Initial

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Author: R.Griffith Typist: G.Moore

Filed on: Sep 04,97 7:55 AM Message attached

Subject: 2520/6520 - Authorization for Expending BAER Funds - Logan Fire

Summary:

Authorizing the Los Padres to expend $152,870 for BAER emergency funds.

Comments:

To Rob

From: Gary J. Schmitt
Postmark: Sep 04,97 7:42 AM

Subject: Logan 2500-8

United States Department of Agriculture | Forest Service | Pacific Southwest Region | Regional Office, R5
630 Sansome Street
San Francisco, CA 94111-2214
415-705-1098 Text (TTY)
415-705-2876 Voice

File Code: 2520/6520 Date: August 21, 1997
Route To:

Subject: Authorization for Expending Burned-Area Emergency Rehabilitation Funds (WFSU-FW22) - Logan Fire

To: Forest Supervisor, Los Padres National Forest

Attached is the approved Burned-Area Emergency Rehabilitation Report for the Logan fire. You are authorized to expend up to $152,870 of WFSU-FW22 funds at this time for the emergency rehabilitation evaluation, administrative support, road and trail work, and digital IR photography for burn intensity analysis. The work to protect archeological sites is approved, contingent upon further evaluation by the hydrologist, soil scientist and archeologist to determine if these sites could be damaged and if other alternative protective measures are feasible.

At this time, monitoring is not eligible for funding with WFSU-FW22 funds and must be considered for funding with forest NFEM funds. The request will, however be forwarded to the WO for increased awareness of the need for BAER monitoring with FWSU-FW22 funding.

/s/ Richard R. Rodieck for
REGIONAL FORESTER TEAM

Enclosure

cc: PDB
WSA:WO
USDA NRCS State Conservationist, Davis, California
R.Griffith
G.Schmitt

ENCLOSURE

United States Department of Agriculture | Forest Service | Los Padres National Forest | 6144 Calle Real, Goleta, CA 93117, (805) 683-6711, TDD: (805) 967-4487

Reply to: 2520 **Date:** August 19, 1997

Subject: Logan Fire Burned Area Report

To: Regional Forester

The initial Burned Area Report (Form FS 2500-8) for the Logan Fire is attached. The initial report serves as the Forest request for $177,570 to fund the BAER Team and materials, the monitoring project, road and trail work, work to protect archaeological sites and to purchase Digital IR photography for burn intensity analysis.

/s/Margaret J. Boland
MARGARET J. BOLAND
Forest Supervisor

cc: SLRD DR

USDA-FOREST SERVICE Ref. 2520 Watershed Date of Report: 08-18-97

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

PART I - TYPE OF REQUEST

A. Type of Report

[x] 1. Funding request for estimated EFFS-FW22 funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[x] 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

[ ] 3. Final report - following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Logan B. Fire Number: LPF 855
C.

State: California D. County: San Luis Obispo
E. Region: 05 F. Forest: Los Padres (07)
G. District: Santa Lucia

H. Date Fire Started: 08-04-97 I. Date Fire Controlled: 08-16-97
J. Suppression Cost: 8,000,000

K. Fire Suppression Damages Repaired with EFFS-PF12 Funds:
1. Fireline waterbarred (miles) 16 of 38 total
2. Fireline seeded (miles) 0
3. Other (identify) 1/2 mi. of fence repair & 11 mi. of road repair

L. Watershed Number: Alamo -1806000702
Lower Cuyama -1806000704

M. NFS Acres Burned: 33,013 Los Padres NF Total Acres 49,482
Ownership type:
(0)State (4587)BLM (11,882)PVT ( )

N. Vegetation Types: **chamise/redshank; oak/grassland; grassland; coastal sage scrub; mesic chaparral; riparian woodland; riparian scrub**

O. Dominant Soils: **Los Osos, Modesto, Millsholm, Millerston, Agua Dulce**

P. Geologic Types: **Tertiary marine sandstone w/interbedded claystone, shale & conglomerate in N & E 1/2 of burn, Cretaceous micaceous shale and sandstone, Franciscan sandstone, and weathered basalt flows in S & W 1/2.**

Q. Miles of Stream Channels by Class:
USFS **Class III** and IV **- 210 miles**

R. Transportation System:
Trails: **4** (miles) Roads: **17.3** (miles)
Unimproved dirt roads: 51

PART III - WATERSHED CONDITION

A. Fire Intensity (Acres): **25,777** (low/unburned) **17,242** (moderate) **6,635** (high)

B. Water Repellant Soil (acres): **2,363**

C. Soil Erosion Hazard Rating (Acres):
25,777 (low) **11,292** (moderate) **12,585** (high/very high)

D. Erosion Potential: **18** tons/acre
E. Sediment Potential: **8,560 in Alamo** cu. yds/sq. mile
13,066 in Cuyama

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: **5** years.
B. Design Chance of Success: **80** percent.
C. Equivalent Design Recurrence Interval: **25** years.
D. Design Storm Duration: **24** hours.
E. Design Storm Magnitude: **6** inches.
F. Design Flow: Alamo design flow = 5,057 cfs
Cuyama design flow = 59,416 cfs

G. Estimated Reduction in Infiltration: **5** percent.

H. Adjusted Design Flow: Alamo adjusted design flow = 5,879 cfs
Cuyama adjusted design flow = 60,068 cfs

PART V - SUMMARY OF ANALYSIS

A. Describe Emergency:

50,000 acres of the Cuyama and Alamo watersheds burned in the Logan Fire from August 4 - 16, 1997. Burn intensities in the western half are mostly moderate and high (Fish, Branch, and Corral Cayons), whereas intensities in the eastern half of the fire are low due to light fuels and higher burn humidities. Soil erosion hazard is high over 25 percent of the burn. This is a remote area with fewer than 25 homes in the area. Hwy 166 on the south boundary of the fire, Twitchell Reservoir, seven homes at the mouth of Alamo Canyon, several secondary Forest Service roads, and several archealogical sites are the main values at risk due to a deteriorated watershed condition.

Thirty three percent of Alamo watershed burned, which drains into Twitchell Reservoir. This will cause peak flows to increase 1.6 times normal (unburned) peak flows in a 2 yr., 24 hr. rain event, and 1.2 times normal (unburned) peak flows in a 25 yr., 24 hr. rain event. Sediment yield in the Alamo drainage will increase 7.4 times normal rates the first year after the fire, and increase 2.8 times normal rates the second year after the fire.

Only five percent of the Cuyama drainage burned, which also drains into Twitchell Reservoir. This will cause peak flows to increase 1.1 times normal (unburned) peak flows in a 2 yr., 24 hr. event, and will not change peak flows in a 25 yr., 24 hr. event. Sediment yield in the Cuyama River will increase 1.8 times normal in the first year after the fire, and 1.2 times normal rates the second year after the fire.

After two rainy seasons, the extra sediment load into Twitchell Reservoir due to the burn effects in both Alamo and Cuyama Rivers (the entire burn area), will be 1,037,400 cubic yards which is equivalent to 0.01 percent of the capacity of Twitchell Reservoir.

Soil erosion rates are predicted to range from as low as 12 tons per acre to as high as 40 tons per acre in the first year. The average soil loss predicted in the high erosion hazard areas is about 30 tons per acre the first year, and 5 tons per acre the second year. All high erosion hazard acres occur in the western half of the fire and particularly in Fish and Branch Creek Watersheds. Very little erosion is expected to occur in the lighlty burned grass and oak types at the east end of the fire. An overall average for the burn of 15 tons per acre is expected the first year.

Expected impacts to individual watersheds:

1. Alamo cumulative

Possible hazards to residents at high water crossings during storms. Hazard for livestock in high water. Potential for high flows in Alamo Creek to flood three houses at the mouth of the canyon. Hillslope erosion hazards on four other houses. Uncontrolled Off Highway Vehicle use on the upper watershed could further deteriorate soil condition and increase runoff, because previous brush barriers have burned. There will also be a loss of control of livestock distribution due to loss of brush barriers. Twitchell Reservoir will receive increased sedimentation and increased water. Several wells, springs, and ponds, as well as drift fences and a PVC pipe in lower Alamo Creek will be damaged by high water. Red-legged frogs inhabit perennial pools between Branch Creek and the mouth of the Alamo canyon. Sedimentation could decrease the availability of invertebrate prey for red-legged frogs, and may fill in breeding holes.

1a. Fish Canyon

There is a high probability of landslides in this area, as well as high soil erosion potential. There is an old jeep road at the bottom of the drainage which will be damaged by erosion. There is also a wire fence across the mouth of the canyon which will be destroyed unless removed. No other values were identified.

1b. Corral Canyon

There is a high potential for landslides and high soil erosion here. There is a native surface road up the canyon, and a corral and barn at the mouth of the creek. The landowner has already deepened and diverted the creek to mitigate the possibility that the creek will damage property.

1c. Branch Creek

High flows will damage the road that runs directly in Branch Creek and make travel there in the rainy season hazardous. Several OHV routes in this watershed will also be damaged. Three campgrounds and two corrals are in danger of damage from high flows, as are several ponds and four springs. Loss of control of OHV use and cattle distribution from the loss of brush barriers could increase soil erosion problems. Red-legged frogs in Branch Creek may lose invertebrate prey and breeding pools due to sedimentation.

2. Cuyama River

The 100 acre section of fire on the south side of the Hwy 166 may create a slight hazard for falling rock. Increased peak flows and sediment in the Cuyama river should not pose an increased risk to roadbed erosion. Twitchell Reservoir will receive a small percentage increase in overall sedimentation. Low water crossings at Rock Front, Chimney Canyon, and Charlie Valley will be somewhat more hazardous due to the slight increase in peak flows during storm events. Four houses in the upper Chimney Canyon area may have slight hillslope erosion problems, and their access roads will have erosion problems. A small reservoir in the canyon west of Chimney Canyon will receive sedimentation. Two guzzlers and several small ponds will receive sedimentation from hillslope erosion and increased sediment yield in the creeks. Hwy 166 bridges will receive higher peak flows at Gypsum, Sycamore, Carrizo, and Taylor Canyon. The All-American pipeline runs under these same drainages near the highway about 15 feet underground, and should not be damaged. Several fences crossing these drainages may be at increased risk due to slightly higher flows.

B. Emergency treatment objectives.

1. Road and trail protection.
2. Road and trail user's safety.
3. Mitigate watershed erosion due to road and trail drainage.
4. Maintain safe access to residences and recreation areas.
5. Notify landowners of potential flooding, hillslope erosion, and inform them of onsight preventative measures.
6. Protect individual structures in high risk areas from high flows, sediment deposition, and debris torrents.
7. Prevent watershed damage due to OHV trespass.
8. Control the numbers of livestock on the allotments to protect the watersheds.
9. Make the city, county, and all other responsible agencies aware of the possible hazards from increased flows and sedimentation.
10. Protect archeological resources by documenting information on site which maybe destroyed due to flooding.

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

Land ____ % Channel _____ % Roads **100** % Other **100%**

D. Probability of Treatment Success

	<----Years after treatment-----> 1	3	5
Land			
Channel			
Roads	70	95	100
Other	80	100	100

E. Cost of No-Action (Including Loss): **$2,462,600**
Team ($49,600)

F. Cost of Selected Alternative (Including Loss): **$2,590,570**

G. Skills Represented on Burned-Area Survey Team:

[x] Hydrology	[x] Soils	[x] Geology	[x] Range
[ ] Timber	[x] Wildlife	[x] Fire Mgmt.	
[x] Engineering	[ ] Contracting	[ ] Ecology	
[ ] Research	[x] Archaeology	[x] GIS	
[ ] Fisheries	[x] Botanist	[x] Rec/Wilderness	

Team Leader: **Kevin Cooper**
Phone: **(805)925-9538** DG Address: **K.Cooper:R05F07D53A**

H. Treatment Narrative:

One of the main concerns from watershed degradation is the increased sediment load into Twitchell Reservoir. Calculations show that the increase in sediment due to the fire will amount to 0.01 percent of the capacity of the reservoir. The very large watershed area of Twitchell, as well as high background sediment loads and a relatively low intensity burn, minimized the percent increase in sedimentation. Seeding the area was considered but not recommended. The soil loss equations did not predict a decrease in soil loss from the addition of seed to the watershed. Natural revegetation rates are high enough to match ground cover values reached by seeding. A list of post-fire seeding criteria is found in Appendix A. It is recommended that the cloud seeding program that occurs over the burn area be postponed for two years during vegetative recovery to decrease the chances of soil loss.

There are at least four areas along Hwy 166 where very high flows in the Cuyama River, previously have eroded the roadbed. Since flows in the Cuyama River are not expected to increase a great deal due to the burn, no mitigation is necessary except to notify Caltrans of our calculations and recommendations. Gypsum, Sycamore, Carrizo, and Taylor Creek crossings of Hwy 166 are probably not in jeopardy, but Caltrans should again be notified of our findings. It is recommended that a rock hazard sign be erected on the south side of Hwy 166, approximately one mile west of the Rock Front Ranch (at the 100 acre burn).

Newhall Cattle and Land Company will be notified that the small reservoir in the canyon west of Chimney Canyon will be at risk of increased sedimentation. It is not recommended that any smaller ponds be treated. Because of their small size, they will quickly be over-run with sediment, and there is no road access anymore to all but one of them. An exception is the pond on the Branch Creek road one mile north of the Rock Front ranch. Access by road is easy, and a sediment trap here may help protect the road crossing below the outfall.

Six springs and two guzzlers should be protected from hillslope erosion by placing sediment deflection barriers above them.

Buck camp, Paradise camp, and Baja camp may lose picnic tables and fire rings from high flows and sedimentation. It is recommended that these structures are removed by recreation funding, before the rainy season.

It is recommended that the Branch Creek FS road and other OHV routes be closed at Rock Front for the wet season. A wet season gate is already in place. After the first rain, it is predicted that the roads will be unsafe for travel, and that is will be too short a time interval between storms, and too expensive to repeatedly repair the roads during the wet season. There is also a flood hazard along Branch Creek road.

Until the gate is closed at Rock Front, it is recommended that fencing be erected at strategic locations where vegetation has been removed and there is high potential for OHV trespass. Based on OHV activity after past fires nearby, OHV trespass onto the open watershed increases the erosion hazard greatly.

The Adobe and Gypsum hiking trails do not require any work to prevent accelerated watershed deterioration or damage to the trail. Burn intensities in these areas are light.

It is recommended that the Forest Service roads in the Rock Front/Branch Cr. area are prepared for rains and expected higher overland water flows. In lower Branch Creek remove the drift fencing near the roads to prevent debris jams. In the higher sections, the road needs to be shaped and drainage improved. This should be done after there is sufficient soil moisture to hold the shape. Other mitigations to protect the watershed from excessive water flow off of the road system include: culvert cleaning, debris racks, energy dissipators, ditch cleaning, rip-rap placement, and removal of berms.

For the residents in the mouth of Alamo Canyon, it is recommended that sand bags and heavier deflectors such as k-rails be placed to divert high water and sediment deposition around the houses and associated structures. Ditching may also help divert water and sediment. These landowners should be notified of the possible hazards to their residences and lives from high water flows in Alamo Creek and of the hazards of crossing Alamo Creek by vehicle during high water.

No channel clearing is recommended because no areas investigated, presented channels that are likely to be clogged with debris.

No treatment is recommended for red-legged frog habitat in the Alamo drainage. Sedimentation into red-legged frog habitat is expected to have a temporary adverse effect which can not be mitigated.

Seven archaeological sites in Branch and Alamo Canyon are at risk from accelerated erosion due to deteriorated watershed conditions. Because channel treatments may not prevent erosion from destroying creek terraces and the archeological sites in them, it is recommended that a hydrologist and soil scientist accompany the archaeologist to each site, and further evaluate the threat from erosion. If it is determined that these sites are at risk, then it is recommended that each site be analyzed for archeological resources, and where appropriate, data should be recovered.

PROPOSED POST FIRE MONITORING PROJECT
LOGAN FIRE
LOS PADRES NATIONAL FOREST
SANTA LUCIA RANGER DISTRICT

Purpose

BAER teams must rely on available information to make important recommendations regarding the protection of life and property. Some of this information, including post fire natural vegetation recovery and associated soil erosion rates, can only be gathered one to two years after the fire. In the past, this information has been gathered primarily to the limited extent of casual observations. Consequently, excessive time is often beening spent during the BAER process providing "best estimates". We propose to implement a monitoring project which will result in a systematic data collection. These data will be used for future BAER team assessments which, in combination with modeling, will greatly reduce time and increase accuracy.

Methods

We will establish 80 vegetation plots in four different plant communities (chamise/red shank; oak/grassland; grassland; and manzanita chaparral) in high, medium, and low burn areas and unburned areas. These will monitored every two or three months in order to record recovery rates. Data to be collected will include percent cover and species presence.

We will also construct 16 silt fences to establish soil erosion rates. We will monitor these sites every month.

Estimated Costs

3 botanists (GS-5, GS-7, GS-11)	$ 11,500
4 soil scientists (2 GS-5, GS-7, GS-11)	$ 11,600
supplies	$ 1,600
TOTAL	$ 24,700

Potential Partnerships

Cal Poly, San Luis Obispo
U.C. Santa Barbara
California Native Plant Society

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

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

			NFS Lands			Other Lands			
Line Items	Units	Unit Cost M$	Number of Units	EFFS-FW22 M$	Other $ ident.	Number of Units	Fed $ ident.	Non-Fed $ ident.	T
A. LAND TREATMENTS									
B. CHANNEL TREATMENTS									
C. ROADS AND TRAILS									
Temporary Fencing	miles	4000	1	4,000					4
Rip rap energy dissap.	ea	50	200	10,000					10
Road/trail treatments	miles	800	22.5	18,000					18
Signs	ea	500	1	500					
Debris racks	ea	200	14	2,800					2
Sediment Deflectors	ea	200	8	1,600					1
D. STRUCTURES-OTHER									
Historic property									
recovery & data recovery	site	5-10m	7	47,500					47
E. BAER EVALUATION/ ADMINISTRATIVE SUPPORT									
Salary, travel, admin.	Team			49,600					49
IR photos + materials				18,870					18
Monitoring Project	ea		1	24,700					24
TOTAL									17

PART VII - APPROVALS

1. /s/Margaret J. Boland _____
Forest Supervisor (Signature) Date

2. /s/ _____
Regional Forester (Signature) Date

The burned area rehabilitation team members were from 3 National Forests, California Department of Forestry and Fire Protection, Natural Resources Conservation Service, California Dept. of Fish and Game, San Luis Obispo City and County agencies.

Appendix A

POSTFIRE SEEDING CRITERIA FOR THE LOGAN FIRE

- No seeding on grasslands and oak/grass woodlands
- No seeding on slopes over 60% (preferably less than 50%)
- No seeding on areas with known populations or potential habitat for threatened, endangered, or Forest sensitive plant species
- No seeding on areas with plant species identified as critical habitat for threatened or endangered wildlife species
- No seeding on low burn intensity areas
- No seeding on areas where vegetation cover after two years is expected to be 30% or greater (BAER guidelines).
- Seed only where there are high downstream values
- No seeding on poor sites (high solar insolation aspects, very rocky sites)
- Use native species only to augment natural vegetation in areas believed to have depleted seed banks.
- Seed only with cool season grass species with the capacity to respond and be effective for early season storms
- Seed at a low rate

Basic Assumptions

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 where risks exist due to geologic factors (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. If there is a sufficient viable seed bank left in the soil, grass seed will not provide additional soil stabilization. If the seed bank is seriously depleted by intense fire, then seeding can add cover which may increase infiltration and reduce surface erosion, possibly providing benefits to downstream values (P. Wohlgemuth, PSW-Riverside, per. communication). Oak/grass woodlands will always have a sufficient seed source and will not require supplemental seeding.

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).

9. A rapid, accurate method to assess the quantity of seed in the soil after the fire would assist in deciding whether severely burned areas should be seeded. Some considerations in developing such a technique are: 1) obtaining an adequate sample size, 2) determining the minimum number of seeds/unit volume to recommend seeding, and 3) locating facilities for germinating the samples. 4) Determine germination procedures that reflect natural germination processes so as not to under or over estimate germination.

10. If native seed is prescribed, it should be collected locally.