BEDFORD FIRE REHAB SUMMARY

Trabuco Ranger District, Cleveland National Forest, Region 5

March 18, 1991

This document is a summary of the rehab efforts made for the Bedford Fire of June/July, 1990.

Authorization for expenditure of Emergency Burned-Area Rehabilitation funds (FFFF-FW22) was granted by the Regional Forester on August 10, 1990. Cooperating agencies for the Bedford Fire Rehab included:

USDA Forest Service
USDA Soil Conservation Service
California Department of Forestry and Fire Protection
Riverside-Corona Resource Conservation District

Rehab accomplishments, funding and actual costs are as follows:

Accomplishment	Funding ($)	Actual Cost ($)
FFFF & FW22 funds (District MC 520603)		
Seeding of 1,473 acres of Natl Forest with native grass to prevent soil erosion from winter rains	81,015	52,056
Placement of temporary barriers and signs at 20 locations to protect against illegal OHV use	5,100	
	$ 86,015	$ 52,056
SCS WF-16 funds (District MC 520604)		
Purchase of straw matting, straw barriers, grass seed and fertilizer for SCS installation to protect private homes within Bedford Canyon	19,250	21,026
Channel clearing of 1 1/2 miles in Bedford Canyon by CDF to allow unimpeded runoff flows	40,000	30,000 **
	$ 59,250	$ 51,026

** This is an estimate from CDF (as of 3/18/91). They have not yet submitted a bill to the Cleveland National Forest but say they intend to submit soon (they are researching the charges). CDF contact is Linda Webb, CDF supervisor in charge of billing for Federal projects. She is located in Sacramento and her phone number is (916) 324-9715.

Values at risk protected as a result of the above-mentioned fire rehab efforts include:

1) Residential property - 31 private homes

2) Commercial property - recycling plant, brick factory, clay company stock yard, transfer/storage yard

3) Citrus orchards - 120 acres

4) Interstate 15 - major freeway underpass at Bedford Canyon crossing

These values at risk were estimated to be worth $10,291,000 by the Burned Area Survey Narrative of July 20, 1990.

Total staff time expended by the USDA Soil Conservation Service was 159 hours. In addition, volunteers were utilized by the SCS to protect the private homes by placement of straw matting on 5 acres, hand seeding and fertilizing on 51 acres and placement of straw barriers and checkdams. These volunteers and the time they contributed are:

Troop 339, El Cerrito Boys Scouts of America - 126 person hours
California Conservation Corps, Pomona Center - 160 person hours

Total - 286 person hours

Although Southern California has entered the fifth year of a drought, it should be noted that very heavy rains (9.85 inches measured in nearby Silverado Canyon) fell during one storm event from February 27 through March 1, 1991. It now appears that no major flooding or sediment flows or property damage occurred as a result of that event, and this is at least partially the result of rehab efforts conducted within the Bedford watershed during the Fall of 1990.

June 22, 1991

Burned Area Survey Narrative
Bedford Fire
Trabuco Ranger District
Cleveland National Forest

JULY 24, 1991

The Bedford fire started on June 22, 1990 in Bedford Canyon. By June 27 when the fire was controlled, it had spread into adjacent Joseph and McBride Canyons. A total of 1372 ac. of National Forest and 2190 ac. of private land were burned. On June 28 a Burned-area Survey Team was formed. Forest Service members of the team have included Dennis Inman, Team Leader/ hydrologist/ geologist; Ernest Martinsen, Trabuco District Resources Officer; Gary Schimtt and Tom Ryan, soil scientist; Ron Woychak, wildlife biologist; Lee DiGregorio, archaeologist; Art Bullard, engineering (roads); Judy Downing and Bill Pidanick, public relations; Tom White, vegetation management specialist, George Gleason, Resources and Planning Staff Officer, Craig Mahaffey, Burned-area Rehabilitation Coordinator; Randy Godden, State and Private Forestry; and Wade Wells, Susan Conrad, Jon Regelbrugge, and Susan Barro, Pacific Southwest Forest and Range Experiment Station. Cooperating agency representitives were Dave Matis and Kevin Turner, California Department of Forestry and Fire Protection; Ed Umbach, Glen Chambers, Bob Dunkel, and Tom Smith USDA, Soil Conservation Service; Ed Lotz, Riverside County Flood Control; and Ben Ramirez, Regional Manager and Dave Mendoza, Area Superintendent, California Department of Transportation.

SUPPRESSION-RELATED REHABILITATION

Initially the team focused on identifying suppression-related rehabilitation needs and coordinating these rehabilitation efforts using fire suppression forces assigned to the fire. The primary concern was the 6.2 miles of dozer line, much of which was constructed through primarily a Chamise-Black sage/shallow-soil ecological type along spur ridge lines at lower elevations in the watersheds and then down to the canyon bottoms. The District Ranger and technical specialists identified decreased visual quality, increased off-highway vehicle (OHV) access, and a potential for gully formation and soil erosion as the primary concerns related to these dozer lines.

Dozer lines are, for the most part, on the lower slopes and have a high impact on visual quality. The dozer lines may eliminate much of the chamise from the site and may increase Black sage and California sage. This may leave a long-term visual contrast between the dozer lines and surrounding vegetation. This potential effect may be mitigated in key areas by seeding with native species. Where the soil has been removed to a depth hindering revegtation, some dozer lines may remain evident. All alternatives except No Action include this mitigation.

There is an increased possibility of soil erosion and gully formation because many of the dozer and hand lines run perpendicular to the slope and have berms which will channel precipitation runoff in the loose soil of the lines. When no longer needed for suppression work, two dozers were retained to build water

bars which will divert some of the water from the dozer lines. Handlines were also waterbarred on steep slopes. Waterbars are mitigation used as standard operating procedure whenever fireline is constructed and are therefore not considered part of the proposed alternatives. The design and spacing of these waterbars is a function of site-specific characteristics such as soils, slope, precipitation, and vegetation. Altogether, approximately 21 miles of dozer and hand line were waterbarred. Seeding of dozer lines is also included as mitigation for all alternatives except No Action. Dozer line would be seeded with a mix of native species, including oats, vetch, blando brome, and red brome, in the fall to help reestablish cover to reduce soil erosion. A total of approximately 30 acres of dozer line would be seeded.

There is an extremely high potential for illegal OHV use of the dozer lines leading from Forest roads. Such use would directly result in more areas of accelerated soil erosion and soil compaction. These impacts then would lead to a loss of vegetation and increased gully formation not only on those ground surfaces directly affected by the OHV tracks, but most likely on areas immediately adjacent to or downslope from such tracks as well. To help prevent these adverse effects, 20 points of access to the dozer lines have been identified. Under all alternatives except No Action temporary barriers would be be placed at these points to prevent OHV access, and temporary signs would be placed which direct the public to stay on the road. These temporary barriers and signs have been installed. These barriers and signs will remain in place until sufficient vegetation had been established to prevent access. One hundred and ten feet of temporary barriers would be installed.

EMERGENCY BURNNED-AREA REHABILITATION

The Burned-area Survey team also completed analysis and planning for emergency rehabilitation of fire-related damage to the watersheds.

Burned-area Description

The approximate percentages of each of the three watersheds burned and the total acreage of each watershed are as follows: Bedford Canyon 48.5% of 4352 acres, Joseph Canyon 45% of 1460 acres, and Mc Bride Canyon 34% of 7158 acres. The lower two-thirds of each watershed was included within the fire perimeter. Approximately 39% of the area within the fire perimeter burned with a moderate intensity, which leaves brush skeletons and some unburned organic material at the soil surface. Another 18% burned at high intensity, which leaves no organic material on or above the ground except for brush stumps; and 43% burned at low intensity, which leaves unburned organic material at or above the soil surface. Although the overall burn intensity was between "low" and "medium", a combination of steep slopes, shallow soil profiles, accelerated post-fire dry ravelling (movement of dry, crumbling material effected by gravity usually on bare slopes over 55%), and soil hydrophobicity (water repellency of a layer of soil) has resulted in a "high" erosion hazard rating for 86% of the burned area. Ten percent of the burned area has a "low" rating, while the remaining 4% has a "medium" rating. Hydrophobic soils occur on approximately 57% of the burned area. They are more prevalent in areas that burned at "high" and "moderate" intensity. The hydrophobic layer occurs from the surface to a depth of three inches, but is generally less than 1/4-inch thick. Extremely steep slopes ranging between 60 and 70% generally begin near the 1600-foot-elevation

contour except for less than 100 acres near the mouth of Bedford Canyon where the steep slopes begin around the 1400-foot-elevation contour. Almost all of the burned area inside the Forest boundary, except for a few ridge tops and the floodplains of the principal drainages, consists of these steep slopes which have historically generated large amounts of fine through coarse material to the ephemeral channels under "normal" pre-fire conditions. This sediment has been transported through the upper watershed, and the upper channels show evidence of only minor deposition. However, much sediment has tended to accumulate in the lower channels since at least the intense storms of 1979-80. Alluvial material in the main channels immediately upstream from the the mouths of the three canyons is especially deep. Consequently, there is a large volume of sediment available for transport by runoff. Sediment production from each of the three watersheds under various conditions of soil water saturation are presented in Table 1. Total sediment production from each watershed, under conditions which would cause runoff of 50% of the precipitation resulting from a single storm of a character which could be expected to occur once every two years and produce four inches of precipitation over a 24 hour period, may be as presented in Table 2.

TABLE 1

SEDIMENT PRODUCTION (cy/sm)

Percent Saturation	Bedford	Joseph	McBride
Pre 1980			
0%	5,400	12,000	9,400
50%	11,000	19,000	17,000
100%	10,000	32,000	28,000
Post Fire			
0%	13,000	20,000	17,000
50%	22,000	31,000	27,000
100%	36,000	47,000	43,000

TABLE 2

SEDIMENT GENERATED BY A 2-yr, 24-hr PRECIPITATION EVENT (cy)

	Bedford	Joseph	McBride
Soil Risk Unit	VERY HIGH	HIGH	HIGH
Source		Volume (cy)	
	Bedford	Joseph	McBride
Slope	244,800	108,100	90,300
Channel	2,518,590	556,600	50,000
@ scour depth (ft)	10	5	3
TOTAL (cy)	2,763,390	664,700	140,300

TABLE 3

ACREAGE

Watershed	Ownership	Burned Ac	%	Unburned Ac	%	Total Ac
Bedford	Private	739.7	17.0	390.3	9.0	1130.0
	F. S.	1372.9	31.5	1849.1	42.5	3222.0
Subtotal		2112.6	48.5	2239.4	51.5	4352.0
Joseph	Private	658.4	45	571.2	39	1229.6
	F. S.	2.0	0	228.4	16	230.4
Subtotal		660.4	45	799.6	55	1460.0
Mc Bride	Private	366.4	27	383.8	29	750.2
	F. S.	97.4	7	498.4	37	595.8
Subtotal		463.8	34	882.2	66	1346.0
TOTALS		3236.8	45	3921.2	55	7158.0

TABLE 4

WATERSHED HYDROGRAPHY

	Bedford	Joseph	McBride
Lower Elevation (ft)	890	900	890
Upper Elevation (ft)	2815	3195	2810
Elevation Difference (ft)	2925	2295	1920
Relief Ratio	0.0995	0.118	0.117
Main Channel Length (ft)	29,400	19,400	16,400
2-yr Flood Flow,(Q) in (cfs)	45	21	19
10-yr " "	327	139	129
50-yr " "	1083	445	413
100-yr " "	1515	616	571
100-yr* " "	4000		

* (using Riverside County methodology)

(1) The Q values are not bulked with sediment. If they were, the values shown could easily double. The existing culvert and flood control structures do not appear to be designed for such bulked flows.

RISK ASSESSMENT

There are high value properties both below and within the burn area that are at risk from sediment flows and floodwaters. In the areas between McBride, Bedford, and Joseph Canyons several residences are located at varying elevations. These structures may be at risk from localized sediment and debris flows generated by rainfall on the slopes above. The USDA, Soil Conservation Service (SCS) in their report, dated August 10, lists 11 residential properties with a total value of $1,650,000. Estimates of damage to these residences from sediment and runoff total $160,875. The probability of occurrence factor is 0.50. Therefore, the estimated "near term" damage, that which might be expected to occur during the next year, totals $80,437. The SCS proposes that a combination of treatments including hand seeding, mulching, straw barriers and matting be installed above those home sites where there is a high erosion potential. The cost for these measures is detailed on the Form 2500-8 below. Straw matting, straw barriers, grass seed and fertilizer were purchased for SCS installation to protect private homes within Bedford Canyon.

The design and success of measures to protect any high value property depends on several factors some of which are chance events and others which can only be estimated by various modeling techniques with no high degree of accuracy. Among these are the amounts of runoff and sediment produced by a storm with uncertain characteristics of frequency, intensity and duration. Topography vegetation cover and the ability of the ground to absorb water are other factors. In the watersheds under consideration, the average slopes above the 1600-foot elevation contour are about 65%, and this is where most the runoff will originate. Runoff from bare soils in the watersheds is expected to be rapid. These factors were considered in constructing Tables 1 and 2 presented above.

The seeding that is typically done following wildfire normally has a positive effect only on those slopes 40% and less. In cases where a mostly "low" to "moderate" intensity burn generally had minor effects on the soil, a stock of grass/herb seeds exists in the soil, and there is sufficient sprouting potential from burned vegetation; seeding would normally not be recommended for the general burn area. In addition, because of extremely steep slopes and loose soil in the upper areas of this fire, it is likely that much of the aerially-applied seed would be washed downslope with significant rainfall and runoff. However, if a series of light rains were to occur this winter, it is probable that aerially-applied seed on the upper slopes would not be washed away but would germinate in place thereby providing an additional margin of protection for the watershed. Treating all the burned area, therefore, would allow for the maximum margin of protection afforded by seeding. A total of 1,473 acres of NFS lands were seeded with native grass to prevent soil erosion from winter rains at a cost of .

The values of private property below the mouth of Bedford Canyon include those residential values discussed above, a large citrus orchard, and Interstate Highway 15. Below I-15, developments consist of a recycling plant, brick factory, rolling stock yard for Pacific Clay Co. and a transfer and storage yard. Bedford Canyon has a "pushed channel" storm ditch on the south side of the canyon. This ditch starts at the upper end of the citrus orchard and extends down to I-15. This ditch would be cleared of brush to restore the designed capacity. No adverse environmental effects are expected from this

maintenance of a constructed channel. One and a half miles of this channel were cleared to allow unimpeded flows. At the I-15 underpass the channel spreads out and flattens in gradient. With a bulked flow from a Q 10 or greater storm, material could start dropping from transport in front of the opening to the underpass and could cause a plug to form. I-15 was designed to handle a 100-year storm event, but was not designed to accomodate the bedloads possible after a major wildfire. Downstream from I-15 there is an earthen plug across the channel just upstream of Temescal Road. Riverside County Flood District has not done a 100-year flood study for Bedford Canyon. However, for the area from I-15 downstream to Temescal Wash, FEMA has done a 100-year storm event analysis which shows the properties below I-15 are out of the flood plain based on a 4,000 cfs discharge. However, if the discharge is greater than 4,000 cfs (for example with sediment-bulked flows) these properties may be at risk. No study has been completed that shows what discharge would put these properties at risk. No value has been assessed these properties by the Government at this time.

Joseph Canyon has a concrete-lined, open box culvert approximately 10 feet by 10 feet in cross-section that runs about 1800 feet up the channel from a point immediately above the I-15. About 100 feet upstream of the freeway, the concrete structure stops, and the channel takes a bend just before it goes under the freeway. This channel configuration could cause plugging of the underpass drainage structure which could result in water crossing the pavement of the freeway. Riverside County Flood District's 100-year flood study shows a discharge of 1,600 cfs at I-15. There is a residential development under construction adjacant to this channel. Within the flood plain of Joseph Canyon are two mobilehomes with outbuildings. These homes may suffer damage with the 100-yr flows. These are valued at approximately $250,000 total.

The lower channel of Mc Bride Canyon is being reconstructed to trapezoidal ditch having aprroximately a 6-foot bottom, 8-foot depth, and 16-to-20 foot top. It is unknown if the ditch is to be lined. In its present condition the ditch will not handle the bulked flows of a Q 10 or greater storm. No 100-year floodplain study has been completed for Mc Bride Canyon. A residential developement is being constructed adjacant to this ditch. No structures have been completed; the development is in the grading stage at this time with no completion date known. No value has been determinied. This development maybe be at risk if flows exceed the capacity of the ditch.

ALTERNATIVE TREATMENTS CONSIDERED

Alt 0. No Action. No emergency rehabilitation or mitigation measures would be implemented to prevent further decreases in watershed function or to restore it, as much as possible, to a pre-fire level.

Alt 1. Coordinate with other federal, State, and local agencies for flood control protection. Install 30 temporary OHV barriers and signing at an estimated cost of $5,100. Waterbar firelines at a cost of $2,500. Seed all 30 acres of dozer line with native species at an estimated cost of $1,500. Remove brush and debris from two miles of lower Bedford channel to restore capacity at a cost of $20,000 per mile. Estimated total cost of $49,100.

Alt 2. Same as Alt. 1 but also includes the following: (1) seeding of Bedford, Joseph, and McBride Canyons with Zorro fescue on NFS lands at a cost of $81,015 and with annual rye on CDF-responsibility lands at a cost of $26,460 for a total of $107,475, and (2) three measures for the protection of 11 residential structures: (a) special seeding of 20 acres at an estimated cost of $8,000, (b) ten acres of straw matting at an estimated cost of $6,000, and (c) 30 straw bale barriers at an estimated cost of $5,250. Estimated total cost of $175,825.

Alt 3. Same as Alts. 2 but with the addition of 10 catchment basins with a combined capacity of 430,000 cubic yards at a total cost of $8,600,000 (approximate construction cost of $20.00 per yard) which would be engineered by the USDA, Soil Conservation Service and constructed below the bottom of the present channel in Bedford Canyon. Seven basins would be constructed on NFS lands, and three more would be installed on private lands. Estimated total cost of this alternative is $8,775,825.

Alt 4. Same as 3 but does not include seeding of Bedford, Joseph, or McBride Canyons. Estimated cost of $8,668,350.

Alternative 2, as modified in this interim report, is selected by the Forest Supervisor to obtain a high margin of benefit for the protection of private property values.

Values at risk protected as a result of the above-mentioned fire rehab efforts include:

1) Residential property - 31 private homes

2) Commercial property - recycling plant, brick factory, clay company stock yard, transfer/storage yard

3) Citrus orchards - 120 acres

4) Interstate 15 - major freeway underpass at Bedford Canyon crossing

These values at risk were estimated to be worth $10,291,000 by the Burned Area Survey Narrative of July 20, 1990.

Total staff time expended by the USDA Soil Conservation Service was 159 hours. In addition, volunteers were utilized by the SCS to protect the private homes by placement of straw matting on 5 acres, hand seeding and fertilizing on 51 acres and placement of straw barriers and checkdams. These volunteers and the time they contributed are:

Troop 339, El Cerrito Boys Scouts of America - 126 person hours
California Conservation Corps, Pomona Center - 160 person hours

Total - 286 person hours

Although Southern California has entered the fifth year of a drought, it should be noted that very heavy rains (9.85 inches measured in nearby Silverado Canyon) fell during one storm event from February 27 through March 1, 1991. It now appears that no major flooding or sediment flows or property damage occurred as a result of that event, and this is at least partially the result of rehab efforts conducted within the Bedford watershed during the Fall of 1990.

USDA-FOREST SERVICE Date of Report: 7/24/91

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

PART I - TYPE OF REQUEST

1. Type of Report

[ ] A. Funding (Request for estimated FFFF funds)
[X] B. Accomplishment Report

2. Type of Action

[ ] A. Initial (estimated funding is first requested)
[ ] B. Interim

[ ] Updating the initial funding request.
[ ] Supplying information for accomplishments to date on emergency work underway.

[X] C. Final

[ ] Best estimate for funds needed to complete eligible rehabilitation measure.
[X] Following completion of funded work.

PART II - FIRE LOCATION

1. Fire Name Bedford
2. Forest Supervisor's Fire No. CNF-824 (from Form FS-5100-29):
3. State: CA
4. County: RIVERSIDE
5. Region: 05 (PACIFIC SOUTHWEST)
6. Forest: 02 (CLEVELAND)
7. Ranger District: 52 (TRABUCO)
8. Date Fire Started: 6/24/90
9. Date Fire Controlled:
10. Estimated Suppression Costs: $1,114,000
11. Fire Suppression Damages Repaired with FFFF PF1 Funds:

21 miles firelines waterbarred
___ acres firelines seeded
6.2 miles dozer line to be seeded fall 1990.

12. Fire Intensity: 43 % (low) 39 % (medium) 18 % (high)

Even though the overall fire intensity is low to medium, the upper watershed slopes will produce a high volume of sediment. Dry ravel is a dominant process that is occuring at an accelerated rate following the fire.

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed No.: 07020334
2. Acres Burned: NFS - 1472 ac. and Private - 1764 ac.
3. Water Repellent Soil: 1845 ac. (57%) which includes private land

4. Vegetation Types (%):

watershed	mixed chaparral		chamise chaparral		inland sage shrub		riparian woodland	
	pre	post	pre	post	pre	post	pre	post
Bedford	20	10	71	38	5	3	2	1
Joseph	20	11	72	40	5	2	2	1
McBride	20	13	72	47	5	3	2	1

5. Geologic Types: Metasediments and alluvial deposits.
Cieneba-Exchequer-Friant soils association; very steep & broken topography (flat ridge tops to 70-100+% slopes).

6. Soil Erosion Hazard Rating:

10 % (low) 4 % (medium) 86 % (high)

7. Erosion Potential: high
8. Miles of Stream Channel by Regional Order or Class:

Order	Bedford	Joseph	McBride
3	13.6 mi	3.4 mi	5.3 mi
2	9.1 mi	10.2 mi	3.4 mi
1	17.0 mi	5.7 mi	6.8 mi

9. Miles of Forest Service Trail: NONE
10. Miles of Forest Service Road by Maintenance Level:
_____ miles (Level I) 4.2 miles (Level II)
_____ miles (Levels III, IV, V)

PART IV - CALCULATED RISK AND CLIMATIC EVALUATION

1. Estimated Vegetative Recovery Period: 5 years. (3 years coastal sage, 7 years broadleaf).

2. Chance of Success Desired by Management: 60 percent.
3. Equivalent Design Recurrence Period: 10 years.
4. Related Design Storm Duration: 24 hours
5. Related Design Storm Magnitude: 4 inches (based on 2-yr, 24-hr NOAA event)
6. Related Design Flow 650 cfsm.
7. Estimated Reduction in Infiltration: 50 percent.
8. Adjusted Related Design Flow: 750 cfsm.

PART V - SUMMARY OF SURVEY AND ANALYSIS

1. 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	[X] Local Mgmt.	[X] Research	[X] Other

Other. cont:

Soil Conservation Service, Pacific Southwest Forest and Range Experiment Station, Riverside Flood Control District, California Department of Forestry and Fire Protection, and Calfornia Department of Transportation.

2. Describe Emergency: High risk of accelerated watershed erosion as a result of fire damage to barrier vegetation. Risk of hazardous impoundment of water behind accumulations of woody debris. Risk of damage to citrus trees, residential development and commercial property below the I-15 Freeway.

3. Emergency Rehabilitation Objective: NFS-Areawide:
(a.) Installation of barriers and signs to prevent accelerated erosion which would result from new access on NFS lands.
(b.) Reduce sediment production from NFS lands that might impact adjacant private lands.

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

Land 90 % Channel 80 % Roads _____% Other _____ %

5. Net Environmental Quality Benefit Index:

[X] Significant [ ] Not Significant

6. Net Social Well Being Benefit Index:

[X] Significant [ ] Not Significant

7. Benefit/Cost Ratio:
8. Net Benefits:
9. Cost Effectiveness Index: [ ] I. [ ] II. [ ] III. [ ] IV.

PART VI - ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS AND SOURCE OF FUNDS

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			Other Lands			All Lands
Line Items	Units	Unit Cost	No. of Units	FFFF $ FW22	Other $ FFFF PF1	No. of Units	Federal$ -SCS-	Non-Federal $ -CDF-	Total $
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
A. LAND									
a1. Seeding	acres	55	1473						81,015
a2. Seeding	**acres**	**15**				**1764**		**26,460**	**26,460**
b.waterbar firelines	miles	119	21		2,500				2,500
c.seed dozer lines	acres	50	30		1,500				1,500
d.straw matting	**acres**	**600**	**10**				**6,000**		**6,000**
e.straw barriers	**each**	**175**	**30**				**5,250**		**5,250**
f.special seeding	**acre**	**400**	**20**				**8,000**		**8,000**
B. CHANNELS									
a. Opening water courses *	miles	14 K				1.5	20,902		40,000
b. Stabilizing streambanks	miles					0			
c.									
d.									
e.									
C. ROADS AND TRAILS									
a. ROADS	miles								
b. TRAILS	miles								
*** c. BARRIERS & SIGNS	each	170	20						5,100
D. MAJOR STRUCTURES									
b. sediment/debris basins	ea								
E. TOTAL				86,115	4,000		59,250	26,460	175,825

* Bedford Ditch

*** **Barriers and signs qualify for FFFF FW22 funding only if they are temporary measures. They must be removed after vegetation has become re-established.**

PART VII - APPROVALS

ANN S. FEGE, Forest Supervisor	Date
Regional Forester (Signature)	Date

FS-2500-8