Date of Report: 8/26/2008
Final Report: 12/29/2009

LIME COMPLEX BURNED AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

Fireline on Miners Fire portion of the Lime Complex

A. Type of Report

[ ] 1. Funding request for estimated emergency stabilization funds
[x] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

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

[ ] 2. Interim Report #____
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[x] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Lime Complex

B. Fire Number: CA-SHF-001041

C. State: CA

D. County: Trinity

E. Region: 5

F. Forest: Shasta-Trinity

G. District: South Fork Management Unit

H. Fire Incident Job Code: P5D8HC

I. Date Fire Started: 6/14/2008

J. Date Fire Contained: 8/13/08

K. Suppression Cost: 65 million

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline (miles): 135
2. Fireline waterbarred and seeded (miles):
3. Other (identify):

M. Watershed Numbers:

N. Total Acres Burned: 65,351
NFS Acres(62,138) Other Federal ( ) State ( ) Private (3,213)

Acres Sum	Ownership			
Fire	**USFS**	**Pvt_On_Forest**	**Pvt_Off_Forest**	**Total**
Lime	23225	1956		25181
Miners	24519	263		24783
Telephone	6967	88		7056
Noble	5950	128		6078
Deadshot	389	260	435	1084
Slide	1075	82		1157
South Fork	83			83
Oak	33			33
Total	**62,241**	**2,778**	**435**	**65,454**

O. Vegetation Types: Mixed Conifer and chappral

P. Dominant Soils:

Whole Complex: Neuns, Deadwood, Hugo, Holland, Marpa
Lime Fire: Neuns, Hugo, Marpa, Deadwood
Miners Fire: Neuns, Deadwood, Hugo, Holland
Telephone Fire: Neuns, Hohmann, Deadwood, Brader
Noble Fire: Parrish, Neuns, Henneke, Stonewell
Deadshot Fire: Deadwood, Indleton, Neuns
Slide Fire: Neuns, Secca, Dunsmuir
South Fork Fire: Deadwood
Oak Fire: Deadwood

Q. Geologic Types: Hayfork Formation, metavolcanics, granitcs

R. Miles of Stream Channels by Order or Class: Perennial – 118; Intermittent – 212; Ephemeral – 187.

S. Transportation System

Trails: 42 miles Roads: 155 miles

PART III - WATERSHED CONDITION

A. Burn Severity by total and FS (acres): 51,838 (v. low & low) 12,316 (moderate) 1,300 (high)

Sum of Acres		Soil Burn Severity				
Fire	Ownership	Unb/VL	Low	Mod	High	Total
Lime	USFS	10,669	8,967	3,321	268	23,225
	Private_On_Forest	651	818	413	74	1,956
Miners	USFS	10,619	8,409	4,639	853	24,519
	Private_On_Forest	86	107	47	24	263
Telephone	USFS	651	4,663	1,627	26	6,967
	Private_On_Forest	13	59	16	0	88
Noble	USFS	1,644	2,388	1,870	48	5,950
	Private_On_Forest	4	79	46		128
Deadshot	USFS	216	97	74	1	389
	Private_On_Forest	169	46	39	6	260
	Private_Off_Forest	165	191	79		435
Slide	USFS	369	588	118		1,075
	Private_On_Forest	33	35	13		82
South Fork	USFS	20	51	12		83
Oak	USFS	25	6	2		33
Total	USFS	24,214	25,168	11,663	1,196	62,241
Total	Private	1,120	1,335	653	104	3,212
Grand Total		**25,334**	**26,504**	**12,316**	**1,300**	**65,454**

B. Water-Repellent Soil by total and FS (acres): Water repellency is present in the high soil burn severity class, approx. 1300 acres (1200 acres NFS and 100 acres non-FS). Repellent layer is from 1 to 4 inches thick, moderate to severe, and patchy.

C. Soil Erosion Hazard Rating by total and FS (acres):
1,847 (low) 17,965 (moderate) 40,468 (high) 5,174 (Very high)

Sum of Acres		Erosion Hazard Rating				
Fire	Ownership	Low	Mod	High	Very High	Total
Lime	USFS	381	8677	13642	525	23225
	Private_On_Forest	184	471	1266	35	1956
Miners	USFS	240	5718	14812	3749	24519
	Private_On_Forest	44	48	172	0	263
Telephone	USFS		744	5507	716	6967
	Private_On_Forest		10	67	12	88
Noble	USFS	997	1560	3351	42	5950
	Private_On_Forest		1	127		128
Deadshot	USFS		134	198	56	389
	Private_On_Forest		96	126	38	260
	Private_Off_Forest		158	277	0	435
Slide	USFS	2	281	792		1075
	Private_On_Forest		21	61		82
South Fork	USFS		20	63		83
Oak	USFS		25	8		33
Total	USFS	1,619	17,161	38,373	5,088	62,241
Total	Private	228	804	2,095	86	3,212
Total		**1,847**	**17,965**	**40,468**	**5,174**	**65,454**

D. Erosion Potential: 12 to 40 tons/acre

	First Year Erosion Potential (tons/ac)		Second Year Erosion Potential (tons/ac)	
FIRE_NAME	2-Year Winter	10-Year Winter	2-Year Winter	10-Year Winter
Miners	18.67	46.67	10.49	34.38
Lime	13.05	32.26	8.25	25.15
Telephone	13.14	42.62	7.18	30.79
Slide	2.76	38.91	10.56	29.28
Average	**11.51**	**40.25**	9.12	29.50

E. Sediment Potential: 1355 cubic yards / square mile

An average winter has the potential to produce **1355** cubic yards per square mile of sediment, ranging from 620 to 1987 across the fires as a whole. Hillslope erosion was determined to have a 19% chance of sediment delivery potential.

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): 85

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 2.8

F. Design Flow, (cubic feet / second/ square mile): 188 (Wannanen & Crippen)

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

H. Adjusted Design Flow, (cfs per square mile): 230

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Background: The Lime complex fires have burned 65,351 acres due to 5,000 lighting strikes that ignited 150 fires on June 21, 2008, in Tehama, Trinity, and Shasta Counties. On the Shasta-Trinity National Forest alone, 35 fires named fires burned or are still burning. The fires started on ridgelines and slowly backed down the ridges over time causing a mosaic burn. The Lime Complex assessment area consisted of 62,138 acres of U.S. forestland and 3,213 acres of private lands. The Lime Complex BAER assessment area includes the Telephone, Noble, Deadshot, upper Deerlick, China, Lime, Miners, Slide, and South Fork fires that occurred in Trinity County.

Approximately 21% burned at high and moderate soil burn severity (see soil burn severity map below). The rest of the fires were either low or very low soil burn severity. General trends are forested areas that were north or east-facing slopes were nice under-burns. Forested areas that were south or west-facing slopes burned hotter and had tree mortality of 20-40% with ridges burning hotter (see pictures below).

Telephone Fire under-burn

Miners Fire ridgeline

Chaparral areas that were north or east-facing slopes had moderate soil burn severity were patchy. Chaparral areas that were south and west-facing, burned moderately high to high soil burn severity removing almost all vegetation (see pics below).

Miners Fire mixed brush

Noble Fire brush fields

The BAER Watershed group stratified the fire into analysis watersheds, analyzed the amount of soil burn severity, and the predicted erosion response to determine threats to identified values. The following sub-watersheds were identified as having the greatest risk to identified values: Lower Plummer Ck., East and West Fork Miners Ck., Little Ck, and Corral Creek Camp Creek.

Critical values at risk:

1) Threats to Life, Property and Safety:

a) Facility structures and homes: The Lime Complex Fires burned on mostly USFS administered lands, placing a few structures at risk from erosion and flooding. These are listed below in outline form.

i) Lime Fire:
(1) Slopes above the Miller Place on South Fork Mountain are hydrophobic and burned hot with deep char, but have good needle-cast and rock fragments.

b) Roads and Trails: Many roads are now at risk due to increased flows from moderate to high soil burn severity with undersized culverts and numerous stream crossings.

i) Lime Fire:
(1) Cold Camp Creek in the Lime Fire which is very accessible (completely surrounded by roads) is burned quite extensively.
(2) On road 24N54, several culverts could plug. They need cleanout and low water crossings.
(3) South Fork Mtn. side of the Lime fire, road 1N24 @MP 0.00 to 5.7 dead-ends into a decommissioned road).
(4) Road 2N27 on private property, has been previously decommissioned (first section ~ 1.6) and now is opened to road 1N16. Numerous wet crossings, temporary fills and culverts have been installed and need to be re-decommissioned.
(5) Road 2N27 at upper edge of burn has 2 culverts with moderate potential for plugging.
(6) South Fork trail has several trail crossings that need work to handle anticipated increased flows to protect the trail from failure.

ii) Miners Fire:
(1) Two culvert problems on Little Creek in Miners Fire (one crushed with debris and other undersized with debris) with burned headwaters just below Hayfork Bally.
(2) Bear Creek trail has several trail crossings that need work to handle anticipated increased flows to protect the trail from failure.

iii) Noble Fire:
(1) 29N06 Beegum Campground road has burned slopes that could erode and fail with undersized culverts.

iv) Telephone Fire:
(1) Old hwy 36 (13-dips) has undersized culverts, lack of proper drainage, unstable banks, undercut water crossings, and will have increased erosion and runoff.

2) **Threats to Water Quality and Fisheries:** With Moderate to high soil burn severity water quality could be compromised due to steep burned soils on many soils that have sandy loam surface.

a) Lime Fire:
i) Limedyke Lookout Slide – Increased sedimentation to the South Fork Trinity River, with recent activity in the last 2 years. Inner gorge and toe zones positions, if they super saturate could deposit 5 to 10 cubic tons of sediments into the river below.
ii) Cold Camp Creek – Drains into Indian and then Butter Creek. Butter Creek is spawning grounds for Coho Salmon and MIS Spring Chinook. Transport of sediments to Lower South Fork due to burn severity in creek could also affect salmon spawning habitat. Higher flows are expected and head-cuts are likely if not treated.

b) Noble Fire:
i) Road 29N03 inadequate crossings and potential sediment delivery to Beegum Creek fishery below.
ii) Erosion of south-facing slopes above Beegum Creek that burned very hot.
iii) Beegum Creek (located in Beegum Gorge) has listed rare salmon fishery part of the greater Cottonwood fishery and could be impacted by accelerated erosion and sediments.

3) **Threats to Soil Productivity/Ecosystem Stability:** Areas that have moderate to high soil burn severity are at risk from accelerated erosion and loss of soil stability and soil fertility. In all geologic formations the potential for slope failure is increased by differential movement along shear and fault zones; by the introduction of water which decreases shear strength of the crushed material; and by the elimination of natural vegetation thus destroying the network of roots that bind weak soil materials together.

a) Lime Fire:
   i) The headwalls of an old debris flow that drains into the South Fork Trinity River near the Limedyke Lookout. The ground that burned here appears to be likely to continue erode, however the bulk of the sediment/erosion that this area produced is already gone.

b) Miners Fire:
   i) Kottmier Mine slide in the Miners fire could become destabilized due to burned trees above and dozer-lines above slide.
   ii) Concentrated pockets of higher burn severity that appear to be in small headwater pockets /reaches of West Fork Miners Creek, East Fork Miners Creek, Bear Creek and Little Creek all immediately below Hayfork Bally as well as another small headwater area in an unnamed tributary to Bear Creek (granitic soils), these areas are gravelly loam to sandy loam soils with water repellency down to 4 inches and deep soil char.

c) Noble Fire:
   i) Landslide potential above 29N03 due to lack of vegetation and moderately hot soil burn severity.
   ii) Debris flow potential into undersized culverts on the 29N03 road.

4) Threats to Cultural Resources: With loss of cover and erosion, cultural resources are now exposed and are vulnerable to vandalism.

a) Noble Fire:
   i) Chromium mine site just above Beegum Creek is now exposed to erosion and potential vandalism of cultural resources.

b) Lime Fire:
   i) Miller Spring prehistoric site has removal of cover by the fire and is now open and exposed subject to vandalism.

c) Miners Fire:
   i) Hayfork Bally area prehistoric site burned over and has loss of cover, are now exposed and are vulnerable to vandalism.

5) Threats to Botanical Resources: With multi-agency response to these fires the likelihood of noxious weed introduction is high.

a) Dozer lines in serpentine soils have removed topsoil and need serpentine seed mix. Serpentine habitats are environmentally sensitive and recover very slowly from soil excavation or other ground disturbance. The Lime, Miners, and Slide fires all fall within the Rattlesnake Creek Terrane, a unique serpentine geologic formation that is home to a suite of endemic serpentine-adapted plant species found nowhere else in the world. Dozer line construction through these habitats caused soil disturbance that is unlikely to recover adequately without vegetative treatments.

b) Noxious weed infestation issue due to multi-agency response and dozer lines running from infestation zones to non-infested zones. There is a high risk of noxious weed introduction into the three fire areas where dozer line construction created suitable bare soil. 145 miles of dozer lines were constructed throughout the three fires. High priority noxious weeds include yellow starthistle, tansy ragwort, brooms, tree-of-heaven, and diffuse knapweed.

c) Diffuse knapweed infestation on east side of Lime could spread due to open exposed sites from dozer-lines and open burned areas. There is an existing, limited infestation of diffuse knapweed on top of South Fork Mountain, on the west edge of the Lime fire. The fire didn't burn through the infestation, but dozer line was constructed from the ridgetop down to midslope on the mountain. There is a very urgent need to closely monitor all dozer line within proximity of the current infestation and treat new individuals to prevent spread of the weed.

6) Threats to Wildlife Resources: Burned areas are a loss of habitat and could impact wildlife populations.

B. Emergency Treatment Objectives:

The purpose of emergency treatments is to mitigate erosion, sedimentation, and flooding that threatens life and property.

- Stabilize hillslopes that are likely to experience unacceptable accelerated erosion
- Stabilize roads to prevent loss of road prism due to increased watershed response
- Reduce the risk of degradation to ecosystem function and for T&E species

Risk determination is dependent on the design storm selected and downstream values at risk. By using an above average storm (10-year event) emergency planning measures can be designed to mitigate and minumize anticipated risks (see hydrologist report). Using a 10-year design storm the values at risk can be evaluated to determine if an emergency exists. Emergency determination matirx displayed below shows if an emergency exists, why, and treatment proposed to mitigate the emergency.

Lime Complex Fires Values at Risk Emergency Determination Matrix

Value at Risk	Emergency U%(yes/no)T%	Reason	Treatment
Slopes above Miller Place	No	Hillslope erosion	None
Cold Camp Creek area	90%/Yes/25%	Hillslope erosion	Mulch
Road 2N54 – Lime east	75%/Yes/25%	Culverts plugging	Cleaning and critical dips
Road 4N08 - Miners	75%/Yes/25%	Culverts plugging	Road stormproofing
Hayfork Bally LO area	95%/Yes/35%	Hillslope erosion	Heli-mulch
Limedyke Lookout Slide	Maybe	Sedimentation issue	Non-treatable
Kottmeir Mine slide	50%/Yes/25%	Destabilization - road	Mulch and divert water
West Fork Miners Creek	60%/Yes/30%	HSBS hillslope erosion	Heli-mulch
Bear Creek headwall	60%/Yes/30%	HSBS hillslope erosion	Heli-mulch
Little Creek headwall	No	MSBS hillslope erosion	None
Plants in serpentine soils	50%/Yes/25%	Dozer lines - erosion	Seed with native seed mix
Noxious weed spread	70%/Yes/35%	Multiple dozer lines	Seed and mulch 50’ into road
Knapweed invasion	80%/Yes/25%	Multiple dozer lines	Nx. weed detection survey
Bear Creek Trail	80%/Yes/25%	Rock fall hazard	Burned area warning signs
South Fork Trail	80%/Yes/35%	Crossing failure	Crossing armoring
Road 1N24 – Lime west	No	Road decommissioned	None
Road 2N27 – Lime west	Yes/re-decommiss.	Culverts plugging	Re-decommissioned s-repair
Ridgeline erosion E. Miner	90%/Yes/20%	Large dozer lines	Mulch and woody debris cover
Decommission crossings	90%/Yes/35%	Large unstable temp cx	Re-decommissioned s-repair
Heritage exposure	95%/Yes/20%	Open exposed sites	Cover with natural vegetation

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

Land **90** % Channel **95** % Roads/Trails **95** % Protection/Safety **95** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	95	80	70
Channel	95	90	80
Roads/Trails	95	90	90
Protection/Safety	95	90	85

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

F. Cost of Selected Alternative (Including Loss):$***

G. Skills Represented on Burned-Area Survey Team:

[x] Hydrology	[x] Soils	[x] Geology	[ ] Range	[ ]
[x] Forestry	[x] Wildlife	[x] Fire Mgmt.	[x] Engineering	[ ]
[ ] Contracting	[ ] Ecology	[x] Botany	[x] Archaeology	[ ]
[x] Fisheries	[ ] Research	[ ] Landscape Arch	[x] GIS	

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H. Treatment Narrative:

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

1. **Land Treatments:** Most moderate to severely burned slopes occurred on upper slopes and ridges and burnout areas. Most fires have designated roadless areas with critical fisheries habitat values, so land treatments are proposed in specific sediment source areas to protect these values. Treatments are intended to reduce off-site sediment-laden runoff, not for on-site soil productivity concerns directly. Treatments will also address landslide potentials and noxious weed introduction and infestations.

Miners Fire:

- Approximately 800 acres of severely burned hillslopes need cover to reduce erosion and sediments from entering critical Coho and Spring Chinook spawning habitat in Hayfork Creek and the South Fork of the Trinity River. Areas selected have direct approximity and conectivity to main salmon spawning areas. Treatments will consist of heli-mulching weed-free rice straw on slopes less than 60 percent. Areas with shallow water repellant coarse textured soils near spawning grounds will be give highest priority. Soils that are not shallow, have high rock fragment content, are not coarse textured will not have as high of priority (see Soils specialist report for details).

- A previously active landslide was identified near Little Creek in section 9 proximate to the Kottmeier Mine. A high intensity burn above the slide and road located immediately below this landslide has created a situation that could pose a threat**.** Two roads are identified above this slide and any road

drainage must be directed away from this slope area and the area planted with native conifers to pull moisture out of the slide headwall.

- Throughout the Miners Fire are numerous firelines that have been cut through noxious weed infestation areas of Tansey Ragwort that has potential to spread into open exposed firelines, safety zones, and staging areas. Treatment proposed is to seed native grass and mulch the last 50 feet of firelines before they enter main roads. Noxious weed detection surveys will be conducted and if any noxious weeds are found they will be pulled and bagged. If larger outbreaks are detected then subsequent funding will be sought to treat the infestation.

Lime Fire:

- Cold Camp Creek area burned in the 1987 event. This creek has since then experienced head-cutting and small inner gorge slides along its length. It is expected that increased flows will accelerate this process if slope treatment are not initiated. Values at risk are fisheries in Butter Creek below. Heilmulching is being proposed for a total of 200 acres. (If no heli-mulch staging area is located and since the area is surrounded by roads, roadside machine mulching could be employed to cover burned landscapes above and below roads. Straw-bale dams could be constructed in draws below mulched areas to curb head-cutting and additionally trap sediments).

- A large nested, in echelon slide complex of Pleistocene age has been identified immediately north of Limedyke Mountain (figures 1 and 2 below). The Bear Wallow fault runs through this area. This area first burned extensively in August of 1987. Since then active creep movement has occurred along the toe of the two lowermost slides. Recent tension cracks have been observed in this area. Potential slope stability hazards will increase as time progresses and peak in five to seven years time as root systems deteriorate. Native conifers should be planted on this site to pull moisture out of the slide headwall and surface flow dispersed from concentrating on the toe of the landslide.

- Two colluvial filled hollows are located below road 2N10 within a hot burn area. Runoff from the road should be dispersed along the slope and not allowed to concentrate that could produce debris flows into Plummer Creek below.

- Throughout the Lime Fire are numerous firelines that have been cut through noxious weed infestation areas of Spotted Knapweed that has potential to spread into open exposed firelines, safety zones, and staging areas. Treatment proposed is to seed native grass and mulch the last 50 feet of firelines before they enter main roads. Noxious weed detection surveys will be conducted and if any noxious weeds are found they will be pulled and bagged. If larger outbreaks are detected then subsequent funding will be sought to treat the infestation.

Telephone, Noble, Slide Fires:

- Throughout these fires are numerous firelines that have been cut through and are potential areas for noxious weeds that have the potential to spread into open exposed firelines, safety zones, and stagging areas. Noxious weed detection surveys will be conducted and if any noxious weeds are found they will be pulled and bagged.

- Mulching treatments were only proposed for the Noble Fire and were covered in the SHU-Lighting 2500-8 request. No mulching treatments are proposed for the Slide or Telephone fires.

2. **Channel Treatments:** Some work is planned to reduce headcutting and meter out sediments in areas that are high in the watershed in intermitten and ephemeral sections. Along with mulching hillslopes efforts will be made to trap sediments before they can reach critical salmon and steelhead spawning grounds. Only the Telephone fires will have any channel treatments.

Telephone Fire:

- Energy dissapators will be installed in gullies below road to reduce sediment into tributaries of Salt Creek from high flows that will happen following the fire.

3. **Roads and Trail Treatments:** Roads and trails are at risk at crossings due to expected increased flows. Several roads need bigger culverts to pass expected flows due to burned out hillslopes above. Several trail crossings are at risk from failure due to indequate crossings for expected flows. Road 2N54 within the Cold Camp Creek of the Lime Fire could pose a risk due to the high intensity burn above. Little Creek in the Miners Fire with the high burn intensity above road 4N08 could exacerbate the problems with two existing culverts. A large 66 inch culvert with crushed outlet and an undersized 18 inch culvert with a plus 20 foot fill are in jeopardy of loss without remedial action. Road 4N08 also has many cross drains, for ditch relief, that threaten increased soil erosion at outlets (see engineering specialist report for details).

Miners Fire:

- Road 4N08 – Miners Creek Road – existing:
  - Existing 66 inch culvert, 20 foot height at centerline, crushed outlet, heavy woody debris at inlet and outlet.
  - Undersized 18 inch culvert, 25 foot plus high fill with woody debris.
  - Slide at head of Little Creek with 48 inch culvert, has underdrains, rocked critical dip and armored overflow.
  - Multiple 18 inch ditch relief culverts with increase erosion potential at outlets.

- Road 4N08 (4.7 miles) – treatments:
  - Repair crushed 66 inch culvert outlet, armor toe of embankment and outfall, and remove wood debris from inlet and outlet. This will consist of mostly hand labor due to inaccessibility of area.
  - Upsize 18 inch culvert, reduce amount of embankment, construct critical dip with armor outlet. Remove approx. 2000 cubic yards material, install 60" x 120' culvert, replace compacted embankment, construct rocked critical dip and armor fill slope.
  - Installation of energy dissipaters at ditch relief culvert outlets with rip rap material.

- Bear Creek trail – has several stream crossings that could pose a problem with increased flows and need armoring to protect the trail. Four crossings are at risk and need rip-rap armoring @ $**** per crossing.

Lime Fire:

- Road 2N54 – Cold Camp Creek – existing:
  - 30" culvert with risk of plugging from increased runoff and debris flow.
  - 36" culvert with high risk of plugging from increased runoff and debris flow.

- Road 2N54 (1.1 mile), Cold Camp Creek – treatments:
  - Road outslope and dips to be maintained for water sheetflow to prevent concentration of waters.
  - Clean inlet and outlets of woody debris.
  - Construct rocked critical dip with armored outlet, to accommodate overtopping of culverts and protect embankments.
  - Maintain outsloped roadways and construct dips (5 total) to reduce surface rilling and erosion.

Telephone:

- Old highway 36 (13-dips road) has numerous areas that are susceptible to erosion and failure due to anticipated increased flows. Old Highway 36 will have high flows following the fire, and without treatment life and safety could be at risk.

- Removing undersized culverts, replacing with Q100 culverts, constructing critical and rolling dips, outsloping, grading, reconstruction of ditches, clearing trees and woody debris, rip-rapping inlets, outlets and installing rock dissapator. Install 2 trash racks (2*$***** = $*****) at inlets of pipes. Straw

dam installation and energy dissapators installed in gullies below road to reduce sediment into tributaties of Salt Creek from high flows that will happen following the fire.Hazard tree removal will be necessary to protect road crew working in the area (6 days for a crew of two sawyers (WG-3) 16/hr, 120 hours, gravel (40 tons at 32/ton = 1280) + rip-rap (22 tons of rip-rap @ 30/ton) = 660, 2 Seasonal closure gates, Installed on 30N19, and reconstruct road closure berms on 30N24, closure sign installation $*****/gate *2 = $*****, three culverts; one 42" ($*****) , one 24" ($*****) and 1 24" ($*****), all 30 feet).

- Road Crew costs are ($*****/day for 10 days. Excavator $*****, Water Truck at $*****/day for 4 days. This will be done by hand with 5 days of GS-9 ($*****), and 2 GS-5s ($*****) + materials (20 Bales at $8/bale = $*****), plus woody debris on site).

4. **Protection/Safety Treatments**: Many areas are at risk to the public safety, OHV incrusion and erosion, and vadalism of protected cultural sites.

    - Recommend a 1-year forest closure till damaging storms have passed for roads, trails, and public camping areas, to allow adequate time for treatment and safety of visitation. OHV incrusion, erosion and vadalism of cultural sites will need to be controlled with gates and signing.

    - Two prehistoric sites are open and exposed from fire damage and need restored cover (one site on Lime Fire and other is on the Miners fire). Recommended treatment for these resources consists of using a four-person hand crew to spread slash piles over exposed areas of the site in order to stabilize the soils and disguise the surface artifacts that have been exposed. Logs should be used to line existing roads in the area to prevent campers, hikers and 4 x 4 road users from causing further damage to exposed areas of the site. Slash piles and logs are available on each site (see specialist report for details).

Accomplishments

Land Treatments:

- Helimulched 681 acres in the Miners Fire completed Nov 17th, to address erosion and sedimentation due to the Miners and Eagle Fires into critical habitats of Miners and Hayfork Creeks cold water refuge.

- Completed all noxious weed treatments of seeding and mulching firelines intersecting main roads throughout all fires in the Lime Complex area.

Road & Trail Treatments:

- Lime Complex stormproofing consisting of constructing critical dips, upsizing and cleaning of culverts, and rock dissipaters completed on Nov. 2008 (3 miles).

- Bear Creek trail treatments and trail crossing treatments (1 mile).

Protection & Safety Treatments:

- Burned area signing for all major fires at strategic areas completed in early summer 09.

Monitoring Treatment Effectiveness:

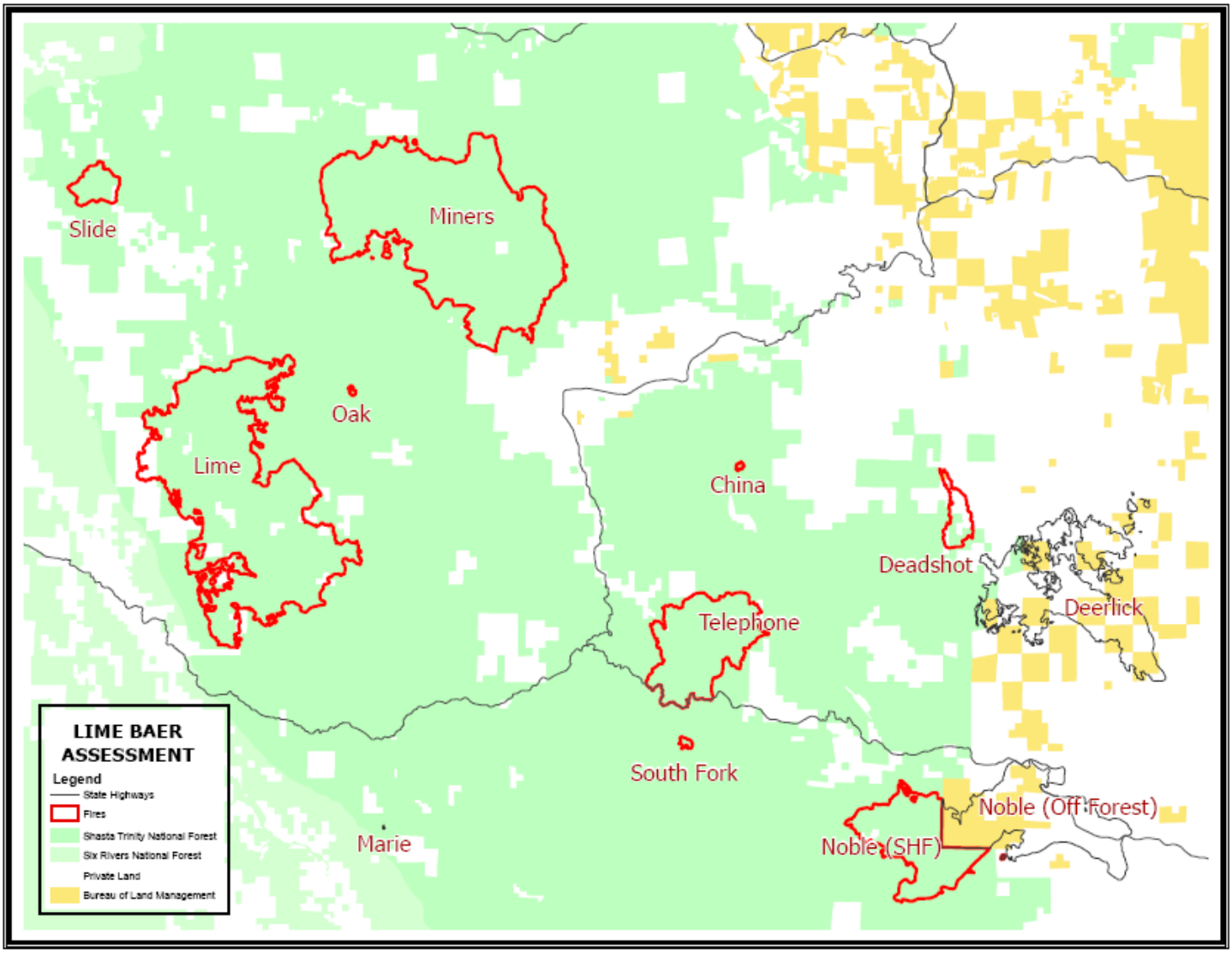
- Monitoring treatment effectiveness for noxious weed treatments and fire effects on past 1987 BAER channel treatments (see attached monitoring reports).

  1) 2008 Fires BAER Noxious Weed Detection and Treatment Monitoring Report - 2009

  2) Cold-Camp Creek BAER Channel Treatment Effectiveness Monitoring – 2009

  3) Miners fire mulching effectivness monitoring - 2009

Appendix C: Vicinity and Administered lands Map



Part VI – Emergency Stabilization Treatments and Source of Funds

Final Report

Click red icons for notes.	NFS Lands					Other Lands				Money Left
Line Items	Uni	Unit Cost	# of Unit	BAER $	Spent	# of Unit	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
Helimulching	ac		1000							
Handmulching	ac		42							
Grass seeding	ac		36							
Nx weed treatment	ac		100							
Nx weed detection	mi		44							
Subtotal Land Treatments										
B. Channel Treatments										
Straw dams	ea		8							
Subtotal Channel Treatments										
C. Road and Trails										
Road stormproofing	mi		1							
Storm Patrol	roje		1							
Culvert Upsizing	ea		2							
Energy dissipaters	roje		1							
Slide water diversion	ea		2							
Subtotal Road & Trails										
D. Protection/Safety										
Gates	ea		6							
Warning signs	ea		6							
trail crossing armor	ea		4							
Heritage site protect	ea		2							
Closure signs	ea		25							
Subtotal Protection										
E. BAER Evaluation										
	---		---			---				
	---		---			---				
Subtotal Evaluation						---				
F. Monitoring										
Hillslope treat. Monito	ea		1							
Road Treat. Monitorin	ea		1							
Straw/rock dam moni	ea		1							
Subtotal Monitoring										
G. Totals										
Previously approved										
Total for this request										

PART VII - APPROVALS

1. */s/ J. Sharon Heywood* — *10 Sep 08*
   Forest Supervisor (signature) — Date

2. /s/ John De La Torre (for) — 19 Sep 08
   Regional Forester (signature) — Date