

FREEZEOUT FIRE REHABILITATION REPORT

On August through 29, 1973, the Regional Office Fire Rehabilitation Team was on the Freezeout Fire, Wallowa-Whitman National Forest. The team consisted of:

Bill Pint	- Range & Wildlife Management
Jack Capp	- " " "
Kurt Austermann	- External Relations
John Dell	- Fire Management
Jerry Swank	- Watershed Management
Loren Herman	- " "
Lewis Nicholson	- Timber Management
Bill Fessel	- Recreation

The 16,000-acre Freezeout Fire burned in some of the most spectacular country in the Region. It burned in both the Joseph and Chesnimnus Ranger Districts. It ranged in elevation from approximately 1,300 feet to 7,000 feet. It encompassed about 12,000 acres of the Seven Devils Scenic Area. It included lands within Congressman Ullman's National Land Park Bill and the Senate Bill for a National Recreation Area.

The vegetation consisted of timbered lands and grasslands, the timber ranging from pine to spruce, subalpine and lodgepole types. The grasses are both annual grasses and perennial bunchgrasses.

The fire burned hottest in the timbered areas. All of the grassland was either moderate or light burned. Erosion potential is very high in the hot-burned areas as nonwettability was observed, particularly in the spruce, subalpine and lodgepole vegetative types; therefore, it is recommended by the team that grass seeding and fertilization be applied to those timbered areas of hottest burn. The grassland should come back by itself to a good stand of grasses without emergency treatment.

Erosion potential is also very high due to the extremely steep terrain of most of the burned area. Because of the steep, rocky landforms, the run-off potential is high as is the sediment potential.

The priority treatment measures are as follows:

1. Grass-seed firelines and hot-burn areas.
2. Fertilize firelines and hot-burn areas.
3. Protective fence.

Soils of the Area

The soils of the area range from rockland (nonsoil) which is extremely steep, to soils which are moderately deep on gently-sloping land. The moderately deep, gently-sloping land is the best soil for timber and grass found in the burn area. There is a large acreage of grassland which

was burned lightly. This grassland soil is 12 to 18 inches deep and found on 10- to 90-percent slopes.

The erosion potential varies with soils and slope. Most of the burn area is on very steep slopes; therefore, the erosion potential is high. The soils are loams and silt loam textures with weak surface structure. This kind of structure is easily detached and easily eroded without a good vegetative cover. The erosion potential is the lowest on the moderately deep soils with gentle slopes.

Nonwettability was observed in the timbered area, particularly in the spruce, subalpine, lodgepole vegetative types. The grassland soils are not nonwetttable.

Soil Unit #1 - This unit is about 80 percent rockland with 20 percent shallow loamy rocky soil. Slopes are extremely steep, ranging from 80 to over 100 percent. This is a large unit encompassing about half the acreage of the burn.

Compaction potential	- low
Erosion potential	- low
Infiltration	- low
Vegetative potential	- poor

Soil Unit #2 - Soils are 12 to 18 inches deep loam and silt loam, gravelly with moderate permeability. Vegetation is annual and perennial grasses. Slopes range from 10 to 90 percent.

Compaction potential	- low
Erosion potential	- high
Infiltration	- moderate
Vegetative potential	- good to poor

Soil Unit #3 - Soil Unit #3 is similar to Soil Unit #1 but is found on northern exposure. The soil areas support a poor stand of trees. Slopes range from 80 to over 100 percent.

Compaction potential	- low
Erosion potential	- low
Infiltration	- low
Vegetative potential	- poor

Soil Unit #4 - Soil Unit #4 consists of about 2 feet of loamy gravelly soil over basalt bedrock. The soils support timber vegetation and are predominantly north slopes ranging from 40 to 80 percent.

Compaction potential	- low
Erosion potential	- moderate
Infiltration	- moderate
Vegetative potential	- good

Soil Unit #5 - Same as #4 but found on slopes of 10 to 30 percent.

Compaction potential	- low
Erosion potential	- low
Infiltration	- moderate
Vegetative potential	- good

Soil Unit #6 - Soil Unit #6 consists of very shallow loamy and stable tableland soils with scattered patches of timber.

Compaction potential	- moderate
Erosion potential	- moderate
Infiltration	- high
Vegetative potential	- poor

Soil Unit #7 - This soil unit consists of moderately deep to deep colluvial and alluvial soils. The soils are gravelly loams and silt loam on slopes of 10 to 30 percent. The site supports a good stand of ponderosa pine and was evidently the hottest-burned area in the fire.

Compaction potential	- low
Erosion potential	- moderate
Infiltration	- moderate
Vegetative potential	- good

Recommendations

Fertilize with ANS (ammonia nitrate sulfate) with 30 percent nitrogen, 1 percent phosphorous, 6 percent sulfur. This is to be applied this fall. Application rate is 50 pounds of actual nitrogen per acre for both firelines and burn area.

Estimated Costs

FFF

Fertilizing firelines (135 acres)	\$ 750
Application of fertilizer	135

Rehabilitation Funds

Fertilizing burn (4,620 acres)	27,000
Application of fertilizer	<u>4,620</u>

Total	\$31,620
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Cost per acre = \$6.30



Ground Cover Restoration and Protection

Of the approximate 16,000 acres within the fire perimeter, 4,620 acres burned at an intensity that effectively destroyed overstory and understory vegetation. These hotly burned (white ash) areas represent densely timbered sections within the fire perimeter, and timbered and brushy drainage bottoms. Bunchgrasses burned on slopes adjacent to drainage bottoms were not significantly damaged, and seeding of such areas is not recommended.

In addition to the burned acreage in need of seeding, approximately 12 miles of tractor fireline and fuelbreak is devoid of ground cover and should be similarly seeded to protect exposed soils. This is classified as 9 miles of tractor-built fireline averaging 50' in width (one helicopter-seeding swath) and 3 miles of major fuelbreak, averaging 200' in width, for a total of 135 acres of line to be seeded. Total acreage to be seeded then, is 4,755 acres. Some of the handlines situated on steep slopes might be seeded as an adjunct to water-barring at little additional cost.

Extreme variances in elevation and habitat type throughout the burned area to be seeded dictate that two seed mixtures be used. These must necessarily be broad-based mixtures to take into account significant changes in elevation slope, aspect, soils, etc., over relatively short distances on a given burned area needing treatment. For instance, elevation in lower Saddle Creek is about 2,000 feet and rises to nearly 7,000 feet in the upper reaches of the same drainage. In addition, seed mixture #2, to be used in the comparatively low-elevation drainage bottoms, should be supplemented with cereal rye for one helicopter swath in the hotly burned drainage bottoms in an effort to establish a rapidly developing cover crop on these highly critical soils where streamside cover has been totally destroyed.

A special seed mix(#3) is suggested for the firelines and fuelbreaks to include Regar brome grass, a rhizomatous species suited to the higher elevations where these lines are situated and which remains green longer than some of the other relatively adapted species. Fire Management has expressed an interest in maintaining the fuelbreaks permanently for strategic fire management of this extremely rough country. A rhizomatous species is also being included in mixture #2 in the streambottoms but not in mixture #1 for use in the higher-elevation timber type where reforestation is the objective.

The Oregon Game Commission has expressed an interest in including a suitable legume in all mixtures to help alleviate the loss of wildlife habitat. This provision is included in the tabulations which follow and should be accomplished to the extent that the Commission can make such seed available.

All of the above seeding should be accomplished as soon as possible, with provision for reseeding of all areas redisturbed in salvage logging, fuelbreak cleanup, piling and burning, etc. For certain, it should be

accomplished before precipitation falls on the area, depreciating the excellent seedbed condition that currently exists. Reseeding of areas subsequently redisturbed should be done even though the redisturbance precedes seed germination, because seed will undoubtedly be covered too deep in these extremely dry, loose soils.

Mixture #1 (see map for area to be applied)

<u>Species</u>	<u>lbs./acre</u>	<u>cost/lb.</u>	<u>cost/acre</u>
Potomac or Latar Orchardgrass	2	.58	1.16
Drummond Timothy	$\frac{1}{2}$.67	.33
Durar Hard Fescue	1	1.50	1.50
Primar Slender Wheatgrass	3	.63	1.89
White Dutch Clover	$\frac{1}{2}$	1.00	-
Totals	7		\$4.88

2,150 acres x \$4.88/acre = \$10,492 + estimated application cost of \$2,150 = \$12,642, cost of fire rehabilitation.

Mixture #2 (see map for area to be applied)

<u>Species</u>	<u>lbs./acre</u>	<u>cost/lb.</u>	<u>cost/acre</u>
Whitmar Beardless Wheatgrass	2	1.80	3.60
Nordan Crested Wheatgrass	2	.60	1.20
Topar Pubescent Wheatgrass	4	.70	2.80
Durar Hard Fescue	1	1.50	1.50
Drummond Timothy	1	.67	.67
*Cereal Rye	20	.08	*1.60
Dwarf Yellow Sweetclover	$\frac{1}{2}$.30	--
Totals	10 $\frac{1}{2}$		\$9.77

* Cereal rye to be applied separately to drainage bottoms (237 acres).

2,470 acres x \$9.77/acre = \$24,132 + estimated application cost of \$2,470 = \$26,602.

237 acres x \$1.60/acre = \$379 + estimated \$1,000 application cost of cereal rye = \$1,379.

Grand total cost of rehabilitation seeding, including application cost = \$40,623.

Mixture #3 (All Firelines)

<u>Species</u>	<u>lbs./acre</u>	<u>cost/lb.</u>	<u>cost/acre</u>
Potomac or Latar Orchardgrass	2	.58	1.16
Drummond Timothy	1	.67	.67
Durar Hard Fescue	1	1.50	1.50
Primary Slender Wheatgrass	4	.63	2.52
Regar Bromegrass	4	.80	3.20
White Dutch Clover	<u>$\frac{1}{2}$</u>	1.00	<u>-</u>
Totals	<u>$12\frac{1}{2}$</u>		\$9.05

135 acres x 9.05/acre = \$1,222 + estimated application cost of \$250 = \$1,472, cost of fireline stabilization seeding (FFF).

The preferred variety is indicated above for each species. However, it might be necessary to accept other than a preferred variety at a time when demand for seed is greatest and supplies are at an annual low ebb. In fact, some species substitutions might prove necessary. If so, the Regional Plant Materials Specialist will assist the Forest in making the substitutions.

Temporary Protection Fencing Essential for Burn Rehabilitation

Seven miles of 2-wire fence must be constructed to keep cattle permitted on two grazing allotments off the reseeded area for at least two complete growing seasons. Relative inaccessibility of the area, plus the fact that the fence must be of let-down design in this heavy snow area above 6,000 feet, places the cost of the fence at \$7,800, somewhat above the average anticipated cost for a 2-wire temporary fence in less formidable country.

Sheep are permitted to graze during the winter months on the steep breaks along the Snake River. It is believed that carefully developed routing plans and diligent range administration should suffice to keep sheep off newly-revegetated areas on that portion of the burn, and fencing should not be necessary. It would also be highly desirable to discontinue routing sheep over the sheep driveway across the burn until vegetation is re-established.

It is recommended that the concerned District Rangers carefully evaluate the impact of the fire and the temporary exclusion of livestock from areas formerly grazed, and take early steps to make adjustments in length of season, livestock numbers, etc., as necessary to ensure not only the rehabilitation of the burn, but adequate protection for the unburned areas of grazing allotments which will obviously carry a heavier load as a result of the fire.

Joseph Ranger District	- 3.0 miles x \$1,000/mile =	\$3,000
Chesnimnus Ranger District	- 4.0 miles x \$1,200/mile =	<u>4,800</u>
Total Protection Fencing Cost =		\$7,800



HYDROLOGY AND WATER QUALITY

ITEMS OF WORK

Firelines

1. Water Bars (see spacing guidelines)

- a. Handlines should be water-barred where necessary but most of the lines were on ridges or outsloped. If digging is hard, a log water bar may be necessary.
- b. Some of the catlines may need water bars, but most do not. Water bars should be constructed so they can be driven over without damage unless barricaded.

2. Seeding (see revegetation section for mixture and additional recommendations).

- a. Some scarification may be necessary as some compaction was evident even under 2 to 3 inches of dust.
- b. Seeding should take place after water bars are constructed if possible but before fall rains.
- c. On some of the non-fuelbreak firelines, slash pushed by the cat can be pulled back onto the road, lopped and scattered.
- d. Handlines should be hand-seeded where necessary.

3. Barriers

Barrier or restrict vehicle traffic on all rehabilitated firelines and non-system roads.

There are 13 miles of handlines, 3 miles of fuelbreaks, and 9 miles of catline needing treatment, for a total of 270 acres.

4. System Roads

- a. Remove slash and debris from road ditches. There were some instances where the road from Hat Point to Jim Spring had debris in the road ditches as a result of the adjacent catlines built next to the road.
- b. Maintain or replace, as necessary, wooden box culverts in system roads that were damaged as a result of fire suppression activities.

5. Tanker Fills or Sumps

The tanker fill at the head of Lightning Creek should be removed and seeded. The dam and spillway should be completely removed and the meadow area returned to normal. If the dam material is returned to the excavation pit, an adequate lined stream channel with rock riprap should be provided.

6. Fire Camp Area

Small, intermittent streams were in the meadow of the fire camp. Where the channel was damaged or restricted due to roads, trampling, etc., the channel should be opened and restored to its original capacity. Some riprapping may be necessary. Seeding of these areas is covered elsewhere in this report.

7. Streambottom Seeding and Fertilization

Most of the timbered streambottoms burned very hot. This loose ash and burned soil lying on the very steep slopes immediately adjacent to the stream and in the streambottom is very likely to end up in the stream at the first intense rainstorm. Therefore, it is imperative that these soils be stabilized as soon as possible to prevent sedimentation of streams and the main Snake River. Also, early stabilization of the soil in these streambottoms will help minimize loss of site productivity; therefore, it is recommended that the erosion seeding mix include a species for the streambottoms that will hopefully germinate this fall and afford some fall cover. The particular mix, costs, etc., will be covered in the Revegetation Section.

There are about 19.6 miles (or 237 acres) of streambottoms needing treatment in the above recommended manner. These streams are shown on the map attached to this report.

Summary

1. Firelines - seed, water bar, and barrier.
2. System Roads - restore drainage facilities (ditches, culverts).
3. Tanker Fills - remove and restore.
4. Fire Camp Area - restore vegetation and channel.
5. Streambottom Seeding - seed with fall-germinating species and fertilize.

TIMING

1. Water Bars - during mopup so that seeding, lopping and scattering, etc. can be done.
2. Seeding - after water bars, but before fall rains. Some seeding can be done during mopup.
3. Barriers - after water-barring, seeding, etc., but before hunting season.
4. System Roads - before fall rains and snow.
5. Tanker Fills - before fall rains and over an extended period of time to keep downstream turbidities low.

6. Fire Camp - before fall rains.
7. Streambottom Seeding - before fall rains while seedbed is soft and not crusted over.

PRIORITIES BY AREA

The main stem of Saddle Creek burned the hottest and should receive the highest priority for streambottom seeding and fertilizing.

PRIORITIES BY ITEMS OF WORK

1. Streambottom seeding and fertilizing.
2. Fireline seeding, water bars, and barriers.
3. Tanker fill removal.
4. Fire camp area.
5. System roads.

Many of the recommendations above may be appropriate to charge to FFF (reference FSM 2521.1, FSM 5192.22), but are included for discussion in this Rehabilitation Report only to point out those items needing attention regardless of financing.

Recommended Water Bar Spacing
(for 5-year recurrence intervals 30-minute
rainfall intensity of 0.6" and a fine-textured loam)

<u>Slope(%)</u>	<u>Slope Distance between Bars (ft.)</u>
2	640
5	220
10	100
15	60
20	45
25	35
30	30
35	25
40	20

SILVICULTURE AND SALVAGE LOGGING

The Forest Supervisor, District Rangers, Fire Boss and other persons made a fine, coordinated effort to start fireline rehabilitation prior to August 28.

The first question to be answered is: How does the unroaded and scenic area designations affect salvage logging? The Forest was not aware of any restrictions on salvaging fire-killed timber. Mr. Ellison or Mr. Hanna are working out the details on the salvage logging with the WO.

General

The area is estimated to be a Site 5 (Douglas-fir). The area below the break into the Snake River is noncommercial and also included in a scenic area; therefore, no reforestation or salvage logging is recommended in this area.

The rehabilitation work should be done immediately, even on proposed sale areas. The salvage timber sale should collect funds for erosion, BD, etc., to repair any rehab work done.

KV funds should be collected on the sales for artificial reforestation in case the areas do not seed in naturally. We will rely mainly on natural regeneration. The Lookout Mountain Burn and other areas adjacent to the upper edge of the fire have regenerated naturally within five years.

Area 1

This is the area from the Memaloose Airstrip to Hat Point. The merchantable logs should be salvaged. The area is along the Hat Point recreation road. No regeneration is planned for this area. The cleared area is being considered for a fuelbreak.

The sale should provide funds to repair the rehab work.

Area 2

The area from the airstrip to Jim Spring has an estimated 500 M board feet of salvageable timber on 200 acres. The tree species are mainly lodgepole pine, alpine fir, Douglas-fir and Engelmann spruce. The salvage should be done this fall, because the thin-barked species will check and/or blue-stain by next spring.

The lodgepole pine is the only species with seed this year. It is estimated to be enough to adequately stock the area naturally; however, KV funds should be collected to do any necessary fill-in planting. Planting is really difficult at this elevation. The species planted should be lodgepole pine, Engelmann spruce, western larch or Douglas-fir. Frost-heaving would be a major consideration; therefore, auger or deep-hoe planting should be done. Generally, the soil is too dry in the fall for planting as the first moisture before snow does not penetrate to the root zone, allowing the trees

to desiccate over winter. Spring planting is usually too late as the weather is hot before the trees can adjust; however, I believe spring would be better than fall.

Area 3

The area around Marks Cabin and Squirrel Prairie has merchantable volume on tractor ground. There is an estimated 1.5 MM or 500 acres. This should be salvaged as soon as possible because the species will check rapidly. The main species are alpine fir, lodgepole pine and Engelmann spruce. The lodgepole pine is the only species with seed.

The density of lodgepole pine is less here than it was on Area 2; therefore, the addition of Engelmann spruce seed to grass mixture #1 would help to regenerate this area.

The spruce seed is small and there is an ash layer on the surface so the rodents should not find the seed and eat any appreciable amount. There is only 29 pounds available for this area. This would put about 8,000 viable seeds per acre. This, along with the natural lodgepole pine, should restock the area; however, KV funds should be collected for doing this seeding and any reforestation on areas that do not seed in naturally. The cost of the tree seed is estimated at \$600 and the application \$300.

If KV funds are not available for this seeding project, the forest could use other P&M funds. The Forest would consider the priority of this seeding project in relationship to other projects in determining the project to do.

Area 4

This area has some merchantable volume. The only feasible logging method would be by helicopter. This is not considered feasible because of:

1. Haul distance (over 1 mile each way)
2. Elevation-6,000' plus
3. Logs would have to be lifted up and not hauled downhill.
4. Low volume - 1 MM (estimated)
5. High percentage of low value species
6. High percentage of volume fire-scarred.

This area is not considered for salvage.

FISH - WILDLIFE REHABILITATION

Situation

Two days were spent observing the burned area. Most observations were from helicopter, due to the exceptionally steep terrain. Fish and wildlife evaluations and rehabilitation recommendations were made jointly with Ron Bartels of the Oregon State Game Commission. He consulted with Game Commission habitat personnel in LaGrande in making revegetation recommendations. The revegetation considerations for fish and wildlife are included in the Revegetation Section of this report.

Variable wildlife habitat exists in the burned area. Elevation changes are extreme, the change consisting of approximately 1,500 feet at the Snake River, to almost 2,000 feet at Lookout and Hat Points.

The fire burned patchy within a perimeter surrounding 16,000 acres. Most of the fire, approximately 14,000 acres, occurred along the steep, rocky faces above the Snake River. This area is covered mainly by bunchgrasses, with scattered trees and browse plants. Approximately 2,000 acres of alpine fir, lodgepole pine and Engelmann spruce commercial forest land were burned above the canyon rim on relatively flat areas.

The Snake River Canyon is extremely important elk and deer winter range. Higher-elevation lands in the canyon and on top are important as summer range. Higher-elevation areas are important also as grouse and songbird habitat, especially for nesting. Eagles, falcons and other raptorial birds nest along the Snake River Canyon. Grouse droppings were found under all deformed ponderosa pine and some deformed Douglas-fir along meadow and rim edges at higher elevations in the burn area.

The fire opened up the timbered areas that were burned. This, plus the revegetation seeding, will mean more forage available to wildlife. Although the fire caused damage, it duplicated a natural process that definitely benefits wildlife.

The Snake River is extremely important fish habitat. Anadromous fish, such as salmon and steelhead, occupy the river. Saddle Creek and Cache Creek support resident trout, and steelhead spawn the lower portions. Although the burned area does not discharge high continuous water yields, storm runoff, including sediment, could have a measurable effect on fish habitat and spawning success in Saddle and Cache Creeks, and the adjacent habitat in the Snake. The presence of anadromous fish means Cache and Saddle Creeks are Class I streams. This means these streams are of the priority and must be protected. Isolated areas occurred of burned streambottom vegetation. Approximately 200 acres of streambottom vegetation were consumed.

Direct loss of wildlife in the burned area appeared negligible; however, most of the area was not observed from the ground. Mountain bluebirds, chickadees, vultures, chipmunks, and nuthatches were observed occupying the burned area. Signs left in the area by coyotes, racoons, hares, deer

and ground squirrels were observed. Aquatic insect larvae were present in lower Saddle Creek. Other creeks were not checked. Two elk were observed to the south adjacent to the burned area.

No officially endangered wildlife or fish species are known to exist on the burned area. The only known endangered species in this area is the peregrine falcon. This species may occupy the burned area. The prairie falcon, golden eagle, and hawks do nest along the Snake River.

Recommendations

1. Locate and mark for saving important wildlife nesting or perching trees in areas of salvage logging or fuelbreak construction.

This recommendation is based on the importance of these trees to wildlife, and the saving or production of future wildlife trees is dependent on salvage logging prescriptions.

Preliminary salvage logging recommendations include approximately 800 acres, all above the canyon river, at higher elevations (around 6,000 feet). Logging would occur during fall 1973. All live trees and nonmerchantable burned trees will be left standing. Any diameter tree over 6" may be taken for salvage. Some trees may be felled that appeared merchantable, but found nonmerchantable after falling. Heart rot, especially in subalpine fir, is present to mean that approximately, 1 to 2 large-diameter (18-36" DBH) snags will be left per acre in salvage log areas. A fuelbreak may be constructed along the canyon rim from Lookout Point to Hat Point. Line trees may be felled.

Dead trees are important to wildlife, especially birds for nesting, perching and roosting. Live mature and over-mature trees are also important. A great density of these trees is not necessary. The large-diameter snags are more beneficial. These snags do not need to be the tallest trees in the stand.

Live mature and over-mature trees are very important for bird roosting and perching. Location of these trees is probably the most important factor. Grouse perch in trees with large lateral limbs. These trees are most often ponderosa pine in areas like the burned area here. Raptorial birds perch in these trees, especially along rims and adjacent to open areas. These trees are most beneficial if they are tall or the taller trees in the stand. Availability of these trees definitely influences occurrence of these birds--lack of trees decreases bird occurrence.

Protection of important wildlife trees in the burned area will encourage presence of birds of prey. These predatory species feed on insects and rodents which often cause damage to young and old trees. Bird predation on insects and rodents has been shown as valuable in prevention or reduction of damage to trees.

Personnel of the Joseph Ranger District have indicated they could spend one or two days surveying salvage logging areas to mark for saving all

important wildlife trees. This would be adequate. Local expertise and familiarity are available. If future fuelbreak construction is planned, additional time should be programmed to select and mark valuable wildlife trees.

The Forest should reconsider its plans to protect valuable wildlife trees if salvage logging prescriptions are changed. Logging should be avoided in periods of the fall big-game hunting season and the spring period of elk-calving and deer-fawning. If live trees will be harvested, additional time should be programmed to survey for important wildlife trees, plus increased plans for possible animal damage control. Reduction of natural seed sources possibly would mean fewer tree seedlings. Animal damage, especially by pocket gophers, would then become more significant. Altered salvage logging plans should be discussed with personnel of the Oregon State Game Commission.

2. Include forage species in the revegetation seeding that are important to wildlife.

Personnel of the Oregon State Commission participated in formulating the revegetation seeding mixture. The Game Commission plans to provide seeds to include in the mixtures. These species, probably legumes, will be separate from those provided by the Forest Service. Seeding should not be done unless these are included, if available. Revegetation recommendations to benefit wildlife have been included in the Revegetation Section of this report.

Since a variety of wildlife occupy the burned area, and the site has been changed, a variety of revegetation species are recommended. The species recommended have value to grazing animals, other wildlife and fish. Large-seeded species are valuable to birds. Cool-season species provide spring and fall forage for herbivores. Grass and forb plants at higher elevations mean increased needed summer forage. By seeding burned canyon bottoms, soil erosion can be stopped. Sediment in streams can severely reduce aquatic food organisms and fish spawning success.

Forage was lost in the burn; however, the loss is not considered harmful. Most of the burned acreage was on bunchgrass range. A consensus was that adequate winter range was still available for deer and elk. Burned grass plants should grow next spring. Some browse plants were lost on rocky slopes and drainage bottoms. Browse seeding or planting on rocky slopes is considered impracticable and of questionable need. Streamside plantings are a possibility which should not be ruled out. The Forest should keep this possibility in mind, especially when these bottoms are surveyed by the Forest or the Game Commission. Plantings may be necessary in the bottom of upper Saddle Creek.

3. Inspect Saddle Creek and Cache Creek for debris and sediment buildup.

Anadromous fish occupy lower Saddle and Cache Creeks; therefore, these are Class I streams and water quality, plus fish passage, must be maintained. Steelhead spawn in the lower two to three miles of Saddle Creek. It is not known how far they travel up Cache Creek.

Locations occupied by anadromous fish should be inspected for buildup of sediment on the spawning gravel and for debris accumulations that may block fish migrations. Inspections should occur this fall if heavy rains occur before winter. The areas should be inspected again after the spring runoff next year. If accumulations are found, they should be removed by hand. The Oregon State Game Commission or Fish Commission of Oregon should be consulted. If sediment buildup becomes a problem, additional erosion control measures should be implemented. Inspections should be made mutually between the Forest and the Oregon State Game Commission.

4. Plan for possible animal damage to young trees on the burned area.

Approximately, 2,000 acres are being considered for reforestation work. These acres are located at higher elevations, not in the Snake River Canyon. Present plans call for direct seeding of Engelmann spruce seed on selected areas and KV collection for possible future tree planting, if needed. Seed protection treatments are not available at present.

The 1967 Lookout Burn area was visited. This area would represent generally what the vegetative response will be on the Freezeout Burn area. Young lodgepole pine and Engelmann spruce seedlings are present. They came in naturally. Some are four and possibly five years old. Seedling density was excessive. This indicates natural regeneration of conifers will probably occur in the Freezeout Burn and animal damage will probably not become significant.

The greatest potential damage to tree seedlings will be from pocket gophers. Gophers, in high density, occupy the entire area in general, including unburned openings and edges adjacent to the canyon rim and the Lookout Burn. Gophers and hares were causing tree mortality in the Lookout Burn. Gophers will move into the Freezeout Burn. High-density populations will probably occur. They most likely will cause some tree mortality. If the vegetation on the Freezeout Burn, including tree seedlings, responds as on the Lookout Burn, gopher predation on trees will not be detrimental. If tree seedling density is low, or becomes low, gopher damage to trees may occur.

Areas should be surveyed during fall 1975 to evaluate presence of pocket gophers, pocket gopher damage, meadow vole damage, and hare damage. Based on that survey, future surveys should be scheduled.

FEATURES INFLUENCING THE EMERGENCY SITUATION

Topography

The burned area goes from 1,300' at the Snake River, to almost 7,000' at Hat Point in a distance of only about $3\frac{1}{2}$ miles. The area burned is the deepest canyon on the North American Continent--Hells Canyon. The east face of the fire area draining directly into the Snake River is a series of vertical cliffs so steep that this part of the fire was unmanned for safety reasons.

Stream gradients of the gentlest stream (Saddle Creek) varies from 7 to 10 percent at the lower end, and 15 to 20 percent at the upper half. Other intermittent stream gradients exceed 40 percent in many instances.

The burn area has a stream density of about 4 miles/square mile, which also contributes to the rapid runoff.

Climate

Because of the great variation in topography (over 5,500' in $3\frac{1}{2}$ miles), there is great variation in climate.

At the lower elevations the climate is mild with Sonoran life zone vegetation--cactus, etc. Summer temperatures can exceed 115°F. Snow at the lower elevations does not linger long.

At the upper elevations winters are harsh with a deep snowpack. Vegetation includes alpine types like alpine spruce and Engelmann spruce. The growing season is very short at higher elevations.

Annual precipitation over the area varies from 10" to 30" of which +50 percent occurs as snow in the high elevations, while on the low elevations precipitation is mostly rain or snow that melts rapidly.

Soils

The soils of the area range from rockland (nonsoil) which is extremely steep to moderately deep soils on gently sloping land. The moderately deep gently sloping land is the best soil for timber and grass found in the burn area. This grassland soil is 12 to 18 inches deep and found on 10 to 90 percent slopes.

The erosion potential varies with soils and slope. Most of the burn area is on very steep slopes; therefore, the erosion potential is high. The soils are loams and silt loam textures with weak surface structure. This kind of structure is easily detached and easily eroded without a good vegetative cover. The erosion potential is the lowest on the moderately deep soils with gentle slopes.

Nonwettability was observed in the timbered area, particularly in the spruce, subalpine, lodgepole vegetative types. The grassland soils are not nonwetttable.

Hydrology

Most of the streams in the area are intermittent and do not flow much of the year. Saddle Creek is the major significant perennial stream in the area. Because of the steep topography, shallow soils, and steep stream gradients, major "sluiceouts" are quite common. Many of the intermittent channels are scoured to bedrock.

High runoff on the lower part of the burn originates primarily from rapid snowmelt of a shallow snowpack and/or rain-on-snow situation, while on the upper part of the burn, most of the high runoff originates from sustained melting of a deep snowpack. High-intensity summer storms can cause very high peak flows and erosion of nonprotected soil in any area of the burn.

In such a steep, variable climatic area with so little natural vegetative cover, it is important to replace burned vegetation so as to not accelerate sedimentation and runoff on an already critical area.

Vegetation

The Freezeout Fire reportedly emanated from a lightning bolt at about 6,500-foot elevation in the upper reaches of Saddle Creek, a tributary of the Snake River. Overstory vegetation at the point of origin and for the first 1,000 acres or so burned, was comprised of dense stands of subalpine fir, spruce and lodgepole pine with lesser amounts of Douglas-fir and white fir. A few grassy parks are scattered throughout this portion of the burn.

The fire then progressed generally northward and eastward into precipitous canyon country (as low as 2,400 feet) typified by bunchgrasses on ridges and southerly aspects, with timber and browse in drainage bottoms and on some of the northerly aspects. A very high-intensity burn occurred on the latter sites having heavy fuels, while the grass-covered slopes burned over lightly with little anticipated damage except for variable damage to scattered patches of browse. The advance of the fire was finally arrested on the northern rim of the Saddle Creek drainage, again at the edge of dense commercial timber at about 6,500-foot elevation.

Wildlife

A variety of fish, wildlife and wildlife habitat exists in the burned area. Elevation changes are extreme. Higher-elevation areas are important as summer range for deer, elk, bear, raptorial birds, songbirds and grouse. A variety of birds nest and live in the area; some raptorial birds plus songbirds and game birds depend on the snags and other trees, while others depend on the trees along and below the Snake River Canyon rim. Anadromous fish occupy the streams below, making their management especially critical. Wildlife forage was lost but will be replaced by surviving plants, revegetation measures and reduced tree density. The most critical need is for soil stabilization to protect fish habitat. Protection of important wildlife trees is very important also.

DESCRIPTION OF POTENTIAL DAMAGES

The burn area is within the Hells Canyon-Seven Devils Scenic Area and within two proposed Congressional bills--the Land Park Bill and the National Recreation Area Bill.

In addition to this aesthetic and recreation value, large numbers of big game and small game utilize and even depend on the area for summer and winter range. Domestic livestock also utilize the area.

Resident and anadromous fish utilize the streams and Snake River. A prime fishing hole in the Snake River is located at the mouth of Saddle Creek.

As a result of the fire burning the vegetative cover, the above values and uses of the area may be impaired by accelerated erosion and runoff.

Hazards from Flooding

The deepest soil and densest vegetative cover is in the streambottoms. These are the areas that burned the hottest and where the vegetative cover was destroyed. While the burn area, as a whole, is naturally subject to high flows, destruction of this cover will accelerate runoff and it should be re-established to minimize such effects.

Hazards from Sedimentation

The accelerated runoff will increase sedimentation by eroding existing stream channels. In addition, the steep sideslopes, dense drainage patterns, and lack of slope obstruction will result in increased overland movement of water, causing soil loss and increased delivery of sediment into the stream system.

The fisheries and aquatic organisms in the many streams can suffer from sedimentation plus the possible sedimentation of the Snake River in the vicinity of the burn. Excessive sedimentation on the Snake River by the mouth of Saddle Creek could even be a potential threat to the numerous boaters who use this section of the river.

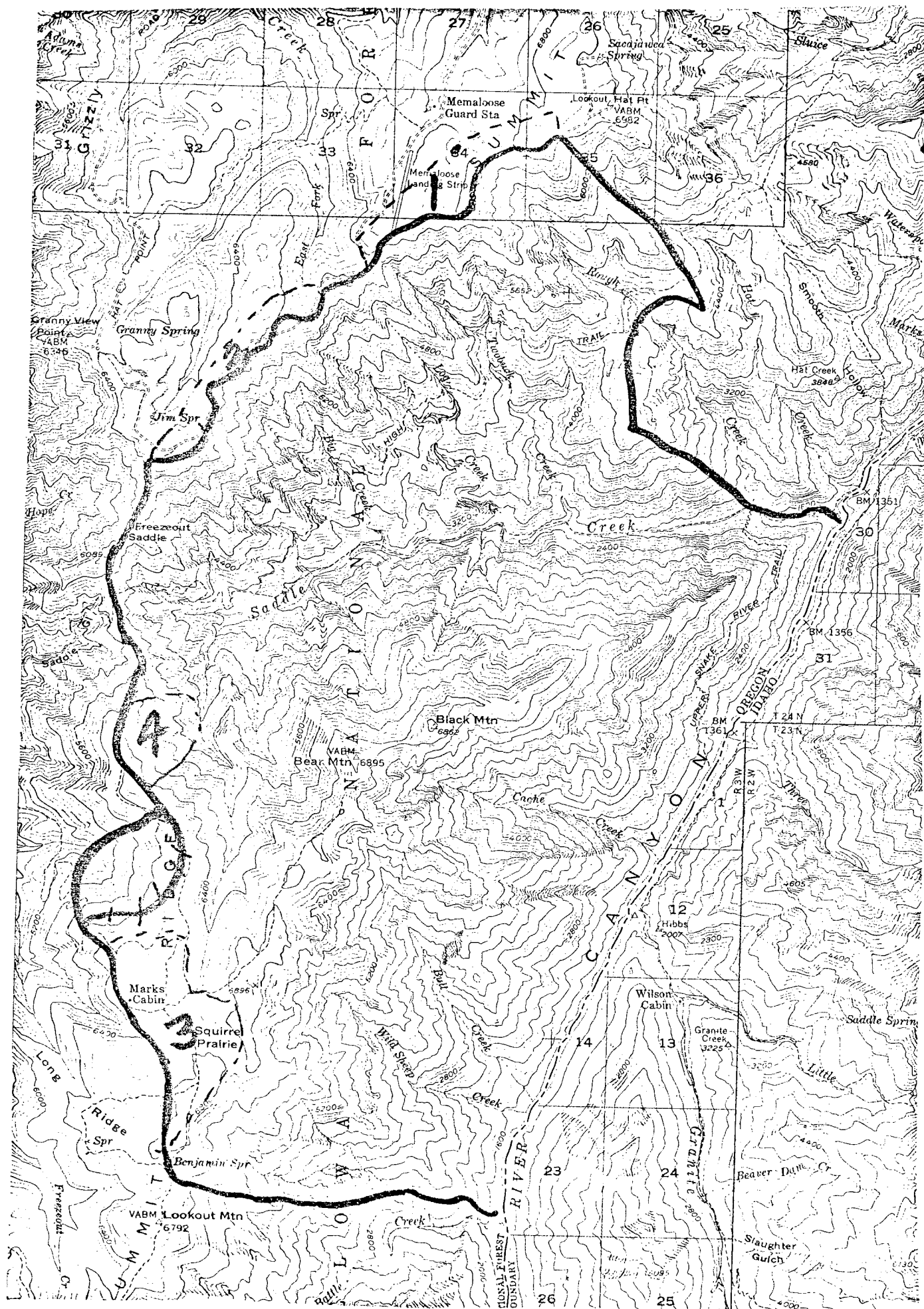
If the proposed measures are initiated, sedimentation from the area while it may not be eliminated, can certainly be minimized and a very precious and limited soil resource protected.

SUMMARY OF EMERGENCY MEASURES RECOMMENDED

State: OREGON Watershed Name: SADDLE CREEK OF SNAKE RIVER Date: SEPTEMBER 4, 1973

Measures and Agency Identification	Unit	Quantity	Unit Cost	Cost of Measures	Section 216	Source of Funds	
						Other Federal (funds)	Non-Federal (name)
<u>NON-FEDERAL LAND</u>							
Subtotal							
<u>FEDERAL LAND</u>							
Fireline seed and fertilizer	Acs.	135	\$ 19.00	\$2,555		\$2,555 (FFF)	
Seed hot burn	Acs.	4,620	8.80	40,600		40,600 (P&M)	
Fertilize hot burn	Acs.	4,620	7.00	31,600		31,600 (P&M)	
Protective fence	Mi.	7	1,114.00	7,800		7,800 (P&M)	
Subtotal:							
GRAND TOTAL							
							\$82,555

Remarks (Necessary explanations should be handled by footnote under remarks)



FIRE MANAGEMENT REHABILITATION REPORT

I have completed my rehabilitation reconnaissance of the Freezeout Fire area and have the following comments:

1. FUELBREAK - Memaloose Airstrip to Hat Point (approximately 3 miles).

A 200'-400'-wide fireline was constructed along the rim in this area. This is in a highly scenic strip that includes, in part, the only access road to Hat Point. It is also a strategic location for a primary fuelbreak along the Snake River Rim.

I recommend that all slash left over from fireline construction be cleaned up 100 percent. This includes slash pushed up against the tree line along the edge of the line. Standing trees are no problem from a fuelbreak standpoint and lend to a natural-opening appearance. The fuelbreak area should be grass-seeded to a species that will remain green well into the fall season (see Bill Pint's Rehabilitation Report).

2. FUELBREAK - Memaloose Airport to Road N163 (approx. 1 mile).

This is a continuation of the fireline described above, but is on steep ground that was tractor-lined and not accessible to vehicle travel. Slash piling and burning is needed here also, but is mostly a hand piling show. Tractor line needs water bars. Area should be grass-seeded the same as above.

3. FUELBREAK - Junction of above to Jim Spring (Helispot 3-60), approximately 3 miles.

This is all strategic location for stopping wildfires at the Snake River Rim. There are several natural openings to tie to. A shaded fuelbreak should be planned and laid out to Jim Spring where a steep ridge drops away to Freezeout Saddle.

4. FUELBREAK - High point south of Freezeout Saddle to Lookout Mountain (approximately 4.5 miles).

For the future, this ridge should be planned and managed for primary fuelbreak. Fuel cleanup should be done with this in mind. Standing snags should be felled, piled and burned. Grass seeding should be implemented and some tree planting done for fuelbreak landscaping and shade.

NOTE: Minimum width for fuelbreaks along the divide should be 300 feet.

5. PRE-ATTACK PLANNING AND INSTALLATION

Although most of the Snake River drainage on the Wallowa-Whitman has been pre-attacked, there is a definite need to update the plan and incorporate it into the new R-6 Pre-attack System and TRI System. This will mean additional inventory of facilities and renumbering to coincide with the new Regional System.

There are a number of additional helispot sites, for example, that could be added to the system. Keep in mind that helicopter capabilities have changed considerably since ten years ago when the old Pre-attack System was developed. Also, considerable time needs to be spent carefully checking control line data used in the old planning. Estimates of line construction rates are, in some cases, exceedingly conservative according to actual experience on this fire.

A hard look is needed at some of the control line locations also. In some cases, trails that contour the slope are shown as control lines, but are totally unsafe and ineffective for the types of fires burning in this steep country. (NOTE: In the new Pre-attack System trails are shown on the plan and may sometimes be used to stop downhill backing fires, but these are not necessarily shown as CONTROL lines.)

Color aerial oblique photos of both sides of the Snake River Gorge should be taken as soon as possible. I would also recommend a set of color slides be made and duplicated for Ranger District, SO and RO Fire Management. This photography should be done per instructions in the R-6 Pre-attack Guide. Photos will be useful for pre-attack planning and for use by fire teams on future fires.

There is a good opportunity here to jump in and incorporate some real protection planning and design into this area for more effective management in the future.

RECREATION REHABILITATION REPORT

Acres of major recreational and visual concern on the Freezeout Fire include:

1. The northwest fireline from Jim Spring to Hat Point.
2. The east edge of the fire adjacent to the Snake River.
3. The main fire camp and vicinity.
4. Trails through the remainder of the burn.

Discussion of each of these areas follows:

1. The northwest fireline from Jim Spring to Hat Point. The fireline follows mainly along the rim of Hells Canyon on the north side of Saddle Creek. The main road to Hat Point--the major viewpoint into Hells Canyon that is accessible by road--follows the rim with several viewpoints looking into the canyon.

From Jim Spring to the south end of the Memaloose Landing Strip, the fireline is mostly a single-pass dozer line. Restoration should include installation of water bars, barriers to prevent jeep traffic, leveling of large cat piles, flush-cutting of high stumps that are visible from the road or viewpoints, and reseeding. In two places the fire slopped across the Hat Point Road for a total of around 1,000 feet. There should be particular attention to revegetation of this area. I do not see tree seeding or planting as necessary; the surrounding stand should be an adequate seed source.

From the south end of the Memaloose Landing Strip to the corner of the burn near Hat Point, a much wider fireline was cleared, actually amounting to a firebreak averaging 200 feet wide. Clearing slash was windrowed against the standing timber on the outside of the fireline. The rim had several natural openings. The firebreak connects them and creates a visual effect that, with moderate effort, will simulate the natural openings commonly found in the general area. Work needed includes:

- a. Pulling windrowed slash into the cleared area and either piling and burning, or removing it (by commercial sale) from the area.
- b. Flush-cutting stumps and disposing of the cut-off ends. Camouflaging the stumps would be desirable.
- c. Blocking the tractor road to vehicle traffic.
- d. Reseeding the area per Range Management recommendations.

I do not feel that tree seeding or planting is necessary on any of this area. Neither do I consider reshaping of the opening to be necessary to achieve a more natural appearance. The nature of the adjoining stand is such that few of the bare stems show along the edge of the clearing. However, the Forest may want to have their landscape architect confirm this after clean-up of the windrowed slash is completed.

2. The east edge of the fire adjacent to the Snake River. The burn along this edge of the fire was spotty and generally light, created by the fire backing slowly downhill. In most instances, vegetation should recover rapidly so that there will be little evidence of the fire within two years.

The alluvial fan at the mouth of Saddle Creek receives considerable camping use. The grassy areas burned lightly and some of the surrounding hackberry was scorched. Natural recovery should be rapid and no special rehabilitation measures are needed.

3. The main fire camp and vicinity. The road to Hat Point passes through the main fire camp, so its cleanup and rehabilitation is of considerable visual concern. On the whole, the camp is no messier nor destructive than any others I have seen, but considerable restoration of meadows will be necessary.
4. Trails through the remainder of the burn. A rough count indicates that about 40 miles of system trail are within the burn. The Forest should expect to have to devote about double the normal maintenance cost over the next two years to these trails because of sloughage, washouts, fallen trees and burned signs that will be the aftermath of the fire.

The additional needs would total about \$8,000 to \$10,000.

Other Thoughts, Observations and Needs

1. Visitor Interpretation - The burn will be evident from Hat Point and other viewpoints for several years. Signs at Hat Point and at a viewpoint near Jim Spring would be excellent locations for interpretive signing about the fire. I recommend that about \$2,000 to \$3,000 of VIS funds be designated for this.
2. Fuelbreaks and Planned Burning - The slopes of Hells Canyon are an easy place for fires to start and spread, and a tough place to control them. Although fire does relatively little damage within the canyon itself, there is continual danger that fire starting in the canyon or spreading through the canyon will sweep into the extensive stands on the Summit Ridge between the Imnaha River and Hells Canyon. There is need for a planned, continuous fuelbreak along the Hells Canyon Rim to retard spread of fire from canyon to ridge, and vice versa. I feel we were very fortunate in holding the hastily-prepared break on the rim

on this fire. The next time we may not be so fortunate. A pre-planned firebreak can also be designed to be visually acceptable in this area. When it is built in the haste of suppression action, the results may be visually disastrous.

Even with a fuelbreak on the rim, it is essential that something be done in the next few years to reduce the natural fuel buildup on the Summit Ridge. The stand of mixed conifers is beginning to fall apart, ground fuel is extensive, and most trees have "fuel ladders" of dead limbs and lichens. With the lightning frequency, dryness and wind common ^{on} this ridge, an eventual conflagration is a virtual certainty.

John Dell is addressing this subject in greater detail.

3. National Significance

The entire burn is in an area proposed for designation as a National Recreation Area. The Snake River side of the burn is proposed for Wilderness designation. This gives added urgency to the need for effective rehabilitation and minimum impact in timber salvage. Most of the fire is inside unroaded areas also, so Chief's approval is required for timber salvage.

4. Public Information

The public needs to be informed regarding fire effects and rehabilitation progress:

- a. Hunters need to be informed of conditions before fall.
- b. Public needs to be informed of rehabilitation plans and progress.

Cost Summary - Recreation-related Items

- | | |
|--|---------------|
| 1. Fireline, firebreak and fire camp rehabilitation and seeding are either FFF or being estimated by other team members. | |
| 2. VIS interpretive signing at Hat Point and elsewhere (FY '74) | \$2,500 |
| 3. Extra trail maintenance (FY '74 and '75) | <u>10,000</u> |
| Total | \$12,500 |

Signed by:

William E. Pint
William E. Pint, Range & Wildlife Management

John C. Capp
For John C. Capp, Range & Wildlife Management

John D. Dell
John D. Dell, Fire Management

Gerald W. Swank
Gerald W. Swank, Watershed Management

Loren D. Herman
Loren D. Herman, Watershed Management

Lewis A. Nicholson
Lewis A. Nicholson, Timber Management

W. C. Fessel, Jr. (Reviewed in his absence)
William C. Fessel, Recreation

Dated: September 11, 1973