

HOUGHTON 11 - NARRATIVE SUMMARY

The Houghton 11 fire started on Monday, August 27, 1984, and eventually reached about 12,800 acres in size. Roughly 65 percent of the burn is classified as low intensity; which means that most surface litter and humus were not destroyed and plants will resprout from root crowns and surface roots. In low intensity burns surface erosion potential is low or unchanged. About 30 percent of the fire burned at medium intensity, which means that surface litter and humus were consumed by fire on up to 40 percent of the area, root crowns and surface roots will not resprout, and the potential for surface erosion is increased. It was felt that about 5 percent of the area burned with high intensity; these were small, site-specific areas within the medium intensity areas. The definition of high intensity is the same as medium except surface litter and humus are gone over more than 40 percent of the area.

The ownership pattern is mixed, with predominant ownership being corporate-private. Ownership is as follows: Forest Service 2092 acres (16 percent), Champion International 9846 acres (77 percent), State of Montana 660 acres (5 percent), Plum Creek, Inc. 17 acres (.1 percent) and small private ownership 213 acres (2 percent).

The burn area is in the SE corner of the Kootenai National Forest in an area of about 27 inches of annual precipitation with an average elevation of about 3500 feet. This is a relatively low annual precipitation for areas of this elevation on the Kootenai. The burn area is predominately low relief, rolling foothills with silt loam topsoils and volcanic ash-influenced loess overlying dense glacial till. Areas closer to the main Pleasant Valley-Fisher drainage are gently undulating stream terraces with silt loam topsoils formed in lacustrine outwash and alluvial deposits. The areas further away from the main Pleasant Valley-Fisher River drainage are much steeper with some slopes greater than 60 percent. The soils vary from glacial till to residual. The vegetation type is mostly mixed conifers with a prevalence of Douglas-fir and grand fir habitat types. Willow, alder and cottonwood are common in the stream bottoms.

The fire area is substantially accessible by road with a density of 6+ miles of road per section and has been intensively managed for timber products. The fire damaged or destroyed standing mature timber as well as managed plantations.

Approximately 70 to 80 percent of the firelines were constructed with tracked bulldozers with the remainder being handline. In some places "catline" was up to two blades in width. In many instances firelines tied into existing roads and skid trails but it was estimated that well over 50 miles of fireline was built, not including interior lines built later in the fire around unburned stands. Some "catlines" were on slopes in excess of 70 percent, but that was a minor exception. The suppression crews made excellent use of tractors on the fire and about 40 miles of "catline" and handline was waterbarred as it was built. This effort will substantially reduce rehab needs and minimize the potential for surface soil erosion.

Briefly, the major thrust of the rehab team was to identify those areas where the potential for major soil loss is high. The areas concentrated on were the firelines, steep slopes and steep lands adjacent to the stream courses. All the firelines were waterbarred, either by machine or by hand. The firelines on the lacustrine silts were waterbarred and, also, seeded and fertilized. About 40 acres of State of Montana land adjacent to the Fisher River were seeded and fertilized. Some of these slopes also had erosion barriers placed. Several areas adjacent to the Fisher River in Sec. 2, T.26N, R.29W. were deemed to be highly sensitive but were not treated due to lack of participation by the private landowner. In addition, traffic and compaction damage at the fire camp sites were treated. Appendix I lists the rehabilitation needs as detailed on the initial proposal.

At the initial meeting of the rehab team and the landowner representatives, it was strongly pointed out that broadcasting grass seed to stabilize the soil surface would not be acceptable. It was also pointed out that it would only be desirable to use seeding on firelines on slopes greater than 40 percent. The main reason given was to not have any competition for any tree seeds that would reach the soil surface.

In summary, the rehabilitation team feels that suppression-related impacts were relatively low and that rehabilitation needs were simple and not very costly. This is due in large part to the conscientious effort made during suppression to waterbar firelines plus the fact that soils, rainfall, and geology in the area are such that few critical sites are present.

BURNED AREA REPORT

DATE: 1/29/85

PART I - TYPE OF REQUEST

1. B. ACCOMPLISHMENT REPORT
2. C. FINAL      b. Following completion of funded work

PART II - FIRE LOCATION

1. Fire name: Houghton II
2. Supervisors Fire Number: 745284
3. State: MT
4. County: Lincoln
5. Region: 1
6. Forest: Kootenai
7. Ranger District: Fisher River
8. Date Started: 27 August 1984
9. Date Controlled: Sept. 5, 1984 2000 hrs.
10. Estimated suppression costs: \$4,449,282.28
11. Fire suppression damage repaired with FFF 102 funds:
  - a. 41. . miles of firelines waterbarred
  - b. 12.50.. acres of firelines seeded and fertilized
  - c. . . . other (identify) Stream debris-Appen IV
12. Fire intensity      63% low      32% medium      5% high

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed Number: See Appen. II
2. NFS acres burned: 2092 NFS
3. Water repellant soil: 10% over entire burn area, but of low duration. Will be neutralized within 1 year
4. Vegetation types: Mixed Conifer; Douglas-fir and Grand fir Habitat Type Series (80%), Subalpine fir H.T. Series (10%), Riparian Zones with alder, willow, dogwood, cottonwood, aspen (10%)
5. Geologic types: Continentally Glaciated -- Lacustrine deposits below 3600', mostly residual and till above 3600', volcanic ash on north aspects. Underlying bedrock-mixed Precambrian Belt.
6. Soil erosion hazard rating:      55% low      25% medium      20% high
7. Erosion potential:      85 cu.yd./sq.mi.
8. Miles stream channel by regional order or class: Ownership Totals (Miles)

FS--6.9, State--1.6,  
Cham--39.2, Small Private--1.8, BN--.5

<u>Order</u>	<u>Miles</u>	<u>Total Miles</u>
1&2	34.8	50.5
3	4.8	
4	7.2	
5	3.7	

Most of the first and second order stream mileage is ephemeral.

9. Miles FS trails: 1.5
10. Miles FS roads by maintenance level: (Forest Service Jurisdiction-Taken from Engineers Map Z-II)
  - a. 0 miles (level I) b. 5.5 miles (level II) c. 19 miles (level III, IV, V)

## PART IV - CALCULATED RISK AND CLIMATIC EVALUATION

1. Est. veg. recovery period: Surface Erosion - grasses, forbs, shrubs - 3-5yr  
Water yields recovery - conifers 25-30 years, if stand establishment occurs immediately.
2. Chance of success desired by management: 75%
3. Equivalent design recurrence: 25 years
4. Related design storm duration: 24 hours frontal storm
5. Related design storm magnitude: 2.8 inches
6. Related design flow: 30 cfs
7. Estimated reduction in infiltration: 35% the first season, reducing to less than 10% thereafter.
8. Adjusted related design flow: 35 cfs

## PART V SUMMARY OF SURVEY AND ANALYSIS

1. Skills represented on burned area survey team (list as appropriate):  
a. Hydrology, b. Soils, d. Range, e. Timber, f. Wildlife, g. Fire Mgmt  
h. Engineering, j. Local Mgmt., l. Corporate, State, Fishery
2. Describe emergency: Class G Wildfire - Resultant erosion control, stream stability and water quality
3. Emergency rehabilitation objective: (a) To reduce accelerated erosion and sediment yield potential from firelines (b) To reduce loss of site productivity (c) To protect against deterioration of water quality.
4. Probability of completing treatment prior to first major damage producing storm: (Assume would occur in December/January as a Rain-on-snow event. All firelines are waterbarred and 12.50 acres of fireline were seeded and fertilized. Most of the organic debris was removed from the channels. The channel alteration and streambank protection on Monk's property didn't occur. Rehab of the east and west fire camps (Hargraves and Manicke, respectively) has been taken of care. Assumes we may have missed some sites in initial survey.
5. Net Environmental-quality benefit index: a. Significant
6. Net Social-well-being benefit: b. Not Significant
7. Benefit/cost ratio: 2:1
8. Net benefits: \$46,050

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ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS AND SOURCE OF FUNDS

NFS LANDS

## OTHER LAND

**SCS**

Units	Unit	units	FFF	094	other	units	federal	non-fed	total	\$
	cost	#	\$		\$	#	\$	\$		

## PART VII - APPROVALS

Forest Supervisor approval and date: /s/ .....  
Regional Forester approval and date: /s/ .....

APPENDIX 1 - Proposed Rehab Measures

9/3/84  
Initial

Part VI. Eligible Emergency Rehabilitation Measures or Treatment and Source of Funds

A. Seeding

	<u>Acres</u>		<u>\$</u>	<u>FFF</u>	
FS	2.25	60/Ac	135.00	102	
Monks	10.00	75/Ac	750.00		SCS Fund
Hargrave & Sedlack Pk	12.0	85/Ac	1020.00	*	
State	2.0	60/Ac	120.00	*	
Corp. Pvt	8.0	60/Ac	480.00	*	
Small Pvt	.25	60/Ac	15.00	*	

B. FR & T Repair

FS	19 mi. (blading)	200/Ac	3800.00	102
	1 gate		1000.00	102
	McGinnis Br.		2000.00	102
	Pleasant Valley Campground			
	Cattle Guard		100.00	102
Corp. Pvt	Lyon Springs Br.		5000.00	*
	Houghton A Spur		5000.00	*
	Elk Creek Br.		4500.00	*
	122.6 mi. (blading)	200/Ac	22520.00	*
Pvt	Shelley Cattle Guard		200.00	*
<b>Total</b>			<b>46640.00</b>	

\*Funding unknown subject to private claims

APPENDIX II - Ownership and Watersheds

	<u>FS</u>	<u>S.R.</u>	<u>Cl</u>	<u>State</u>	<u>BN</u>	<u>Other Private</u>
(Acres)	2092	9517	329	660	17	213
(%)	16	74	3	5	.1	2
<b>Total Acres - 12828 *</b>						

\*Based on area within fire perimeter.

Watersheds (Part III, 1.)

1701	01	02	16-01	Pleasant Valley - Fisher
1701	01	02	17-01	McGinnis-Elk-Crystal
1701	01	02	17-02	Silver Butte-Fisher
1701	02	13	23-01	McGregor-Thompson

APPENDIX III - Initial Instructions to Tractor Bosses, During Suppression

Objectives

- A. Reduce accelerated erosion and sediment yield potential from fire lines.
- B. Minimize loss of site productivity.
- C. Protect against deterioration of water quality.

WATER BARS

Tractor line

Slope  $<$  20% -- 200 feet spacing  
Slope  $>$  20% -- 100 feet spacing

Dig trench 18-24" \* Deep

Make sure outsloped -- angled  $30^{\circ}$

\*Don't want soil piled up on top, dig into residual soil material.

Much better to use cats w/hydraulic tilt, D-6 size

If straight blades are used, sweep to outslope--to drain to down slope side.

Handline

$<$  40% 200 feet  
 $>$  40% 100 feet

Use natural topographic breaks, when possible.

REHAB TEAM

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9/3/84

APPENDIX IV - Debris Removal Instructions to Tractor Boss, During Suppression

Rehab - Raven Creek

- A. Near middle of section 35 - St.Regis Land

Remove material from stream channel above culvert approximately 300 feet (or to bend in drainage). Place debris along old spur or where it will not reenter channel.

- B. NENE Section 2 USFS

Remove all fire-related material (burned-off shrubs and trees) from two parallel streams (approximately 150 feet apart). Remove for a distance of 100 feet.

REHAB TEAM

APPENDIX IV CONT.

Sept. 4, 1984

STREAM REHABILITATION--HOUGHTON CREEK FIRE

The following are projects that have been accomplished or need to be done as of September 4, 1984 for the streams that were either adversely affected by the fire or from suppression activities:

A. Completed

Pleasant Valley-Fisher River

1. Large trees across river at Pleasant Valley Campground removed.
2. Remains of nature trail bridge removed from river.

B. Unfinished

1. Remove large trees across river from Lyons Springs Campground and immediately downstream.
2. Fisher River at Monk's--
  - a. Move log pile against raw bank south of River and open old channel to allow flows to reduce bank erosion.
  - b. Cut large dying trees on south bank to preserve stumps for some soil stability.

Raven Creek

1. Clear culverts of debris that may cause failure.
2. Remove dead trees that may have fallen in lower part of creek.

McGinnis Creek

1. Hand remove alder cuttings from creek near Elk Creek junction.
2. Improve water bars on hand lines entering creek.

REHAB TEAM

9/7/84

Houghton II  
Additional Rehab Needs

- A. Fisher River - Removal of at least 6 trees lying in and/or across the Fisher from Lyon Springs downstream.
- B. Restructure debris removed from the Fisher downstream from Raven. Place debris under slide upstream of water flow. Shove material into bottom of slide.
- C. Waterbar all firelines in Sector A of the West Zone. Most of this sector is in lacustrine soil material, which can be very erosive, and it is important that these waterbars are put in. On the steep slopes the bars need to be 50 feet apart. Sedlak Creek also has to be cleaned at the upper end of the alluvial fan at Sedlak Park.

Louis Kuennen



APPENDIX V

TO: LOU KUENNEN

9/5/85

SUBJECT: HOUGHTON CREEK FIRE ROADS REHABILITATION

1) ROAD BLADING NEEDS (FS JURISDICTION)

Rd. Level 2

Raven Cr. Rd. 761, Hwy 2 to Jct. 763,	1.0 miles
Fisher River 763.3, Jct. 761 to M.P. 1.4,	1.4 miles
West Side Elk Cr. 4421 A, Jct. 4421 to M.P. 1.8,	1.8 miles

Rd. Level 3

West Side Elk Cr. 4421, Jct. 535.2 to M.P. 0.4,	0.4 miles
Houghton Creek 6761, Hwy 2 to M.P. 1.2,	1.2 miles
Houghton Creek 6761, Jct. 516 (County Rd.) to M.P. 2.7,	2.7 miles
Fritz Mtn. 6731, 0.5 mi. on aggregate fire line,	0.5 miles
Crystal Cr. 6734, Hwy 2 to creek crossing,	0.2 miles
McKillop - McGinnis 535.2, Jct. Hwy. 2 to County Rd.,	6.3 miles
County McGinnis Rd. Jct. Hwy. 2 to 535.2,	3.4 miles

Total miles FS roads, 18.9 mi. @ \$200/mi = \$3780 (Does not include watering)

2) Lyon Springs cut across bridge (St. Regis)

Replace Northwest abutment - est. \$4000 - \$5000

3) McGinnis Bridge (County Road)

Broken upstream stringer on East span - Needs replacement - Stringer size 17ft. x 16" dia, treated - est \$2000.

4) Houghton Creek Bridge

Not damaged by fire traffic, however will not support legal highway loads for salvage log haul. Will be replaced in FY 85.

5) Raven Work Center Access Road 997

Gate torn down, needs replacement, - est. \$1000.

6) Pleasant Valley Campground 4876

Replace curb on cattleguard - est. \$100.

7) Shelly Cattleguard (Private Drive)

Replace burned cattleguard - est. \$200.

8) Houghton Creek A Spur (St. Regis Rd.)

Place 4" compacted grid rolled pit run. Pit located 1.2 miles from project. - est. \$5000.

RAY HAMMONS

ZONE II ROAD MANAGER

APPENDIX V CONT.

## Houghton II

A. Damages related to suppression activity		
1. Corp. Pvt. - Blading of roads, 122.6 miles @ \$200/mile		\$22,520
2. Gate at Raven		1,000
3. McGinnis Bridge Stringer		2,000
4. 19 mile blading, Forest Service		3,800
5. Hargraves		1,000
6. Sedlak Park		200
7. Fire lines, 12.5 acres		750
8. Houghton A spur		5,000
B. Fire Damaged		
1. Cattle Guard	\$ 100	
2. Elk Creek Bridge	4500	
3. Shelby Cattle Guard	200	
4. Lyon Springs Bridge	5000	

SUMMARY FOR A-1 (Corp. Pvt.)

Road Blading needs: (St. Regis roads)

Township	Range	Miles of road
26	- 28	: 24.5
26	- 29	: 29.8
27	- 28	: 44.9
27	- 29	: 13.4
Total :		112.6 miles

112.6 mi. x \$200/mi. = \$22,520.00 (Does not include watering.)

SUMMARY FOR B-2 (Elk Creek Bridge)

SEC. 5 NE1/4 T26 R28

30' native timber

1200 Labor

600 Equip.

2400 Material

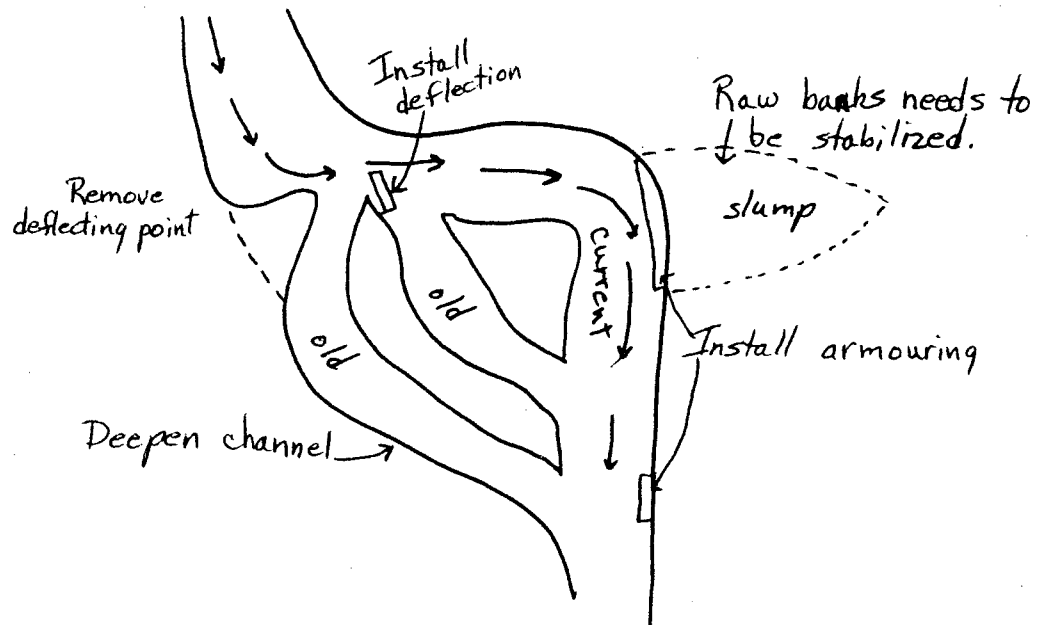
100 Loader

4300 say \$4500

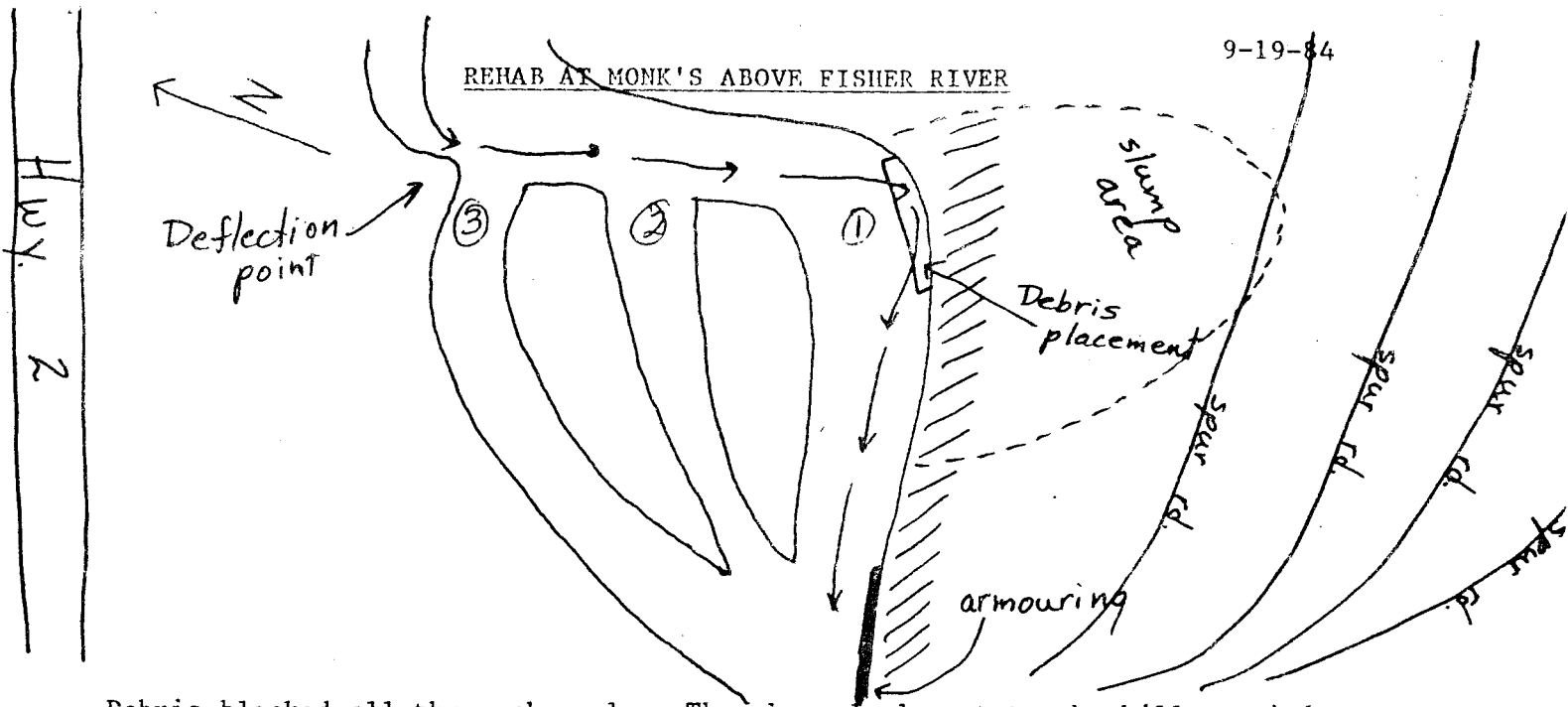
JOHN LLOYD'S REHAB AT MONK'S

The following are my findings regarding my specific concerns for rehabilitating the aquatic environment due to the Houghton Creek Fire:

1. The trees that had fallen into or across Pleasant Valley Fisher River that I had considered to be potential hydrologic problems were removed from the stream and floodplain. The remaining tree tops or small logs should not be of concern.
2. The tractor trail above the westend fire camp has been waterbarred. The bars are 18-24 inches high at about 50-foot intervals. I do not know if these will be adequate. Without seeding this fall they will probably fall. Sedlak Creek needs to be cleaned out or any significant flows will wash sediment into the river.
3. The steep burned over bank downstream from Pleasant Valley Campground needs to be seeded quickly before fall growth is not possible. The channel we chose to take the main flow to protect the south bank needs to be opened and deepened. As you indicated, the trees blocking this channel were simply placed on high ground and not used for revetment. The following diagram is my opinion as to what should be done:



4. Much of the area is beginning to green up. Seeding should be done now when there are still warm days and frostless nights.
5. Talking with D-6's range con, I was informed the two hand seeders lasted about an hour of use before needing repair.



Debris blocked all three channels. The channel closest to the hill carried most of the flow the first week of Sept. In anticipation of increased flows following the fire, the rehab team requested the debris be removed from channels 2 & 3 and placed against the bank/hillslope in the outer part of the bend at channel 1. After several false starts, debris was removed from channels 2 & 3. Unfortunately it was not placed against the toe of the slough. Presently channel 2 carries most of the water, but it is preferable for channel 3 to carry the water.

A slump approx. 100' x 175' occurred where channel 1 made the bend. A lot of sediment was introduced into the Fisher River. Presently the slough is delivering surface erosion material to the Fisher. The organic debris that was to be placed against the bank would have helped to deflect the flow and to also reduce the sediment entry.

After the fire this hillside is a prime candidate to introduce large amounts of sediment to the Fisher River. To reduce the potential of the sediment entry further erosion reduction methods are needed on the hillside. The entire logged area should be seeded immediately with cereal rye. Before snow covers the ground, the dead trees on the hillside should be felled across slope and overlapped to act as check dams. Cuttings should be placed into the slough to help stabilize the soil material. The four roads should be checked for water bars or lack of them and where water is deflected. Some type of armorings needs to be placed at the toe of the slough. Bales of straw could be also used to retain sediment. (Toe of slough and bank of river are one and the same.) More permanent vegetation (orchard grass, timothy, smooth brome and alsike clover) should also be placed with the cereal rye.

Channel 3 needs to be deepened and the deflection paint needs to be removed.

Additional hillsides above and below the above described site should have some cereal rye sown on them. This is especially true where the Fisher River flows adjacent to the hillside.



IN REPLY REFER TO:

# United States Department of the Interior

## NATIONAL PARK SERVICE

Branch of Fire Management  
3905 Vista Avenue  
Boise, Idaho 83705

October 17, 1984

Mr. Louis Kuennen  
Kootenai National Forest  
Libby, MT 59923

Dear Lou:

It was good to hear from you. Sorry I didn't get an evaluation done before I left. We were demobed so fast that the many little things that Class I teams have to do after everything is over didn't get done.

As far as I'm concerned you and your rehab team did an excellent job. I base this on having good open communication between you and my team and your availability to us. All of our concerns and questions were answered in a timely manner. Right from the start we were aware of what our responsibilities, restrictions, etc. were regarding rehab. In a way maybe you should be evaluating us. Did we do all we could during the fire to ease the rehab pain for you and your team?

At any rate, your official rating is excellent. If you want me to put it on the official form I will, but I have always felt that a narrative is more meaningful.

It was a good comfortable experience working with you. I hope we get a chance to do it again.

Thanks for the super help.

Sincerely,

Bob Sellers  
Fire Management Specialist