which may include restoration and rehabilitation.

Stand: Aggregation of individual plants separated rom other such aggregations so that cross fertilization rarely occurs (if at all).

Undesirable Plant: May be a non-native species, non-adapted source, genetically changed through selection in a foreign dissimilar environment, or possesses trait(s) that conflict with accomplishment of objectives.

H-1745-NATIVE PLANT MATERIALS HANDBOOK

REQUEST FOR FORMAL BID

French Incident, California Stabilization Seed Mix

Date: **August 2004**

To: **Prospective Bidder**

From: **USDI Emergency Stabilization and Rehabilitation Team**

Attached is a formal bid sheet for your consideration and completion. The Department of the Interior ESR Team is currently attempting to seed portions of the French Incident, California 2004 for stabilization issues. **Your prompt response is necessary.**

The following stipulations will be included in the purchase agreement should your firm be selected. Please review the following stipulations carefully. Should you be unable to meet any one of the following criteria, we request that you fill out the sheet as a **NO BID** and return it to the fax number listed.

Seed Certification Requirements:

1) All seed will have no less than 80% germination and 90% purity. Inert matter must not exceed 10%.

2) Vendor will provide certification that the seed has been tested for weed content and inert matter within the past 120 days. **Seed certification tag without testing document will not be accepted.**

3) All seed will be certified **NOXIOUS WEED FREE**.

4) No substitute species will be accepted unless approved by Contracting Officer after consultation with Redding Field Office Natural Resource Specialist.

5) **The government will send seed samples to an independent testing laboratory or the California Department of Agriculture, Botany Seed Laboratory, Sacramento, CA. If seed does not meet the specifications required, the government may reduce the contract price or seek other claims, as warranted.**

6) Quoted prices are to include shipping costs to a location in Shasta County specified by the Contracting Officer.

7) The desired grass and shrub seed mix is attached. Mix ratios are based upon a pure live seed (PLS) count basis. The desired bulk mix will consist of sufficient volume to seed approximately 2,348 acres, at 25 pounds per acre. The desired mix will also include a sterile hybrid, *Triticum aestivum* X *Elytrigia elongata*,blue tag certified, at a rate of 11.3 pounds per acre. The mix may not be varied, unless approved by the Contracting Officer. The bid will be awarded based upon the lowest total cost of a seed mix that meets the contract specifications. **Bids which do not meet all terms and specifications of this contract will not be accepted.**

8) **The initial delivery to the job location must begin as designated by the Contracting Officer.** This date may be adjusted by the government according to fire suppression and site readiness status and these adjustments will be discussed between the government and the vendor.

9) Seed shall be delivered as designated by the Contracting Officer. Seed will be delivered on site in hopper bottom-drop trailers, and will be off-loaded for application directly from the trailers.

VENDOR'S SEED MIX

Species	Application Wt. (PLS Lbs./Acre)
Bromus carinatus California brome *	6.4
*Elymus glaucus** Blue wild rye	6.7
Lupinus nanus Sky lupine *	0.6
Regreen, *Triticum aestivum X* *Elytrigia elongata*	11.3
Total Seed Mix	25

* Native plant species must be derived from Shasta, Tehama, or Butte County ecotypes--Southern Klamath Region or Northern Sacramento Valley and foothills, north of Willows, Ecological subsections M261Ai, M261Fa, M261Am, M261Ac, M261Ar, M261Ca, M261Cb, M261Dl, 262Ab, M261Bc, and 262Aa. The Eastern Klamath Mountains Ecological Subsection, M261Ai is the preferred source of origin.

Total seed mix quantity required = 62,536 PLS pounds.
SUGGESTED VENDORS:

S & S Seeds
P. O. Box 1275
Carpenteria, CA 93013

(805) 484-0551

Conservaseed
P.O. Box 1069
Walnut Grove, CA 95690

Hedgerow Farms
21740 County Rd 88
Winters, CA 95694
530-662-4570

Pacific Coast Seed Company
533 Hawthorne Place
Livermore, CA 94551
800-733-3462

Hawes Ranch & Farm Supply
530-365-2332

Rana Creek Ranch
831-659-3820

U.S. Department of the Interior
Burned Area Emergency Stabilization and Rehabilitation

2004 French Fire
AERIAL SEEDING SOLICITATION FOR BID

Project Description:

Bids are being solicited for an "End-Service Contract" to accomplish aerial application of grain and grass seed on the Paradise Fire using fixed-wing aircraft. The fire area is located immediately east of Valley Center, California. The total fire area is approximately 13,323 acres. Approximately 2,438 acres of the burn area will be treated. The Bureau of Land Management-Redding Field Office will provide detailed treatment area maps to the successful bidder. The seed application will be conducted in one operation: once in November or December 2004 (native grass). The Bureau of Land Management-Redding Field Office, will administer this contract.

Aerial Operations Location:

There are several airstrips available near the fire vicinity for application operations. The Bureau of Land Management-Redding Field Office will designate applicable locations.

Scope of Work:

This contract will be awarded as an "End-Service Contract." The contractor will handle all operations necessary for aerial application of seed, according to the specifications. This includes the supply of all seed handling, aircraft, support equipment, labor and supervision to accomplish this project. Seed will be delivered on site in hopper bottom-drop trailers, and will be off-loaded for application directly from the trailers. The contractor must be equipped to perform this operation. The contractor will apply the seed as specified, and provide daily Global Positioning System (GPS) flight path/ seed application data logs to the government. These logs shall be provided in the ARCVIEW GIS shape file format. The Government's representative will meet with the Contractor's representative to assist with logistical coordination of facilities use and seed delivery, but will not supervise the operations in any manner. The Government's representative will perform quality control and compliance inspections and will communicate with the Contractor's representative on a daily basis.

Contractor Requirements:

1) Contractor will provide all aircraft, pilots, fuel, and seed handling and loading equipment, safety equipment, and lodging for all personnel. Sufficient equipment is required to meet a 1-week limitation for application operations.

2) Contractor will be responsible for seed loading operations. Movement of trailers in and around an operation location will be the sole responsibility of the applicator.

3) Aircraft and pilots must be certified and carded for seeding operations by the US Government Office of Aircraft Services (OAS).

4) Vendor must be licensed and bonded. Proof of bonding will be required upon notification of bid award. US Government procurement regulations require that all aircraft contract bonding be not less than 100% of total contract award amount. Deposit of this bond will be required prior to initiation of work.

5) All aircraft must be equipped with GIS software capable of utilizing an ARCVIEW GIS shape file format to guide flight paths and application locations.

6) All aircraft must be equipped with GPS tracking equipment that can map seed application areas and download information in the specified format for contractor and agency use.

Application Period:

One application will be conducted starting either in November or December of 2004, or after the first fall rains. Seed must be applied within a two-day period upon start of the project unless weather conditions arise that prevent the prudent and proper application of seed. The contractor is expected to start operations on the dates specified. These dates may be modified depending upon seed availability and weather conditions. The status of the site readiness will be discussed between the vendor and the government on a weekly basis in a pre-arranged telephone conversation.

Application Rate:

Seed will be applied in accordance with project specifications provided by the Bureau of Land Management-Redding Field Office.

During the application, Regreen will be applied at the rate of 11.3 pounds pure live seed (PLS) per acre (3 seeds/ square foot). The native perennial grass and forb seed mix will be applied at the rate of 12.7 pounds pure live seed (PLS) per acre (30 seeds/ square foot). The total seed mix rate will be applied at a rate of 25 PLS per acre (36 seeds/square foot).

BID INFORMATION:

Bids will be accepted by the Bureau of Land Management-California State Office.

2800 Cottage Way
Sacramento, California 95825

Sola Long, CSO 916 978-4527

Leona Parker, Contracting Officer at (530) 257-0456
Fax bid to: ATTENTION -BAER TEAM AERIAL SEED APPLICATION BID,

Bids are due no later than ~~December~~ November 1, 2004 at 3 pm (Pacific Standard Time). Any bids received after that time will not be considered.

THE GOVERNMENT RESERVES THE RIGHT TO CANCEL THIS BID SOLICITATION WITHOUT AWARD.

For more information regarding the contract requirements contact:
Leona Parker, Contracting Officer

For more information regarding the technical specifications contact:

Joe Molter, Natural Resource Specialist, Redding Field Office, California

233-8684

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

FACT SHEET

Reseeding Grasses and Clovers on Burned Areas

REVEGETATION of burned areas with grass or a mixture of grass and clover will help protect the soil from erosive winter rains. Grass or a mixture of grass and clover seed can be planted in areas that do not have enough good seed remaining under the ash.

Where Needed

FIELD CHECK the burned area. Map out areas that have no seed or very little seed under the ash. White ash shows where the fire was very hot and seeds most likely were destroyed. Most areas in thick brush without a grass understory will not have enough seed. Desirable seeds are the grasses and clovers. The minimum amount is an aggregate of 50 viable seeds per square foot. Exposed earth areas like new roads, firebreaks and steep embankments including cut and fill slopes also should be planted.

Which Plants?

WHEN SELECTING PLANTS, consider the depth and types of soil, average annual rainfall, availability of seed, reseeding ability, and amount of growth produced. The most commonly used plants are described below:

BLANDO BROME is a winter growing, self-seeding, annual grass which is found naturally in California grasslands. It is adapted to climatic variations and grows 20 inches or taller on better soils. It can be planted with other annual grasses in any proportion. It should not be over 70 percent of a mix with annual legumes and should not be planted with flowers or perennial grasses. Average annual precipitation should be at least 12 inches.

CALIFORNIA BROME is a native winter growing erect perennial grass that grows up to 3 feet high with up to a 12 inch spread. This plant is different from Cucamonga Brome and Deborah Brome often listed with the same scientific name. Average annual percipitation should be at least 15 inches.

ZORRO ANNUAL FESCUE is a low-volume, winter growing, self-seeding, annual grass that grows 10 to 24 inches high. It is a common naturalized plant of California grasslands and matures earlier than Blando brome. Zorro is very drought tolerant and has provided excellent erosion control on low-fertility and acidic (pH 4.5) soils. It is compatible with perennial native grasses and shrubs. Zorro may constitute up to 70 percent of a mix if used with annual legumes, and up to 25 percent with flowers or perennial grasses. Zorro will appear weedy if used with flowers, but it will not be overly competitive. Average annual precipitation should be at least 10 inches.

HYKON ROSE CLOVER is an annual, reseeding legume for well drained droughty soils which are slightly acidic (pH 5.5 to 7.0). It grows 10 to 15 inches high, matures early and is preferred for critical erosion areas. 'Its ability to make its own nitrogen makes it well suited for low fertility soils and it will help fertilize reseeding grasses. The seed needs to be inoculated before planting. Average annual precipitation should be at least 10 inches.

'BERKELEY' BLUE WILDRYE is a native perennial bunchgrass growing up to 4 feet high with green or bluish leaves and strong seedling vigor. It tolerates drought and establishes rapidly with up to a 12 inch spread. Average annual percipitation should be at least 15 inches.

REGREEN is a winter growing wheat x wheatgrass hybrid that is 99 percent seed sterile. It has rapid germination and establishment. This long lived annual dies out in two to three years. Average annual precipitation should be at least 12 inches.

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Seeding Guide

Recommended Plants and Mixtures	Seeding Rate lbs/Acre	Adjusted Rate Lbs/Acre	Seeding Rate [1] Lbs/10,000 Sq. Ft. Lot
1. Zorro annual fescue (Vulpia myuros) Hykon rose clover (Trifolium hirtum) California poppy (Eschscholzia californica)	8 9 0.5	13.5 [2]	2.0 2.0 3.0 [2] (2 oz)
2. Blando brome (Bromus mollis)	18		4.0
3. Zorro annual fescue (Vulpia myuros) [3]	8		2.0
4. Blando brome (Bromus mollis) and Hykon rose clover (Trifolium hirtum) [3]	12 9	13.5 [2]	2.75 2.0 3.0 [2]
5. Zorro annual fescue (Vulpia myuros) California Brome (Bromus carinatus) [3] (Use Native - Perennial type)	6 10		1.5 2.3
6. Zorro annual fescue (Vulpia myuros) 'Berkeley' Blue Wildrye (Elymus glaucus) [3]	6 10		1.5 2.3
7. Zorro annual fescue (Vulpia myuros) Regreen (Wheat x Wheatgrass Hybrid)	6 40		1.5 10.0
8. Barley (Hordeum vulgare) or Regreen (Wheat x Wheatgrass Hybrid)	125		29.0

1 Recommended Seeding Rates are based on uncoated seed and a Pure Live Seed content (percent purity multiplied by percent germination) of at least 80 percent.

2 Increase rate by 1.5 if seed coated by the supplier with innoculant or other materials. No adjustment is needed when you inoculate the clover seed at the site.

3 One or more of the following native plants can be added to the mixture: California poppy 1/2 lb, Annual Lupines 1 lb, California buckwheat 1-2 lbs

Planting

METHODS OF SEEDING include broadcasting by hand, broadcasting with a hand-operated seeder, hydroseeding, and seeding by air. Most home owners and small landowners will find broadcasting to be the most economical method. Hydroseeding requires roads for equipment access and a nearby water supply. Aerial seeding is used on large acreages.

When to Seed

SEPTEMBER 15 TO OCTOBER 15 is the best time to seed annual grasses and clovers on California foothills. Seeding should be done before winter rains pack the burn ash. Later plantings will grow more slowly because of cooler temperatures. Timeliness of rains will also affect how well the plants will grow. Exposed earth areas like roads and firebreaks and steep embankments should be protected with straw mulch at the rate of 2 tons per acre and anchored by punching with shovels or crimping equipment. A 74-pound bale of straw would cover 800 square feet.

Fire Danger

REDUCING FIRE HAZARDS after the annual grasses and clovers mature in the spring needs to be planned. Safety experts recommend clearing a 30-foot space around structures down to ground level and another 70 feet beyond that reduced to below 18 inches in height. Wait until the grasses and clovers set their seed before mowing or clipping. Using a lawnmower will produce a safe zone around structures. Mowing to a three or four inch height with a nylon filament weed whip or similar equipment will produce a "safe zone" in the 30 to 70 foot zone. Consider mowing around shrubs and trees beyond 100 feet. The resulting straw mulch will provide erosion protection against early rains.

Where to Get Help

TECHNICAL ASSISTANCE is available from the U.S. Department of Agriculture's Natural Resources Conservation Service, local Resource Conservation District, County Cooperative Extension Service, and California Department of Forestry and Fire Protection district office.

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

FACT SHEET

Purpose

UNIFORM DISTRIBUTION of seed over burned areas will help ensure uniform vegetative cover and will increase protection against erosion caused by winter rains.

Seed Needed

SEED SUPPLIES of each species should be obtained in separate bags and kept cool and dry. Total amount of seed purchased should equal the acres burned multiplied by the recommended seeding rate" per acre. Include any roads and firebreaks in the burned acreage. If the seed is coated by the supplier or is less than 80 percent Pure Live Seed (PLS), the amount of seed purchased should be based on the "adjusted seeding rate."

Check seed tags for species and the percent germination and purity. Increase the seeding rate if percent germination multiplied by the percent purity shows less than 80 percent PLS.

LOW PLS ADJUSTMENT example where recommended seeding rate is 10 lbs/acre:

- 90% purity x 70% germination - 63% Pure Live Seed (PLS)
- Adjustment Factor = 80/63 - 1.3
- Adjusted Seeding Rate = 1.3 x 10 lbs/acre = 13 lbs/acre

COATED SEED ADJUSTMENT is needed if the seed is coated by the supplier with inoculant or other materials. No adjustment is needed when you inoculate clover or other legume seeds at the site. Recommended seeding rates are based on uncoated seed and need to be adjusted as shown in the following example after making any adjustment for low PLS:

- Coated clover seed or other small seeded legumes:
- Adjustment Factor= 1.5
- Adjusted Seeding Rate = 1.5 x 9 lbs/acre = 13.5 lbs/acre

Other Items Needed

EQUIPMENT AND MATERIALS should be ready before you start. The following list will minimize disruptions and let you finish seeding in one day:

- Hand-operated Seeder - One "belly grinder" for each person doing seeding.
- Weighing Scale - At least 20 pound capacity
- Plastic Bucket - At least two
- Seed Targets - At least two pieces of 2 ft. x 2 ft.. soft cloth or cardboard with corrugations exposed nailed to small wood frame or at least four pieces of 1 ft. x 1 ft. soft cloth attached to open wire frame.

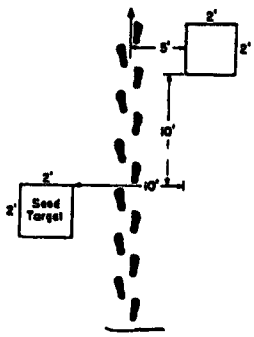
- Paper Bags/Pens - Four grocery bags and two marker pens.
- Inoculant* - Specific type for each clover or legume.
  *Omit if seed coated by supplier

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C., 20250, or call (202) 690-1538 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

Getting Started

INOCULATE CLOVERS and other legume seeds if they have not been inoculated by supplier. Coated seed inoculated over 30 days ago or seed that has not been kept cool and dry should be reinoculated. Do this the evening before or early on seeding day so the seed will be dry by seeding time.



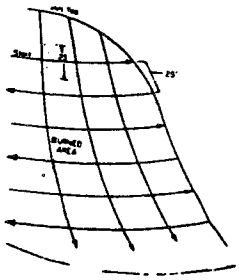
DIVIDE SEED of each species into equal amounts and label bags. Keep cool and dry. When seeding a mixture, broadcast each species separately to get the most uniform distribution of seed. This may not always be possible.

ADJUST SEEDER according to the manufacturer's instructions based on half the Seeding Rate when doing split seeding. Base it on the full Seeding Rate when doing a single once-over seeding. Set out two Seed Targets 10 feet apart and offset 10 feet. With the hand operated seeder half full, start broadcasting and walk between the two seed targets. Stop and check the seed count in each seed target. Adjust the seeder and repeat until the number of seeds per square foot agrees with the following table:

Species	lbs Acre	Single Seeding Seeds/Square Ft	Split Seeding Seeds/Squeare Ft
Blando brome	12	73	36
Cucamonga brome	10	31	15
Zono annual fescue	4	92	46
Zono annual fescue	12	274	137
Hykon rose dover	9	24	12
Subtenanean cbwr	12	21	10
Barley	125	36	18
Annual ryeorass	8	40	20

'If Low PLS Ajustment was made, increase by same factor.

Seeding



BROADCAST IN TWO DIRECTIONS to achieve a uniform distribution of seed. Using half the seed of a species, broadcast as you walk across the slope starting at the top of the burn area. Notice how far the seed is thrown. When you reach the other edge of the burned area, move downslope a distance equal to the width of throw. Continue broadcasting and walk back across the slope, trying to avoid gaps. Repeat this procedure all the way down to the bottom edge. When several people are seeding, move across the slope together. Adjust your walking pace on the second half of the field so you have enough seed to finish.

Using the remaining half of the seed, repeat the procedure going downslope. On gentle slopes you may be able to broadcast walking back up the slope. On steep slopes it is best to broadcast only walking downslope because you need to maintain the same walking speed used to calibrate the seeder. Using several people will make this easier.

BROADCAST IN ONE DIRECTION if conditions to not allow seeding in two directions. Broadcast the remaining seed in the same direction across the slope while walking midway between your previous lines of travel.

Repeat the procedure for each species.

When to Seed

SEPTEMBER 15 TO OCTOBER 15 is the best time to seed annual grasses and clovers on California foothills. Seeding should be done before winter rains pack the burn ash. Later plantings will grow more slowly because of cooler temperatures. Timeliness of rains will also affect how well the plants will grow.

Exposed areas - new roads, firebreaks, and steep embankments- should be protected with straw mulch. Use two tons per acre and anchor by punching with shovels or with crimping equipment. A 74-pound bale of straw would cover 800 square feet.

Where to Get Help

TECHNICAL ASSISTANCE is available from the U.S. Department of Agriculture's Natural Resources Conservation Service, local Resource Conservation District, County Cooperative Extension Service, and California Department of Forestry district office.

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE
FACT SHEET

TEMPORARY EROSION CONTROL AROUND THE HOME FOLLOWING A FIRE

STRAW BALE DIKE

What is it?
A temporary sediment barrier constructed of straw bales located downslope of a disturbed area or around a storm drainage outlet to redirect debris flows or trap debris materials.

When is it used?
Usually installed in areas requiring protection from sedimentation expected from predicted rainfall events that will cause erosion and are intended to provide protection for a limited time period (less than 3 months).

Planning Criteria:
Straw Bale Dikes drainage area limits are as follows:

Slope	Maximum Drainage Area	Maximum Slope Length
0-15 percent	1acre	200 feet
>15 percent	1/2 acre	100 feet

Methods and Materials:
Bales should be bound with wire or nylon twine. Twine bound bales are less durable. Bales should be placed in a row with ends tightly abutting the adjacent bales. **Do not place bales with wire or twine touching~ the soil (see illustration).** Some loose straw should be compressed between adjacent bales to close voids. The tops of bales should all be level and set at the same elevation.

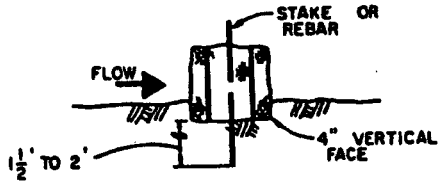
Anchorage:
Each bale should be embedded in the soil a minimum of 4 inches. Drive 2x2 stakes or rebar through the bales and into the ground 1 1/2 to 2 feet for anchorage. The first stake in each bale should be driven toward a previously laid bale to force the bales together. Please refer to the drawings on the back side of this sheet.

Maintenance:
Inspect the bale dike and provide necessary maintenance following each storm period. It is important to assure that loose straw does not enter storm drain facilities. Remove the bales once permanent drainage and stabilization is reestablished. Used straw can be used as mulch in other areas.

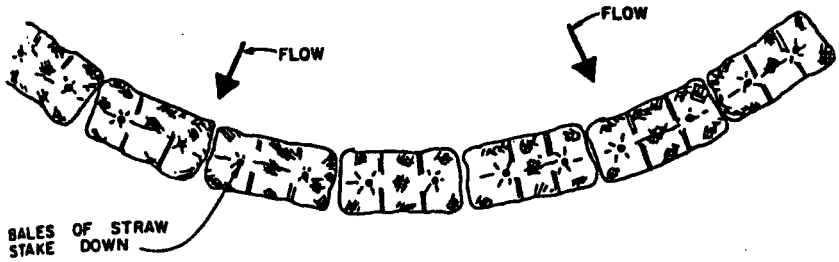
Where to Get Help:
Technical assistance is available from your local USDA Natural Resources Conservation Service office or your local Resource Conservation District regarding the use and installation of straw bale dikes and other treatments.

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EMBEDDING DETAIL
N.T.S.

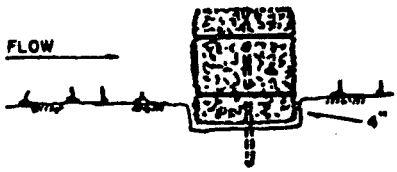


PLAN
N.T.S.

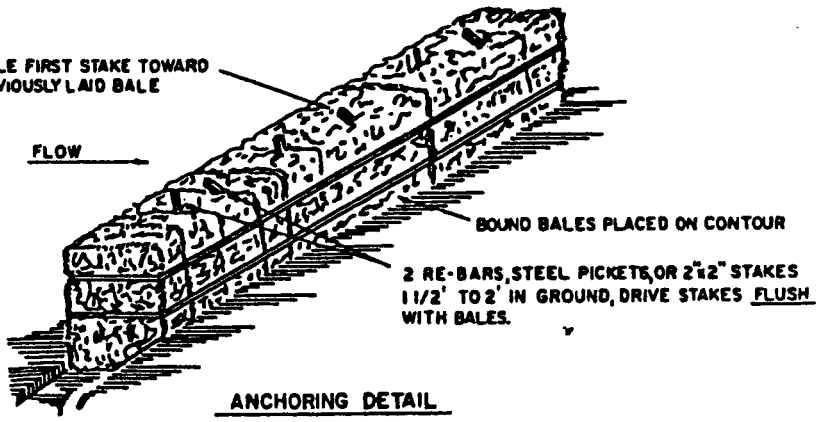


ELEVATION
N.T.S.

STRAW BALE DIKE



BEDDING DETAIL



ANCHORING DETAIL

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

FACT SHEET

TEMPORARY EROSION CONTROL AROUND THE HOME FOLLOWING A FIRE

SILT FENCE

What is it?
This is a temporary barrier made of woven wire and fabric filter cloth that is used to catch sediment-laden runoff from small areas of disturbed soil such as following a fire.

Silt fences are easy to construct, and materials are available from hardware stores, nurseries, and lumber yards.

When is it used?
Silt fences are used for specific situations. Major considerations are slope, slope length, and the amount of drainage area from which the fence will catch runoff. Here are some design considerations:

Slope Steepness	Maximum Slope Length
2:1 = 50%	50 feet
3:1 = 33%	75 feet
4:1 = 25%	125 feet
5:1 = 20%	175 feet
<5:1 = <20%	200 feet

For longer slopes, add additional silt fences.

Drainage Area:
The area that contributes runoff to be caught by the silt fence should not be greater than 1/2 acre for 100 feet of fence.

Type of Runoff:
Silt fences are designed to catch runoff that is in the form of "sheet flow" and not "concentrated flow." Sheet flow differs from concentrated flow in that the runoff is spread evenly over the ground surface (like a sheet) rather than concentrated in small rills or gullies.

Methods and Materials:

Fence Posts:
Posts should be at least 36 inches long. Wood posts should be of hardwood with a minimum cross sectional area of 3 inches. Steel posts should be standard "T" or "U" section and should weigh no less than 1 pound per linear foot.

Wire:
Wire fence should be at least 14 gage with openings no larger than 6 inches by 6 inches.

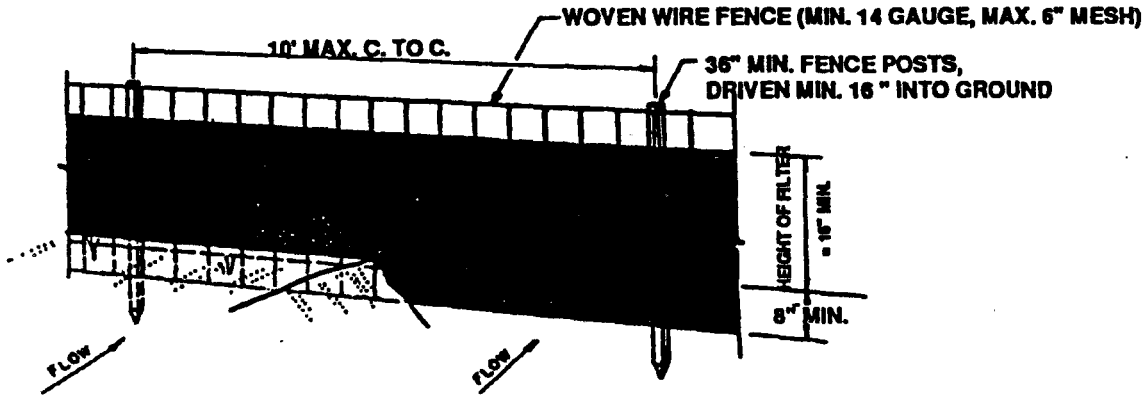
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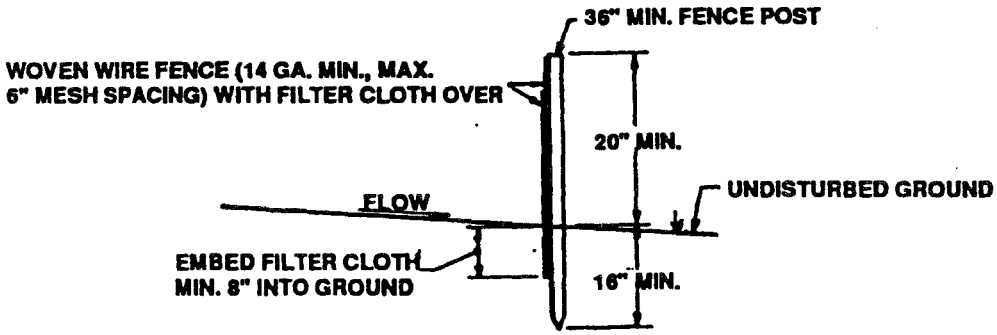
Fabric Properties:
Filter fabric properties should be as follows (hardware store personnel can help you with these):

Fabric Property	Minimum Acceptable Value	Test Method
Grab tensile strength (LBS)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (mod)
Slurry flow Rate (gal./min/sf)	0.3	
Equivalent Opening Size	40-80	US Std Sieve
Ultraviolet Rad. Stability	90	ASTM-G-26

Perspective View:



Section View:



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO FASTENCED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.

2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACES EVERY 24" AT TOP AND MID SECTION.

3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.

4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE...

POST: STEEL EITHER OR U TYPE OR 2' HARDWOOD

FENCE: WOVEN WIRE, 14 GA., 6" MAX. MESH OPENING

FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140 OR APPROVED EQUAL

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

Where to get help?
Technical assistance is available from your local USDA Natural Resources Conservation Service office of your local Resource Conservation District regarding the use and installation of straw bale dikes and other treatments.

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE
FACT SHEET

TEMPORARY EROSION CONTROL AROUND THE HOME FOLLOWING A FIRE

JUTE NETTING

What is it?
This is a net made of Jute that is laid and anchored over straw or other mulch to protect the mulch from wind and water damage. It reduces soil erosion and provides a good environment for vegetative regrowth. Jute is a biodegradable material that will eventually decompose and is not a threat to the environment.

When is it used?
This practice is often used on areas that may erode near structures such as homes, roads, and bridges. It is used on small, steep, disturbed areas. Jute can also be applied alone (without mulch) as an alternative to straw or wood mulches on flat sites for dust control and seed germination enhancement. It should not be used alone where runoff quantities are expected to be high. The use of jute is not appropriate in all situations. Examples of when jute netting may not be appropriate include:

- Steep slopes with sandy soils
- Steep slopes with many rocks on the surface
- Steep slopes with a significant amount of fire burned vegetation remaining

Check with the local Natural Resources Conservation Service office to find out if the use of jute netting is appropriate.

Methods and Materials: The soil surface should be reasonably smooth. Rocks and other obstructions which rise above the level of the soil and mulch must be removed.

Recommended specifications for jute netting are as follows: Jute should be cloth of a uniform plain weave of undyed and unbleached single jute yarn. The netting should **not be wider than 48 inches** (plus or minus an inch). The material should **weigh about 1.2 pounds per linear yard** and have approximately 78 warp ends per width of cloth and 41 weft ends per linear yard. Most nurseries, hardware stores, and lumber yards can help find netting that meets these recommended specifications.

Individual rolls of jute should be applied **up and down the slope - never along the contour.** The upper end of the matting at the top of the disturbed area should be buried in a trench at least **8 inches deep.**

Rolls should be laid out so that edges overlap each other by at least **4 inches across the slope.** When more than one roll is required going down the slope. The ends going down the slope should overlap by at least 3 feet.
This is extremely important!

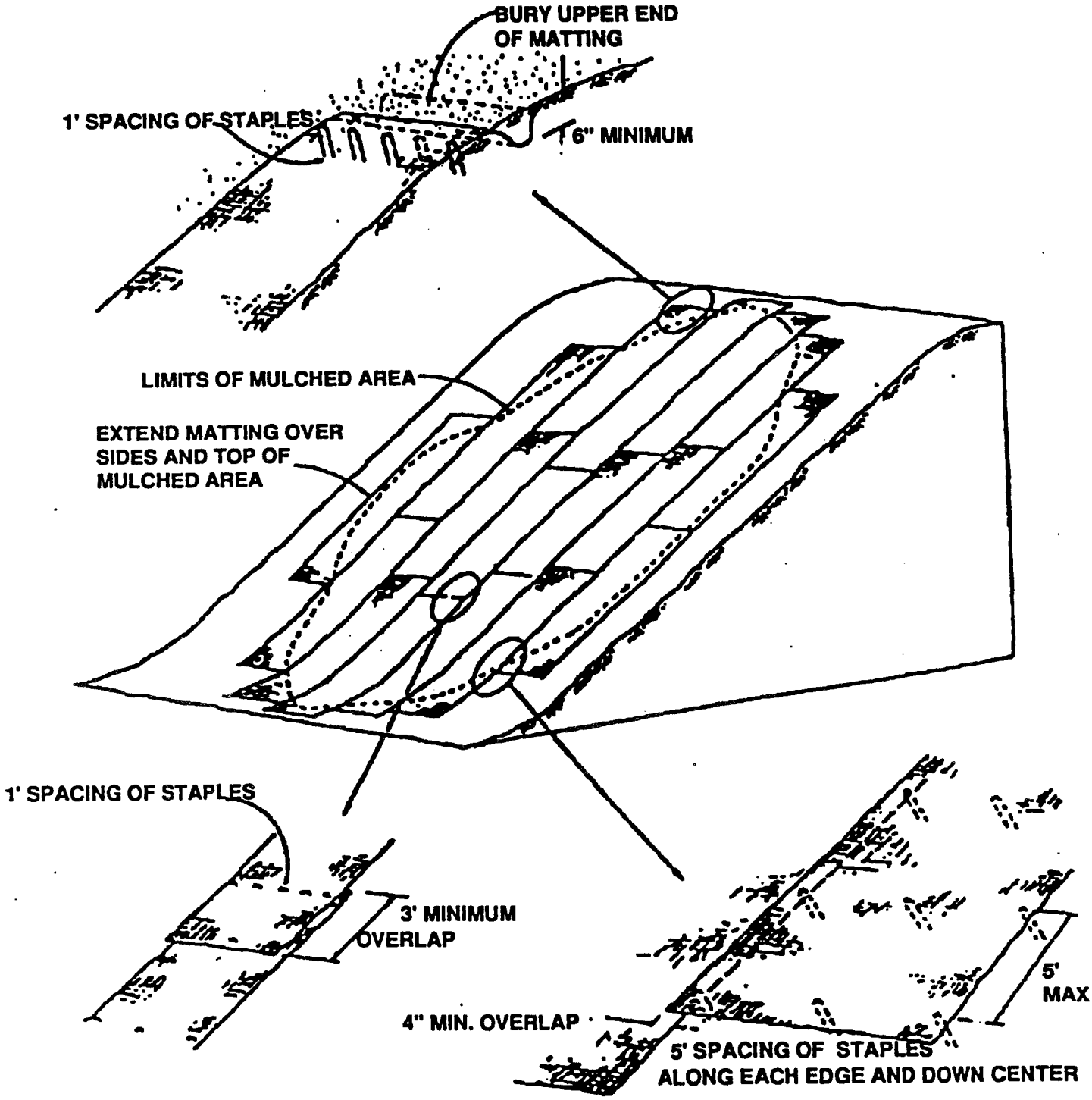
Anchor pins or staples are used to anchor the netting to the soil surface. Anchor pins are made of rigid 0.12 inch diameter or heavier galvanized wire with a **minimum length of 10 inches** for hook or "J" type pins. Staples should be of wire .09 inches in diameter or greater and should have 'U" shaped legs that are **at least 6 inches in length.** Longer staples are needed for sandy soils.

Staples or anchor pins need to be driven perpendicularly into the slope face and should be spaced about **5 feet apart down the sides and center of the roll.** Spacing between staples at the upper end of a roll, and at the end overlap of two, rolls should not be greater than 1 foot.

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Jute matting should go beyond the edge of the mulched or seeded area at least 1 foot at the sides and 3 feet at the bottom. If there is existing vegetation at the boundaries of the area, the matting should be continued into the stale vegetated area or to the edge of a structure.



For more information about the use of jute netting, mulch, fertilizer, and seed selection and application rates, contact your local USDA Natural Resources Conservation Service office or Resource Conservation District.

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

FACT SHEET

TEMPORARY EROSION CONTROL AROUND THE HOME FOLLOWING A FIRE

STRAW MULCHING

What is it?
The application of straw as a protective cover over seeded areas to reduce erosion and aid in revegetation or over bare soils that will be landscaped later to reduce erosion.

When is it used?
This method is used on slopes which have been seeded and have high potential for erosion. It requires some type of anchoring by matting, crimping or other methods to prevent blowing or washing away.

Straw mulch forms a loose layer when applied over a loose soil surface. To protect the mulch from wind drifting and being moved by water, it must be covered with a netting such as plastic or punched into the soil with a spade or roller, or by spraying it with a tacking agent. The mulch should cover the entire seed or bare area. The mulch should extend into existing vegetation or be stabilized on all sides to prevent wind or water damage which may start at the edges.

Methods and Materials:
On gentle to moderate slopes, straw mulch can be applied by **hand broadcasting to a uniform depth of 2 - 3 inches.** On steep slopes, the straw should be blown onto the slope to achieve the same degree of cover. When applied properly, approximately 20-40 percent of the original ground surface can be seen. **The application rate per acre should be about 2 tons (or one 74 pound bale per 800 square feet).** Straw should be clean rice, barley, or wheat straw.

Anchoring of straw mulch can be accomplished using the following methods:

Hand Punching:
A spade or shovel is used to punch straw into the slope until all areas have straw standing perpendicularly to the slope and **embedded at least 4 inches into the slope. It should be punched about 12 inches apart.**

Roller Punching:
A roller equipped with straight studs not less than 6 inches long, from 4 - 6 inches wide and approximately one inch thick is rolled over the slope.

Crimper Punching:
Like roller punching, the crimper has serrated disk blades about 4 - 8 inches apart which force straw mulch into the soil. Crimping should be done in two directions with the final pass across the slope.

Matting:
Matting is used on large, steep areas which cannot be punched with a roller or by hand. Jute, wood excelsior or plastic netting is applied over unpunched straw.

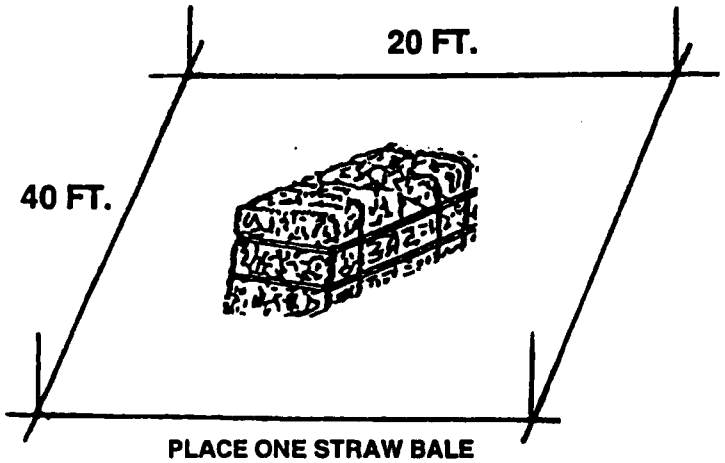
Where to Get Help:
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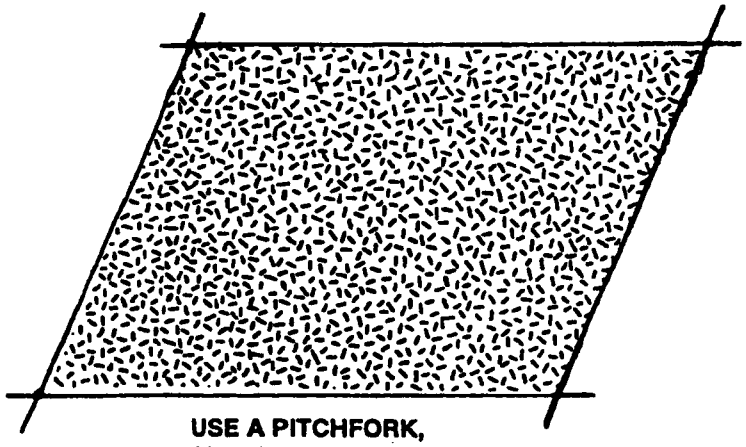
SPREAD THE STRAW

MARK OFF 800 SQ FT. PLOTS



PLACE ONE STRAW BALE
PER PLOT (~74 POUNDS).
THIS IS EQUIVALENT
TO 2 TONS PER ACRE.

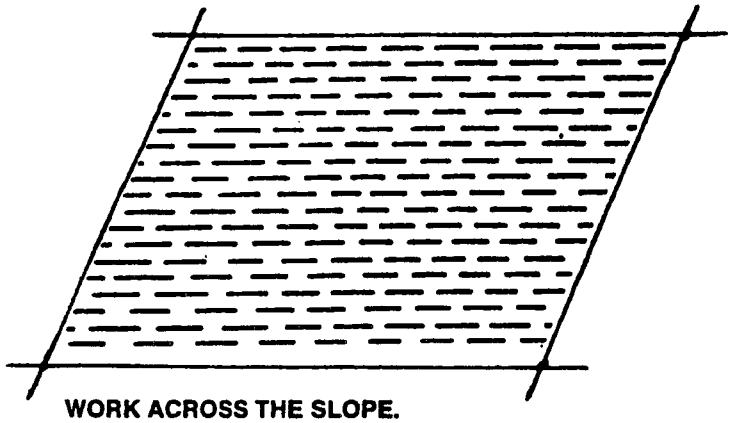
SPREAD EVENLY



USE A PITCHFORK,
SPADING FORK,
OR BY HAND

ANCHOR THE STRAW

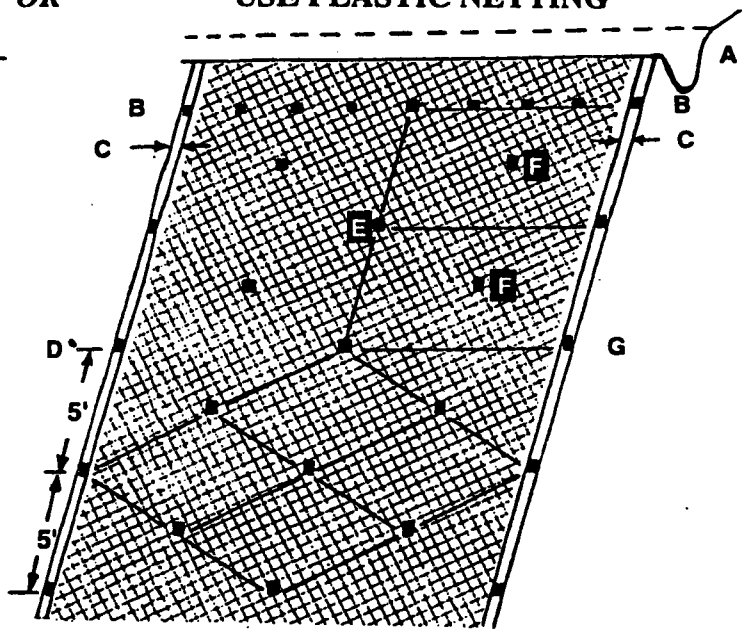
CRIMP BY HAND



WORK ACROSS THE SLOPE.
PUNCH STRAW 4 INCHES DEEP.
A SQUARE END SPADE WORKS WELL.
MAKE PUNCH EVERY 12 INCHES.

OR

USE PLASTIC NETTING



A. LAY BIRD CONTROL NETTING OR SIMILAR MATTING IN STRIPS DOWN THE SLOPE OVER THE STRAW. BURY UPPER END IN 6-8 INCH DEEP AND WIDE TRENCH.. MOST NETTING COMES IN 14 TO 17 FT. WIDE ROLLS.

B. SECURE THE UPPER END WITH STAKES EVERY 2 FEET.

C. OVERLAP SEAMS ON EACH SIDE 4-5 INCHES.

D. SECURE SEAMS WITH STAKES EVERY 5 FEET.

E. STAKE DOWN THE CENTER EVERY 5 FEET.

F. STAKE MIDDLES TO CREATE DIAMOND PAT TERN THAT PROVIDES STAKES SPACED 4-5 FEET APART.

G. USE POINTED 1X2 INCH STAKES 8 TO 9 INCHES LONG. LEAVE 1 TO 2 INCH TOP ABOVE NETTING, OR USE "U" SHAPED METAL PINS AT LEAST 9 INCHES LONG.

NOTE: WHEN JOINING TWO STRIPS, OVERLAP UPPER STRIP 3 FEET OVER LOWER STRIP AND SECURE WITH STAKES EVERY 2 FEET LIKE IN "B" ABOVE

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

FACT SHEET

TEMPORARY EROSION CONTROL AROUND THE HOME FOLLOWING A FIRE

HYDROSEEDING AND HYDROMULCHING

What is it?

Hyrdoseeding is applying a slurry of water, wood fiber mulch, seed and fertilizer to prevent soil erosion and provide an environment conducive to plant growth. Hydromulching is applying a slurry of water, wood fiber mulch, and often a tackifier, to prevent soil erosion. These terms are often used interchangeably.

When is it used?

On steep, highly erosive slopes which have been partially or completely denuded of vegetation due to a land disturbance such as fire. This is a fairly expensive erosion control method which is often reserved for areas which are close to roads, bridges, homes and other structures. Use is often restricted due to lack of access roads and a nearby water supply. Slope lengths of 125 to 225 feet can be treated.

Methods and Materials:

A tank mounted truck equipped with a special pump and continuous agitation system is used. The pump forces the slurry through a top mounted discharge nozzle or discharge can be through 100 to 200 feet of hose. Tank capacities range from 1000 to 3000 gallons. Water is added first and then the wood fiber, tackifier (if used), fertilizer (if used), and seeds. Any coated seed would be loaded last. Legume seeds should be pellet inoculated with a special bacteria to stimulate the fixing of nitrogen. Seed should not be added to the slurry until immediately prior to beginning the operation and not remain in the tank more than 30 minutes.

Single application hydroseeding uses 1500 to 2000 pounds of wood fiber mulch per acre with the seed and fertilizer. Split application hydroseeding and hydromulching uses 500 pounds of wood fiber mulch per acre with the seed and fertilizer in the first pass followed by an application of 1500 to 2000 pounds of wood fiber mulch per acre and tackifier (if used). Most tackifiers are applied at 100 pounds of dry ingredients per acre.

Hydromulching using 500 to 1000 pounds of wood fiber mulch per acre and tackifier is often applied over loose, blown straw to tack it down. Hydromulching using 2000 to 3000 pounds of wood fiber mulch per acre and tackifier can be used for temporary protection where landscaping will be planted after the rainy season.

Wood fiber is usually dyed to aid in uniform distribution, but care should be taken to ensure that concrete or painted surfaces are not stained and that plants and animals are not injured. Wood fiber has natural tackifying properties but adding a tackifier should be considered on steep slopes.

Seed Selection:

Seed and fertilizer recommendations are dependent upon the location of the area to be treated. Generally, one or two grasses and a legume like rose clover are used for these critical sites. California poppy, annual lupines, California buckwheat, and other seed can be added to the mix.

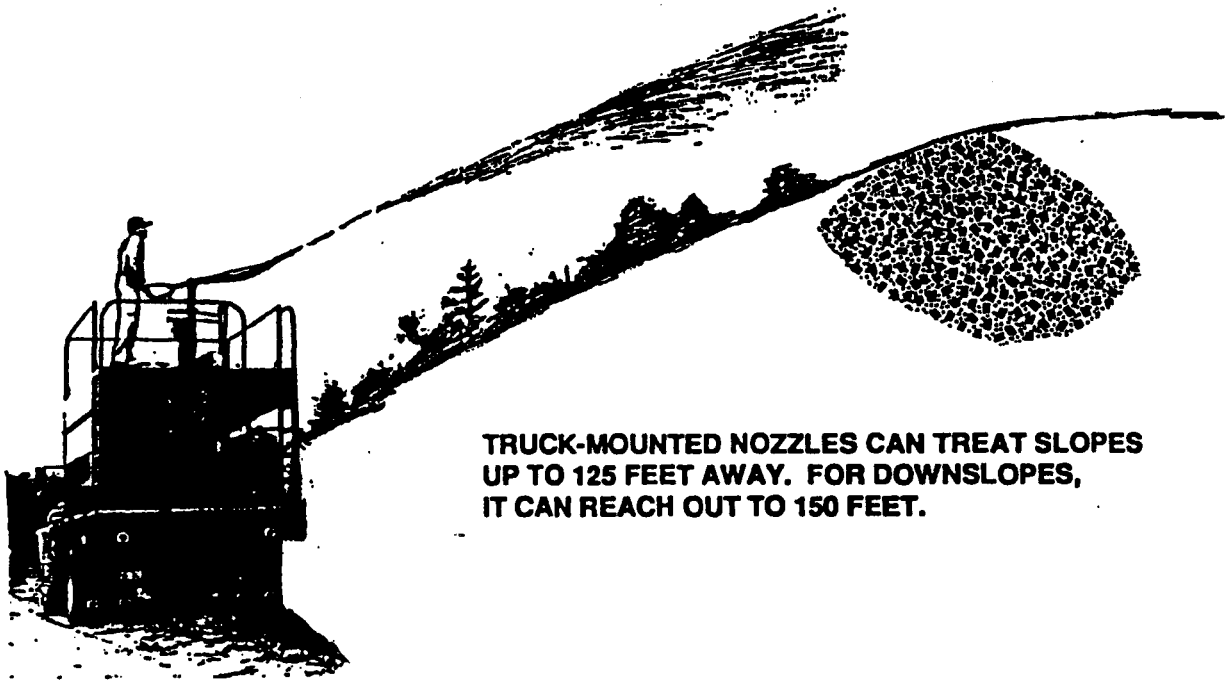
Where to Get Help:

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HYDROSEEDING AND HYDROMULCHING



TRUCK-MOUNTED NOZZLES CAN TREAT SLOPES UP TO 125 FEET AWAY. FOR DOWNSLOPES, IT CAN REACH OUT TO 150 FEET.

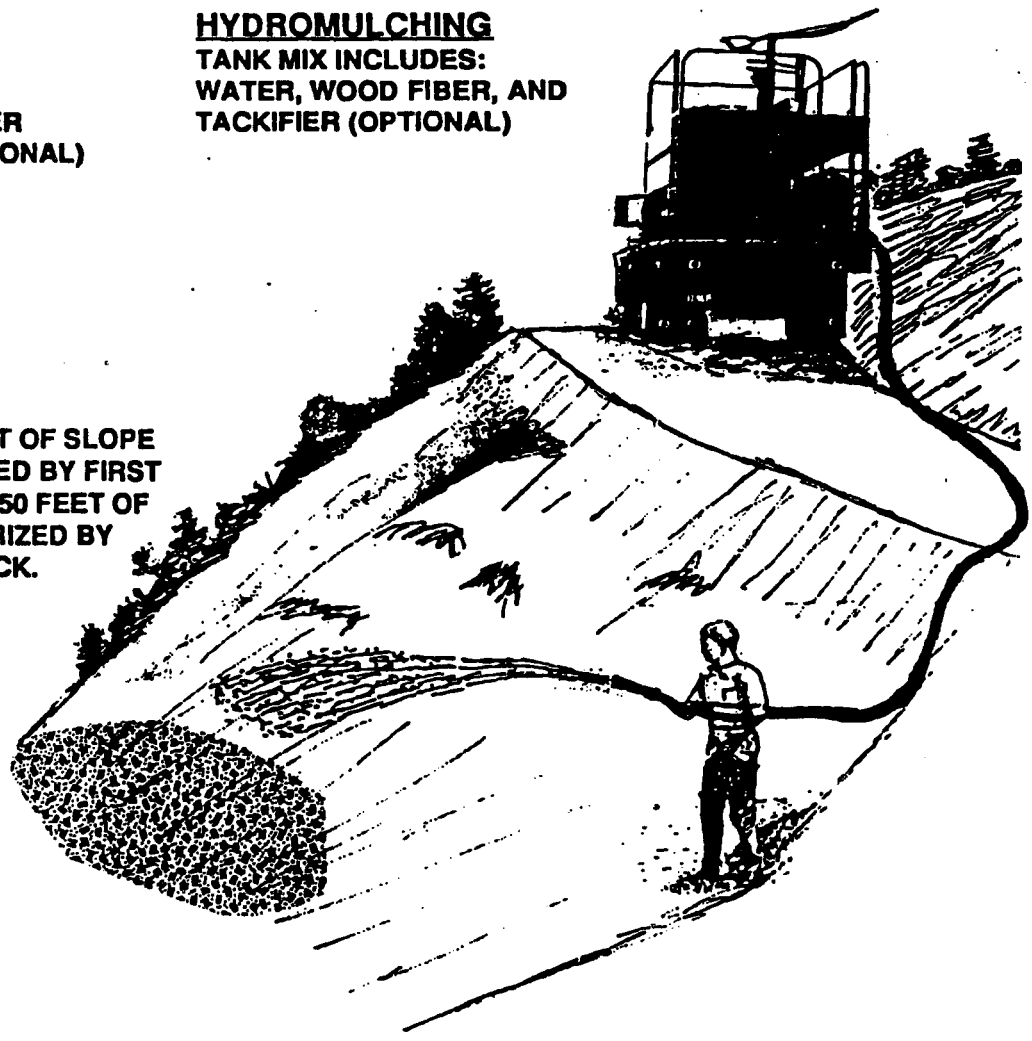
HYDROSEEDING

TANK MIX INCLUDES: WATER, WOOD FIBER, SEED, FERTILIZER (OPTIONAL AFTER FIRES) AND TACKIFIER (OPTIONAL)

HYDROMULCHING

TANK MIX INCLUDES: WATER, WOOD FIBER, AND TACKIFIER (OPTIONAL)

200 TO 225 FEET OF SLOPE CAN BE TREATED BY FIRST USING 100 TO 150 FEET OF HOSE PRESSURIZED BY THE TANK TRUCK.



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U.S. DEPARTMENT OF AGRICULTURE
FACT SHEET

TEMPORARY EROSION CONTROL AROUND THE HOME FOLLOWING A FIRE

SANDBAG PROTECTION

What is it?

An inexpensive, **temporary** barrier, or wall, one to two feet high, that is constructed by stacking sand-filled or earth-filled sandbags and placing them to divert mud and other debris flows away from buildings. **These barriers do not provide protection from high debris flows.**

When is it used?

These barriers are used to protect building sites vulnerable to **low mud debris flows** from steep, erodible slopes that are partially or completely void of vegetation due to wildfire burns. This is an inexpensive, temporary protection method that can be used by homeowners before predicted rainfall.

Sandbags deteriorate when exposed to continued wetting and drying for several months . If the bags need to be used for more than a few months, cement can be mixed with the sand. The cement and sand mixture will harden when the bags dry.

Methods and Materials:

These barriers are easy to construct. Burlap bags, sand, plastic, lumber, cement and plywood are readily available at local lumber yards. Some fire stations and other emergency centers can help with materials too. Often times, volunteers are available to provide assistance in assembling and placement of sandbags.

Begin by trying to direct debris flows away from buildings, pools and other structures. Clear a path for the debris. **Do not try to dam it or stop it.**

Protect your most valuable property first. Debris can enter a building through doors and windows. They should be boarded up and waterproofed with plastic sheets. **Sandbags will not seal out water.**

Work with your neighbors and be prepared to use your property to provide good protection for the community.

Filling Bags:

Fill sandbags one-half full. Use sand, if available, or, local soil. Fold the top of the sandbag down and place the bag on its folded top (see illustration).

Placing Bags:

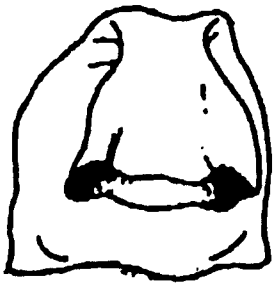
Refer to the illustration. Place each sandbag as shown, finishing each layer before starting the next. **Limit placement to two layers unless they are stacked against a building or sandbags are pyramided.**

It is important to place the bags with the folded top in the upstream or uphill direction facing the flow of water to prevent them from opening when water runs by.

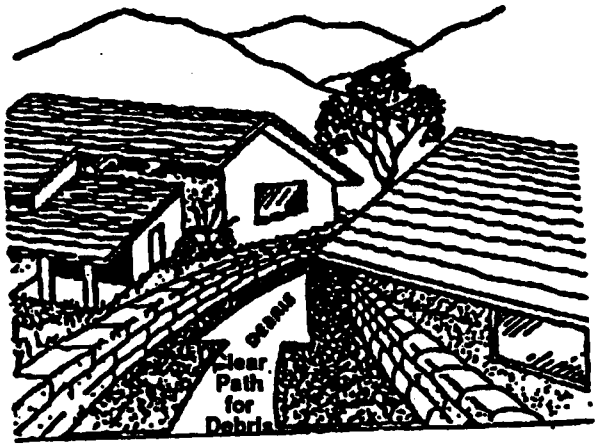
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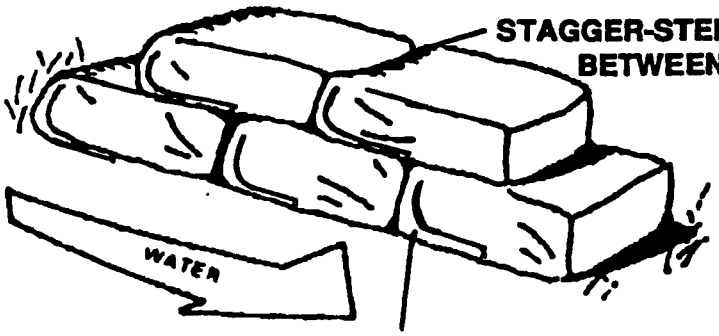
SANDBAG FILLING AND PLACEMENT



FILL HALF FULL
FOLD TOP UNDER

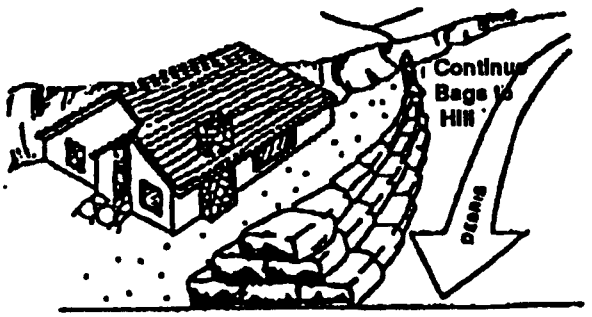


DIRECTING FLOWS BETWEEN BUILDINGS

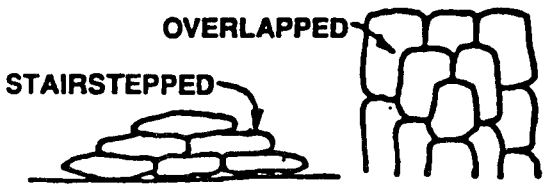


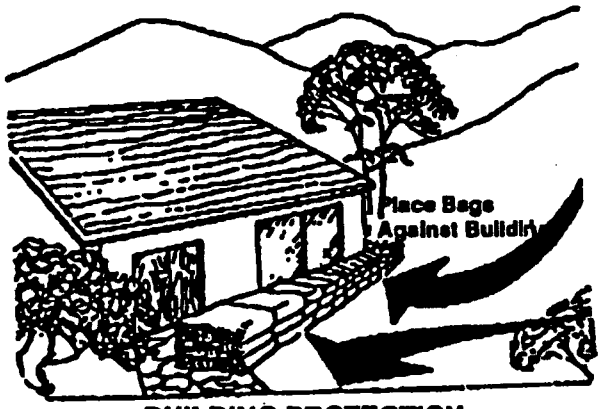
STAGGER-STEP BAGS
BETWEEN ROWS

PLACE BAG WITH FLAP
UNDER BAG

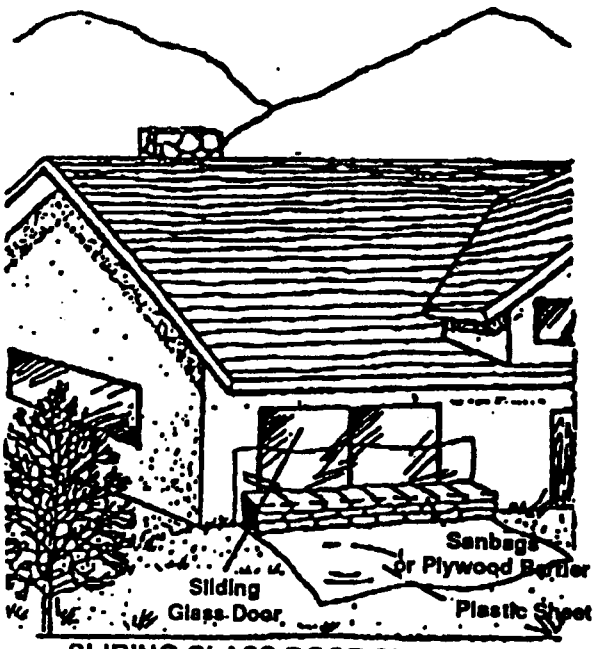


DIRECTING DEBRIS AWAY FROM BUILDINGS

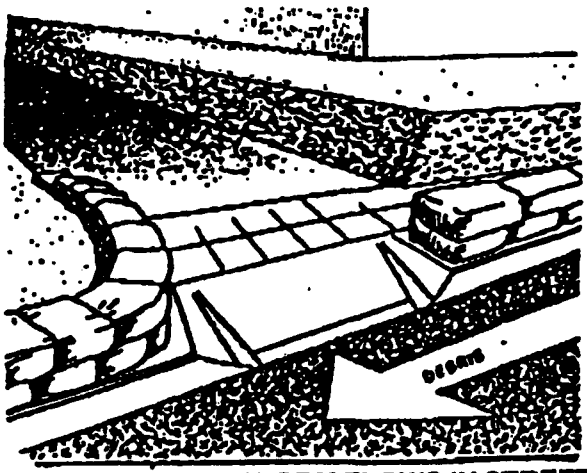




BUILDING PROTECTION



SLIDING GLASS DOOR SEALING
Control of Flows to prevent
seeping into sliding glass door



CONTROLLING DEBRIS/STORM FLOWS IN STREETS

USDA NATURAL RESOURCES CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE
FACT SHEET

TEMPORARY EROSION CONTROL AROUND THE HOME FOLLOWING A FIRE

STRAW BALE CHECK DAM

What is it?
These are **temporary sediment barriers** constructed of straw bales located across small drainages.

When is it used?
These temporary structures are used to slow debris flows in small channels. They are not intended to provide protection from large storm events nor to control debris flows in water bodies such as creeks, streams and rivers.

Planning Criteria:
Straw Bale Check Dam design limits are as follows:

Slope	Maximum Drain Area	Maximum Slope Length Between Check Dams
0 - 15 percent	1 acre	200 feet
15 - 20 percent	1/2 acre	100 feet
>20 percent	Not Recommended	---

Methods and Materials: Bales should be bound with wire or nylon string. Twine bound bales are less durable. The bales should be placed in rows with bale ends tightly abutting the adjacent bales.

Downstream Row (refer to illustration): Dig a trench across the small channel, wide enough and deep enough to so that the top of the row of bales placed on their long, wide side is level with the ground. The tops of bales across the center of the channel should all be level and set at the same elevation. Place the bales in position and stake them according to the instructions below.

Upstream Row: Dig another trench across the small channel, upstream and immediately adjacent to the first row of bales. The trench should be wide enough to accommodate a row of bales set vertically on their long edge. The trench should be deep enough so that at least 6 inches of each bale is below ground starting with the bale in the channel bottom. The trench should be as level as possible so that the tops of the bales across the center of the channel are level and water can flow evenly across them.

Continue this trench up the side slopes of the small channel to a point where the unburied bottom line of the highest bale (point "C", illustration) is higher than the top of the bales that are in the center of the channel (point "D", illustration).

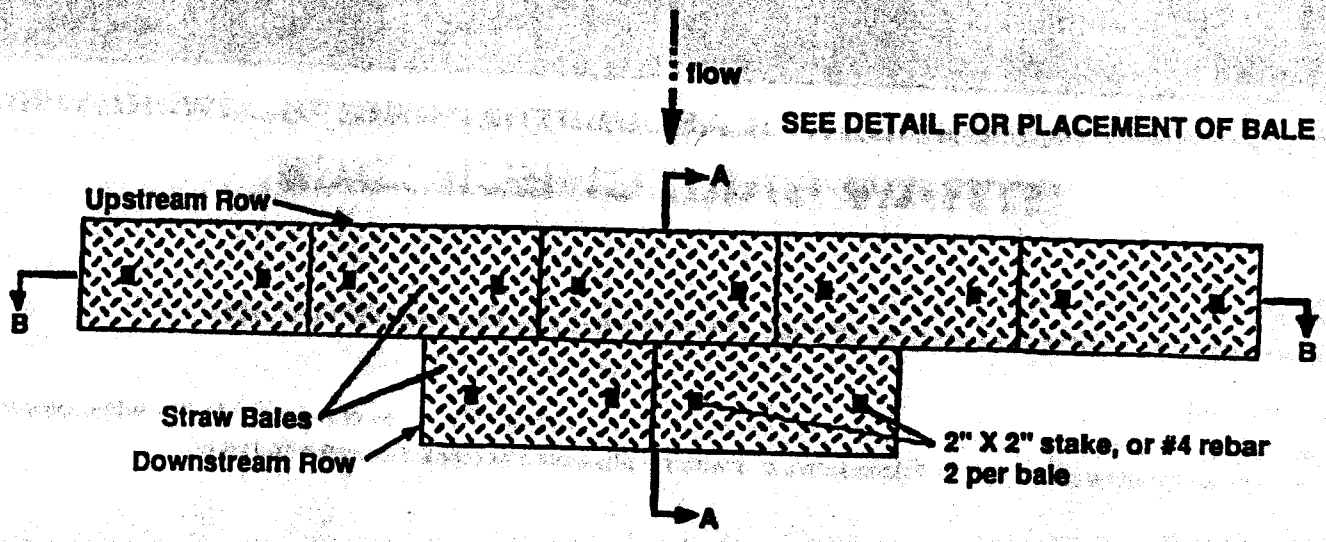
Anchorage: Drive 2 x 2 stakes or #4 rebar through the bales and into the ground 1 1/2 to 2 feet for anchorage. The first stake in each bale should be driven toward a previously laid bale to force the bales together (see illustration).

Maintenance: Inspect the bale check dam and provide necessary maintenance following each storm period. It is important to assure that loose straw does not enter storm drain facilities. Remove the bales and stakes once permanent drainage and stabilization is reestablished. Used straw can be used as mulch in other areas.

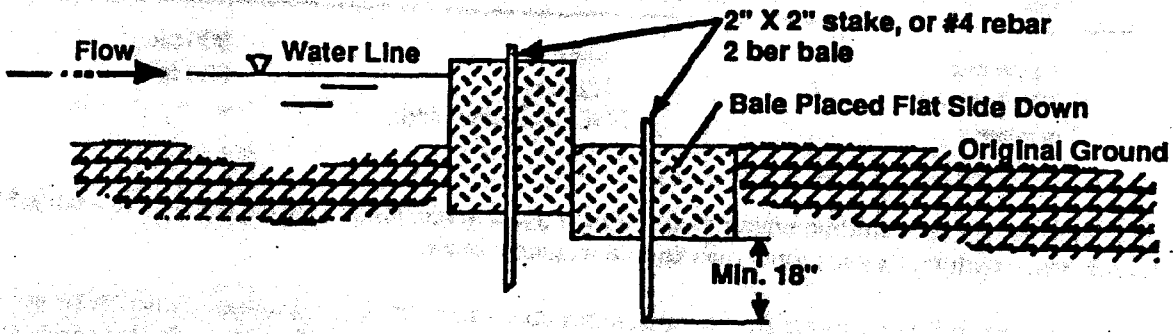
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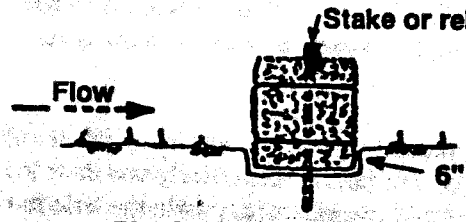
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Plan - Typical Straw Bale Check Dam



Section A-A

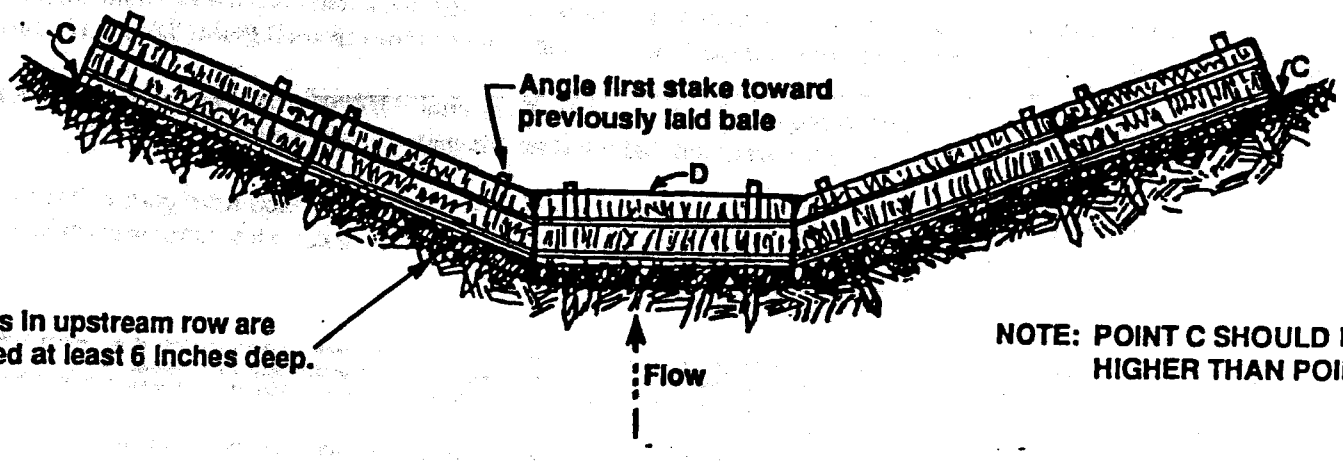




PLACEMENT DETAIL
UPSTREAM ROW

REMOVE #4 REBAR AFTER STRAW BALES ARE NO LO NGER IN PLACE

Section B-B



NOTE: POINT C SHOULD BE HIGHER THAN POINT D

Where to Get Help: Technical assistance is available from your local USDA Natural Resources Conservation Service office or your local Resource Conservation District regarding the use of this practice and other treatments.

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects In the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 040820104809

Database Last Updated: July 19, 2004

Quad Lists

WHISKEYTOWN (648A)

Listed Species

Invertebrates

Desmocerus californicus dimorphus - valley elderberry longhorn beetle (T)

Fish

Hypomesus transpacificus - delta smelt (T)
Oncorhynchus mykiss - Central Valley steelhead (T) (NMFS)
Oncorhynchus tshawytscha - Central Valley spring-run chinook salmon (T) (NMFS)
Oncorhynchus tshawytscha - winter-run chinook salmon (E) (NMFS)

Amphibians

Rana aurora draytonii - California red-legged frog (T)

Birds

Haliaeetus leucocephalus - bald eagle (T)
Strix occidentalis caurina - northern spotted owl (T)

Candidate Species

Fish

Acipenser medirostris - green sturgeon (C)
Oncorhynchus tshawytscha - Central Valley fall/late fall-run chinook salmon (C) (NMFS)

Mammals

Martes pennanti - fisher (C)

Species of Concern

Fish

Lampetra ayresi - river lamprey (SC)
Oncorhynchus mykiss - Klamath Mts. Province steelhead (SC) (NMFS)
Ptychocheilus grandis - Sacramento splittail (SC)
Spirinchus thaleichthys - longfin smelt (SC)

Amphibians

Ascaphus truei - tailed frog (SC)
Rana boylii - foothill yellow-legged frog (SC)
Spea hammondii - western spadefoot toad (SC)

Reptiles

Clemmys marmorata marmorata - northwestern pond turtle (SC)

Birds

Amphispiza belli belli - Bell's sage sparrow (SC)
Chaetura vauxi - Vaux's swift (SC)
Cypseloides niger - black swift (SC)
Elanus leucurus - white-tailed (=black shouldered) kite (SC)
Empidonax traillii brewsteri - little willow flycatcher (CA)
Falco peregrinus anatum - American peregrine falcon (D)
Lanius ludovicianus - loggerhead shrike (SC)
Melanerpes lewis - Lewis' woodpecker (SC)
Numenius americanus - long-billed curlew (SC)
Otus flammeolus - flammulated owl (SC)
Selasphorus rufus - rufous hummingbird (SC)

Mammals

Corynorhinus (=Plecotus) townsendii pallescens - pale Townsend's big-eared bat (SC)
Corynorhinus (=Plecotus) townsendii townsendii - Pacific western big-eared bat (SC)
Gulo gulo luteus - California wolverine (CA)
Myotis evotis - long-eared myotis bat (SC)
Myotis thysanodes - fringed myotis bat (SC)
Myotis volans - long-legged myotis bat (SC)
Myotis yumanensis - Yuma myotis bat (SC)

Plants

Sedum paradisum - Canyon Creek stonecrop (SC)

FRENCH GULCH (648B)

Listed Species

Invertebrates

Desmocerus californicus dimorphus - valley elderberry longhorn beetle (T)

Fish

Hypomesus transpacificus - delta smelt (T)
Oncorhynchus kisutch - coho salmon, So OR/No CA (T) (NMFS)
Oncorhynchus mykiss - Central Valley steelhead (T) (NMFS)
Oncorhynchus tshawytscha - Central Valley spring-run chinook salmon (T) (NMFS)
Oncorhynchus tshawytscha - winter-run chinook salmon (E) (NMFS)

Amphibians

Rana aurora draytonii - California red-legged frog (T)

Birds

Haliaeetus leucocephalus - bald eagle (T)
Strix occidentalis caurina - Critical habitat, northern spotted owl (T)
Strix occidentalis caurina - northern spotted owl (T)

Candidate Species

Fish

Acipenser medirostris - green sturgeon (C)
Oncorhynchus tshawytscha - Central Valley fall/late fall-run chinook salmon (C) (NMFS)

Mammals

Martes pennanti - fisher (C)

Species of Concern

Fish

Lampetra ayresi - river lamprey (SC)
Oncorhynchus mykiss - Klamath Mts. Province steelhead (SC) (NMFS)
Pogonichthys macrolepidotus - Sacramento splittail (SC)
Spirinchus thaleichthys - longfin smelt (SC)

Amphibians

Ascaphus truei - tailed frog (SC)
Rana boylii - foothill yellow-legged frog (SC)

Reptiles

Clemmys marmorata marmorata - northwestern pond turtle (SC)

Birds

Amphispiza belli belli - Bell's sage sparrow (SC)

Chaetura vauxi - Vaux's swift (SC)
Cypseloides niger - black swift (SC)
Empidonax traillii brewsteri - little willow flycatcher (CA)
Falco peregrinus anatum - American peregrine falcon (D)
Lanius ludovicianus - loggerhead shrike (SC)
Melanerpes lewis - Lewis' woodpecker (SC)
Numenius americanus - long-billed curlew (SC)
Otus flammeolus - flammulated owl (SC)
Selasphorus rufus - rufous hummingbird (SC)

Mammals

Corynorhinus (=Plecotus) townsendii pallescens - pale Townsend's big-eared bat (SC)
Corynorhinus (=Plecotus) townsendii townsendii - Pacific western big-eared bat (SC)
Gulo gulo luteus - California wolverine (CA)
Myotis evotis - long-eared myotis bat (SC)
Myotis thysanodes - fringed myotis bat (SC)
Myotis volans - long-legged myotis bat (SC)
Myotis yumanensis - Yuma myotis bat (SC)

Plants

Puccinellia howellii - Howell's alkali grass (SC)

PAPOOSE CREEK (666C)

Listed Species

Invertebrates

Desmocerus californicus dimorphus - valley elderberry longhorn beetle (T)

Fish

Hypomesus transpacificus - delta smelt (T)
Oncorhynchus kisutch - coho salmon, So OR/No CA (T) (NMFS)
Oncorhynchus mykiss - Central Valley steelhead (T) (NMFS)
Oncorhynchus tshawytscha - Central Valley spring-run chinook salmon (T) (NMFS)
Oncorhynchus tshawytscha - winter-run chinook salmon (E) (NMFS)

Amphibians

Rana aurora draytonii - California red-legged frog (T)

Birds

Haliaeetus leucocephalus - bald eagle (T)
Strix occidentalis caurina - Critical habitat, northern spotted owl (T)
Strix occidentalis caurina - northern spotted owl (T)

Candidate Species

Fish

Acipenser medirostris - green sturgeon (C)
Oncorhynchus tshawytscha - Central Valley fall/late fall-run chinook salmon (C) (NMFS)

Mammals

Martes pennanti - fisher (C)

Species of Concern

Invertebrates

Nebria gebleri siskiyouensis - Siskiyou ground beetle (SC)
Nebria sahlbergii triad - Trinity Alps ground beetle (SC)

Fish

Lampetra ayresi - river lamprey (SC)
Oncorhynchus mykiss - Klamath Mts. Province steelhead (SC) (NMFS)
Polyonichthys macrolepidotus - Sacramento splittail (SC)
Spirinchus thaleichthys - longfin smelt (SC)

Amphibians

Ascaphus truei - tailed frog (SC)
Rana boylii - foothill yellow-legged frog (SC)

Reptiles

Clemmys marmorata marmorata - northwestern pond turtle (SC)

Birds

Accipiter gentilis - northern goshawk (SC)
Chaetura vauxi - Vaux's swift (SC)
Cypseloides niger - black swift (SC)
Empidonax traillii brewsteri - little willow flycatcher (CA)
Falco peregrinus anatum - American peregrine falcon (D)
Lanius ludovicianus - loggerhead shrike (SC)
Melanerpes lewis - Lewis' woodpecker (SC)
Numenius americanus - long-billed curlew (SC)
Otus flammeolus - flammulated owl (SC)
Selasphorus rufus - rufous hummingbird (SC)

Mammals

Corynorhinus (=Plecotus) townsendii pallescens - pale Townsend's big-eared bat (SC)

Corynorhinus (=Plecotus) townsendii townsendii - Pacific western big-eared bat (SC)
Euderma maculatum - spotted bat (SC)
Gulo gulo luteus - California wolverine (CA)
Myotis evotis - long-eared myotis bat (SC)
Myotis thysanodes - fringed myotis bat (SC)
Myotis volans - long-legged myotis bat (SC)
Myotis yumanensis - Yuma myotis bat (SC)
Vulpes vulpes necator - Sierra Nevada red fox (CA)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed (in the Federal Register) as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed (in the Federal Register) for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Marine Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(CA) Listed by the State of California but not by the Fish & Wildlife Service.
(D) *Delisted* - Species will be monitored for 5 years.
(SC) *Species of Concern*/(SLC) Species of Local Concern - Other species of concern to the Sacramento Fish & Wildlife Office.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.

- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.

- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regard-less of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the quad or quads covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the nine surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

State-Listed Species

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. However you should contact the California Department of Fish and Game Wildlife and Habitat Data Analysis Branch for official information about these species.

Your Responsibilities Under the Endangered Species Act

All plants and animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to

develop a plan that minimizes the project's direct and indirect impacts to listed species and compen-sates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our critical habitat page for maps.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

Your list may contain a section called Species of Concern. This is an informal term that refers to those species that the Sacramento Fish and Wildlife Office believes might be in need of concentrated conservation actions. Such conservation actions vary depending on the health of the populations and degree and types of threats. At one extreme, there may only need to be periodic monitoring of populations and threats to the species and its habitat. At the other extreme, a species may need to be listed as a Federal threatened or endangered species. Species of concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be November 18, 2004.

WESTERN SHASTA RESOURCE CONSERVATION DISTRICT

6270 Parallel Road – Anderson, CA 96007-4833 – Phone: (530) 365-7332 – Fax: (530) 365-7271
http://www.westernshastarcd.org

August 25, 2004

Chuck Bell, State Conservationist
U.S. Department of Agriculture
Natural Resources Conservation Service
2121-C 2nd Street, Suite 102
Davis, CA 95616-5475

RE: French Fire, Shasta County, California

Dear Mr. Bell:

We request Federal assistance under provisions of Section 403, Agricultural Credit Act of 1978, to restore watershed areas damaged by the French Fire, such as ditch cleaning, culvert evaluation and resizing, revegetation, sandbagging, and measures to protect private property from an imminent threat of damages in the area of French Gulch and surrounding area in Shasta County, California. The fire started on Saturday, August 14 and contained on August 20, 2004 and burned 4,895 acres of private land and 13,323 acres total.

We expect increased erosion of hillsides and channels affecting private land. This work is needed to safeguard lives and property from an imminent hazard of winter flood flows.

We understand, as sponsors of an Emergency Watershed Protection project, our responsibilities will include acquiring necessary right of way and permits to construct, and if required, to operate and maintain the proposed measures. We are prepared to furnish the 25 percent local cost-share of construction work, which includes engineering, survey and inspection.

If you need any additional information, please contact:
Mary Schroeder
Western Shasta Resource Conservation District
6270 Parallel Road, Anderson, CA 96007
Telephone: (530) 365-7332 x 202 Fax: (530) 365-7271

Sincerely,

Mary E. Schroeder
District Manager

Mike Here is a very preliminary table of availability-will send additional info shortly.
Thanks;
Scott Stewart
916-776-1200
916-776-2029
916-869-8330

Collection Point	Native Seed	Scientific Name	Purity	Germ	Lbs	Price	Price Coated
Redding West	Elymus Glaucus	Blue WildRye			7,000	8.50	4.85
Redding South-West	Native California Brome	Bromus Carinatus			1200+	6.50	3.75
Mt Diablo	Native California Brome	Bromus Carinatus			10,000	4.00	2.50
Redding North	Siskiyou Idaho Fescue	Festuca Ovina spp Ingrata			4300	9.50	5.25
Lincoln Ca.	Sky Lupine	Lupine Nanus			1540	24.00	15.00
Redding West	Native White Yarrow	Achillia Millifolium			1093	15.00	8.50
Redding South-West	Slender WheatGrass	Elymus Trachycaulus			8490lbs	4.50	3.95

WiskeyTown Lake Seed Available for Fire Re-hab-French Gulch Fire

Elymus Glaucus---

CONSERVASEED *FAX*

PO BOX 1069
WALNUT GROVE CA 95690
PHONE: (916)776-1200
FAX: (916)776-1112

TO: Mike Dolan **FROM:** Dena
PH: _____ **PAGES:** many
FAX: 530-722-9684 **DATE:** 8/28/04
RE: _____ **CC:** _____

Mike,

Scott thinks this would be a perfect product for your situation.

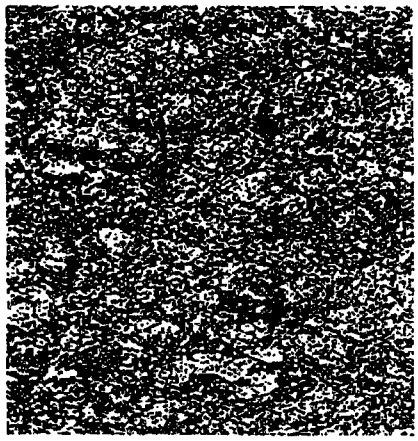
You can also search for more info via web.

Have a great weekend

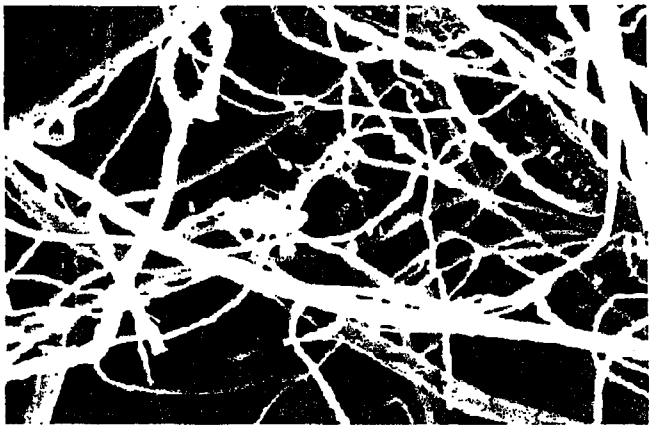
Dena

Glomalin: Hiding Place for a Third of the World's Stored Soil Carbon

A sticky protein seems to be the unsung hero of soil carbon storage.

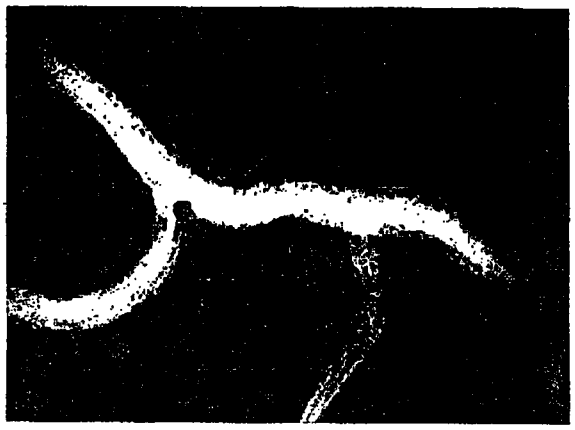


A glomalin rich soil



Glomalin producing m
courtesy of Mycorrhiz

Until its discovery in 1996 by ARS soil scientist Sara F. Wright, this soil "super glue" was mistaken for an unidentifiable constituent of soil organic matter. Rather, it permeates organic matter, binding it to silt, sand, and clay particles. Not only does glomalin contain 30 to 40 percent carbon, but it also forms clumps of soil granules called aggregates. These add structure to soil and keep other stored soil carbon from escaping.



As a glycoprotein, glomalin stores carbon in both its protein and carbohydrate (glucose or sugar) subunits. Wright, who is with the

Sustainable Agricultural Systems Laboratory in Beltsville, Maryland, thinks the glomalin molecule is a clump of small glycoproteins with iron and other ions attached. She found that glomalin contains from 1 to 9 percent tightly bound iron.

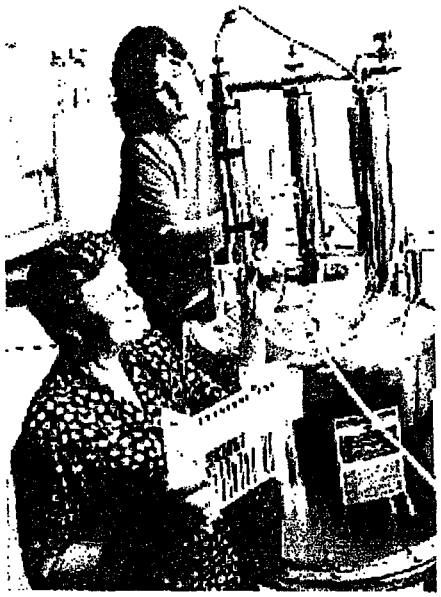
Glomalin is causing a complete reexamination of what makes up soil organic matter. It is increasingly being included in studies of carbon storage and soil quality. In fact, the U.S. Department of Energy, as part of its interest in carbon storage as an offset to rising atmospheric carbon dioxide (CO_2) levels, partially funded a recent study by lab technician Kristine A. Nichols, a colleague of Wright's. Nichols reported on the study as part of her doctoral dissertation in soil science at the University of Maryland.



Spores or "seeds" of Glomus mycorrhizal fungi
Photo courtesy of Mycorrhizal Applications Inc

That study showed that glomalin accounts for 27 percent of the carbon in soil and is a major component of soil organic matter. Nichols, Wright, and E. Kudjo Dzantor, a soil scientist at the University of Maryland-College Park, found that glomalin weighs 2 to 24 times more than humic acid, a product of decaying plants that up to now was thought to be the main contributor to soil carbon. But humic acid contributes only about 8 percent of the carbon. Another team recently used carbon dating to estimate that glomalin lasts 7 to 42 years, depending on conditions.

For the study, the scientists compared different chemical extraction techniques using eight different soils from Colorado, Georgia, Maryland,



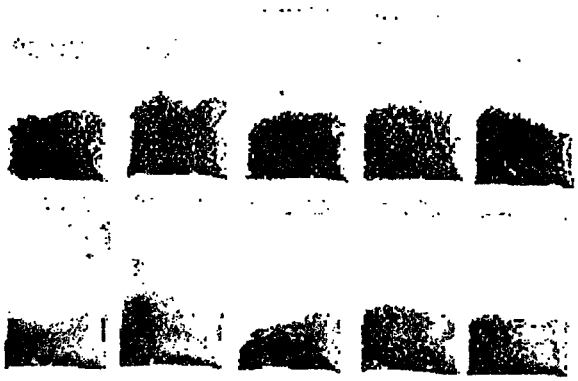
and Nebraska. They found that current assays greatly underestimate the amount of glomalin present in soils. By comparing weights of extracted organic matter fractions (glomalin, humic acid, fulvic acid, and particulate organic matter), Nichols found four times more glomalin than humic acid. She also found that the extraction method she and Wright use underestimates glomalin in certain soils where it is more tightly bound than usual.

In a companion study, Nichols, Wright, and Dzantor teamed up with ARS chemist Walter F. Schmidt to examine organic matter extracted from the same soils under a nuclear magnetic resonance (NMR) imager. They found that glomalin's structure differs from that of humic acid—or any other organic matter component—and has unique structural units.

In a current study in Costa Rica, partly funded by the National Science Foundation, Wright is using glomalin levels and root growth to measure the amount of carbon stored in soils beneath tropical forests. She is finding lower levels of glomalin than expected and a much shorter lifespan. "We think it's because of the higher temperatures and moisture in tropical soils," she explains. These factors break down glomalin.

Forests, croplands, and grasslands around the world are thought to be valuable for offsetting carbon dioxide emissions from industry and vehicles. In fact, some private markets have already started offering carbon credits for sale by owners of such land. Industry could buy the

credits as offsets for their emissions. The expectation is that these credits would be traded just as pollution credits are currently traded worldwide.



How Does Glomalin Work?

It is glomalin that gives soil its tilth—a subtle texture that enables experienced farmers and gardeners to judge great soil by feeling the smooth granules as they flow through their fingers.

Arbuscular mycorrhizal fungi, found living on plant roots around the world, appear to be the only producers of glomalin. Wright named glomalin after Glomales, the taxonomic order that arbuscular mycorrhizal fungi belong to. The fungi use carbon from the plant to grow and make glomalin. In return, the fungi's hairlike filaments, called hyphae, extend the reach of plant roots. Hyphae function as pipes to funnel more water and nutrients—particularly phosphorus—to the plants.

"We've seen glomalin on the outside of the hyphae, and we believe this is how the hyphae seal themselves so they can carry water and nutrients. It may also be what gives them the rigidity they need to span the air spaces between soil particles," says Wright.

As a plant grows, the fungi move down the root and form new hyphae to colonize the growing roots. When hyphae higher up on the roots stop transporting nutrients, their protective glomalin sloughs off into the soil. There it attaches to particles of minerals (sand, silt, and clay) and organic matter, forming clumps. This type of soil structure is stable enough to resist wind and water erosion, but porous enough to let air,

water, and roots move through it. It also harbors more beneficial microbes, holds more water, and helps the soil surface resist crusting.

Scientists think hyphae have a lifespan of days to weeks. The much longer lifespan of glomalin suggests that the current technique of weighing hyphae samples to estimate fungal carbon storage grossly underestimates the amount of soil carbon stored. In fact, Wright and colleagues found that glomalin contributes much more nitrogen and carbon to the soil than do hyphae or other soil microbes.

Rising CO_2 Boosts Glomalin, Too

In an earlier study, Wright and scientists from the University of California at Riverside and Stanford University showed that higher CO_2 levels in the atmosphere stimulate the fungi to produce more glomalin.

They did a 3-year study on semiarid shrub land and a 6-year study on grasslands in San Diego County, California, using outdoor chambers with controlled CO_2 levels. When CO_2 reached 670 parts per million (ppm)—the level predicted by mid to late century—hyphae grew three times as long and produced five times as much glomalin as fungi on plants growing with today's ambient level of 370 ppm.

Longer hyphae help plants reach more water and nutrients, which could help plants face drought in a warmer climate. The increase in glomalin production helps soil build defenses against degradation and erosion and boosts its productivity.

Glomalin went from 1.3 milligrams per gram of soil (mg/g) after the first year to 1.7 mg/g after the third. A nearby field that was plowed and planted each year had only 0.7 mg/g. In comparison, the soil under a 15-year-old buffer strip of grass had 2.7 mg/g.

Wright found glomalin levels up to 15 mg/g elsewhere in the Mid-Atlantic region. But she found the highest levels—more than 100 mg/g—in Hawaiian soils, with Japanese soils a close second. "We don't know why we found the highest levels in Hawaii's tropical soils. We usually find lower levels in other tropical areas, because it breaks down faster at higher temperature and moisture levels," Wright says. "We can only guess that the Hawaiian soils lack some organism that is breaking down glomalin in other tropical soils—or that high soil levels of iron are protecting glomalin."

It's Persistent and It's Everywhere!

The toughness of the molecule was one of the things that struck Wright most in her discovery of glomalin. She says it's the reason glomalin eluded scientific detection for so long.

"It requires an unusual effort to dislodge glomalin for study: a bath in citrate combined with heating at 250 °F for at least an hour," Wright says. "No other soil glue found to date required anything as drastic as this."

"We've learned that the sodium hydroxide used to separate out humic acid in soil misses most of the glomalin. So, most of it was thrown away with the insoluble humus and minerals in soil," she says. "The little bit of glomalin left in the humic acid was thought to be nothing more than unknown foreign substances that contaminated the experiments."

Once Wright found a way to capture glomalin, her next big surprise was how much of it there was in some soils and how widespread it was. She tested samples of soils from around the world and found glomalin in all.

"Anything present in these amounts has to be considered in any studies of plant-soil interactions," Wright says. "There may be implications beyond the carbon storage and soil quality issues—such as whether the large amounts of iron in glomalin mean that it could be protecting plants from pathogens."

Her recent work with Nichols has shown that glomalin levels are even higher in some soils than previously estimated.

"Glomalin is unique among soil components for its strength and stability," Wright says. Other soil components that contain carbon and nitrogen, as glomalin does, don't last very long. Microbes quickly break them down into byproducts. And proteins from plants are degraded very quickly in soil.

"We need to learn a lot more about this molecule, though, if we are to manage glomalin wisely. Our next step is to identify the chemical makeup of each of its parts, including the protein core, the sugar carbohydrates, and the attached iron and other possible ions." Nichols is starting to work on just that.

"Once we know what sugars and proteins are there," says Nichols, we will use NMR and other techniques to create a three-dimensional image of the molecule. We can then find the most likely sites to look for iron or other attached ions.

"Researchers have studied organic matter for a long time and know its benefits to soil. But we're just starting to learn which components of organic matter are responsible for these benefits. That's the exciting part of glomalin research. We've found a major component that we think definitely has a strong role in the benefits attributed to organic matter—things like soil stability, nutrient accessibility, and nutrient cycling."

"Glomalin: Hiding Place for a Third of the World's Stored Soil Carbon" was published in the **September 2002** issue of *Agricultural Research* magazine.

For more information on Mycorrhizae and their uses go to:
www.mycorrhizae.com or call
Dr Mike or Jeff @
Mycorrhizal Applications Inc
541.476.3985

A COATED PERENNIAL GRASS MIX

LOW GROWING, LOW MAINTENANCE

CALTRANS "NO-MOW" GRASS BLEND

1.) Grasslands Gala Bromegrass 50%
2.) Atom Prairie Brome 30%
3.) Henry Hard Fescue 20%

ALL BUNCH GRASSES - NO CREEPING TYPES

1. An improved perennial bromegrass; low growing, more persistent and less expensive than native types. Drought tolerant and winter active.
2. A Prairiegrass similar to California Brome; fast germination ,high reseeding capability.
3. A short , deep rooted fescue; for drought adaptation

These varieties will establish in the first year, giving strong wear tolerance to support equipment and deep roots to prevent erosion.The grasses are coated with a hydrophilic component and patented mycorrhizal aspects to enhance germination and persistance in compromised environments

Seeding Rate: As low as 60 lbs per acre will establish a good stand, but faster results and better weed suppression may be achieved at higher seeding rates.

CALTRANS "NO-MOW" PERENNIAL GRASS MIX

"It's In The Bag"

This is an effort to use proven proprietary grass and clover cultivars in an added value format. These seeds have been coated with moisture absorbing clay, fertilizer, and microbial organisms. This process enhances seed germination, persistence of the sward and long-term profitability. We are offering added value to ranchers, foresters, and wildlife groups. This concept is also a precise solution to crop rotations and covercrops in treefruit ,vines and vegetables.

The "It's In The Bag" concept is an answer to regimes depleted by cropping and fire. Coated seed has better ballistic properties than raw seed . Coated seed is foreign to mice and birds. You apply the seed ,on your time frame ,without the depredation. Millions of acres of grasslands in California that have lost perennial grasses and the mycorrhizal interaction to support them. This concept incorporates mycorrhizae and nutrients into the coating. You apply this concept where it is needed; this is precision agriculture brought to the wild west. You add value to your reseeding project by reducing tillage while improving germination and standlife.You are able to grow adapted, palatable grass species in an economic and sustainable framework.

Our clients include farmers and ranchers in the livestock business and their affiliated governmental support agencies (NRCS, RCDs, Nature Conservancy, BLM, and Forest service.) Most ranchers know of coated legumes. This knowledge should introduce them to the value of coating grasses to enhance their seed investment. Other markets are any involved in bio remediation, erosion control, fire revegetation business.

We have coated Gala Grazing Brome, Atom Brome, and Henry Hard Fescue. Perennial brome grasses and the fine fescues have proven to be most receptive to mycorrrhizal interactions. Gala brome and Atom brome are cultivars from Pyne Gould Guinness Ltd, in New Zealand. Henry Hard Fescue is a fine fescue from Oregon. All three have been successfully trialed and used in California . The Gala and Henry are already in the "Vinemate", a proprietary perennial grass cover crop mix. Gala Brome, a deep-rooted, palatable forage grass has shown to be particularly adapted California's Mediterranean climate. Atom Brome, a short lived brome of high feed value, compliments the Gala in grassland regimes by acting as a reseeding annual.

Another added value aspect to this project is recent data from U.C. Davis establishing carbon sequestration values to perennial grasses. Perennial grasses will store 100 times the carbon of introduced annual range plants. With carbon credits in the works there will be incentives to re establish a viable, practical, perennial grass regime on California's neglected grasslands.
Governmental agencies offer cost sharing to ranches for reseeding. Ranchers receive "carbon credits" for the sequestration of carbon in their grasslands. The energy industry buys the credits from the rancher. The rancher regains profitability from his grasslands. Pastoral farming returns, not as an extractive process in a giant feedlot scenario but as a direct conduit to the sun. Open space, water storage capacity, nutrient cycling and rational economies emerge. Finally, possibly,an incentive payment from a grateful public-----less greenhouse gases.....

Wright says all these benefits can also come from good tillage and soil management techniques, instead of from higher atmospheric CO_2.

"You're in the driver's seat when you use techniques proven to do the same thing as the higher CO_2 that might be causing global warming. You can still raise glomalin levels, improve soil structure, and increase carbon storage without the risks of the unknowns in global climate change," she says.

Putting Glomalin to Work

Wright found that glomalin is very manageable. She is studying glomalin levels under different farming and ranching practices. Levels were maintained or raised by no-till, cover crops, reduced phosphorus inputs, and the sparing use of crops that don't have arbuscular mycorrhizal fungi on their roots. Those include members of the Brassicaceae family, like cabbage and cauliflower, and the mustard family, like canola and crambe.

"When you grow those crops, it's like a fallow period, because glomalin production stops," says Wright. "You need to rotate them with crops that have glomalin-producing fungi."

In a 4-year study at the Henry A. Wallace Beltsville (Maryland) Agricultural Research Center, Wright found that glomalin levels rose each year after no-till was started. No-till refers to a modern conservation practice that uses equipment to plant seeds with no prior plowing. This practice was developed to protect soil from erosion by keeping fields covered with crop residue.

8/25/04
10:25 AM, PST

From S+S Seeds 8/25/04

Bear Vicki Schaffer

Here is the seed mix I need. If you do not have any of the seeds, don't worry. I suspect Lemmon's needlegrass is unavailable.

Mix will cover approximately 200 ac

Source	name	Rate #/ac
Comercial	Regreen (Triticum aestivum x Elytrigia elongata)	- 6
N. Calif	California brome (Bromus carinatus)	- 8
N. Calif	Blue wildrye (Elymus glaucus)	- 8
N. Calif	Idaho fescue (Festuca idahoensis)	- 4
N.A	Lemmon's needlegrass (Achnatherum lemmonii	- 4
N Calif.	deer vetch (Lotus purshianus)	- 1

$130.00/acre delivered Price without Lemmons Needlegrass comes out to 6200 # w/ needlegrass + 5,400 # w/out. [redacted] You probably know the federal routine. Please give source, either by ecoregion or a geographical recognizable location. We are not tied to local natives

AUG 25 2004

Thanks,

Michael P. Dolan (Mike)
Burned Area Emergency Response Team

Our FAX: 530-722-9684

Price Change by Adding ½ #/acre Cal Poppy
$135.00/acre

Pacific Coast Seed INC

August 27, 2004

Mr. Mike Dolan
Vegetation Specialist
BAER Team FAX 530 722 9684

Re: Ca Native Seed - French Fire, Redding California

Dear Mr. Dolan:

Thank you for contacting Pacific Coast Seed, Inc. as your potential supplier for the above referenced item. Below I have outlined the seed mix as you described on the phone yesterday. All of these seeds are currently available and could be mixed and shipped within a day or two at the most. All lots comply with CA state law and are CA noxious free.

Lbs per acre PLS	Species	Location
10	Elymus X Triticum, Regreen	Commercially grown hybrid
7	Bromus carinatus California Brome	Northern California Source
7	Elymus glaucus, Blue Wildrye	Northern California Source
1	Lupinus nanus, Native CA Sky Lupine	From CA wild collected source.

A budget estimate for the above mix is approximately : $4.50 per PLS Lb.

We are prepared to mix and ship this material prompty. Should you want more information about this mix or Pacific Coast Seed, Inc., please contact me through my office or by email at Davidg@pcseed.com.

Thank you again for choosing Pacific Coast Seed a potential seed supplier for this project. We look forward to working with you on this project and future projects.

Sincerely,

David Gilpin
President

Bacrfire/frenchfire

FAX COVER SHEET

Hedgerow Farms
21740 County Rd 88
Winters, CA 95694
530 662-4570
530 668-8369 FAX

SEND TO	
Company name: BLM	From: John Anderson
Attention: Mike Dolan	Date: 8/24/04
Office location: Bay Area Energy & Response Team	Office location:
Fax number: 530 722 9684	Phone number: 530 662 4570

☐ Urgent ☐ Reply ASAP ☐ Please comment ☐ Please review ☐ For your information

Total pages, including cover: _____

COMMENTS

Enclosed is our current species availability & prices (bulk seed). If you need seed tests for any particular ecotype, we can send those to you. Give us a call if you have any questions.

John Anderson

HEDGEROW FARMS PRICE LIST July 2004

GRASSES

Species	Common name	Ecotype/origin	Bulk Price/lb
Agrostis exarata	Bentgrass	Glenn County: Kopta Slough	$26.00
Bromus carinatus	California Brome	Santa Clara County: Arastradero Preserve	$11.00
Danthonia californica	California Oat Grass	Napa County: Napa Marsh	ask
Deschampsia caespitosa	Tufted Hairgrass	Lake County	$25.00
Deschampsia elongata	Slender Hairgrass	Sacramento County: Cosumnes River	$23.00
Elymus multisetus	Squirrel Tail	Tehama County	$35.00
		Yolo County: Lynch Creek	$40.00
Elymus glaucus	Blue Wildrye	Colusa County: Bear Valley	$9.00
		Butte County: Llano Seco Ranch	$9.00
		Mariposa County: NRCS release	$8.50
		Plumas County: Lake Almanor	$12.00
		Sacramento County: Cosumnes River	$9.50
		Santa Clara County: Arastradero Preserve	$11.00
		Sonoma County, Bodega Bay	$16.00
		Tehama County: Dye Creek	$8.50
		Yolo County: "Anderson"	$7.00
		Yolo County: Yolo Bypass	$8.50
Elymus trachycaulus	Slender Wheatgrass	Yolo County: Willow Slough	$8.00
Festuca idahoensis roneri	Idaho Fescue	Napa County: Quail Ridge	$14.00
Hordeum brachyantherum	Meadow Barley	Colusa County: Bear Valley	$13.00
		Napa County: Napa/Sonoma Marsh	$13.00
		Sacramento County: Cosumnes River	$13.00
		Solano County: Glide Ranch	$14.00
		Solano County: Jepson Prairie	$13.50
		Yolo County: Yolo Bypass	$12.00
Koeleria macrantha	June Grass	Lake County: Cache Creek Watershed	$25.00
Leymus triticoides	Creeping Wildrye	Kings County: 'Rio' NRCS release	$40.00
		Yolo County: Yolo Bypass	$40.00
		Stanislaus County: White Lake	$45.00
Melica californica	Calif. Onion Grass	Marin County: Ring Mountain	$23.00
		Solano County: Benecia	$30.00
		Tehama County: Inks Creek	$20.00
		Yolo County: Fiske Creek	$20.50
Muhlenbergia rigens	Deergrass	Placer County: Lincoln	$80.00
Nassella cernua	Nodding Needlegrass	Kern County: Carrizo Plain	$37.00
		San Luis Obispo County: NRCS release	$40.00
		Solano County: Benecia	$36.00
		Tehama County: Inks Creek	$35.00
		Yolo County: Dunnigan Hills	$36.00
Nassella lepida	Foothill Needlegrass	Marin County: Ring Mountain	$48.00
		Yolo County: Stone Ranch	$48.00
Nassella pulchra	Purple Needlegrass	Butte County: Llano Seco Ranch	$26.00
		Contra Costa County: Los Vagueros Watershed	$28.00
		Marin County: Bodega Bay area	$30.00

Grasses continued

Species	Common name	Ecotype/origin	
Nassella pulchra	Purple Needlegrass	Napa County: Napa/Sonoma Marsh	$26.00
		Santa Clara County: Arastradero Preserve	$31.00
		Sacramento County: Cosumnes River	$26.00
		Solano County: Jepson Prairie	$27.00
		Tehama County: NW of Redbluff, NRCS release	$26.00
		Tehama County: Inks Creek	$26.00
		Yolo County: Fiske Creek	$26.00
		Yolo County: Stone Ranch	$26.00
Poa secunda secunda	One sided Bluegrass	Yolo County: Fiske Creek	$23.00
		Tehama County: Vina Plains	$35.00
Vulpia microstachys	Three Week Fescue	Yolo County: Fiske Creek	$23.00

SEDGES

Species	Common name	Ecotype/origin	
Carex barbarae	White Root Sedge	Yolo County: Yolo Bypass	$80.00
Carex praegracilis	Slender Sedge	Colusa County: Bear Valley	$80.00
		Yolo County: Yolo Bypass	$65.00

FORBS

Species	Common name	Ecotype/origin	
Achillea millefolium	Yarrow	Lake County: Cache Creek Watershed	$10.00
Asclepias fascicularis	Narrow-leaf Milkweed	Yolo County: North of Winters	$75.00
Calindrinia ciliata	Red Maids	Yolo County:North of Winters	$38.00
Eschscholzia californica	California Poppy	Colusa County: Ladoga Hills	$15.00
Grindelia camporum	Gum Plant	Yolo County: Yolo Bypass	$9.00
Grindelia stricta	Marsh Gum Plant	Napa County: Napa/Sonoma Marsh	ask
Lotus purshianus	Spanish Clover	Yolo County: Yolo Bypass	$30.00
Lupinus bicolor	Small-flowered Lupine	Napa County: Napa River	$25.00
Lupinus nanus	Sky Lupine	Butte County: Pine Creek	$30.00
Lupinus nanus	Sky Lupine	Yolo County: North of Winters	$25.00
Lupinus succulentus	Arroyo Lupine	Yolo County: North of Winters	$16.00
Lupinus densiflorus	Yellow Lupine	Yolo County: North of Winters	$23.00
Oenethera hookeri	Evening Primrose	Sacramento Valley Watershed	$25.00
Trifolium bifidum		Colusa County: Colusa Wildlife Refuge	ask
Trifolium ciliolatum	Tree Clover	Napa & Lake Counties: Quail Ridge & Red Bud Trail	ask
Trifolium fucatum	Bull Clover	Colusa County: Colusa Wildlife Refuge	$25.00
Trifolium gracilentum	Pin-point Clover	Yolo County: North of Winters	ask
Trifolium microcephalum	Maiden Clover	Tehama County: Vina Plains	ask
Trifolium wildenowii	Tomcat clover	Yolo County: Winters	$25.00

Prices subject to change. Large order discounts. Please call for current information.

The following ecotypes are available for increase in 2005 or in small quantities for transplants. Request now for seeding Fall 2005 projects.

- *Aristida hamulosa* – Three Awn from Spring Valley Ranch, Colusa County
- *Hordeum brachyantherum californicum* – California Barley from Hwy 20, Colusa County
- *Elymus trachycaulus* – Slender Wheatgrass from Walker Ridge, Colusa County
- *Leymus triticoides* short – Creeping Wildrye (Short ecotype) from Yolo Bypass, Yolo County
- *Melica californica* – California Oniongrass from Jepson Prairie, Solano County
- *Nassella cernua* – Nodding Needlegrass from Buck Ranch, Kern County
- *Nassella pulchra* – Purple Needlegrass from Alameda County (NRCS release)
- *Nassella pulchra* – Purple Needlegrass from Button Ranch, Petaluma, Sonoma County
- *Sporobolus airoides* – Alkali Sacaton from both Merced & Kern Counties

QUALITY PLUG PLANTS FOR RAPID ESTABLISHMENT

Many of our ecotypes are grown as plug plants for planting during the Fall, Winter & Spring. Large orders are custom grown. Order 14-16 weeks prior to planting date. We grow plugs from our ecotypes or from seed that you supply. Plug plants are grown in 1"x1"x21/2" cells in trays of 200. Please call to order plugs.

Quantity	Grasses	Sedges/Rushes
Up to 100	$0.45	$0.55
100-500	$0.35	$0.45
500-1,000	$0.30	$0.40
1,000 to 2,000	$0.28	$0.35
2,000 to 3,000	$0.25	$0.30
3,000 to 5,000	$0.20	$0.25
5,000 to 10,000	$0.17	$0.22
Above 10,000	$0.14	$0.20

NATIVE GRASS STRAW

- **Certified noxious weed free**
- **We bale only our cleanest production fields**
- **Excellent erosion control**
- **Contains some native seed**
- **Inquire for price**

CUSTOM SEED MIXES

Hedgerow Farms' experienced personnel are ready to help you design custom seed mixes to fit your specific ecological zones.

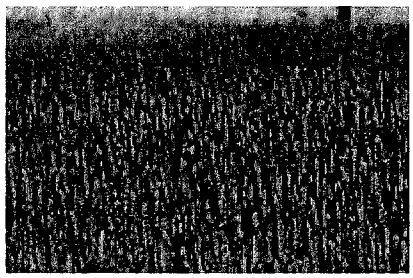
HEDGEROW FARM$
21740 County Rd 88
Winters, CA 95694
530 662-4570, 530 668-8369 fax
hedgefarm@jps.net

AGASSIZ SEED & SUPPLY

PRODUCTS

Regreen

Cool Season, Soil Stabilizing Nurse Crop



Regreen, a wheat x wheatgrass hybrid, produces a sterile plant. After it dies out it does not leave a new generation of plants behind to compete with the slower growing perennial species. A highly versatile temporary cover crop, Regreen can be planted in either the spring or fall in most climates.

A large seed allows Regreen to germinate quickly and get one step ahead of any potential weeds. A dense, fibrous root system enhances Regreen's ability to stabilize the soil surface and provide vigorous seedlings. A deep root system also allows the plant to be drought tolerant, winterhardy and adaptable to varying soil and moisture conditions. With characteristics from both parents, wheat and wheatgrass, Regreen is ideal for aiding in the establishment of costly native plant communities. This long-lived annual plant will survive in a variety of soil types and environmental conditions. If your objective calls for a nurse crop, Regreen is your answer!

Applications

- Wetland
- Forest Fires
- Roadsides
- Erodible Hillsides
- Mining Site
- Pipelines
- Landfills
- Waterways
- Ski Areas
- Logging
- Construction Sites
- Grazing Areas

Plant Description

Technically speaking, Regreen is a cross between wheat and wheatgrass (triticum x agropyron). This match is made in the production field. The final product is one-quarter wheatgrass and three-quarters wheat. Regreen takes on many of the strong plant characteristics of wheat such as quick germination, large seed size (approximately 10,000 - 12,000 seeds per pound), excellent seedling vigor, dense root development and drought tolerance. The unique benefit of Regreen is the non-viable seed this plant produces. Never again will a site manager have to deal with unwanted "volunteer" plants from a cover crop.

Seeding Rates

When seeded in a mix with other perennial grasses for stabilizing cover and minimal competition, 10 pounds per acre is adequate. When seeding a monoculture for maximum soil stabilization, 40 - 50 pounds per acre is desirable. For best results, seed should be placed in a firm seed bed with ample moisture, one inch below the surface. In a dry site, place seed slightly deeper so germination will not occur until sufficient precipitation is received to penetrate the soil and support plant life. Use a drill, hyrdoseeder or a spin spreader to apply the seed.

Native Grasses and Mother Nature's Helper

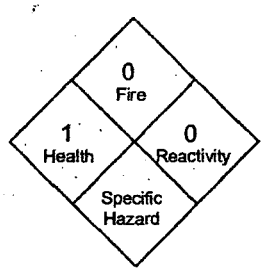
Many governmental agencies are now requiring disturbed areas be reseeded with expensive native plant materials and/or "site-specific" seed. When the success of your project depends on the survival of expensive and sensitive species, Regreen is Mother Nature's Helper. Apply Regreen one year ahead of the permanent cover, or with hard to establish native grasses and it will act as a temporary protection without crowding out the perennials in the second year of growth. The skeletons of dying Regreen plants offer protection from wind and will assist in holding snowcover when insulation is necessary. Regreen can be planted as a monoculture in sites where native species are expected to revegitate themselves over a period of time. Use Mother Nature's Helper to ensure the success of your project.

MATERIAL SAFETY DATA SHEET

FIRE-TROL HOLDINGS, L.L.C.

FIRE-TROL® GTS-R

Fire-Trol Holdings, L.L.C.
2620 N. 37th Dr.
Phoenix, AZ 85009
(602) 262-5401
(530) 865-4932 (24 hr. number)



THIS PRODUCT IS BASED ON COMMERCIAL FERTILIZERS AND GENERALLY HAS A LOW ORDER OF TOXICITY, AS INDICATED BY PRODUCT'S TOXICOLOGICAL ANALYSIS.

FIRE-TROL® FIRE RETARDANTS HAVE NO CAS NUMBERS.

CAUTION

Powder may cause eye or skin irritation with prolonged exposure. Avoid breathing vapor or dust. Do not take internally. Store in controlled access location.

No adverse effects are expected from occasional exposure to dry product or from use of the mixed product. To prevent long-term effects, the use of protective equipment when continuously handling dry product is required. It is important to wash hands and face before smoking, drinking or eating. A shower is recommended after each prolonged contact.

A. MATERIAL IDENTIFICATION AND INFORMATION

1. **GENERAL INFORMATION:**

FIRE-TROL® GTS-R is a fire retardant, which is mixed with water for aerial delivery to wildfires. It consists primarily of two commonly used agricultural fertilizers: ammonium sulfate and diammonium phosphate. It also includes minor amounts of thickener, preservative, color and corrosion inhibitor.

DOT Proper shipping name:	This product is not classified as a hazardous material by the U.S. Department of Transportation.
DOT Hazard Classification/I.D.:	Not Applicable
Label(s):	Product Label
U. S. Surface Freight Classification:	Fire Extinguisher Compounds, NOIBN
SARA Hazard Notification: Hazardous Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):	Immediate Delayed

(continued)

(Continued from Page 1)

2. **SECTION 313 TOXIC CHEMICAL(S)**

This product contains less than 90% ammonium sulfate (CAS No. 7783-20-2) in the powder form. When dissolved in water, it may be defined as a toxic chemical under and subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

3. **HAZARDOUS CHEMICAL(S) UNDER OSHA HAZARD COMMUNICATION STANDARD:**

The substances listed below, in addition to the SARA 313 toxic chemicals, are considered as hazardous under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

GUAR GUM (CAS NO. 9000-30-0), or a derivative:

Dust. Listed on the EPA TSCA list.

DIAMMONIUM PHOSPHATE (CAS NO. 7783-28-0):

Dust. Classified as an eye irritant, aggravates asthma and emphysema. Hazardous decomposition product: ammonium. No TLV.

SODIUM O-PHENYLPHENATE TETRAHYDRATE (CAS No. 006152-33-6):

Dust. "For hazard communication purposes under OSHA Standard 29 CFR Part 1910.1200, this chemical is listed as a potential carcinogen by IARC. Sodium o-phenylphenate has been shown to cause bladder tumors when fed in exaggerated doses to rats. However, risks from environmental exposures are considered negligible."

No specific exposure limit has been established for this product. Threshold Limit Value: Limits for nuisance dusts are 15 mg/m3 (OSHA PEL) and 10 mg/m3 (ACGIH TLV.)

HEALTH HAZARD CLASSIFICATION:

An immediate health hazard.
A delayed health hazard.

WARNING STATEMENTS:

WARNING!
Contains material that can cause allergic respiratory reaction. May cause respiratory tract irritation. May cause eyes and skin irritation.

PRECAUTIONARY MEASURES:

Avoid breathing dust.
Use with adequate ventilation.
Avoid unnecessary contact with eyes and skin.

4. **CALIFORNIA PROPOSITION 65:**

California: Warning: "This product may contain chemicals known to the State of California to cause cancer or birth defects, or other reproductive harm."

B. OCCUPATIONAL CONTROL PROCEDURES

1. **FOR HANDLING POWDER PRODUCT:**

Eye Protection:	Wear safety goggles.
Respiratory Protection:	Wear NIOSH/MSHA approved dust respirator.
Skin Protection:	Wear clean clothing that minimizes exposure to skin such as coveralls or long sleeved shirt and long pants.
Ventilation:	Work in a well-ventilated area.
Ingestion:	Avoid ingestion.

ATTENTION:

Repeated or prolonged inhalation may cause allergic respiratory reaction in some people.

2. **FOR HANDLING DILUTED PRODUCT:**

Eyes & Skin:	Avoid unnecessary contact with eyes and skin.
Ingestion:	Avoid ingestion.

3. **DO NOT DROP ONTO FIRE FIGHTERS.**

C. FIRE PROTECTION INFORMATION

1. Product is not flammable and has no flash point or lower explosive limits.
2. No unusual fire or explosion hazards.
3. Extinguishing Media: Water spray or water flooding.
4. Special Fire Fighting Procedures:
   Use water to keep fire-exposed containers cool. Wear full protective clothing and self-contained breathing apparatus approved by NIOSH.

D. PHYSIOLOGICAL EFFECTS & HEALTH INFORMATION (Toxicological Data)

1. **FOR POWDER BEFORE DILUTION WITH WATER:**

a.	Eye Irritation:	Can cause eye irritation and conjunctivitis.
b.	Skin Irritation:	Can cause skin irritation.
c.	Inhalation:	Can be an irritation to upper respiratory tract.
d.	Ingestion:	Can be harmful if ingested in quantity.

Animal Test Results (Acute Exposure)

Rabbit Eye Irritation:	Mildly irritating.
Rabbit Skin Irritation:	Practically not an irritant.
Rat Acute Oral:	LD_{50} = 3850 mg/kg (low toxicity)
Rabbit Acute Dermal:	LD_{50} >2010 mg/kg (low toxicity)

2. **FOR MIXED READY-TO-USE LIQUID:**

a.	Eye Irritation:	Can cause eye irritation.
b.	Skin Irritation:	Can cause skin irritation.
c.	Ingestion:	Can be harmful if ingested in quantity

Animal Test Results (Acute Exposure)

Rabbit Eye Irritation:	Minimally irritating.
Rabbit Skin Irritation:	Slight irritant.
Rat Acute Oral:	LD_{50}>5050 mg/kg (low toxicity)
Rabbit Acute Dermal:	LD_{50}>2010 mg/kg (low toxicity)

Note: All animal results reported in this section for both concentrated and diluted products were done in accordance with USDA Forest Service specifications for Long-term Retardants: 5100-304a, February, 1986, through the U.S. Forest Service, by an independent laboratory. The results are all acceptable according to those requirements.

E. PHYSICAL & CHEMICAL PROPERTIES

1.	Specific Gravity:	1.1 for the product after mixing.
2.	Viscosities:	1200-1800 cps
3.	Appearance:	Thick red/pink liquid
4.	Solubility:	Mixes readily in water.

F. REACTIVITY DATA

1. **FOR POWDER:**
   a. Product is stable and will not polymerize.
   b. Avoid temperatures over 405°F.
   c. Avoid contact with chlorine, hypochlorites, and strong oxidizers.
   d. Hazardous decomposition products include NH3 and S0x, P0x and HCN. Please note that these decomposition products are not a cause for concern when the diluted product is used in fire fighting due to air dilution and other factors.

(Continued)

(Continued from page 3)

General note: Powder has excellent long-term stability. Keep powder dry to avoid caking.

2. **FOR LIQUID AFTER DILUTION, MATERIALS TO AVOID:**
Magnesium and zinc due to unacceptable corrosion rates. Acceptable container materials with respect to corrosion: 2024 T3 aluminum, mild steel, and yellow brass.

G. ENVIRONMENTAL PROTECTION

1. **ENVIRONMENTAL IMPACT:**
Acute toxicity of FIRE-TROL® GTS-R to Juvenile Rainbow Trout - LC_{50} value at 96 hours, Estimated 1000 mg/liter. Avoid lakes and streams in applying FIRE-TROL® GTS-R.

Fire retardant chemicals applied near streams have been shown to have virtually no impact on them. This is partly because there is a minimum of migration of chemicals from areas as close as three meters from the edge of a stream (Norris et al, "The Behavior and Impact of Chemical Fire Retardant in Forest Streams," Forestry Sciences Laboratory, USDA Forest Service Pacific Northwest Forest and Range Experiment Station, October 20, 1978).

Use and disposal employing proper environmental controls should not cause significant environmental impact.

2. **PRECAUTIONS IF MATERIAL IS ACCIDENTALLY RELEASED OR SPILLED:**
Contain and pick up spilled material as soon as possible to minimize environmental contamination.

3. **WASTE DISPOSAL METHODS:**
Sweep up and maximize recovery. Flush residue with water in accordance with applicable federal, state and local environmental regulatory requirements.

H. EMERGENCY & FIRST AID PROCEDURES FOR POWDER CONCENTRATE

1.	Eye Contact:	Flush eyes with water immediately for fifteen minutes. If irritation persists, seek medical attention
2.	Skin Contact:	Wash skin thoroughly and change clothing.
3.	Inhalation:	Upon inhaling, move to fresh air.
4.	Ingestion:	Upon ingestion, have person drink water to induce vomiting, (if conscious). Seek medical attention
5.	General:	Seek medical attention as soon as possible if adverse effects occur.

NOTICE OF WARRANTY:
Fire-Trol Holdings, L.L.C., warrants that FIRE-TROL® products are reasonably fit for the purposes for which they were developed only when used in accordance with recommended use practices under normal conditions. In no case shall Fire-Trol Holdings, L.L.C. be liable for consequential, special, or indirect damages resulting from the use or handling of these products. The buyer shall assume ALL such risks. FIRE-TROL HOLDINGS, L.L.C. MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESSED OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

Date: December 30, 1999

FIREOUT ENTERPRISES, INC.
P.O. Box 1254
Forest, VA 24551
Tele: 434-534-0636
Fax: 434-534-0637

MATERIAL SAFETY DATA SHEET: May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910, 1200. Standard must be consulted for specific requirements.

PRODUCT NAME: FIREOUT®ICE

SECTION I MANUFACTURER/MARKETER INFORMATION

Manufacturer and Marketer's Name & Address
Fire Out Enterprises, Inc.
P.O. Box 1254
Forest, VA 24551 Tele: 434-534-0636 Fax: 434-534-0637

Emergency telephone number: 8--/424-9300

BASF Corporation
10930 Darracott Rd.
POB 577
Aberdeen. 39730

Date Prepared: Sept 27, 2002

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity: Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Manufacturer's Recommended Exposure Guideline for Respirable Particulate	-	-	0.05mg/m^3	-

PRODUCT IDENTIFICATION

Chemical Name	CAS Number	%
Potassium Polyacrylate, lightly crosslinked	25608-12-2	92 to 98
Water	7732-18-5	2 to 8
Acrylic Acid	79	

NFPA/HMIS Health – 1, Fire – 0 Reactivity – 0, Specific Hazard – None

Dot Class: Not Regulated

SECTION III PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	- Not Applicable	Bulk Density (Apparent – g/cc)	- 0.5
Vapor Pressure (mm Hg.)	- Not Applicable	Melting Point	- Not Applicable
Vapor Density (AIR = 1)	- Not Applicable	Evaporation Rate (Butyl Acetate = 1)	-Not Applicable
Appearance and Odor	-Off White, odorless		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used) - Not Applicable
Flammable Limits - Not Applicable LEL- UEL-
Extinguishing Media - As with any fire, wear positive pressure, self contained breathing apparatus in any closed space when fighting fires.
Unusual Fire and Explosion Hazards - Becomes slippery when wet.
- Under certain confined conditions, a fine dust of this material in air may cause a dust explosion if ignited.

SECTION V REACTIVITY DATA

Stability Unstable - Conditions to Avoid – None Known
Stable - x

Incompatibility (Materials to Avoid) - Strong Oxidizers
Hazardous Decomposition or By-products - Thermal decomposition: CO, CO_2, hydrocarbons
Hazardous Polymerization - May Not Occur -X Conditions to Avoid – Non Known

SECTION VI HEALTH HAZARD DATA

Route(s) of Entry: Inhalation? Yes Skin? Yes Ingestion? Yes

Health Hazards (Acute and Chronic) - Contact with eyes, skin or clothing may cause mild irritation. Care must be taken to minimize workplace inhalation of respirable dust. Respiratory protection is required for exposures above the recommended level of respirable dust.
- A similar product, ground very finely, produced an inflammatory tissue response in the lungs in a lifetime exposure inhalation experiment with animals.
- According to the EPA "Hazard Categories" under sections 311 and 312 of SARA Title III, this product is considered to meet the applicable definitions of: A delayed health hazard.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

California Proposition- 65: No Prop- 65 Listed Chemicals

Signs and Symptoms of Exposure - Slight irritant effects.

Medical Conditions Generally Aggravated by Exposure - None Known

Emergency and First Aid Procedures
Eyes: Flush with large quantity of water, consult physician.
Skin: Wash with soap and water.
Inhalation: Remove to fresh air, consult physician.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: Vacuum (using HEPA filter equipped system) if possible to avoid generating airborne dust. Avoid adding water, the product will become slippery when wet.

Waste Disposal Method: Dispose of in accordance with federal, state and local regulations.

Precautions to be Taken in Handling and Storing: Store in a cool, dry place. Avoid breathing powder. Avoid skin and eye contact.

Other Precautions: Slippery when wet.

SECTION VII CONTROL MEASURES

Respiratory Protection (Specify Type) Use NIOSH/MSHA approved or equivalent with high efficiency filter for particulate levels above 0.05mg/m^3.

Ventilation -Local Exhaust As appropriate to control airborne dust levels below the applicable exposure limits.
- Mechanical (General) -As appropriate Other -None
Protective Gloves -Impervious/rubber
Eye Protection -Safety goggles
Other Protective Clothing or Equipment - None
Work/Hygienic Practices -Use good housekeeping practices

The information herein has been compiled from sources believed to be reliable and is accurate to the best of our knowledge. However, FireOut & BASF Corporation cannot give any guarantees regarding information from other sources, and expressly do not make any warranties, nor assume any liability for its use.

Attach completed form, map(s) and photo log to Site Form Comments on Back of form Yes__ No __

FRENCH FIRE
EMERGENCY POST-FIRE SITE INSPECTION RECORD

SITE: No: _____ Temp or other No: _____ Date of Inspection _____
Inspector(s) initials)_____ Crew Chief _____

SITE DESCRIPTION
Site Type: Prehistoric Historic Multi component Other _____
UTM (GPS) _____E _____N Elev: _____ USGS Quad:_____
Features Present: _____
_____
List wood/organics (if known to be present): _____
Were they burned Y___ N___

VANDALISM PRESENT: YES___ NO ___ If yes: Recent YES___ NO___ UNKNOWN___

SITE BURN SEVERITY
___ Low (duff partially consumed, none to little ladder fuels burned, no canopy burned)
___ Moderate (duff consumed, ladder fuel burned, isolated crown burn or torching)
___ Severe (duff, ladder and crown completely consumed)
Note: Map, photograph and describe affected areas of site

FIRE EFFECTS AT SITE	**YES**	**NO**
Cracking/spalling	___	___
Smoke/soot damage	___	___
Stump/root holes	___	___
Loss of architectural wood/features	___	___
Tree(s) on walls or rubble	___	___

Other _____
_____

SUPPRESSION IMPACTS TO SITE: YES___ NO___ Handline___ Drop point/safety zone___ Dozer line___ Retardant drop impact/staining___ Mopup ___ Tree falling ___ Spike Camp ___ Safety Zone___
Vegetation removal ___ Vehicle ruts ___
Other_____

EROSIONAL THREATS TO SITE : YES ___ NO ___
On site slope _____% Aspect _____o
Site Watershed (to 20 m. out) Slope_____% Aspect _____o
Erosion threat: Active gully/rilling/scouring (depth and extent) _____ Stumphole/burned log erosion ____
Pedestaling ___ Duff absent _____
Other_____

RECOMMENDED PRESERVATION TREATMENT
____ No Treatment Recommended
____ Monitor
____ Treatment Recommended: if so, describe:(e.g. Directional falling, Straw bale, straw scatter, Excelsior matting, sandbag, etc.):
_____
_____
Additional comments on back Yes ___ No ___ Form 9/09/00

ACRES OF SOIL BURN SEVERITY BY WATERSHED

Sum of ACRES FACILITY	SOIL BURN SEVERITY	ACRES Total	PERCENT OF WSHD
"	1 Very Low/Unburned	2213.1	34.4
	2 Low	2100.2	32.7
	3 Moderate	1943.2	30.2
	4 High	169.5	2.6
" Total		6426	100.0
'Cemetery South'	1 Very Low/Unburned	1	4.5
	2 Low	7.6	34.1
	3 Moderate	13.7	61.4
'Cemetery South' Total		22.3	100.0
'Daily'	1 Very Low/Unburned	36.8	23.3
	2 Low	81.7	51.7
	3 Moderate	37.6	23.8
	4 High	0.4	0.3
	5 out	1.5	0.9
'Daily' Total		158	100.0
'Daily at Highland Ridge Road'	2 Low	0.2	66.7
	3 Moderate	0.1	33.3
'Daily at Highland Ridge Road' Total		0.3	100.0
'Dutch Gulch'	1 Very Low/Unburned	0.1	20.0
	2 Low	0.3	60.0
	3 Moderate	0.1	20.0
'Dutch Gulch' Total		0.5	100.0
'French Gulch'	1 Very Low/Unburned	2048.5	35.4
	2 Low	1796.3	31.1
	3 Moderate	1668.7	28.8
	4 High	253.9	4.4
	5 out	16.9	0.3
'French Gulch' Total		5784.3	100.0
'French Gulch Park North'	1 Very Low/Unburned	1.1	5.1
	2 Low	10.3	48.1
	3 Moderate	10	46.7
'French Gulch Park North' Total		21.4	100.0
'French Gulch Park South'	1 Very Low/Unburned	0.7	1.2
	2 Low	11.9	21.1
	3 Moderate	42.4	75.2
	4 High	1.4	2.5
'French Gulch Park South' Total		56.4	100.0
'Niagra'	1 Very Low/Unburned	0.1	0.3
	2 Low	11.9	32.3
	3 Moderate	24.1	65.5
	4 High	0.7	1.9
'Niagra' Total		36.8	100.0
'Northern Culvert'	1 Very Low/Unburned	10.2	13.5
	2 Low	25	33.1

'Northern Culvert'	3 Moderate	3.7	4.9
	5 out	36.7	48.5
'Northern Culvert' Total		75.6	100.0
'Opposite Cline Gulch'	1 Very Low/Unburned	0	0.0
	2 Low	22.6	14.0
	3 Moderate	114	70.4
	4 High	25.4	15.7
'Opposite Cline Gulch' Total		162	100.0
'Salt Grass'	1 Very Low/Unburned	11.8	17.8
	2 Low	32	48.3
	3 Moderate	22.2	33.5
	5 out	0.3	0.5
'Salt Grass' Total		66.3	100.0
'School House'	1 Very Low/Unburned	0.1	0.2
	2 Low	2.5	6.0
	3 Moderate	38.8	93.7
'School House' Total		41.4	100.0
'Slaughterhouse Gulch'	1 Very Low/Unburned	37.8	14.4
	2 Low	125.2	47.8
	3 Moderate	85.9	32.8
	4 High	0.6	0.2
	5 out	12.2	4.7
'Slaughterhouse Gulch' Total		261.7	100.0
'Summit Mine'	1 Very Low/Unburned	66.5	28.3
	2 Low	60.1	25.6
	3 Moderate	93.9	40.0
	4 High	7.1	3.0
	5 out	7.1	3.0
'Summit Mine' Total		234.7	100.0
Grand Total		13347.7	

FRENCH FIRE BAER
RUSLE SOIL EROSION MODELING PROCESS
08/26/04
Annette Parsons

Surface soil erosion was estimated using the Revised Universal Soil Loss Equation (RUSLE)

A* (tons/acre) = *R*K*LS*C

Where:

A is the soil movement expected in tons/acre,
R is the rainfall factor,
K is the soil erodibility value taken from the soil survey,
LS is the slope factor accounting for slope steepness and length, and
C is the cover factor.

R - Rainfall factor. This value was derived by obtainng the 2yr-6hr precipitation value from the NOAA web site (http://www.nws.noaa.gov
The 2yr-6hr precipitation value (P) for the fire area = 1.8 "
Using the erosion index (EI) for the western US (Wischmeier, 1974),

$R = 16.55\ P^{2.17}$

$R = 59.26$

K – inherent soil erodibility factor. This value was obtained from the Soil Survey of Shasta County Area, CA (USDA NRCS 1974). The value was adjusted for strong granular surface structure and high surface gravel cover (Weishcmeier Textural Triangular Nomograph for Soil Erodibility).

(Note: often, in post-fire situations, the k-factor may also be affected by fire, as structural stability and infiltration rate are decreased, and a pre- and post-fire adjustment in the K-factor is necessary, This was not the predominant case with the French Fire due to very strong granular structure in surface soils, the presence of high surface gravel cover, and minimal water repellency.)

LS – Length and Steepness of slope.

To derive a grid for the LS factor:

- DEM clipped to fire perimeter
- ArcView hydro extension run to fill holes in DEM
- Slope grid in degrees generated from filled DEM [slope_deg]
- Using MapCalculator in ArcView 3.x the LS factor was calculated as:

(((((([slope_deg] * 0.017453293).Sin).Sqr * 65.41) + (([slope_deg] * 0.017453293).Sin * 4.56) + 0.065) * ((25/72.6).Sqrt)).Int

(From Tenpas, 2004, Pers. Comm.)

C – soil cover factor. This value was determined for vegetation groups by burn severity. Vegetation groups were generated using the Cal-Veg vegetation spatial dataset. Pre- and post-fire C values were determined using tables for subfactors of canopy, fine roots, and step effect (Dissemeyer, 1984), per attached spreadsheets.

Note: Of the RUSLE inputs, the cover factor is the one affected by fire, in the case of the French Fire. Hence, the model was run twice, once using a pre-fire C-factor and a second time using a post-fire C-factor were determined.

A separate grid was created for each of the factors in the equation, and then the grids were multiplied using simple map algebra in command line ArcGRID:

RUSLE_prefire = R-grid * K_grid * LS_grid * C_prefire_grid

RUSLE_postfire = R-grid * K_grid * LS_grid * C_postfire_grid

These grids were integerized and classified into the following erosion groupings, based on the results of the pre- and post- RUSLE model runs:

0 - 1 tons/acre
1.1 -2 tons/acre
2.1 – 5 tons/acre
5.1 – 10 tons/acre
10.1 – 50 tons/acre
>50 tons/acre

It is important to recognize that the results of this model (soil movement in tons per acre) are modeled numbers only, and are not based on measured values in this specific area. While the model uses the best available data for the burned area, the figures may not represent absolute amounts of soil movement. It is the difference in numbers between pre-fire and post-fire conditions that is of interest in evaluating any expected increase in erosion due to the fire.

FRENCH FIRE

SOIL COVER FACTOR PARAMETERS BY VEG TYPE

*From Tables 3, 5, and 7 From Dissmeyer, George E. and Foster, George R. 1984. A Guide for Predicting Sheet and Rill Erosion on Forest Land. USDA Forest Service Tech Pub R9-TP-6

**Veg Groups derived from CalVeg spatial vegetation dataset for California

Table 1. BARE SOIL TABLE						
veg grp**	vwg grp desc	pre-fire	vlo/unb	low	mod	high
1	mix sh, brew, live	0.033	0.033	0.05	0.127	0.301
2	conifer	0.024	0.024	0.36	0.058	0.26
3	barren	0.45	0.45	0.45	0.45	0.45
4	dry grass/herbs	0.02	0.02	0.027	0.055	0.222
5	mixed chapparal	0.59	0.59	0.79	0.127	0.26

Table 2. CANOPY TABLE						
veg grp	vwg grp desc	pre-fire	vlo/unb	low	mod	high
1	mix sh, brew, live	0.95	0.95	0.95	1	1
2	conifer	0.93	0.93	0.93	0.95	1
3	barren	1	1	1	1	1
4	dry grass/herbs	0.91	0.91	0.91	1	1
5	mixed chapparal	0.95	0.95	0.95	1	1

Table 3. Step Effect Factor 0.5 assumed for all veg groups (overall >50% slope with at least 50% total slope in steps)

Table 4. CALCULATED COVER FACTOR (Table 1 value * Table 2 value * Table 3 value)						
veg grp	veg grp desc	pre-fire	vlo/unb	low	mod	high
1	mix sh, brew, live	0.016	0.016	0.024	0.064	0.151
2	conifer	0.011	0.011	0.167	0.028	0.130
3	barren	0.225	0.225	0.225	0.225	0.225
4	dry grass/herbs	0.009	0.009	0.012	0.028	0.111
5	mixed chapparal	0.280	0.280	0.375	0.064	0.130

ASSUMPTIONS FOR TABLE 1* (Bare Soil/Fine Roots subfactor))							ASSUMPTIONS FOR TABLE 2** (Canopy Subfactor)				
		pre-fire	vlo/unb	low	mod	high	pre-fire	vlo/unb	low	mod	high
		%bare/%roots	%bare/%roots	%bare/%roots	%bare/%roots	%bare/%roots	ht/%bare can	ht/%bare can	ht/%bare can	ht/%bare can	ht/%bare can
1	mix sh, brew, live	20/30	20/30	30/30	60/20	90/10	6.5/10	6.5/10	6.5/10	6.5/0	6.5/0
2	conifer	20/50	20/50	30/50	40/40	90/20	26/80	26/80	26/80	26/50	26/0
3	barren	100/0	100/0	100/0	100/0	100/0	0/0	0/0	0/0	0/0	0/0
4	dry grass/herbs	30/80	30/80	40/80	60/70	90/30	1.5/10	1.5/10	1.5/10	1.5/0	1.5/0
5	mixed chapparal	30/20	30/20	40/20	60/20	90/20	6.5/10	6.5/10	6.5/10	6.5/0	6.5/0

Flow Model Curve Numbers

Hydro Group A							Adjusted for Hydrophobicity	
Vegetation Type	Good	Rx Fire	Fair	Poor	Mod Burn	High Burn	Mod Burn	High Burn
Oak-Aspen-Mtn Brush	20	33			77	77	82.25	98
Herbaceous-grass-brush	51	65			77	77	82.25	82.25
Conifer	27	38	36	45	77	77	82.25	98
Sagebrush-grass	30	55			77	77	82.25	82.25
Oak woodland	32	47	44	55	77	77	82.25	98
Pinyon juniper	30	59			77	77	82.25	98
Broad leaf chaparral	31	41	40	53	77	77	82.25	98
Narrow leaf chaparral	55	67	55	70	77	77	82.25	98
Barren	77	77		77	77	77	82.25	82.25
Annual grass	38	51	49	65	77	77	82.25	82.25
Hydro Group B								
Vegetation Type	Good	Rx Fire	Fair	Poor	Mod Burn	High Burn	Mod Burn	High Burn
Oak-Aspen-Mtn Brush	30	53	48	66	63	86	71.75	98
Herbaceous-grass-brush	62	76	74	85	81	86	85.25	85.25
Conifer	55	63	60	66	73	86	79.25	98
Sagebrush-grass	35	60	51	67	65	86	73.25	73.25
Oak woodland	58	69	65	73	80	86	84.5	98
Pinyon juniper	41	68	58	75	77	86	82.25	98
Broad leaf chaparral	57	67	63	70	75	86	80.75	98
Narrow leaf chaparral	65	77	72	82	77	86	89	98
Barren	86	86	86	86	86	86	89	89
Annual grass	61	74	69	78	83	86	86.75	86.75

Hydro Group C								
Vegetation Type	Good	Rx Fire	Fair	Poor	Mod Burn	High Burn	Mod Burn	High Burn
Oak-Aspen-Mtn Brush	41	63	57	74	72	91	78.5	98
Herbaceous-grass-brush	74	86	81	87	89	91	91.25	91.25
Conifer	70	75	73	77	84	91	87.5	98
Sagebrush-grass	47	73	63	80	78	91	83	83
Oak woodland	72	79	76	82	89	91	91.25	98
Pinyon juniper	61	83	73	85	87	91	89.75	98
Broad leaf chaparral	71	77	75	80	81	91	85.25	98
Narrow leaf chaparral	77	83	81	88	85	91	88.25	98
Barren	91	91	91	91	91	91	92.75	92.75
Annual grass	75	83	79	86	90	91	92	92
Hydro Group D								
Vegetation Type	Good	Rx Fire	Fair	Poor	Mod Burn	High Burn	Mod Burn	High Burn
Oak-Aspen-Mtn Brush	48	69	63	79	93	93	94.25	98
Herbaceous-grass-brush	85	91	89	93	93	93	94.25	94.25
Conifer	77	81	79	83	93	93	94.25	98
Sagebrush-grass	55	78	70	85	93	93	94.25	94.25
Oak woodland	79	84	82	86	93	93	94.25	98
Pinyon juniper	71	85	80	90	93	93	94.25	98
Broad leaf chaparral	78	82	81	85	93	93	94.25	98
Narrow leaf chaparral	83	87	86	90	93	93	94.25	98
Barren	93	93	93	93	93	93	94.25	94.25
Annual grass	81	87	84	89	93	93	94.25	94.25

Oak-Aspen-Mtn Brush	Assumes 60% of the mineral soil not protected by canopy,litter, duff and exposed to direct raindrop impact.
Herbaceous-grass-brush	Assumes 70% of the mineral soil not protected by canopy,litter, duff and exposed to direct raindrop impact.
Conifer	Assumes 20% of the mineral soil not protected by canopy,litter, duff and exposed to direct raindrop impact.
Sagebrush-grass	Assumes 70% of the mineral soil not protected by canopy,litter, duff and exposed to direct raindrop impact.
Oak woodland	
Pinyon juniper	Assumes 70% of the mineral soil not protected by canopy,litter, duff and exposed to direct raindrop impact.
Broad leaf chaparral	Assumes 60% of the mineral soil not protected by canopy,litter, duff and exposed to direct raindrop impact.
Narrow leaf chaparral	Assumes 60% of the mineral soil not protected by canopy,litter, duff and exposed to direct raindrop impact.
Barren	
Annual grass	

Appendix V. Catchment Area and Channel Gradient for Watersheds above Values at Risk; Used to Determine Debris Flow Potential

e:/french_fire/watershed_sls/sheets/debris_flow_sheds.xls 08/27/04

STUDY WATERSHED AREA AND GRADIENT

WSHED	ACRES	Square Km	PCT MOD+HI	CHANNEL LENGTH (ft)	ELEV MIN (ft)	ELEV MAX (ft)	DELTA ELEV	BASIN GRADIENT***	
*Cemetery South	23	0.09	61.4	2021	1400	2000	600	29.7	(borderline)
Dutch Gulch	1189	4.81	39.1	13,743	1520	3500	1980	14.4	
Daily	158	0.64	57.4	5682	1400	3280	1880	33.1	
French Gulch	5809	23.51	33.2	8005	1280	4880	3600	45.0	
French Gulch Park North	22	0.09	46.7	1686	1400	2560	1160	68.8	
*French Gulch Park South	57	0.23	77.7	2530	1400	2600	1200	47.4	
**Lower French Gulch Trib	13	0.05	93.7	1129	1440	2000	560	49.6	
*Niagra	37	0.15	67.4	1883	1400	2240	840	44.6	
Northern Culvert	76	0.31	4.9	3458	1500	3200	1700	49.2	
*Opposite Cline Gulch	162	0.66	86.1	3802	1520	3100	1580	41.6	
Salt Grass	67	0.27	33.5	2520	1400	2440	1040	41.3	
*School House	41	0.17	93.7	1755	1400	2440	1040	59.3	
Slaughterhouse Gulch	264	1.07	33	7073	1400	3520	2120	30.0	
Summit Mine	235	0.95	43	5161	3200	4400	1200	23.3	

*Denotes a watershed meeting criteria for increased liklihood of potential debris flow production, per Cannon et al., 2004. (%burn severity, gradient, geology)

**Meets above criteria PLUS lies on dip slope (underlying bedding planes are parallel to the slope)

***Threshold gradient is a function of basin area, per Cannon et al. 2004, Figure 15.9

SPECIFICATION DIAGRAM FORM

SITE NO. FG-1

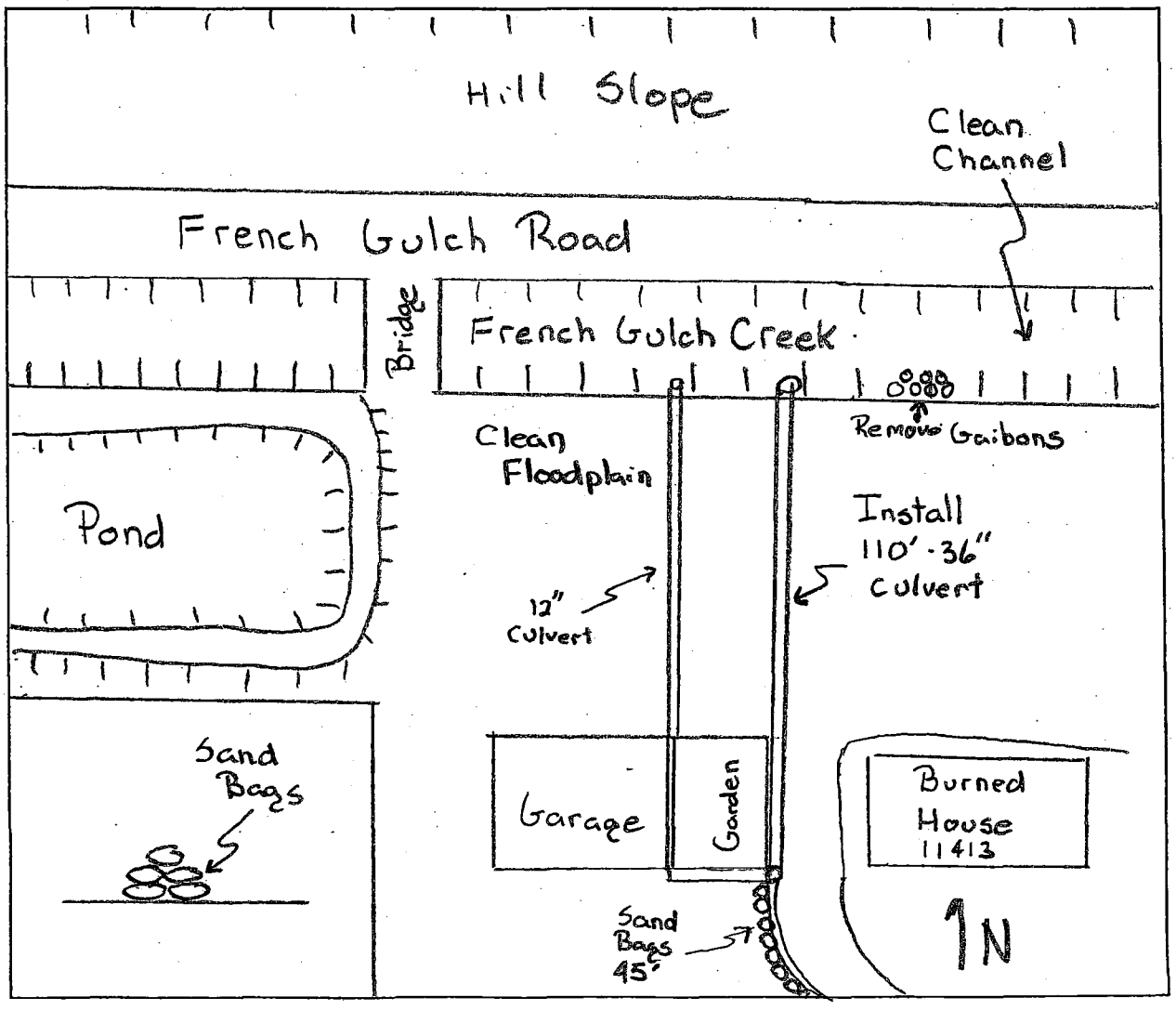
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 11413 French Gulch Road

DESCRIPTION: Install sand bags and 110' of 36" culvert. Clean channel and debris from flood plain. Remove gaibons from Channel.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-90

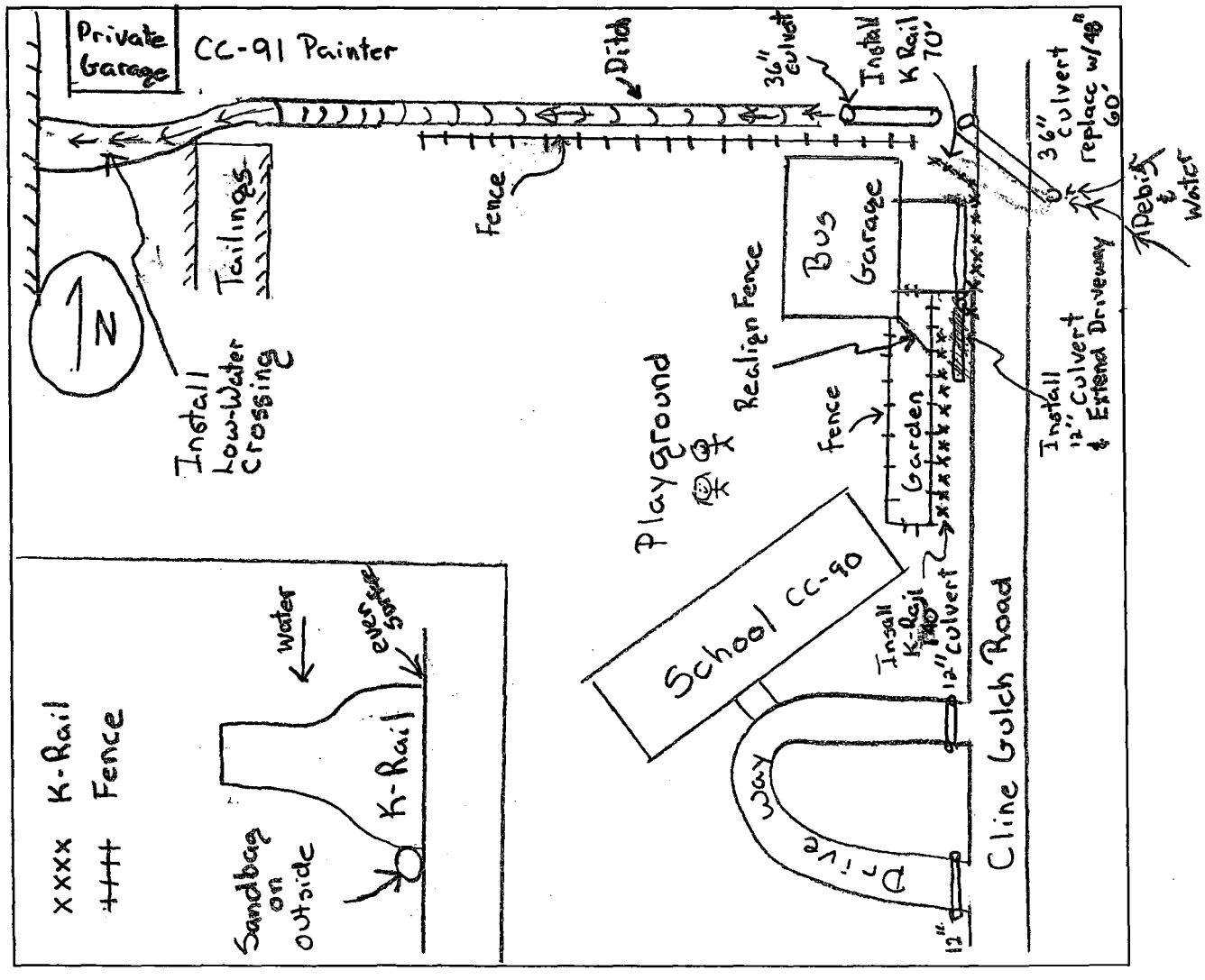
PROPERTY OWNER:

Shasta County Schools

PHYSICAL ADDRESS: 11442 Cline Gulch Road

DESCRIPTION: Protect school and bus garage w/ K-Rail. Clean inboard ditch and culverts. Realign fence and extend driveway. Replace 36" culvert w/ 48".

DIAGRAM:



SPECIFICATION DIAGRAM FORM

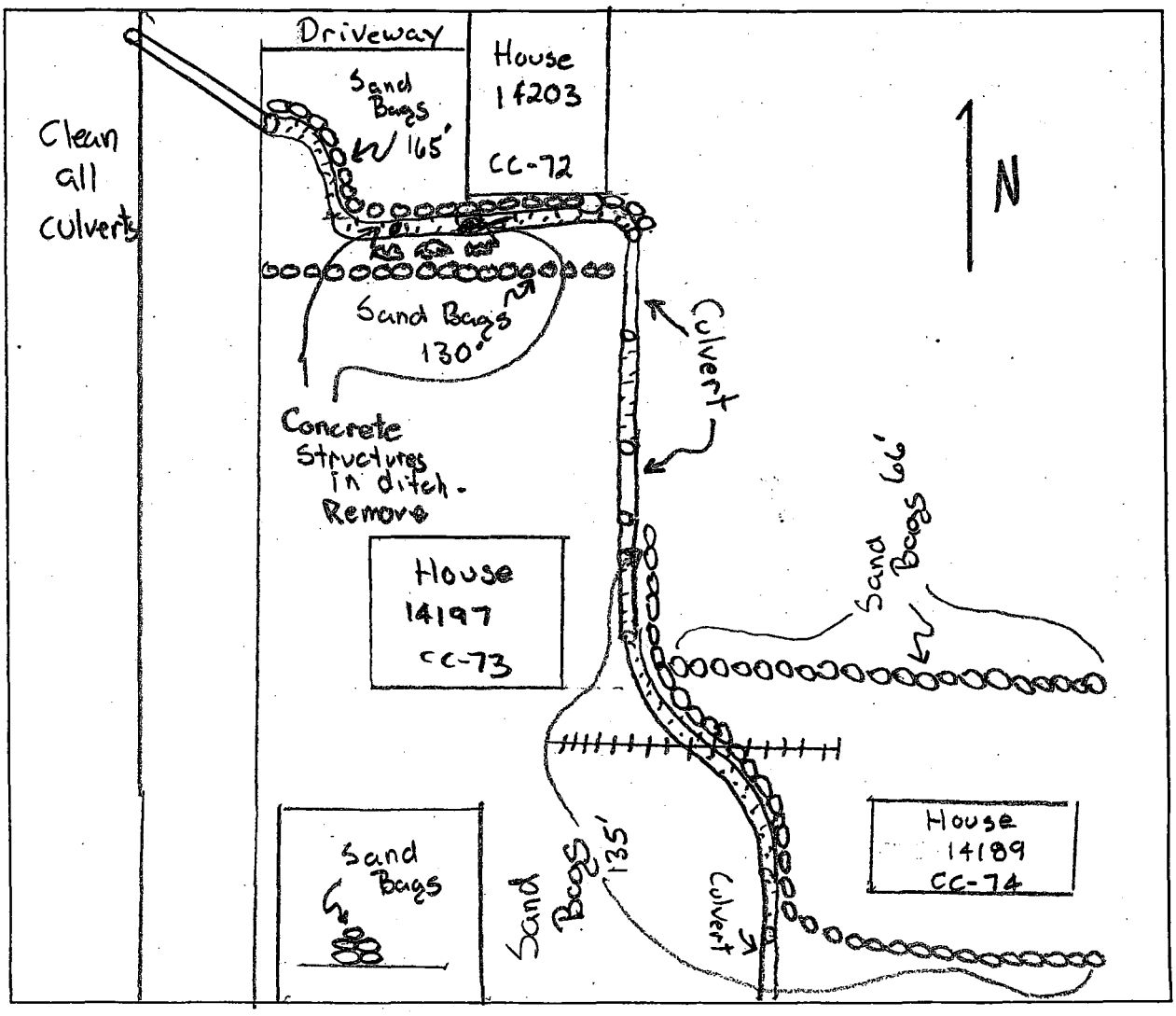
SITE NO. CC-72
CC-73
CC-74

PROPERTY OWNER: [redacted]

PHYSICAL ADDRESS: 14203 (Hoffman) / 14197 (Pearson) / 14189 (Combs) Main St.

DESCRIPTION: Install 496' of Sand Bags. Clean culverts and ditchs. Remove two concrete wiers in ditch on CC-72.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-69

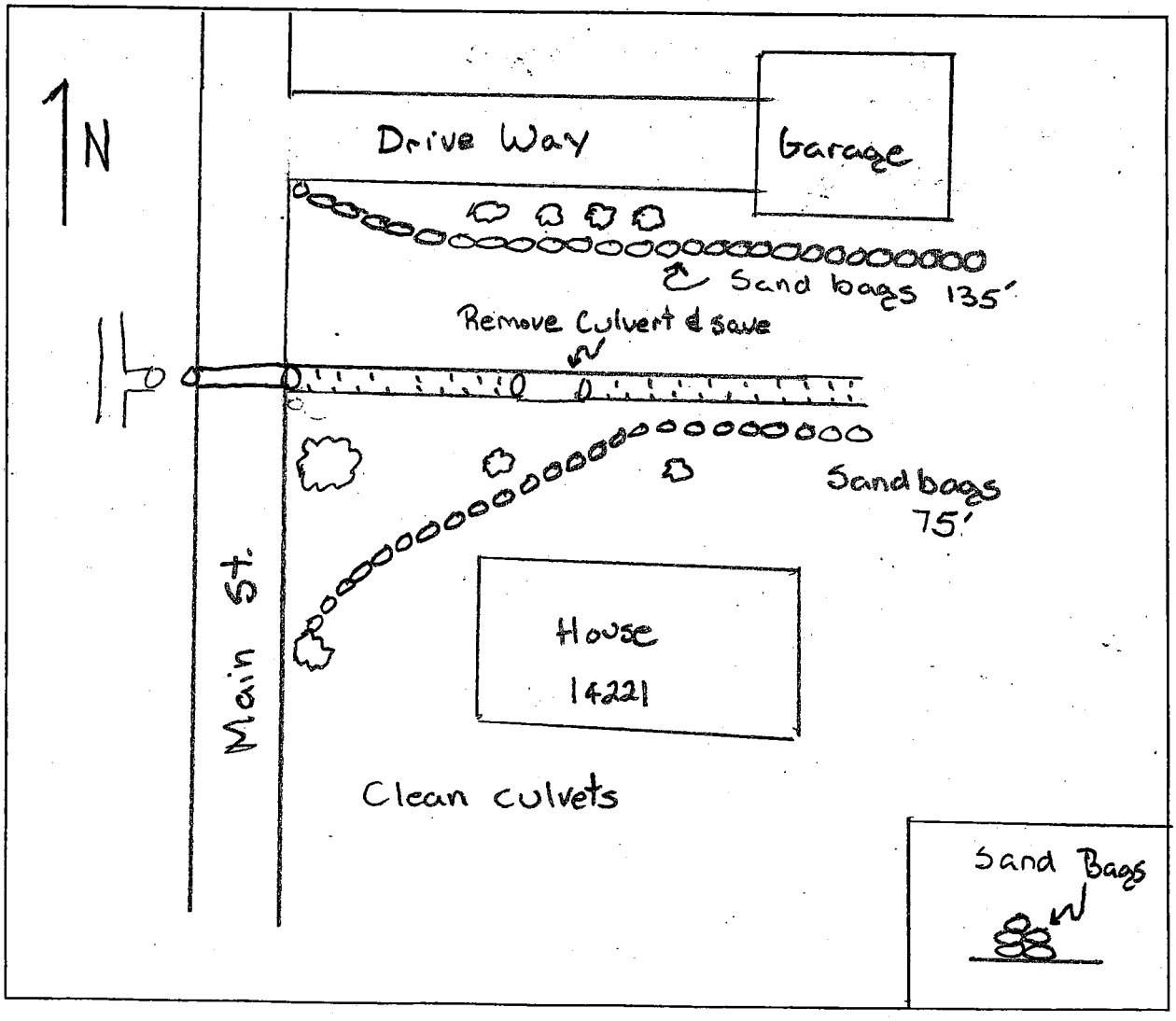
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 14221 Main St.

DESCRIPTION: Install 205' sand bags. Remove culvert & clean all ditchs and culverts.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-59

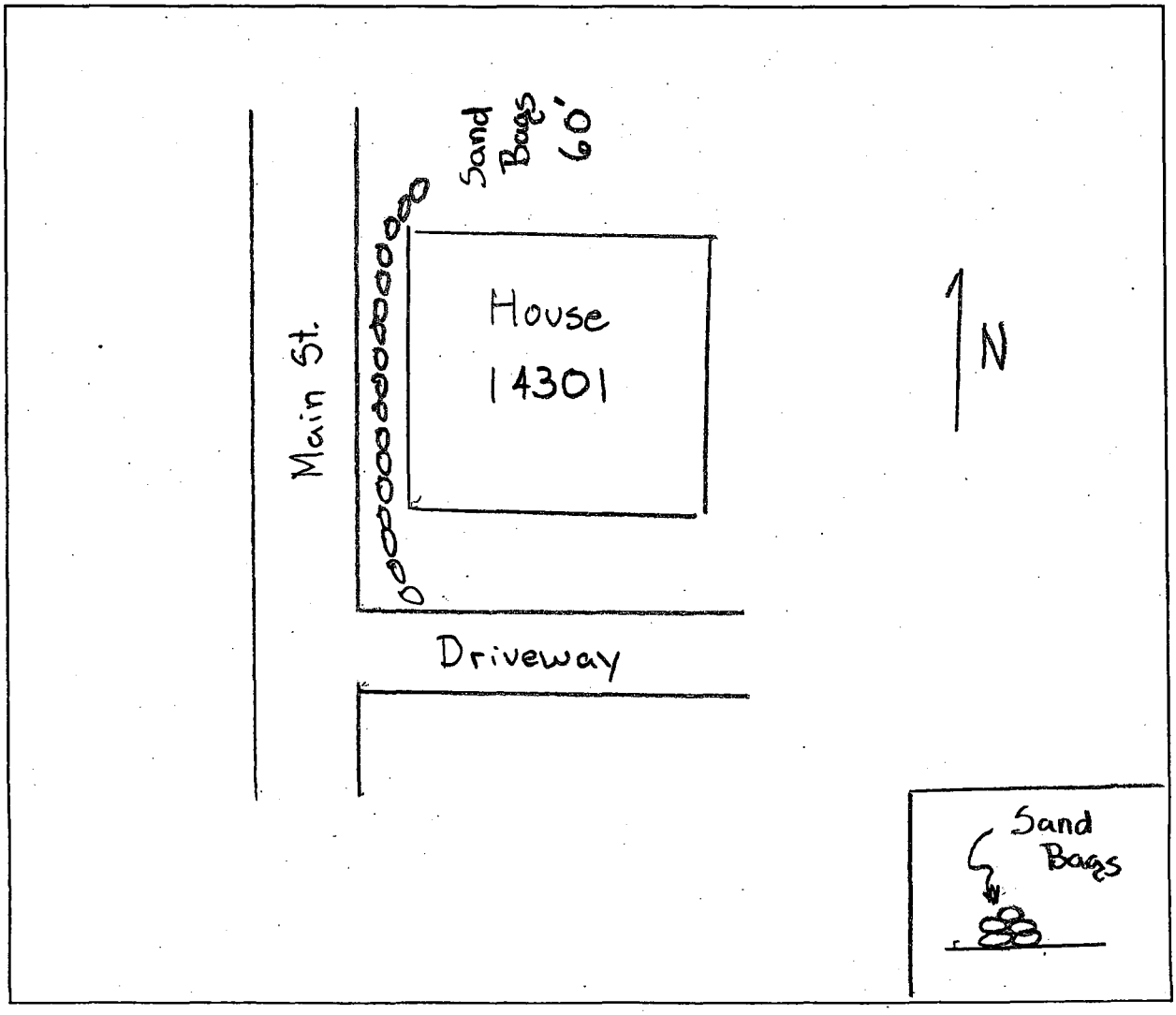
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 14301 Main St.

DESCRIPTION: Install 60' of sand bags in front of house.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-45

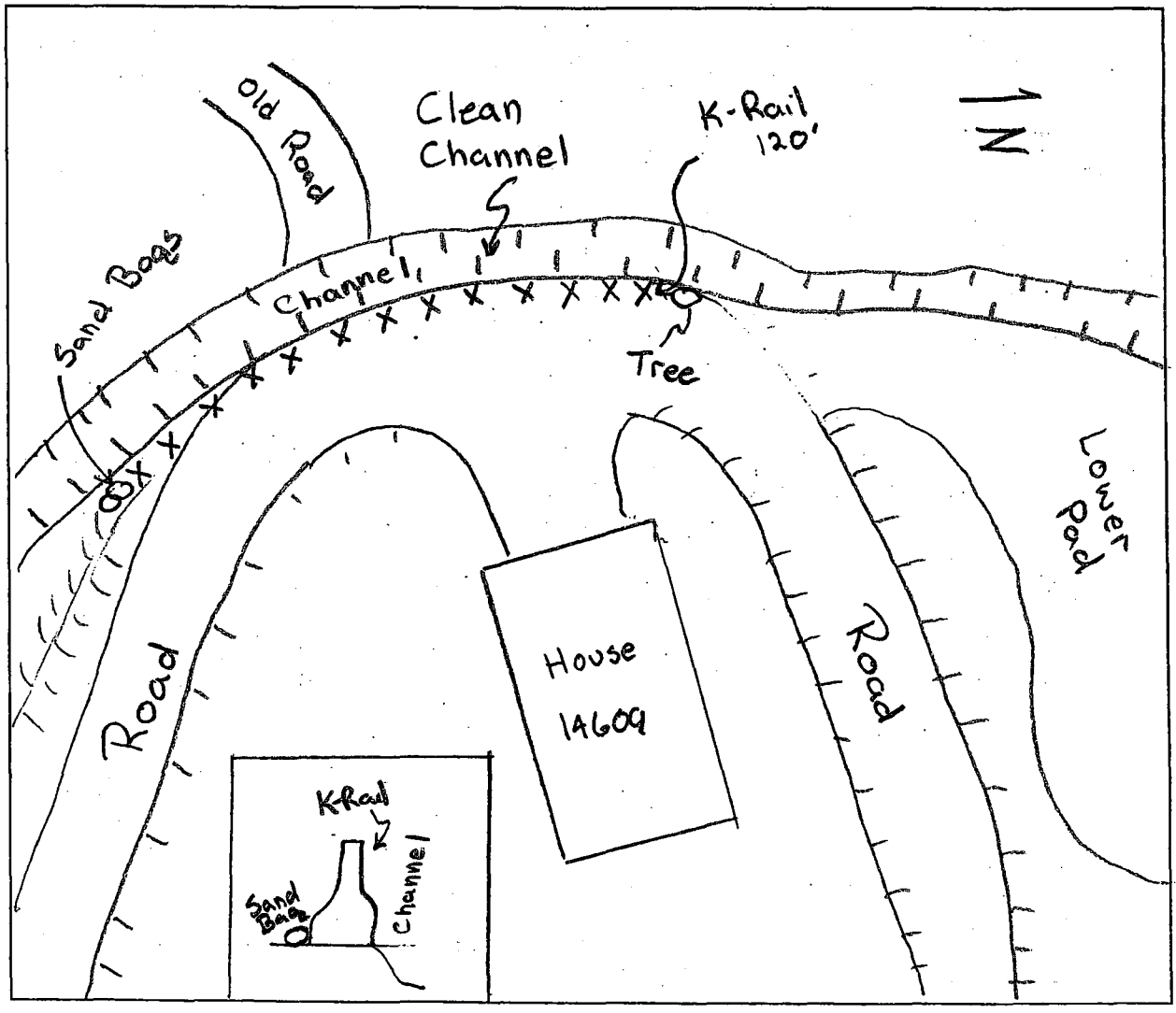
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 14609 Trinity Mountain Road

DESCRIPTION: Install 120' of K-Rail to protect house from channel flow.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-40

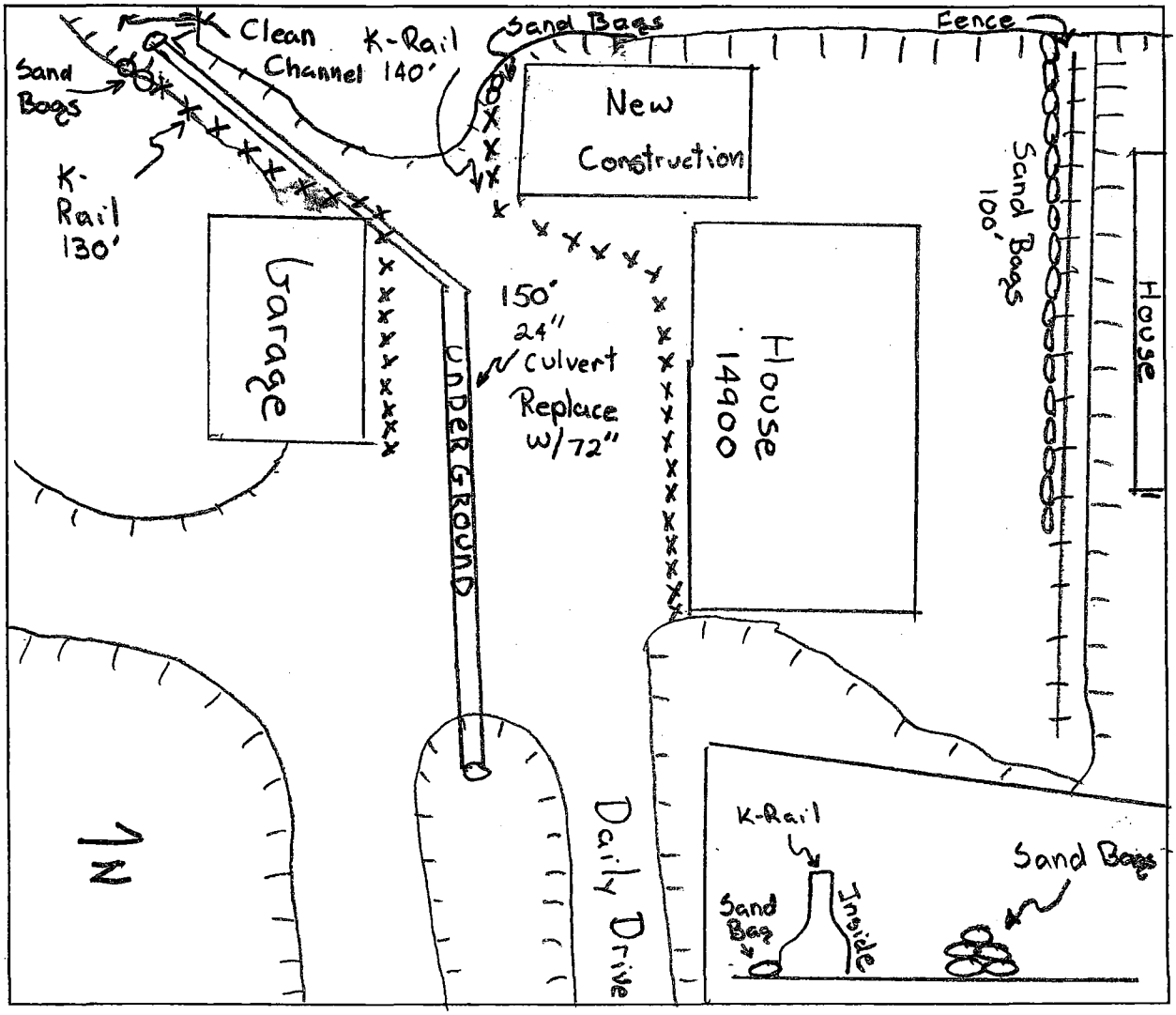
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 14900 Trinity Mountain Road

DESCRIPTION: Install K-Rail (270') and 100' Sand Bags. Replace 24" Culvert w/ 72" culvert (150'). Clean channel above property and remove small dam and culvert in channel.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-42

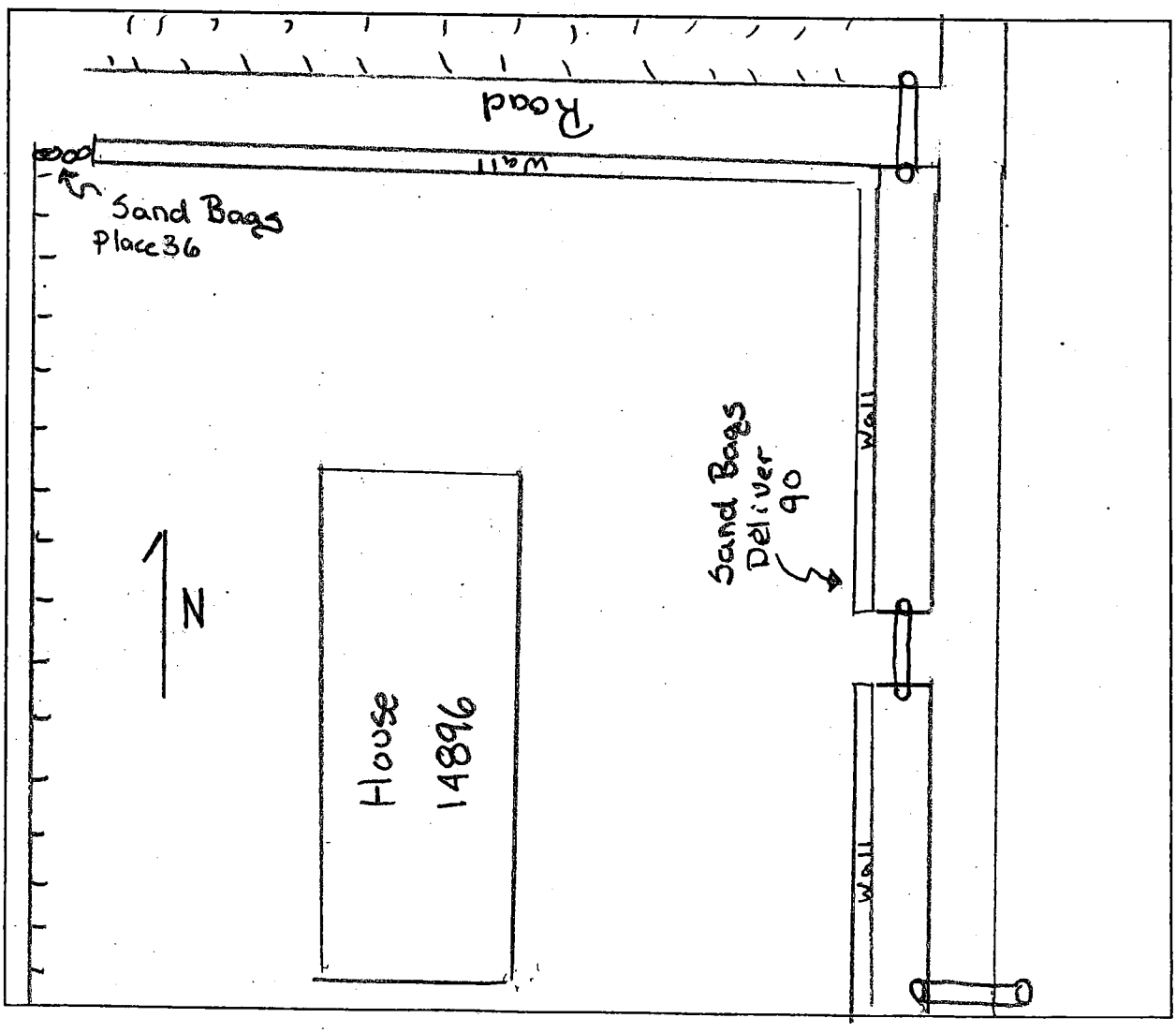
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 14896 Trinity Mountain Road

DESCRIPTION: Tie wall to embankment w/ 36 Sand Bags. Deliver 90 Sand Bags to front of Driveway for placement by owner.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

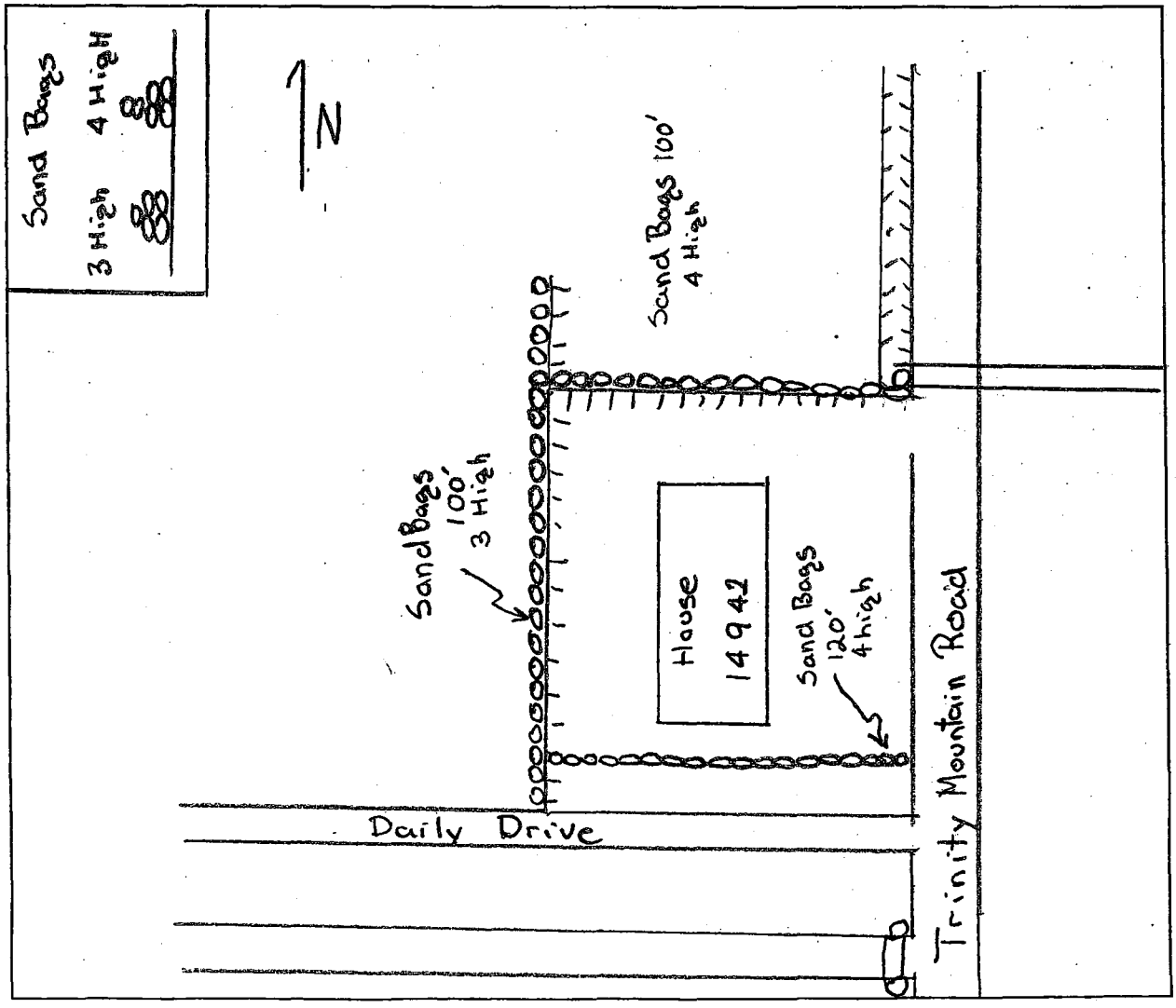
SITE NO. CC-36

PROPERTY OWNER: [redacted]

PHYSICAL ADDRESS: 14942

DESCRIPTION: Install 320' of K-Rail. Clean culverts and increase capicity of inboard ditches.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-35

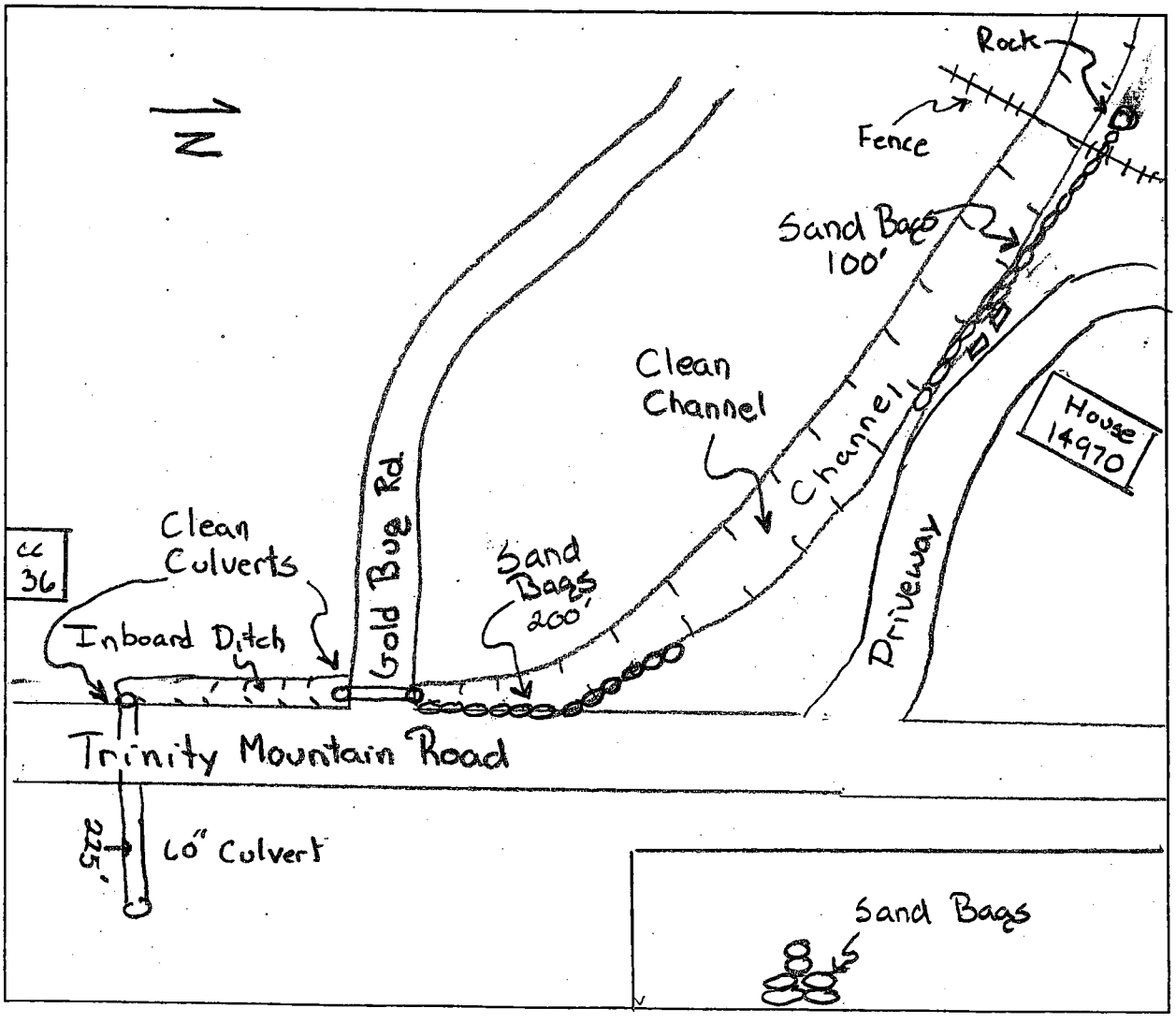
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 14970 Trinity Mountain Road

DESCRIPTION: Install 300' of Sand bags. Clean channel and remove fencing across channel. Clean all culverts and increase capicity of inboard ditch and clean all vegetation from culvert ends.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

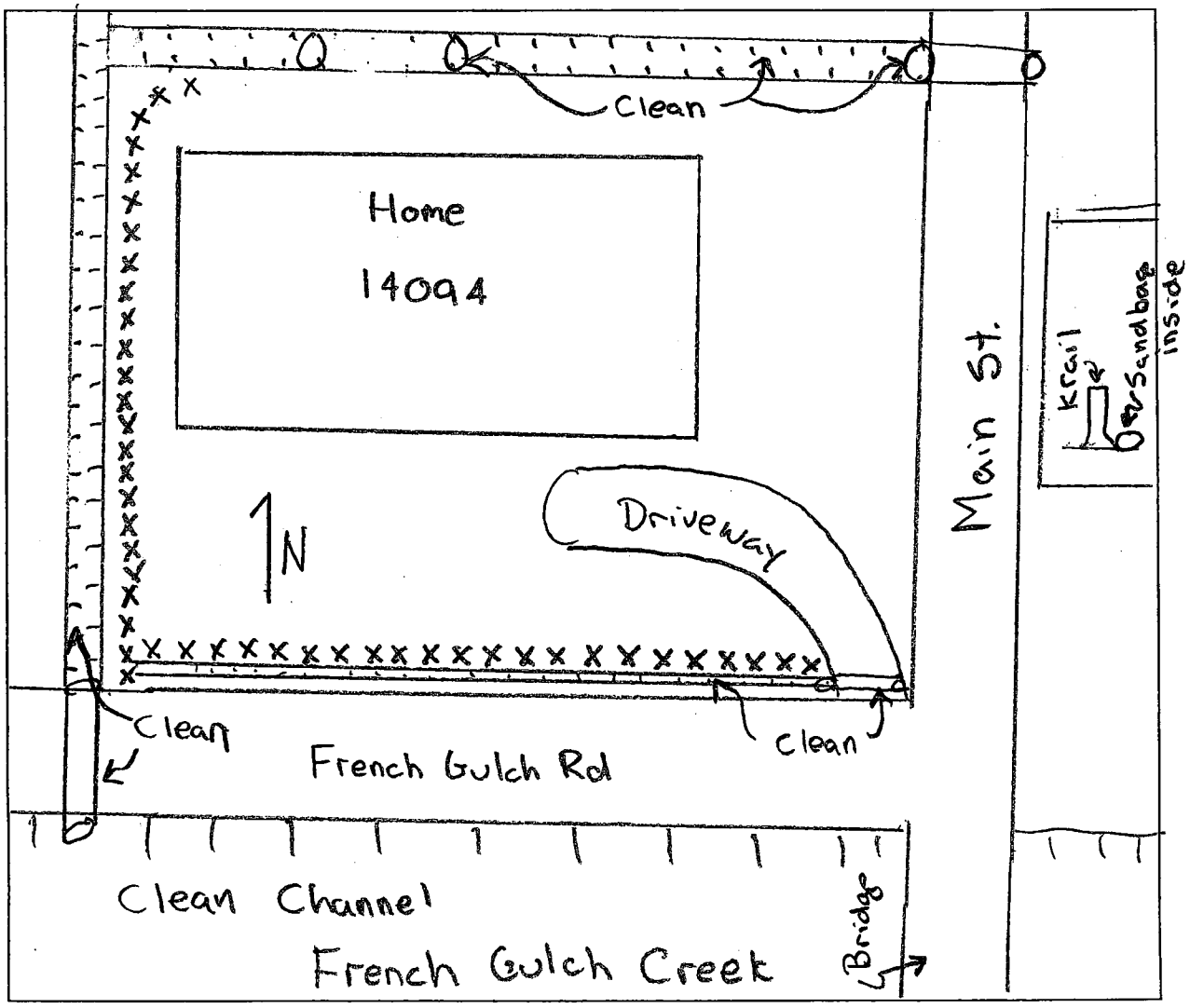
SITE NO. CC-33

PROPERTY OWNER: [redacted]

PHYSICAL ADDRESS: 14094 Main St.

DESCRIPTION: Install 250' K-Rail. Clean all culverts and ditches

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-14
CC-15

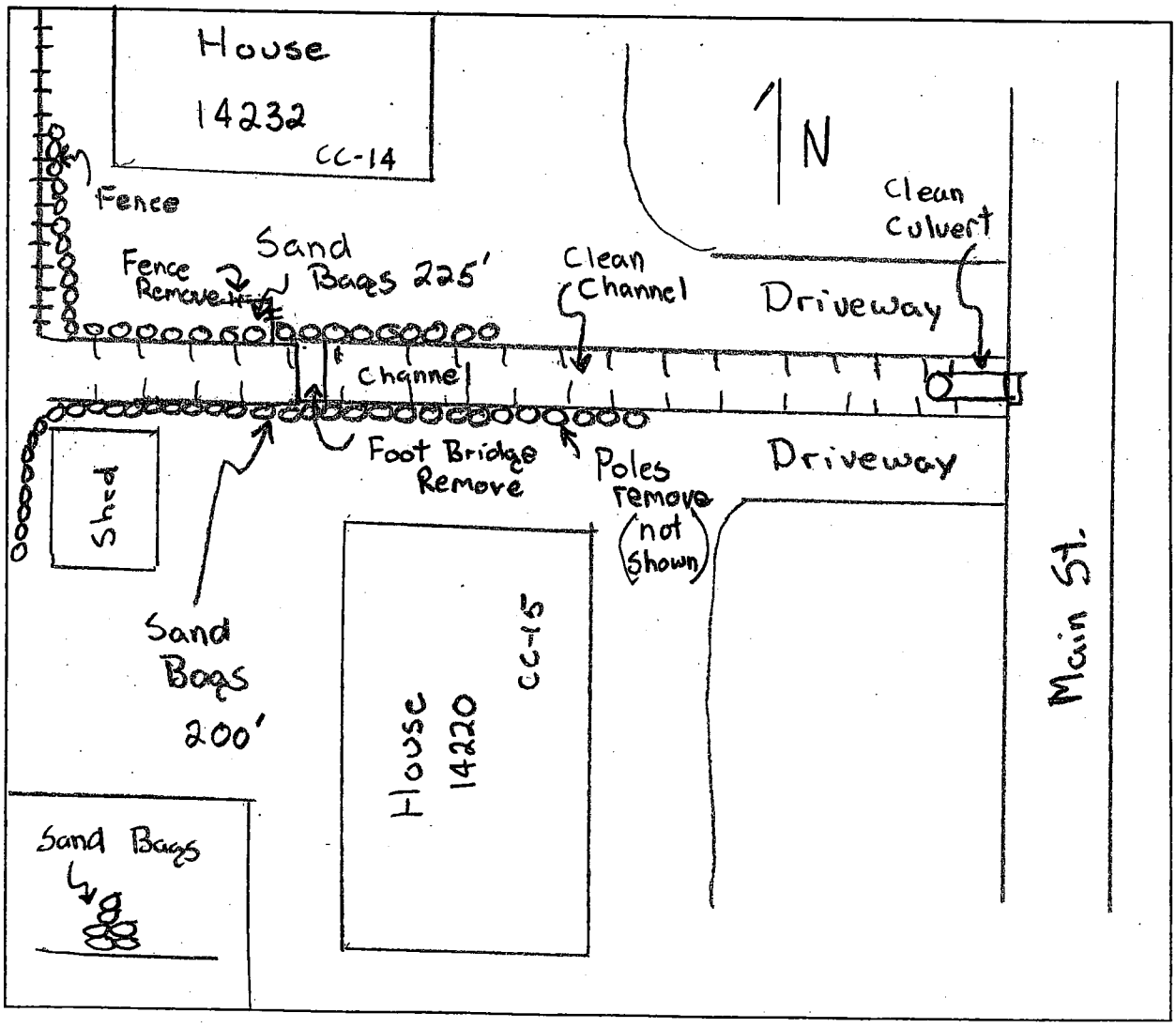
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: 14232 (Renter) & 14220 (Wagers) Main St.

DESCRIPTION: Install 425' of Sand Bags. Clean channel of debris & vegetation. Remove fence and foot bridge. Relocate pole for sand bag placement

DIAGRAM:



SPECIFICATION DIAGRAM FORM

SITE NO. CC-07
CC-06

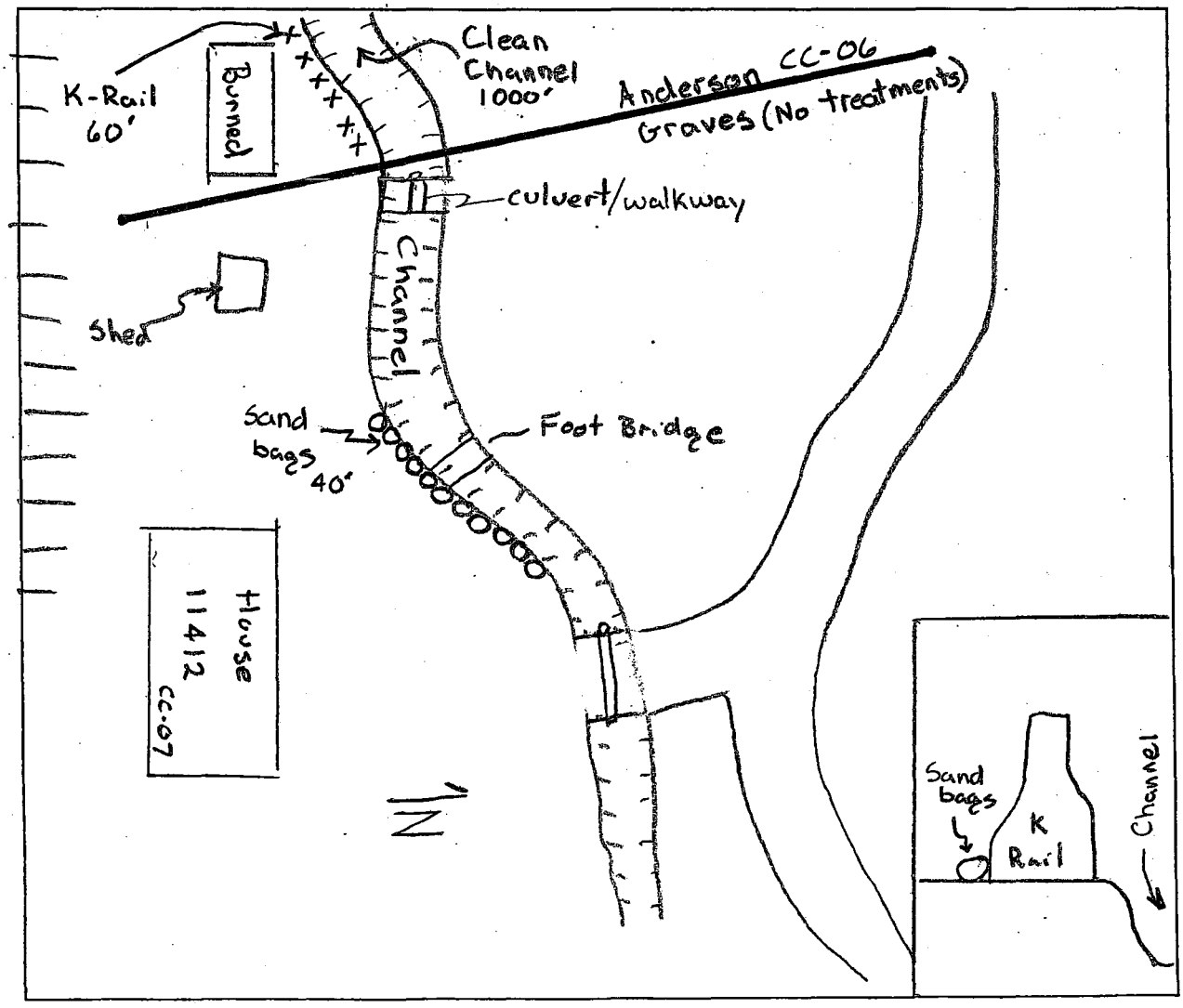
PROPERTY OWNER:

[redacted]

PHYSICAL ADDRESS: Graves 11412 Niagara/Anderson ? Niagara

DESCRIPTION: Only install K-Rail and clean channel 1000' on Anderson property. Graves has denied treatment on property.

DIAGRAM:



SPECIFICATION DIAGRAM FORM

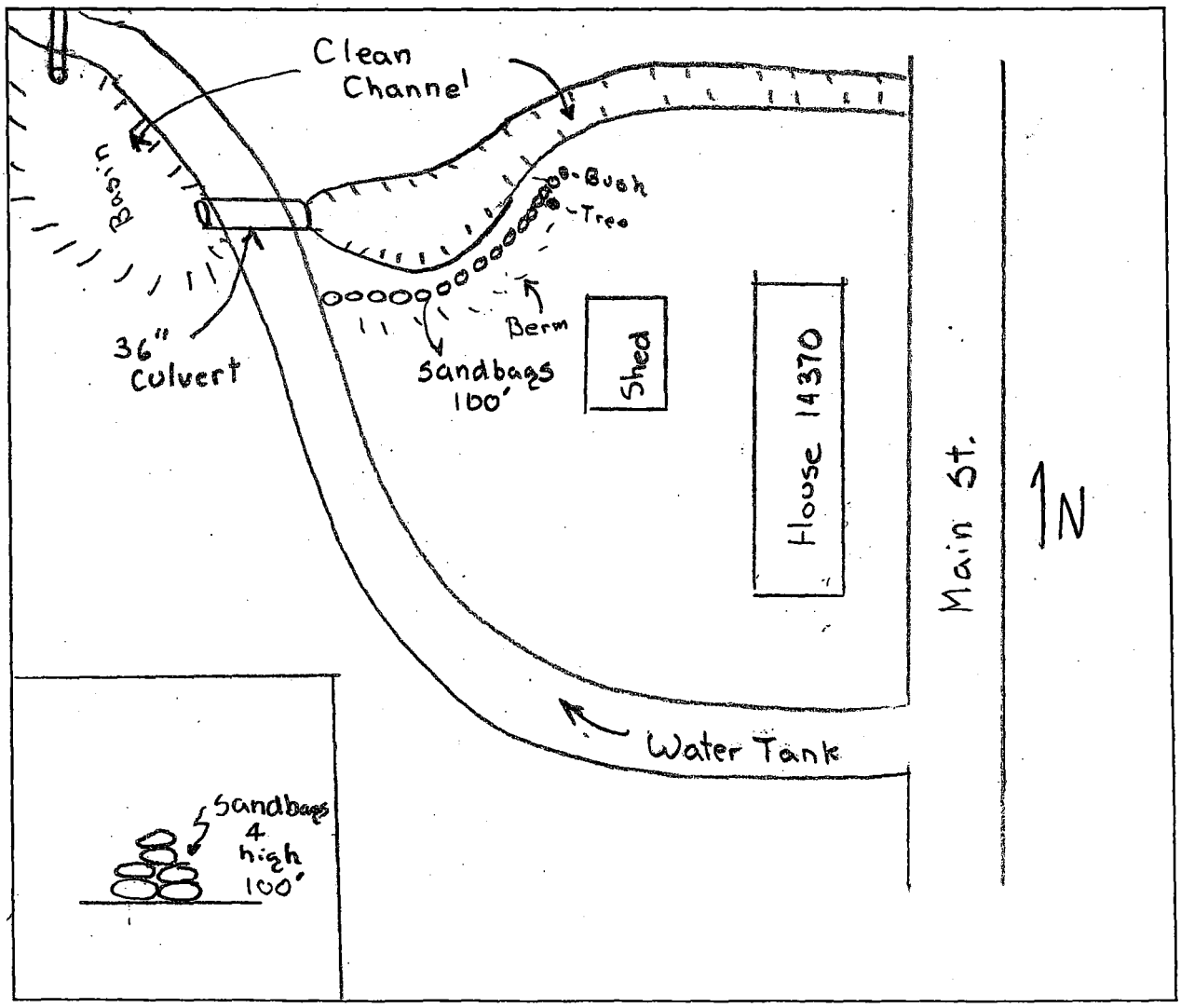
SITE NO. CC-01

PROPERTY OWNER: [redacted]

PHYSICAL ADDRESS: 14370 Main St.

DESCRIPTION: Over-topping of channel threatens shed and home. Install sandbags and clean channel. Clean in-board ditch and culverts along watertank road.

DIAGRAM:



FRENCH FIRE
Cost/Risk Analysis – Watershed Treatments

Part 1. Treatment Cost

Treatments	Cost
Ditch Cleaning	$150,280
Culvert Evaluation/ Cleaning/ Removal/ Replace/ Install	$57,400
Post-Flood Event Road Clean-up	$60,000
Flood Hazard Warning Signs	$1,174
Structural Protection – K-rails	$41,105
Structural Protection - Sandbags	$59,680
Floatable Debris Removal	$145,200
Early Warning System	$40,000
Total	**$554,839.00**

Part 2. Probability of Rehabilitation Treatments Successfully Meeting ESR Objectives

Treatments	Units	%
Ditch Cleaning	5 storms	85
Culvert Evaluation/ Cleaning/ Removal/ Replace/ Install	25 miles	90
Post-Flood Event Road Clean-up	25 miles	90
Flood Hazard Warning Signs	8 signs	95
Structural Protection – K-rails	51 K-Rails	85
Structural Protection - Sandbags	18,000 sandbags	85
Floatable Debris Removal	10,560 feet	85
Early Warning System	1 station	95

Risk of Resource Value Loss or Damage

No Action: Treatment Not Implemented (check one)

Resource Value	None	Low	Mid	High
Lives				X
Residential & Commercial Property				X
Water Quality & Soil Productivity			X	
Cultural Resources			X	
Roads				X

Proposed Action: Treatments Successfully Implemented (check one)

Resource Value	None	Low	Mid	High
Lives		X		
Residential & Commercial Property			X	
Water Quality & Soil Productivity			X	

Cultural Resources		X		
Roads			X	

PART 3. SUMMARY

1. Are the risks to natural resources and private property acceptable as a result of the fire if the following actions are taken?

Proposed Action Yes [x] No [ ] Rational for answer:

Ditch Cleaning allows for the removal of obstructions that could block culverts or divert flow out of the channel effecting unforeseen lives and property.

Culvert Evaluation/ Cleaning/ Removal/ Replace/ Install will remove obstructions that could block culverts or divert flow out of the channel. Removal and replacement will accomplish the resizing of culverts to facilitate the expected post-fire increased flow that is likely to occur. The completion of this task will reduce flood events affecting unforeseen lives and property.

Post-Flood Event Road Clean-up will clear roadways following flood events to permit normal community access and travel and facilitate the timely access of to populated areas by emergency vehicular traffic.

Flood Hazard Warning Signs. These signs are necessary to warn the public of the high risk of flooding across roadways that have been identified within and downstream from the burned area.

Structural Protection – K-rails will help protect at-risk structures that have been identified in the French Gulch community from major flood flows. This protection will assist in preventing the loss of lives and property damage.

Structural Protection – Sandbags will help protect at-risk structures that have been identified in the French Gulch community. This protection will assist in preventing the lost of lives and property damage.

Floatable Debris Removal will remove floatable debris from portions of flood prone channels. The completion of this task will eliminate obstructions that could block culverts or divert flow out of the channel effecting unforeseen lives and property.

Early Warning System will warn the public in the French Gulch community to prepare for eminent flooding to occur within their community from the burned area. This system will help prevent the loss of lives and property damage.

No Action Yes [ ] No [x] Rational for answer:

No Ditch Cleaning would likely result in accumulation of obstructions that could block culverts or divert flow out of the channel effecting unforeseen lives and property.

No Culvert Evaluation/ Cleaning/ Removal/ Replace/ Install would likely result in obstructions that could block culverts or divert flow out of the channel. No removal and replacement or resizing of culverts would likely result in expected post-fire increased flow that would overtop stream crossings with each storm event, affecting unforeseen lives and property.

No Post-Flood Event Road Clean-up would likely result in obstructions that block roadways following flood events, halting normal community access and travel and impending the timely access of to populated areas by emergency vehicular traffic.

No Flood Hazard Warning Signs. No signs would warn the public of the high risk of flooding across roadways, resulting in risk to lives following flood events.

No Structural Protection – K-rails would protect at-risk structures that have been identified in the French Gulch community from major flood flows. No protection would place unforeseen lives and property at high risk of loss or damage.

No Structural Protection – Sandbags would protect at-risk structures that have been identified in the French Gulch community. No protection would place unforeseen lives and property at high risk of loss or damage.

No Floatable Debris Removal would likely result in floatable debris that creates obstructions that could block culverts or divert flow out of the channel, effecting unforeseen lives and property.

No Early Warning System would warn the public in the French Gulch community to prepare for eminent flooding to occur within their community from the burned area. No early warning would jeopardize lives and property.

Alternative(s) Yes [ ] No [X] Rationale for answer:

None proposed. The assessment team discussed many alternatives, but the proposed alternative was deemed to be the most favorable action by the assessment team and agency resource advisors.

2. **Is the probability of success of the proposed action, alternatives or no action acceptable given their costs?**

Proposed Action Yes [x] No [ ] Rational for answer:

Ditch Cleaning will provide flow and storage capacity to manage flood flows and sediment. Cost of treatment to provide protection of life and property is acceptable.

Culvert Evaluation/ Cleaning/ Removal/ Replace/ Install will remove obstructions, ensuring that channels can handle capable flow capacities. Removal and replacement will resize culverts to facilitate the expected post-fire increased flow that is likely to occur. Cost of treatment to provide protection of life and property is acceptable.

Post-Flood Event Road Clean-up will clear roadways following flood events to permit normal community access and travel. Cost of treatment to provide protection of life and property is acceptable.

Flood Hazard Warning Signs. These signs will warn the public of the high risk of flooding across roadways during and after storm events. Cost of treatment to provide protection of life and property is acceptable.

Structural Protection – K-rails will help protect at-risk structures that from major flood and debris flows. Cost of treatment to provide protection of life and property is acceptable.

Structural Protection – Sandbags will help protect at-risk structures that from major flood flows. Cost of treatment to provide protection of life and property is acceptable.

Floatable Debris Removal will remove floatable debris from portions of flood prone channels. Cost of treatment to provide protection of life and property is acceptable.

Early Warning System will warn the public in the French Gulch community to prepare for eminent flooding to occur within their community whenever pre-determined rainfall quantities occur on relevant watersheds within the burned area. This system will help prevent the loss of lives and property damage.

No Action

Yes [ ] No [x] Rational for answer:

Ditch Cleaning. No Action will allow stream channels to fill up with sediment and debris.

Culvert Evaluation/ Cleaning/ Removal/ Replace/ Install. No Action will threaten the stream crossings.

Post-Flood Event Road Clean-up No Action to clear roadways following flood events will impede normal community access and travel.

Flood Hazard Warning Signs. No Action will not inform the public of potential flooding across major roadways.

Structural Protection – K-rails. No Action will expose properties at-risk to flood damage and possible loss of life.

Structural Protection –Sandbags. No Action will expose properties at-risk to flood damage and possible loss of life.

Floatable Debris Removal. No Action will create conditions that will cause debris to block culverts and divert flood flows outside of the normal channel increasing threats to life and property.

Early Warning System. No Action would warn the public in the French Gulch community to prepare for eminent flooding to occur within their community when significant rain events are recorded within the burned area watersheds.

Alternative(s) Yes [ ] No [X] Rationale for answer: **None proposed**

3. **Which approach will most cost-effectively and successfully attain the Emergency Stabilization and Rehabilitation objectives and therefore is recommended for implementation from a Cost/Risk Analysis standpoint?**

Proposed Action Yes [x] No [ ] Rational for answer:

The **Ditch Cleaning, Culvert Evaluation/ Cleaning/ Removal/ Replace/ Install, Post-Flood Event Road Clean-up, Flood Hazard Warning Signs, Structural Protection – K-rails, Structural Protection – Sandbags, Culvert Cleaning and Debris Removal from Channels, Structural Protection – K-rails, Floatable Debris Removal and Early Warning System** are treatments identified in Part F, Specifications that will meet the issues and objectives identified by the Bureau of Land Management, National Park Service and the Interagency Burned Area Emergency Stabilization and Rehabilitation policy and program.

FRENCH FIRE
Cost/Risk Analysis – Cultural Treatments

PART 1. TREATMENT COST

Treatments	Cost
Cultural Resource Stabilization (Suppression)	$19,880
Cultural Resource Emergency Stabilization	$930
Increase Agency Presence	$30,000
Finish Cultural Resource Assessment	$17,002
Native American Consultation	$500
Total	**$68,312.00**

PART 2. PROBABILITY OF REHABILITATION TREATMENTS SUCCESSFULLY MEETING ESR OBJECTIVES

Treatments	Units	%
Cultural Resource Stabilization (Suppression)	1 Site	80
Cultural Resource Emergency Stabilization	2 Sites	75
Increase Agency Presence	7810 Acres	75
Finish Cultural Resource Assessment	250 Acres	90
Native American Consultation	1 Site	95

Risk of Resource Value Loss or Damage

No Action: Treatment Not Implemented (check one)

Resource Value	None	Low	Medium	High
Lives	X			
Residential & Commercial Property	X			
Recreation	X			
Wildlife Habitat	X			
Cultural Resources				X

Proposed Action: Treatments Successfully Implemented (check one)

Resource Value	None	Low	Medium	High
Lives	X			
Residential & Commercial Property	X			
Recreation	X			
Wildlife Habitat	X			
Cultural Resources		X		

PART 3. SUMMARY

1. **Are the risks to cultural resources and private property acceptable as a result of the fire if the following actions are taken?**

Proposed Action Yes [x] No [ ] Rational for answer:

Cultural Resource Stabilization (Suppression) is necessary to mitigate suppression impacts to significant cultural resources where possible and to stabilize the sites to ensure that they are not further damaged or lost. ***The actions to be performed under this specification are funded by the fire suppression account and will not be further discussed in this analysis.***

Cultural Resource Emergency Stabilization is necessary to ensure that significant cultural resources are not damaged or lost due to flood, and mudflows anticipated from the French Fire burned area.

Increase Agency Presence is necessary to reduce the risk of looting to in areas where significant cultural resources have been exposed as the result of the French Fire.

Finish Cultural Resource Assessment is necessary to evaluate whether or not significant cultural resources in fire areas not surveyed by BAER Team archeologists are at risk of damage or lost due to flood and mudflows anticipated from the French Fire burned area. It is also necessary to identify whether or not significant cultural resources have been damaged by suppression actions in fire areas not surveyed by BAER Team archeologists.

Native American Consultation is necessary to ensure that BAER plan emergency stabilization practices comply with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act.

No Action Yes [ ] No [x] Rational for answer:

No Cultural Resource Emergency Stabilization treatments would occur to ensure that significant cultural resources are not damaged or lost due to flood and mudflows anticipated from the French Fire burned area.

No Increased Agency Presence would occur. Significant cultural resources would be at high risk to damage and looting for at least one year, until sufficient vegetation is established to obscure the presence of these sites.

No Finish Cultural Resource Assessment would occur to identify and stabilize sites in un-surveyed portions of the fire. Unknown significant cultural resources would be at risk of permanent damage or loss due to flood and mudflows anticipated from the French Fire burned area.

No Native American Consultation would occur to ensure that BAER plan emergency stabilization practices comply with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act. All emergency stabilization actions would not be in legal compliance with these acts.

Alternative(s) Yes [ ] No [ ] Rationale for answer:

None proposed. The assessment team discussed many alternatives, but the proposed alternative was deemed to be the most favorable action by the assessment team and agency resource advisors.

2. **Is the probability of success of the proposed action, alternatives or no action acceptable given their cost?**

Proposed Action Yes [x] No [ ] Rational for answer:

Cultural Resource Emergency Stabilization practices are likely to result in successful stabilization of significant cultural resources such that they are not damaged or lost due to flood and mudflows. Treatment specifications are standard and have been historically demonstrated to be successful. Cost of treatment to provide protection of irreplaceable significant cultural resources is acceptable.

Increase Agency Presence is likely to reduce the risk of looting to an acceptable level in areas where significant cultural resources have been exposed as the result of the French Fire. Cost of treatment to provide protection of irreplaceable significant cultural resources is acceptable.

Finish Cultural Resource Assessment is a reasonable approach to evaluate whether or not significant cultural resources in fire areas not surveyed by BAER Team archeologists are at risk of damage or lost due to flood and mudflows anticipated from the French Fire burned area. It is also necessary to identify whether or not significant cultural resources have been damaged by suppression actions in fire areas not surveyed by BAER Team archeologists. Cost of treatment to provide protection of irreplaceable significant cultural resources is acceptable.

Native American Consultation is required to ensure that BAER plan emergency stabilization practices comply with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act. Cost of compliance with legal mandates is acceptable, and a normal component of federal lands management.

No Action Yes [ ] No [x] Rational for answer:

No Cultural Resource Emergency Stabilization, no Increase Agency Presence, no Finish Cultural Resource Assessment, or Native American Consultation would most likely result in loss or damage of irreplaceable significant cultural resources, and lack of legal compliance of BAER plan emergency stabilization practices with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act .

Alternative(s): Yes [ ]No [X] Rationale for answer: **None proposed**

3. **Which approach will most cost-effectively and successfully attain the Emergency Stabilization and Rehabilitation objectives and therefore is recommended for implementation from a Cost/Risk Analysis standpoint?**

Proposed Action Yes [x] No [ ] Rationale for answer:

The **Cultural Resource Emergency Stabilization, no Increase Agency Presence, no Finish Cultural Resource Assessment, or Native American Consultation** are treatments identified in Part F, Specifications that will meet the issues and objectives identified by the Bureau of Land Management, National Park Service and the Interagency Burned Area Emergency Stabilization and Rehabilitation policy and program.

FRENCH FIRE
Cost/Risk Analysis – Vegetation Treatments

PART 1. TREATMENT COST

Treatments	Cost
Revegetation	$546,203
Non-Native Invasive Species Control	$85,592
Vegetation Monitoring	$19,792
Total	**$651,587.00**

PART 2. PROBABILITY OF REHABILITATION TREATMENTS SUCCESSFULLY MEETING ESR OBJECTIVES

Treatments	Units	%
Revegetation	2,438 Acres	80
Non-Native Invasive Species Control	512 Acres	75
Vegetation Monitoring	7,562, Acres	95

Risk of Resource Value Loss or Damage

No Action: Treatment Not Implemented (check one)

Resource Value	None	Low	Medium	High
Lives			X	
Residential & Commercial Property				X
Recreation			X	
Wildlife Habitat			X	
Cultural Resources				X

Proposed Action: Treatments Successfully Implemented (check one)

Resource Value	None	Low	Medium	High
Lives	X	X		
Residential & Commercial Property		X		
Recreation		X		

Wildlife Habitat		X		
Cultural Resources		X		

PART 3. SUMMARY

4. Are the risks to natural and cultural resources and private property acceptable as a result of the fire if the following actions are taken?

Proposed Action Yes [x] No [ ] Rational for answer:

Revegetation will allow for quick development of a root mass to stabilize the soils and reduce the potential for erosion and flooding. A fall application will increase probability of successful revegetation of the burned area with native vegetation.

Non-native Invasive Species Control will protect the revegetation seeding treatment as well as the suppression rehabilitation treatments from trampling. In addition, grazing will be suspended until the vegetation conditions improve.

Vegetation Monitoring is necessary to ensure the seeding success and to monitor for invasion of non-native plants.

No Action Yes [ ] No [x] Rational for answer:

No Revegetation treatments would occur to rapidly reestablish ground vegetation and reduce soil erosion and the invasion of non-native plant species.

No Non-native Invasive Species Control would occur. Existing populations will rapidly increase and colonize burned areas, jeopardizing the revegetation of native plant communities.

No Vegetation Monitoring would occur to document success or failure of the seeding treatments and to monitor for invasive species establishment.

Alternative(s) Yes [ ] No [ ] Rationale for answer:

None proposed. The assessment team discussed many alternatives, but the proposed alternative was deemed to be the most favorable action by the assessment team and agency resource advisors.

5. Is the probability of success of the proposed action, alternatives or no action acceptable given their cost?

Proposed Action Yes [x] No [ ] Rational for answer:

Revegetation will provide ground cover to reduce soil loss and loss of site productivity. Treatment specifications are standard for the local area, and have been historically demonstrated to be successful. Cost of treatment to provide protection of life, property and site productivity is acceptable.

Non-native Invasive Species Control will protect the revegetation seeding treatment as well as natural recovery of native plant communities. Treatment specifications are standard for the local area, and have been historically demonstrated to be successful. Cost of treatment to provide protection of site productivity is acceptable.

Vegetation Monitoring will be conducted by standard sampling systems and analyzed by accepted statistical techniques to determine achievement of project objectives. Cost of monitoring to ensure treatment success is acceptable.

No Action Yes [ ] No [x] Rational for answer:

Revegetation. While No Action will not cost anything, it is probable that the specified sites will not revegetate naturally to a desirable plant community to achieve stabilization objectives.

Non-native Invasive Species Control. No Action will result in replacement of native plant communities with undesirable invasive plants, throughout large areas of the burn. This will also create a seed source for potential non-native plant invasion to occur on sites outside of the burn area.

Vegetation Monitoring. No action will not provide managers with information necessary to develop sound vegetation treatment decisions.

Alternative(s): Yes [ ]No [X] Rationale for answer: **None Proposed**

6. Which approach will most cost-effectively and successfully attain the Emergency Stabilization and Rehabilitation objectives and therefore is recommended for implementation from a Cost/Risk Analysis standpoint?

Proposed Action Yes [x] No [ ] Rationale for answer:

The **Revegetation, Non-native Invasive Species Control, and Vegetation Monitoring** are treatments identified in Part F, Specifications that will meet the issues and objectives identified by the Bureau of Land Management, National Park Service and the Interagency Burned Area Emergency Stabilization and Rehabilitation policy and program.

FRENCH FIRE
Cost/Risk Analysis – Forestry Treatments

PART 1. TREATMENT COST

Treatments	Cost
Imminent Tree Hazard Identification & Mitigation	$26,057
Long-Term Tree Hazard Identification & Mitigation	$11,382
Total	**$37,439.00**

PART 2. PROBABILITY OF REHABILITATION TREATMENTS SUCCESSFULLY MEETING ESR OBJECTIVES

Treatments	Units	%
Imminent Tree Hazard Identification & Mitigation	72 trees	100%
Long-Term Tree Hazard Identification & Mitigation	15 trees	90%

Risk of Resource Value Loss or Damage

No Action: Treatment Not Implemented (check one)

Resource Value	None	Low	Medium	High
Lives				X
Residential & Commercial Property			X	
Recreation	X			
Wildlife Habitat	X			
Cultural Resources			X	

Proposed Action: Treatments Successfully Implemented (check one)

Resource Value	None	Low	Medium	High
Lives	X			
Residential & Commercial Property	X			
Recreation	X			
Wildlife Habitat	X			
Cultural Resources		X		
Imminent Tree Hazards	X			
Long Term Tree Hazards		X		

PART 3. SUMMARY

7. Are the risks to cultural resources and private property acceptable as a result of the fire if the following actions are taken?

Proposed Action Yes [x] No [ ] Rational for answer:

Imminent Tree Hazard Identification & Mitigation is necessary to remove immediate treats of fire damaged trees that pose an immediate risk of falling on structures or roads. These trees are high threats to human health, property and public safety.

Long-Term Tree Hazard Identification & Mitigation is necessary to remove long-term treats of fire damaged trees that pose a potential risk of falling on structures or roads. These trees are potential threats to human health, property and public safety.

No Action Yes [ ] No [x] Rational for answer:

No Imminent Tree Hazard Identification & Mitigation treatments would occur to remove immediate treats of fire damaged trees that pose an immediate risk of falling on structures or roads. Retention of these trees constitutes high threats to human health, property and public safety.

No Long-Term Tree Hazard Identification & Mitigation treatments would occur to remove long-term treats of fire damaged trees that pose an immediate risk of falling on structures or roads. Retention of these trees constitutes threats to human health, property and public safety.

Alternative(s) Yes [ ] No [ ] Rationale for answer:

None proposed.

8. Is the probability of success of the proposed action, alternatives or no action acceptable given their cost?

Proposed Action Yes [x] No [ ] Rational for answer:

Imminent Tree Hazard Identification & Mitigation: The probability of success is high with a low cost therefore the action is acceptable.

Long-Term Tree Hazard Identification & Mitigation: The probability of success is high with a low cost therefore the action is acceptable.

No Action Yes [ ] No [x] Rational for answer:

No action would not generate any costs, but it would jeopardize public health and safety.

Alternative(s): Yes [ ]No [X] Rationale for answer: **None proposed.**

9. **Which approach will most cost-effectively and successfully attain the Emergency Stabilization and Rehabilitation objectives and therefore is recommended for implementation from a Cost/Risk Analysis standpoint?**

Proposed Action Yes [x] No [ ] Rationale for answer:

Identifying and felling imminent and long-term tree hazards is the most cost effective method to meet ESR objectives of ensuring the safety of the public and property.

FRENCH FIRE
Cost/Risk Analysis – Cultural Treatments

PART 1. TREATMENT COST

Treatments	Cost
Cultural Resource Stabilization (Suppression)	$19,880
Cultural Resource Emergency Stabilization	$930
Increase Agency Presence	$30,000
Finish Cultural Resource Assessment	$17,002
Native American Consultation	$500
Total	**$68,312.00**

PART 2. PROBABILITY OF REHABILITATION TREATMENTS SUCCESSFULLY MEETING ESR OBJECTIVES

Treatments	Units	%
Cultural Resource Stabilization (Suppression)	1 Site	80
Cultural Resource Emergency Stabilization	2 Sites	75
Increase Agency Presence	7810 Acres	75
Finish Cultural Resource Assessment	250 Acres	90
Native American Consultation	1 Site	95

Risk of Resource Value Loss or Damage

No Action: Treatment Not Implemented (check one)

Resource Value	None	Low	Medium	High
Lives	X			
Residential & Commercial Property	X			
Recreation	X			
Wildlife Habitat	X			
Cultural Resources				X

Proposed Action: Treatments Successfully Implemented (check one)

Resource Value	None	Low	Medium	High
Lives	X			
Residential & Commercial Property	X			
Recreation	X			
Wildlife Habitat	X			
Cultural Resources		X		

PART 3. SUMMARY

10. Are the risks to cultural resources and private property acceptable as a result of the fire if the following actions are taken?

Proposed Action Yes [x] No [ ] Rational for answer:

Cultural Resource Stabilization (Suppression) is necessary to mitigate suppression impacts to significant cultural resources where possible and to stabilize the sites to ensure that they are not further damaged or lost. ***The actions to be performed under this specification are funded by the fire suppression account and will not be further discussed in this analysis.***

Cultural Resource Emergency Stabilization is necessary to ensure that significant cultural resources are not damaged or lost due to flood, and mudflows anticipated from the French Fire burned area.

Increase Agency Presence is necessary to reduce the risk of looting to in areas where significant cultural resources have been exposed as the result of the French Fire.

Finish Cultural Resource Assessment is necessary to evaluate whether or not significant cultural resources in fire areas not surveyed by BAER Team archeologists are at risk of damage or lost due to flood and mudflows anticipated from the French Fire burned area. It is also necessary to identify whether or not significant cultural resources have been damaged by suppression actions in fire areas not surveyed by BAER Team archeologists.

Native American Consultation is necessary to ensure that BAER plan emergency stabilization practices comply with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act.

No Action Yes [ ] No [x] Rational for answer:

No Cultural Resource Emergency Stabilization treatments would occur to ensure that significant cultural resources are not damaged or lost due to flood and mudflows anticipated from the French Fire burned area.

No Increased Agency Presence would occur. Significant cultural resources would be at high risk to damage and looting for at least one year, until sufficient vegetation is established to obscure the presence of these sites.

No Finish Cultural Resource Assessment would occur to identify and stabilize sites in un-surveyed portions of the fire. Unknown significant cultural resources would be at risk of permanent damage or loss due to flood and mudflows anticipated from the French Fire burned area.

No Native American Consultation would occur to ensure that BAER plan emergency stabilization practices comply with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act. All emergency stabilization actions would not be in legal compliance with these acts.

Alternative(s) Yes [ ] No [ ] Rationale for answer:

None proposed. The assessment team discussed many alternatives, but the proposed alternative was deemed to be the most favorable action by the assessment team and agency resource advisors.

11. Is the probability of success of the proposed action, alternatives or no action acceptable given their cost?

Proposed Action Yes [x] No [ ] Rational for answer:

Cultural Resource Emergency Stabilization practices are likely to result in successful stabilization of significant cultural resources such that they are not damaged or lost due to flood and mudflows. Treatment specifications are standard and have been historically demonstrated to be successful. Cost of treatment to provide protection of irreplaceable significant cultural resources is acceptable.

Increase Agency Presence is likely to reduce the risk of looting to an acceptable level in areas where significant cultural resources have been exposed as the result of the French Fire. Cost of treatment to provide protection of irreplaceable significant cultural resources is acceptable.

Finish Cultural Resource Assessment is a reasonable approach to evaluate whether or not significant cultural resources in fire areas not surveyed by BAER Team archeologists are at risk of damage or lost due to flood and mudflows anticipated from the French Fire burned area. It is also necessary to identify whether or not significant cultural resources have been damaged by suppression actions in fire areas not surveyed by BAER Team archeologists. Cost of treatment

to provide protection of irreplaceable significant cultural resources is acceptable.

Native American Consultation is required to ensure that BAER plan emergency stabilization practices comply with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act. Cost of compliance with legal mandates is acceptable, and a normal component of federal lands management.

No Action Yes [ ] No [x] Rational for answer:

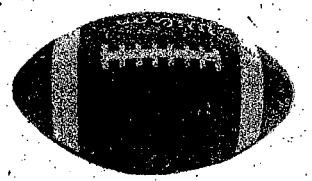
No Cultural Resource Emergency Stabilization, no Increase Agency Presence, no Finish Cultural Resource Assessment, or Native American Consultation would most likely result in loss or damage of irreplaceable significant cultural resources, and lack of legal compliance of BAER plan emergency stabilization practices with the National Historic Preservation Act, Executive Order 11593, and the Native American Graves Protection and Repatriation Act .

Alternative(s): Yes [ ]No [X] Rationale for answer: **None proposed**

12. Which approach will most cost-effectively and successfully attain the Emergency Stabilization and Rehabilitation objectives and therefore is recommended for implementation from a Cost/Risk Analysis standpoint?

Proposed Action Yes [x] No [ ] Rationale for answer:

The **Cultural Resource Emergency Stabilization, no Increase Agency Presence, no Finish Cultural Resource Assessment, or Native American Consultation** are treatments identified in Part F, Specifications that will meet the issues and objectives identified by the Bureau of Land Management, National Park Service and the Interagency Burned Area Emergency Stabilization and Rehabilitation policy and program.



HOUSEWARMING / *D-1*
Foothill High football squad's season includes opening of stadium on campus



PERSISTENT PLANT / *E-1*
It takes more than willpower to beat blackberry brambles

Record Searchlight

SATURDAY
August 28, 2004
Redding, California
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tate has most Vest Nile cases

California surpassed Ari-na on Friday as the state ith the most human cases of est Nile virus.
Tests have confirmed the vi-s in 343 people in Califor-a, an increase of nearly 38 rcent from a week earlier, e state Department of ealth Services reported.

BLM approves fire funds

At least $1.9 million earmarked for French Gulch restoration

By Janet O'Neill
Record Searchlight

The federal Bureau of Land Management promised Friday to spend at least $1.9 million to help heal the land scarred by the French Fire.

The announcement came at the French Gulch-Whiskeytown Elementary School after BLM Director Kathleen Clarke toured the scene of the 13,323-acre blaze that started Aug. 14 and destroyed 28 homes. Clarke touted the efforts of the multiagency Burned Area Emergency Response — or BAER — team, which was sent to French Gulch before the fire was contained.

"This team of scientists and natural resource experts did an excellent job of assessing the situation and designing projects that will help protect property and lives from potential flooding and landslides this winter," she said in a statement.

Jan Bedrosian, a public affairs specialist from BLM's Sacramento office, said it's likely even more help is on the way. Some of that money would come from a sister agency, the Natural Resources Conservation Service, she said.

The financial infusion announced today will jumpstart projects that include reseeding, removing hazardous trees, road repair, fisheries

See *BLM,* back of section

BLM: *Team of specialists plans to complete work before the rainy season*

Continued from A-1

protection and preservation of American Indian heritage sites, Bedrosian said.

"A lot of this work is going to be done by contractors," she said, noting crews were already on the job today.

More than half of the fire area is on public land, with 7,153 acres owned by the BLM and 409 by the National Park Service. The balance is private, including 866 acres in the hands of Sierra-Pacific Industries.

Federal funds can be spent on private lands if it will affect public land downstream, Bedrosian said.

"The money will not be (disbursed) according to jurisdiction but where it will do the most good," she said.

The BAER team, including geologists, hydrologists, soil scientists, archaeologists and other specialists from several federal departments, designed the emergency-stabilization plan. They have worked in concert with local and state agencies to ensure necessary work is completed before the rainy season.

The cause of the French Fire, which was fully contained last Saturday, is still under investigation. Firefighting costs are estimated at more than $16 million.

Reporter Janet O'Neill can be reached at 225-8216 or at joneill@redding.com.

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