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File Code: 2520/6520

Date:

Route To:

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

To: Forest Supervisor, Los Padres National Forest
Assistant Regional Forester, Ecosystem Conservation

Attached is the approved Burned-Area Emergency Rehabilitation Report for the Sur fire. The report documents that after detailed evaluation of the area that no emergency conditions exist on National Forest System lands. However it goes on to identify some site specific emergencies on other jurisdictions, and documents that the Forest has passed this information along to the other agencies with jurisdiction for these areas.

The Forest Supervisor, Los Padres National Forest is authorized to expend up to \$45,764 of WFSU-FW22 funds at this time for BAER administration and evaluation indicated in Part VI of the enclosed FS-2500-8 report.

The Assistant Regional Forester for Ecosystem Conservation is authorized to expend up to \$10,000 of WFSU-FW22 funds for BAER administration and evaluation.

REGIONAL FORESTER TEAM

Enclosure

cc: PDB

ARF FAM

WSA:WO

R.Griffith

USDA NRCS State Conservationist, Davis, California

California Department of Forestry and Fire Protection,

Headquarters, Sacramento, California.

State of California, Department of Fish and Game, Sacramento, California

United States
Department of
Agriculture

Forest
Service

Los Padres
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Forest

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Reply to: 2520

Date: November 5, 1996

Subject: Fire Burned Area Report

To: Regional Forester

The initial Burned Area Report (Form FS 2500-8) for the Sur Fire is attached. The history of fire and flooding for this area warranted the formation of a BAER Team to determine if a watershed emergency existed. The BAER team found that the fire intensity was low and moderate throughout the area with little damage to the watersheds. **Based on our assessments the team determined that there was no emergency per criteria in FSH 2509.13.**

As a result, we do not propose BAER treatment but we do request the authority to spend \$45,764 of BAER funds for the cost of the SUR BAER Team's evaluation and to purchase air photos and digital color IR imagery for on and off site evaluation of fire damage.

Recommendations for trail closure, implementation of existing flood control policies, and mitigation for potential road damage on private lands will be forwarded to the responsible agencies.

/s/ Margaret J. Boland (for)
DAVID W. DAHL
Forest Supervisor

cc: MRD DR

PART I - TYPE OF REQUEST

A. Type of Report

- ☐ 1. Funding request for estimated EFFS-FW22 funds
- ☐ 2. Accomplishment Report
- ☒ 3. No Treatment Recommendation

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
- ☒ 3. Final report - following completion of work

PART II - BURNED-AREA DESCRIPTION

- A. Fire Name: Sur B. Fire Number: LP1011
C. State: California D. County: Monterey
E. Region: 05 F. Forest: Los Padres (07)
G. District: Monterey (51)
- H. Date Fire Started: 10/18/96 I. Date Fire Controlled: est.11/10/96
J. Suppression Cost: est. \$8,200,0000 10/31/96
- K. Fire Suppression Damages Repaired with EFFS-PF12 Funds:
1. Fireline waterbarred (miles) 9.2 miles
2. Fireline seeded (miles) 0
3. Other (identify) approximately 50 acres rehabilitation of soil and vegetation at the fire base camp.
- L. Watershed Numbers: Pacific Ocean Tributaries (1806000602)
- M. NFS Acres Burned: 4168 Los Padres NF Total Acres 4430
Ownership type:
(16) Pfieffer Big Sur State Park (0)BLM (246)PVT
- N. Vegetation Types: Coastal sage scrub, redwood forest, mixed evergreen forest, oak forest, knob cone pine stands, ponderosa pine stands, northern mixed chaparral, chamise chaparral, blue oak/grey pine woodland
- O. Dominant Soils: Cienaba, Gamboa, Sur, Junipero, and extensive areas of rock outcrop

P. Geologic Types: Primarily Metamorphic (sandstone, shale, ultrabasic marine rocks, gneiss), plus minor amounts of granitic rock

Q. Miles of Stream Channels by Class:

I. 4.2 II. 3.2 III. 5.9 IV. ----

R. Transportation System:

Trails: 7 (miles) Roads: 6 (miles)

PART III - WATERSHED CONDITION

A. Fire Intensity (Acres): 2850 (low/unburned) 1567 (moderate) 13 (high)

B. Water Repellant Soil (acres): 425 (some increase in water repellantcy was observed in about 30% of the low burn intensity areas)

C. Soil Erosion Hazard Rating (Acres):

0 (low) 0 (moderate) 4430 (high/very high)

D. Erosion Potential: 10 tons/acre (pre-burn estimated to be 6 t/a)

E. Sediment Potential: * cu. yds/sq. mile

* A slight increase (20% for the lower Big Sur River) above normal background levels due to fire is expected the first year only and is not considered significant in terms of flooding potential, nor is it practical to treat in this case.

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 3-5 years.

B. Design Chance of Success: * percent.

C. Equivalent Design Recurrence Interval: * years.

D. Design Storm Duration: * hours.

E. Design Storm Magnitude: * inches.

F. Design Flow: * cfs.

G. Estimated Reduction in Infiltration: 0 percent.

H. Adjusted Design Flow: * cfs.

* A 20% increase above normal background levels is expected due to fire for the lower Big Sur River. Design flows were not calculated since there are no drainage structures within the fire area.

PART V - SUMMARY OF ANALYSIS

A. Describe Emergency:

THE BAER TEAM HAS DETERMINED THAT THE FIRE HAS NOT CAUSED A WATERSHED EMERGENCY.

Introduction:

On October 18, 1996 a wild fire started in the Ventana Wilderness along the Bad Gulch drainage and burned about 4,430 acres. The fire, named the Sur Fire, burned aggressively. Access was limited and the country is steep making fire

fighting difficult and complicating watershed assessments. This area has a frequent fire history (Molera fire, 1972; Marble-Cone fire, 1977; Gorda-Rat fire, 1985). The low fuel loading of the area, evidenced by the generally low intensity of the fire, is largely due to these past fires. The ecosystem is fire-adapted and vegetative recovery is expected to be rapid. The fire affected portions of four watersheds: Big Sur River, Tributary to Doolans Hole, Doolans Hole Creek, and Ventana Creek. Soil erosion hazard is high or very high over 100 percent of the area and in addition some of the fire area geology has a high potential for landslide activity. However, very little (less than 1 percent) of the fire area burned at high intensity and erosion and sedimentation are **not** expected to increase significantly above background levels after the first year. The first rainy season may see an increase in soil movement of up to 4 tons/acre over background levels but this is not expected to be significant given the naturally high erosion rates in the landscape. Of the area that burned, 2,850 acres (64 percent) were low intensity or unburned; 1,567 acres (35 percent) were burned at moderate intensity; and 13 acres (less than 1 percent) were burned at high intensity. The fire may have increased water repellency in the soils above natural background conditions in about 30% of the low burn intensity areas.

Initial Burn Area Emergency Concerns:

Is there a threat to human life downstream, due to fire related erosion and increased water flows?

Is there a threat to Big Sur Wild and Scenic River?

Is there a threat to heritage resources?

Is there a threat to soil productivity and/or water quality?

What effect will fire induced runoff have on the road system and drainage facilities?

What is the potential for damage or destruction due to fire related erosion emergencies such as landslides, rilling, gullying, and runoff on downstream structures?

What effect will the fire have on TE&S species and habitat within the burned area, especially with regard to the Steelhead Trout?

INDIVIDUAL TECHNICAL REPORTS SUMMARY (Complete Specialist's Reports are located at the Los Padres Supervisor Office and Monterey Ranger District Office.)

Burn Intensity and Soils

The definitions and identifying criteria for BAER burn intensity classes are set forth in FSH 2509.13. Soil factors such as amount of soil cover remaining, condition and color of ash and charred litter, soil structure, and water repellancy are critical in identifying and mapping burn intensity. Of the 4430 acres within the burn perimeter, the percent in each burn intensity class is:

<u>Burn Intensity</u>	<u>Acres</u>	<u>Percent of Total</u>
Low/Unburned*	2850	64.3%
Moderate	1567	35.4%
High	13	0.3%
Total	4430	

*NOTE: about half the area mapped as low intensity consists of unburned patches.

Vegetation communities on these steep slopes are strongly controlled by aspect and topographic position. South aspects are generally populated by the coastal sage scrub community. Pre-burn organic soil cover is fairly low in these communities, about 30%. However, many of these soils have a high coarse fragment content, and surface armoring over ages of frequent fire-erosion cycles has resulted. These surface erosion pavements serve to increase the effective soil cover.

The sages are especially high in pungent oily compounds, and as their leaf litter decomposes in the surface soils a thin layer of natural water repellancy at the immediate soil surface results. In the case of the Sur fire, virtually all the shrub communities that were involved burned at moderate intensity with short fire residence time. We did not observe a significant increase in water repellancy as a result of the fire.

The north facing slopes in the burned area are dominated by mixed evergreen forest communities. The areas of mixed evergreen within the fire perimeter generally burned at low intensity or remain unburned (about half of the area mapped as Low intensity consists of unburned patches). The duff layer was partly consumed to black and grey ash. Usually some intact or charred litter is at the base of the ash layer above the mineral soil surface. Moderate hydrophobicity was observed in the top 1/2 to 1.5 inches. This water repellancy is spotty in occurrence and occurs in perhaps 30% of the low burn intensity areas. Pre-burn effective soil cover was estimated to be about 95%.

Lower slopes and drainages are dominated by redwood forest communities. Surface soils are high in organic matter, overlain by a thick duff and litter layer, and unburned areas exhibit moderate to strong water repellancy in the top inch or so. The redwood forest areas involved in the fire generally experienced low burn intensity or remain unburned, and no significant increase in hydrophobicity was observed.

Very little area of grassland-oak community was involved in the burn, and was primarily along the North Coast Ridge Road where back burning was done to

protect the residences in the area. Burn intensities were low and little or no hydrophobic conditions were found. The grass was charred but not completely consumed and bits of charred litter are visible in the remaining material. Effective soil cover was estimated to be 80% in the unburned conditions and 50% in the lightly burned areas. Regrowth of grasses will commence almost immediately, especially given the rains experienced during the fire.

There is some increased risk of loss of long-term soil productivity due to the fire, but generally it is low due to the fact that most of the fire burned at lower intensities. There will be localized increased soil loss in the moderate and high intensity burn areas the first rainy season following the fire, but by the following season, these fire-adapted vegetation communities will have recovered and erosion rates will return to background levels. In areas of low intensity burn, some soil movement will occur until fresh leaf and needle litter replace effective soil cover. The rains that have occurred several times during the fire will ensure rapid regrowth of vegetation. Most of the drainages within the burn perimeter experienced low burn intensity, and retained sufficient canopy to contribute litter to replace burned duff and prevent significant soil loss. In the areas that burned at lower intensities the vegetation may benefit in the short term from the flush of nutrients released from the ash. Most of the ash will wash downslope or blow off site, some of which will be captured in unburned areas capable of holding it, thus increasing the nutrients at the receiving site.

We observed only one small area (5 to 10 acres) of high burn intensity. This was on the northeast side of Island Mountain, in an area of mixed evergreen forest. Tree canopy was entirely consumed, ash was mostly black, with lines of white ash apparent where downed logs had burned. Since this area is in the very remote interior of the burn, no ground visit was possible. Because the area is so small, and has low intensity and unburned areas downslope in the rest of the watershed, we do not expect any significant off-site soil movement. Natural reseeding of tree species will occur from the surrounding intact forest.

Most of the areas mapped as moderate burn intensity were the shrub communities discussed earlier. The fire apparently traveled up these slopes rapidly, consuming shrub vegetation quickly, but not remaining in contact with the soil for very long. This short fire residence time is the reason we did not observe factors indicating high soil burn intensities. These areas are primarily on south facing slopes, and pre-fire organic ground cover is not high, but many of these areas have developed erosion pavement, or surface armoring with rock fragments. These slopes naturally exhibit high erosion rates due to the steep angle of the slopes, with dry ravel and sheet and rill erosion being major geomorphic processes on the middle and upper slopes. In inner gorge areas, where slopes approach 90% or more, mass wasting processes dominate. Post-fire vegetation recovery in these fire-adapted communities will be rapid. This fire and vegetation regrowth cycle is a natural part of the ecology of these ecosystems. A fire regime of frequent, low intensity fires is needed to prevent massive buildup of dense shrub communities, and accumulation of ladder fuels in forested communities. As long as these fuels do not build up, fire intensities are low, soil damage is minimal, and stand-replacing fires are the exception.

Watershed

The 4,400 acre Sur fire was a moderate to low intensity late season fire that occurred almost entirely within the Big Sur River watershed. The watershed has a history of high intensity fires followed by damaging floods and mudslides. The effects of the Sur fire are expected to be localized to the first order drainages, with only moderate effects transmitted downstream to the Lower Big Sur River. In this case, a fire-caused emergency related to loss of water control, degradation of water quality, and threat to life and property does not exist for the following reasons:

the small percentage of the watershed area that was burned (14%),

the low to moderate intensity of the fire (only 5% of the watershed was burned at a moderate level), and

the minimal effect on riparian areas.

The Forest Development trail system will be impacted during the winter by falling debris, stream channel scour, and deposited sediment. These conditions will create hazards to users of the trail, especially during rainfall. Trail closures should remain in effect until slopes stabilize and the trail tread is repaired. For the Lower Big Sur River, implementation of existing flood control policies offers the best solution for reducing the existing threat from damaging floods.

Geology:

Field observations throughout the Big Sur fire area indicate that there is very little increase in the risk of landsliding events as a result of the Big Sur incident. The fire burned with a low to moderate intensity in the represented watersheds, with the exception of a small portion of the Big Sur watershed that underwent high fire intensity impacts.

Dry ravel and soil slip, resulting from the moderate intensity fire impacts will be an ongoing problem until leaf and needle cast is sufficient to give the soil surface an added degree of protection.

There has been no identified increased risk or mitigation opportunities from a geologic standpoint.

Engineering:

Very few miles of road are within or bordering fire burned areas. Most of the fire occurred within the Ventana Wilderness. Only two roads were identified as having potential fire related impacts, the North Coast Ridge Road (Road 20S05.1) and the Harrington Road (Road 20S05A). Road related impacts from the Sur Fire should be minimal. Maintenance responsibilities for the main North Coast Ridge Road rest with the U.S. Air Force. The Harrington Road is a special use road with permittee maintenance responsibility.

The potential for road related property damage from the fire is judged to be small, and restricted to storm runoff damage that could cause temporary loss of access to private residences.

The following recommendations will be forwarded to the responsible agencies to mitigate potential damage:

To ensure culvert drainage structures will not be overwhelmed with runoff from this winter's storm events. Three drainage crossings on the North Coast Ridge Road should undergo immediate maintenance and improvement. Existing sediment accumulations in the culvert inlet catch basins should be excavated and removed. At two of the drainages, extensions to the riser inlets should be added creating "snorkel" type inlets.

Some additional small rock ravel can be expected onto the North Coast Ridge Road from upslope burned areas between mile posts 1.9 and 3.4. (Mile post 0.0 is at the gate near the Ventana Inn Restaurant.) Additional maintenance patrols should be scheduled to clean this debris. Also, culvert patrol during the first few winter storms is recommended.

Fisheries:

The Big Sur River supports one of the larger steelhead runs of the south central California coastline and is considered important for steelhead recovery (proposed listing August 1996). Primary steelhead spawning and rearing habitat is located along 6 miles of the Big Sur River below the Big Sur Falls and the Forest Service boundary. The upper Big Sur drainage provides 13 miles of good to excellent resident rainbow trout habitat and at least 9 miles of potential steelhead habitat.

The effects of the Big Sur Fire are expected to be localized and not extended into multiple years. The low intensity and limited area and minimal extent of burn within riparian areas will minimize the effects of the fire on steelhead and other aquatic resources. If any areas are effected it will be within Ventana Creek and within the Big Sur River immediately downstream from Ventana Creek. The early post-fire storm mobilized much of the fine sediments and subsequent storm events coupled with the continued winter flows from the upstream unburned watershed should flush out channels prior to the late winter steelhead spawning period. Some additional input of large woody debris is to be expected and could provide beneficial structure in channels. Dry ravel will contribute gravels that may prove beneficial to steelhead production and overall aquatic productivity once fine sediments are flushed from the system. Landslides may be triggered by the fire and could cause additional blockages to upstream steelhead movements.

A total loss of access in the gorge would equate to a loss of less than 25 equivalent adult steelhead with a recreational value of \$1,300. Habitat restoration costs could be \$5,000 or more, depending on the extent of the landslide. The increased sedimentation of spawning gravels and temporary reduction in food production could under a worst case scenario contribute to a loss of approximately 20,000 steelhead smolts which equates to 200 adults and roughly 50% of the total 1996 yearclass. A partial loss of less than 50 equivalent adults would be more likely with a recreational economic value of \$2,600. Losses to resident trout would not be significant in terms of the overall Big Sur River resident trout population which is mostly located upstream from the fire area.

There are no treatments which could realistically prevent these effects although post-storm in channel treatments may be able to minimize some of the potential losses or shorten recovery time. Monitoring of conditions is recommended with evaluation of potential habitat restoration and enhancement measures in ensuing years.

Federally listed southern sea otter (threatened), brown pelican (endangered), and Stellar's sea lions (threatened) may inhabit the nearby Monterey Marine Sanctuary. Aquatic resources of the Big Sur Marine Sanctuary are not expected to be significantly affected since the increase in sediment and nutrient plumes will be minor in comparison to other sources. A slight increase in large woody debris could provide added bottom structure and floating cover for a variety of marine life.

Wildlife

T&E Species

The fire or suppression activities may have affected individuals and habitat of Stellers's Sea Lion, California red-legged frogs and Smith's blue butterflies. There was no effect from the fire or suppression activities on California condor, peregrine falcons, bald eagles, brown pelicans, marbled murrelets, Southwestern willow flycatchers, and California black legless lizard.

Other Species

Other federal, state and local species of concern considered are California spotted owl, prairie falcon, purple martin, yellow warbler, Monterey dusky-footed woodrat, Southwestern pond turtle, two-striped garter snake, California horned lizard, Foothill yellow-legged frog and coast range newt. The fire may have affected individuals but is not likely to result in a trend toward federal listing.

Fire camp was moved to avoid impact on an adjacent Monarch butterfly roost area in a eucalyptus grove.

Botany:

The ecosystem is fire adapted. Native plant species, including those species listed as "Forest Sensitive" or "rare", will quickly be re-established from the soil seed bank (which may consist of thousands of seeds per square meter), or will rapidly re-sprout from root crowns. With this in mind, no emergency exists that would require mitigating treatment under the BAER team mandate. Vegetation is a mosaic of several plant communities that vary with slope, aspect, elevation, and proximity to the coast.

The recovery rate of these vegetation communities will depend on a number of variables, including temperature and timing and amount of precipitation. Surveys of recovery rates (in unseeded areas) during the first spring following wildfires revealed 65% revegetation cover for the 1993 Marre Fire (even in identified high intensity burn areas) and 60% cover for the 1994 Highway 41 Fire (unpublished data on file at Los Padres National Forest Supervisor's Office).

Sensitive plant species: Hutchinson's delphinium (Delphinium hutchinsonae), Butterworth's buckwheat (Eriogonum butterworthianum), Talus fritillary (Fritillaria falcata), Cone Peak bedstraw (Galium californicum ssp. luciense), Arroyo Seco bush mallow (Malacothamnus palmeri var. lucianus), Carmel Valley cliff aster (Malacothrix saxatilis var. arachnoidea) Dudley's lousewort (Pedicularis dudleyi), Muir's raillardella (Raillardiopsis muirii), Hickman's checkerbloom (Sidalcea hickmanii ssp. hickmanii), Santa Lucia fir (Abies bracteata)

Silviculture:

The major portion of the Sur fire was located and contained within the Ventana Wilderness. There are no reforestation activities recommended for this fire because of its location.

Generally, the Redwoods will survive within the areas that fire was not carried by the crowns. All tree species commonly found in this ecosystem are adapted to fire. They will regenerate.

Redwood forests occur in the lowest portions of the drainages and north facing slopes. In these stands, the overstory is predominately redwoods, with an understory mixture of big leaf maple, alder and madrone. This fire burned with a low to moderate intensity. Expect the understory vegetation to be consumed. The larger redwoods in these drainages can be expected to survive, if the fire was not carried by their crowns or if the fuel loading at the base of these trees was not heavy.

Heritage Resources Summary

Hydrological studies of the Sur Incident have determined there is little significant risk of loss or damage to properties as a result of the fire. This is based primarily on the fact that the Sur fire was of low to moderate intensity and burned only 14% of the Big Sur watershed.

An assessment of risk due to flooding or sedimentation of historic properties was conducted for the Sur Incident. Of particular focus were those historic properties situated along the Big River downstream of the burn area. These include the Pfeiffer Homestead, the Floss Cabin and Manuel Innocente gravesite which date back to the mid to late 1800's. The Sur River has a history of flooding even during normal rainy conditions. It is recommended that flood control policies established by Monterey County be followed.

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

Land ____ % Channel ____ % Roads ____ % Other ____ %

D. Probability of Treatment Success

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

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

F. Cost of Selected Alternative (Including Loss): \$ _____ (No Action)

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range
<input checked="" type="checkbox"/> Timber	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input checked="" type="checkbox"/> Ecology	<input type="checkbox"/> Research	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> GIS	<input checked="" type="checkbox"/> Fisheries	<input checked="" type="checkbox"/> Botanist	<input checked="" type="checkbox"/> Rec/Wilderness

Team Leader: Gary Schmitt

Phone: (209) 297-0706 ext. 4933

DG Address: R05F15A

Team Members:

Annette Parsons: Soils, GIS
Patrick Merchant: Soils trainee
Bob Hawkins: Hydrology, suppression rehab liason
Rich Weist: Silviculture
Lisa Bryant: Soils, team leader trainee
Bill Snavelly: Geology
Robin Butler: Wildlife
Carol Molitoris: Wildlife trainee
Andrea Maliarik: Archaeology/trails
Sara Chubb: Fisheries
Dirk Rodriguez: Botany, GIS
Tom Ward: Ecology/Botany
Rich Wisehart: Engineering

Forest Advisors/Resources

Kevin Cooper: Wildlife
Karen Danielson: Botany
Dick Zechentmayer: Land Use/trails

H. Treatment Narrative:

No treatments are prescribed for National Forest System Lands. A list of treatment options regarding roads will be provided to responsible agencies. These options are to be considered by these agencies, and they will make their own decisions based on their situation.

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.

Line Items	Units	Unit Cost M\$	NFS Lands			Other Lands			All
			Number of Units	EFFS- FW22 M\$	Other \$	Number of Units	Fed \$	Non-Fed \$	Total \$
					ident.		ident.	ident.	
A. LAND TREATMENTS									
B. CHANNEL TREATMENTS									
C. ROADS AND TRAILS									
D. STRUCTURES-OTHER									
E. BAER EVALUATION/ ADMINISTRATIVE SUPPORT									
Salary, travel, admin.	Team	days	\$ 3647	10	\$36464				
Air Photos		acres	\$ 0.27	4430	\$ 1200				
Digital Color IR imagery		acres	\$	4430	\$ 8000				
Replacement of misc. supplies		---	---	---	\$ 100				
TOTAL									
					\$45764				

PART VII - APPROVALS

1. _____
Forest Supervisor (Signature) _____ Date _____
2. _____
Regional Forester (Signature) _____ Date _____