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File Code: 2520/6520 Date: May 13, 1998
Route To: Rob Griffith

Subject: Final Burned-Area Report for Canyon II Fire

To: Regional Forester

Attached is the Final Burned-Area Report (FS 2500-8) for the Canyon II Fire. A discussion of treatment accomplishments and evaluation of success is provided in the report.

A quick and rough assessment of the burned area and BAER treatments has indicated that burned slopes have revegetated under natural conditions very well (no seed applied), and that treatments have been effective in meeting their objectives.

Total funding approved for the Canyon II BAER effort was $84,725.00. Total funding expended is $70,788.00, a surplus of $13,937.00.

Please direct all questions to Bill Brown, BAER Team Leader, at (626) 574-5258.

/s/ Bernice A. Bigelow
for
MICHAEL J. ROGERS
Forest Supervisor

enclosure:

USDA-FOREST SERVICE Date of Report: 05/13/98

BURNED-AREA REPORT
(Reference FSH 2509.13, Report FS-2500-8)

PART I - TYPE OF REQUEST

A. Type of Report

[ ] 1. Funding request for estimated FFFS-FW22 funds
[X] 2. Accomplishment Report

B. Type of Action

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

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

[X] 3. Final report - following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Canyon II Fire
B. Fire Number: ANF-2908
C. State: California
D. County: Los Angeles
E. Region: 5
F. Forest: Angeles
G. District: Mt. Baldy

H. Date Fire Started: 07/01/97
I. Date Fire Controlled: 07/09/97
J. Suppression Cost: $ 5,000,000

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

1. Fireline waterbarred (miles) 13 (10 Dozer, 3 Hand)
2. Fireline seeded (miles) 0
3. Other (identify) 60 Feet of Cyclone Fencing/posts

L. Watershed Number: 180701602 and 180701603

M. NFS Acres Burned: 3,335 Total Acres Burned: 3,618
Ownership type:
( ) State ( ) BLM ( ) PVT (283)

N. Vegetation Types: Chamise, Scrub oak, manzanita, Ceanothus, Black Sage, White Sage, Yorba Santa

O. Dominant Soils: Trigo-granitic substratum; Exhcequer; Craperton; Lodo; Vista; Olete; and Kilburn families.

P. Geologic Types: Gneiss; Quartz Diorite; Diorite; and Precambrian Igneous and Metamorphic Complex.

Q. Miles of Stream Channels by Order or Class:
Ord 1:11.6 Ord 2:2.4 Ord 3:1.2 Ord 4:3.2

R. Transportation System:
Trails: 5.25 (miles) Roads: 5.3 (miles)

PART III - WATERSHED CONDITION

A. Fire Intensity (Acres): 275 (low) 3,137 (moderate) 206 (high)

B. Water Repellant Soil (Acres): 2,170

C. Soil Erosion Hazard Rating (Acres):
0 (low) 543 (moderate) 3,075 (high)

D. Erosion Potential: 2,123 tons/acre

E. Sediment Potential: 97,650 cu. yds/sq. mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 10 years.
B. Design Chance of Success: 85 percent.
C. Equivalent Design Recurrence Interval: 25 years.
D. Design Storm Duration: 96 hours.
E. Design Storm Magnitude: 18.5 inches.
F. Design Flow: 780 cfsm.
G. Estimated Reduction in Infiltration: 16.7 percent.
H. Adjusted Design Flow: 1474 cfsm.

PART V - SUMMARY OF ANALYSIS

A. Describe Emergency:

The Canyon II Fire removed approximately 3,400 acres of protective chaparral vegetation cover within Roberts Canyon, a steep watershed (60%+) that drains into the San Gabriel River near the entrance to San Gabriel Canyon. Parts of this area last burned in 1968 and 1988. In 1969 several high intensity storms fell on the area burned the previous year causing extensive damage to property near the confluence of Roberts Canyon and the San Gabriel River.

Although a majority of the watershed burned under moderate intensity, potential threats/risks to life and property were high due to the high erosion potential of the Roberts Canyon Watershed and the potential for high intensity winter storms. A discussion of resources at risk and treatments, if any, completed prior to the first damaging winter storm to eliminate or minimize adverse impacts are discussed below:

High Risk Potential.

1. **Damage to Highway 39:**

Highway 39, the main access to San Gabriel Canyon, was at risk from down slope movement of debris directly onto the road surface, and debris and increased water flows down canyons of burned areas. There was also potential for Hwy. 39 to be washed out at one location under extreme flood flow conditions.

Highway 39 is an important transportation corridor since it provides access for approximately 500 residents, numerous individuals accessing the area for recreational purposes (200,000 RVD, winter; 400,000 RVD, summer), and several businesses.

Treatment(s) Completed:

A trash rack was installed above the culvert in an unnamed watershed near mile post 19.61. The structure was designed to catch large rocks, boulder, and other debris that had the potential to move down canyon plugging the culvert and resulting in the loss of Hwy. 39 at this location.

Material remaining from the Reservoir Fire BAER effort was used to construct the trash rack. This material was provided to Cal Trans who constructed and installed the trash rack at no cost to the Forest Service. This is just another example of the cooperation the Forest has with one of our key partners in accomplishing BAER treatments where protecting values at risk are a high priority.

Treatment Effectiveness:

This structure has been effective in meeting treatment objectives.

2. **Damage to Rincon/Redbox Road (2N24):**

Approximately 1.9 miles of the Rincon/Redbox Road was burned over in the Canyon II Fire. The area in question has a history of rock and mud slides as was documented during the storm events of 1992. With this documented history and the now burned off sideslopes an anticipate increase in soil movement down the sideslopes averaging 70% and across this road was anticipated.

The Rincon/Redbox Road provides access to the Pine Mt. Electronic Site, Edison power lines, hunters and mountain bikers, and is part of the cross-Forest OHV trail. It was important that this road remain open.

Treatment(s) Completed:

Using Forest Service Engineering Crews and equipment, existing slough and slide material was removed along the Rincon-Red Box road for the 1.9 miles of area the fire burned over to provide space for material expected to move downslope and onto the road. The road was also widened in a couple of locations to allow for more sediment storage capacity.

All material removed was hauled to designated disposal sites or sidecast where this was acceptable. Approximately 7500 cu. yds. of material was removed.

Treatment Effectiveness:

Monitoring of the treatment has indicated that it was effective in meeting treatment objectives.

3. **Damage to Silver Fish Road (2N28):**

The lower 3.3 miles of the Silver Fish Road is currently maintained at maintenence level 1. This is a closed condition. The remainder of the road is used by hikers as a trail. The primary concerns with 2N28 was the potential for blowouts at numerous small drainage crossings. Should this occur, there would have been mass movement of road fill material into channels below that currently have a high bedload. This material would then become mobilized during intense rainfall events, creating problems at the mouth of Roberts Canyon where it would eventually end up.

In addition, the long-term plan for this road may be to designate it as a trail, as per Forest Plan management direction. In order to maintain the integrity of the road prism and reduce future maintenance/construction cost, it was necessary to provide some level of protection to culverts and other drainage structures which were at increased risk due to the effects of the fire.

Treatment(s) Completed:

1. **Silver Fish Channel Clearing:**

All floatable debris was removed from along approximately 2250 feet of stream channel within an unnamed tributary to Winters Canyon to prevent the potential loss of the lower Silver Fish Road. This work was accomplished using a Forest Service Fire Crew.

2. **Silver Fish Culvert Clearing:**

Drainage structures along approximately 2.25 miles of the upper Silver Fish Road were checked and cleared of rocks and other debris to prevent failure of the road at these locations. This work was also accomplished using a Fire Crew.

Treatment Effectiveness:

Channel clearing has been effective in preventing the loss of the lower Silver Fish Road.

The effectiveness of culvert clearing along the upper Silver Fish Road/Trail has not been determined at this time. This stretch of road/trail will need to be walked in the very near future to determine treatment effectiveness.

4. **Damage to Recreation Residence:**

Prior to the Canyon II Fire two recreation residences occurred in Roberts Canyon. One of these was destroyed by the fire, while the other survived the fire with only minor damage. This residence was at risk from rocks, other debris, and sediment from moving off steep slopes above onto or into the structure. Although the residence sets on a bench high out of the stream channel (it survived the flood of 1969), there was also potential for damage to a storage area on a secondary bench below the house.

Treatment(s) Completed:

A silt fence structure was installed on the burned over slope above the recreation residence to catch and/or deflect small rocks, other debris, and sediment. This work was accomplished using a Fire Crew.

Treatment Effectiveness:

Monitoring of this structure has indicated that it was very effective in meeting treatment objectives.

5. **Home on Private Land Near Avocado Grove:**

This home is owned by Ralph Covell and sits near an area where it appears that a natural channel has been altered. This home survived the 1969 flood when high water and mud flows were deflected by a block wall which had been constructed at the west (upslope) end of the residence. Debris caught and retained by this wall has not been removed. The wall now has only limited capacity for holding and/or deflecting mud flows or high water.

Treatment(s) Completed:

No treatments were completed with BAER funding. This home sits on private land. Since opportunities to conduct treatments upstream from the residence on Forest Service land were limited and cost prohibitive, the Forest BAER Team Leader facilitated discussions of possible treatment/funding alternatives between the Natural Resources Conservation Service (NRCS), Los Angeles County, Department of Public Works (DPW), and the home owner.

6. **Avocado Grove and Associated Sprinkler System:**

The avocado grove is approximately 29 acres in size and lies on an alluvial deposit below the burned area. It was reported by Phil Tate, owner, that the grove was one of the most productive in the state. Several small tributary drainages drain directly onto the alluvial deposit that extends upslope to the toe of the slope, approximately 75

yards. This area of alluvium (that area between the western most edge of the avocado grove and the toe of the slope) was unburned for the most part. Existing unburned vegetation consisted of various grasses, wild mustard, mulefat, etc. Several small portable housing units store in this area also appeared to be at risk from sediment and/or mud flows.

The flood in 1969 resulted in the loss of aproximately 14 acres of the avocado grove. And, the owner was concerned that parts of the grove and associated sprinkler system would be lost and/or damaged due to an extremely wet winter.

Treatment(s) Completed:

No treatments were completed with BAER funding. The avocado grove sits on private land. Since opportunities to conduct treatments upstream from the grove on Forest Service land were limited and cost prohibitive,the Forest BAER Team Leader facilitated discussions of possible treatment/funding alternatives between the Natural Resources Conservation Service (NRCS), Los Angeles County, Department of Public Works (DPW), and the home owner.

7. Small Bridge Crossing Roberts Canyon:

The primary high water access to a horse corral and an area known as the paintball ranch located on the south end of the Covell property is provided by a small wooden bridge across Roberts Canyon Creek. The creek dries up at this location during the summer months. A secondary crossing constructed through the stream channel below the bridge has often been used as an alternative to the bridge. This bridge was at risk from washing away during peak flow events.

Treatment(s) Completed:

No treatments were completed with BAER funding. This bridge sits on private land. Since opportunities to conduct treatments upstream from the bridge on Forest Service land were limited and cost prohibitive,the Forest BAER Team Leader facilitated discussions of possible treatment/funding alternatives between the Natural Resources Conservation Service (NRCS), Los Angeles County, Department of Public Works (DPW), and the home owner.

8. Roberts Canyon Aquatic Resources:

Roberts Canyon Creek is home to possibly three of the four fishes native to southern California (speckled dace, arroyo chub, and Santa Ana sucker). The stream also supports rainbow trout and other common

amphibians such as the California newt, Pacific and California tree frogs. Historically, red-legged and mountain yellow-legged frogs inhibited the stream. These resources and associated riparian habitats were at risk from peak flow events.

Treatment(s) Completed:

No treatments were prescribed.

Moderate Risk Potential.

1. **Horse Corral:**

   A horse corral sits on a bench adjacent to Roberts Canyon Creek. This corral sustained damage during the 1969 flood when the stream bank was eroded away. The corral was once again at risk during peak flow events.

Treatment(s) Completed:

No treatments were completed with BAER funding. This horse corral sits on private land. Since opportunities to conduct treatments upstream from the corral on Forest Service land were limited and cost prohibitive,the Forest BAER Team Leader facilitated discussions of possible treatment/funding alternatives between the Natural Resources Conservation Service (NRCS), Los Angeles County, Department of Public Works (DPW), and the home owner.

Low Risk Potential.

1. **Wells for Avocado Grove and Others:**

The primary concern here was the potential for damage and/or loss of above ground hardware associated with water wells. There was potential that the well associated hardware would be damaged and/or lost under extreme flood/mud flow conditions.

Treatment(s) Completed:

No treatments were completed with BAER funding. This well sits on private land. Since opportunities to conduct treatments upstream from the well on Forest Service land were limited and cost prohibitive,the Forest BAER Team Leader facilitated discussions of possible treatment/funding alternatives between the Natural Resources Conservation Service (NRCS), Los Angeles County, Department of Public Works (DPW), and the home owner.

2. **Morris Reservoir:**

Morris Reservoir is managed by the Department of Public Works for flood control and water conservation. Similar to the Reservoir Fire that burned several small watershed that lie directly above Morris, there

was potential for sediment to enter the reservoir from one unnamed tributary to the San Gabriel River. This small canyon lies downstream from the much larger Winter Canyon (southern most edge of the Reservoir Fire). There was also potential that rocks, boulders and other debris could block the culvert at this location, resulting in the loss of Hwy. 39.

Treatment(s) Completed:

Additional field investigations indicated that there was enough storage capacity near the mouth of the unnamed tributary and above Hwy. 39 to store the estimated amount of sediment predicted to move out of this tributary during the wet season. Foe this reason, no sediment removal operation and/or catchment enhancement was recommended.

To alleviate the potential threat to the culvert in question, channel clearing was accomplished to remove large floatable woody debris that could help block this drainage structure and contribute to its failure. This treatment was addressed earlier under the Silver Fish Channel Clearing discussion.

B. Emergency Treatment Objectives:

- Prevent potential loss of Hwy. 39, the main access route into San Gabriel Canyon, due to debris movement downslope from the small unnamed watershed near mile post 19.61.
- Prevent potential closing and/or loss of road prism of the Rincon/Redbox Road due to expected surface erosion, dry ravel, and debris movement downslope from steep fire denuded slopes above the road.
- Prevent further loss of drainage structures and/or road prism on the Silver Fish Road.
- Minimize the potential for movement of rocks or other debris and sediment onto or into the recreation residence in Roberts Canyon.
- Allow for natural recovery of the watershed with its native vegetation.
- Facilitate the need to identify potential treatments designed to protect life and property on private land with the Natural Resources Conservation Service, Los Angeles County, Department of Public Works, and Los Angeles County, Fire Department, Department of Forestry.

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

Land _____ % Channel 100 % Roads 100 % Other _____ %

D. Probability of Treatment Success

	<----Years after treatment-----> 1	3	5
Land			
Channel	85%	100%	100%
Roads	85%	100%	100%
Other			

E. Cost of No-Action (Including Risk): $ 24,011,113.00

F. Cost of Selected Alternative (Including Risk): $ 13,086,225.00

G. Skills Represented on Burned-Area Survey Team ("x" appropriate boxes):

[X] Hydrology	[X] Soils	[X] Geology	[ ] Range
[ ] Timber	[X] Wildlife	[ ] Fire Mgmt.	[X] Engineering
[ ] Contracting	[ ] Ecology	[ ] Research	[X] Archaeology
[X] GIS	[ ]	[ ]	[ ]

Team Leader: Bill Brown
Phone: (818) 574-5258 DG Address: B.Brown:R05F01A

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.

Rationale used to support the decision not to seed the burned area are as follows:

1. The effects of grass seeding on peak flows and sediment reduction are uncertain and depend on evenly spaced, low to moderate amounts of rainfall during initial post-fire storms. Seeding will not reduce erosion and runoff from heavy precipitation that occurs early in the rainy season (State Board of Forestry Task Force on Emergency Watershed Protection 1995)

2. Seeding can increase infiltration rates which were lowered during wildfire due to the creation of a hydrophobic layer. Higher infiltration rates can have both positive and negative impacts. Positive impacts include reduced surface erosion created by rilling, sheetwash, and gullying. Disadvantages include potential increases in mass movement (primarily shallow debris sliding) (Ruby 1987, Spittler 1995, Booker et al. 1993).

3. Seeding can reduce native plant species density, cover, and diversity which in some situations can reduce a system's long-term hillslope stability (Keeler-Wolf 1995, Stone 1993, Rice 1975).

4. Grass seeding can only affect surface erosion processes (i.e., rilling and gullying). It is likely that between one-fifth and one-third of the erosion in southern California watersheds results from surface erosion. Seeding will have little impact where the major source of sediment is dry ravel or mass wasting. Similarly, downstream sediment yield may not be significantly reduced by seeding if there is very high sediment storage in stream channels that is mobilized by very high peak flows. If infiltration rates are significantly increased by seeding through interruption of the hydrophobic layer, erosion of channel deposits could be affected by grass seeding (Rice 1975, Spittler 1995).

5. On average, about 70% of the long-term sedimentation from the watershed occurs during the first year after the fire (Rice 1975).

6. Due to climatic conditions in many instances, seeding efforts achieve little soil stabilization during the first year except to establish a cover that may be effective in the following seasons (Rice 1975).

7. Based on observations of vegetative recovery rates on the Reservoir Fire which burned under similar conditions and intensities, there appears to be a sufficient viable seed bank left in the soil. Ground cover on the Reservoir burned area has been established on a majority of the area in only one growing season after the fire.

8. Seeding success and effectiveness are closely associated with site productivity. Only better sites should be considered as a priority for seeding; poorer sites should not be considered. The best sites have fine-grained soils, dark color, and usually slopes less than 50%. Poorer sites have harsh exposure, slopes greater than 50% with mobile surfaces, no definite soil development, and high natural erosion rates (Ruby and Griffith, 1994). Using this criteria, the Canyon II burned area would be classified as a poor site.

ADDITIONAL FIRE SUPPRESSION REHABILITATION NEEDS:

A majority of the fire suppression rehabilitation requirements were met while fire fighting resources and equipment were available. Other treatments will be required before winter storms approach. These include cutting and pulling brush onto areas on hand and dozer lines that have high erosion potential. Approximately 13 miles of line will need to be checked and treated where applicable. This work will be accomplished by an AD Crew and should take approximately five days at a cost of $15,000.

In addition, dozers damaged approximately ten drainage structures as they were walked off the burned area and out the Silver Fish Road. These important drainage structures need to be repaired. Materials currently in storage at the Rincon Station will be used for this project. Anticipated labor costs using the fire and a small dozer/tractor is $13,000. This additional fire suppression treatment was not completed.

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

NOTE: Emergency rehabilitation is work done promptly following a wildfire and is not to solve watershed problems that existed prior to the wildfire.

	NFS Lands						
Line Items	Units	Unit Cost $	Number of Units	EFFS-FW22 $	Other $ ident.	Proposed Costs	Actual Costs
A. LAND TREATMENTS							
B. CHANNEL TREATMENTS							
Channel Clearing	mile	12000	.5			6000.00	6000.00
C. ROADS AND TRAILS							
Slide Material Removal	Cu.Yd	3.00	7500			22500.00	9840.00
Culvert/Drain Clearing	mile	6667	2.25			15000.00	15496.00
D. STRUCTURES							
Trash Rack	Ea.	8500	1			8500.00	*

Silt Fence.Sand Bags	Ea	5500	1			5500.00	5500.00
E. BAER EVALUATION/ ADMINISTRATIVE SUPPORT							
BAER Team	Days	2000	10			20000.00	26727.00
Infared Didital Imagery	Ea.	7225	1			7225.00	7225.00
F. TOTALS						84725.00	70788.00

* - monthly trans records reflect higher expenditure

* Materials available from earlier BAER effort. Trash rack installed by CAL Trans at no cost to the Government.

PART VII - APPROVALS

/s/ Bernice A. Bigelow
1. for Michael J. Rogers — 5/13/98
Forest Supervisor (Signature) — Date

2. /s/ _____

Regional Forester (Signature) Date