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FIRE REHABILITATION REPORT

for the

GOLD RIDGE, ENTIAT, SLIDE RIDGE AND MITCHELL CREEK FIRES

Wenatchee and Okanogan National Forests

September 21, 1970

Division of Watershed Management
Regional Office
Portland, Oregon

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ERRATA SHEET

Page 9. A. - should read 140#/acre

B. - should read 200#/acre

WENATCHEE AND OKANOGAN FIRE REHABILITATION PLAN

During the weeks of September 1 through 4, and 8 through 11, 1970, the Regional Fire Rehabilitation Team was on the Wenatchee and Okanogan National Forests to assist in the massive rehabilitation of nearly 106,000 acres of burned lands. The Team restricted fire activities to the larger fires. This report contains observations and recommendations for the Gold Ridge, Entiat (south and north sides), Slide Ridge, and Mitchell Creek fires (which includes the Okanogan and Wenatchee National Forests). The rehabilitation recommendations given for the fires will serve as guidelines for the rehabilitation of all fires by Forest personnel.

An exit interview was held on September 11, 1970, with the following team members present:

Regional Rehabilitation Team Members

Fred Sprenger	-	Timber Management
Fred Hall	-	Range and Wildlife
Lew Nicholson	-	Timber Management
Rod Canutt	-	Range and Wildlife
Jerry Swank	-	Watershed Management
Don Boyer	-	" "
Bob Snyder	-	" "
Jerry Davis	-	Wenatchee Supervisor's Office

(Virgil Binkley, Loren Herman, Len Volland and Rick Ross were also on the team but did not attend exit interview.)

Soil Resource Considerations and Observations

Within one week following the fire, it was noted that in the mid-elevation hot burn areas the surface soil materials were beginning to dry-slide on the steeper slopes.

Wind erosion processes are active throughout the entire burn area and subsequent ash and surface soil losses can be expected this fall and next summer. Depletion of the upper 1 to 3 inches will occur due to the fluffy nature of the ash and the fire-caused ignition of the organic matter in the surface soil layer.

Displacement hazard on these soils is severe over the general area. This natural lack of resistance to displacement by foot and vehicle traffic as well as log gouging is recorded in the aerial photographs. Tractor traffic and log skidding marks remain evident for as many as 12 to 15 years. Since the surface soil layers are low in organic matter, coarse

in texture and quite thin (1 to 4 inches), cohesion properties are very low. Below this depth the soil material is structureless and has virtually no cohesion properties until exposed to the elements for some length of time. Sunlight plus rainfall impact and some degree of compaction tend to crust these exposed subsoil materials until fall rains or snowpack moisten them again. This annual process makes the recognition of soil erosion processes difficult since small rills tend to smooth over during the hotter months. Therefore, considerable erosion takes place without being recognized by the casual observer.

Under natural vegetation cover these soils have exceptionally rapid infiltration rates, particularly in the grassland-bitterbrush, ponderosa pine-Douglas fir and green fescue-sagebrush plant communities. A naturally occurring non-wettable condition exists in the lodgepole-true fir or lodgepole-white bark pine plant communities. This non-wettable condition is intensified by extreme temperatures as may occur in the moderate and hot burn areas. In the other plant communities it is expressed in localized areas, particularly where the former forest floor litter was the deepest. A reduction in natural infiltration rates can, therefore, be expected for at least 35 percent of the burn areas. This will create higher runoff volumes than normal and road surfaces, drainageways and log-gouged or exposed soil areas should be protected to receive these higher runoff volumes.

Normally, these lands transmit the water they receive as precipitation through the soil profile and commonly intra-zonally or laterally. There is very little evidence of overland flow of water on natural ground. There is some water movement into the underlying geologic material which is yielded as springs. In areas of extensive rock outcroppings and road surfaces, considerable overland flows can be expected. In those areas composed of glacial deposits, the soil water is held for extended periods and may yield to the streamflow slowly or as seeps.

The areas considered are generally well covered with a soil mantle but there are extensive acreages of rock outcroppings or exposed bedrock. These rock outcroppings will yield water rapidly and vegetation covered buffer or absorbing areas that have been burned can no longer absorb this runoff.

Most of the stream systems flow in deposited or aggraded materials with very few streambeds occurring on bedrock. The valley fill and streamside vegetation in the Mitchell Creek burn area has largely been consumed by the fire and erosion by channel cutting and streambank cutting can be expected. A preview of what may possibly happen to the stream systems can be observed on the Okanogan side of the burn. Those drainages are deeply entrenched and no longer have valley fill or streambed soil materials to absorb and slowly yield the water downstream.

The surface soil materials are moderately susceptible to compaction when wet, but the subsoil materials are difficult to compact. Tractor traffic performing multiple passes over the same area on wet soils can create compaction conditions and eventually a loss in infiltration rates and/or vegetation thrift or rooting abilities.

Susceptibility to windthrow is rated as moderate over most of the area. Some windthrow damage on the hot burned areas was observed one week following the fire and can be expected to continue.

It appears that these soils are generally lacking in nitrogen and sulphur and a response can be expected from fertilizer applications. Where long-term grass vegetation is especially desirable such as in firelines and exposed soil areas, these soils should respond well to an application of both nitrogen and sulphur, and a blended fertilizer consisting of urea and ammonium sulphate would be most desirable. An application of urea could be applied to the interior portions of the burn or those areas formerly supporting a tree overstory.

Fire Line Treatment

Since most of the topsoil has been removed and only the nearly sterile subsoil is exposed, the application of a blended fertilizer containing nitrogen plus sulphur, as mentioned above, is particularly recommended.

Most firelines were constructed on ridgetop positions where soil depths are shallowest and wind erosion activities are greatest. Protection of these sites will be difficult at best. In addition to the seed and fertilizer application, it would be best if these sites were left in a roughened condition to reduce wind turbulence.

The piling and burning of pushed-over trees is also recommended to reduce the hazards of insect and disease infestations.

Road Locations

The geologic or bedrock materials are quite competent and should provide good road prisms. Where roads are constructed in ice-marginal deposits and other glacial features, slumping of cutbanks and some fill slopes can be expected. These features can be recognized by their characteristically gentle topography; however, in some major drainages a veneer of glacial materials is plastered against the canyon sidewalls and is not as easily identifiable.

The existing roads are narrow and very little extensive cutbank exposures or sidecast materials were noted. This standard of road construction is well suited to these lands and should be continued.

Road construction might be performed when soil moisture conditions are high or employing the use of watering trucks so that maximum compaction can be obtained. The stratified silts and silty sands and gravels generally found in the ice-marginal deposits might also be utilized for road surfacing since a better degree of compaction could be reached.

A detailed soil survey for the Entiat River watershed is available and should provide considerable assistance in road location, etc.

Revegetation

The Entiat, Gold Ridge, Slide Mountain and Mitchell Creek fires burned approximately 106,500 acres. This acreage and variation of burn intensity require a priority system for recommending erosion seeding. Priorities have been based upon kind of plant community and degree of burn. The attached map delineates these plant communities and burn intensities.

Plant Community Map Coding

L = lower elevation ponderosa pine savanna and mid-elevation, very stony, shallow soils supporting pine (ponderosa/bitterbrush/wheatgrass). Also included are the bitterbrush-annual grass community adjacent to Lake Chelan. These communities are classed as non-commercial to very poor commercial forest.

M = mid-elevation forest of ponderosa pine/Douglas-fir or lodgepole pine often with Douglas-fir understory (ground vegetation is pine-grass, ceanothus and often low manzanita). This area includes commercial forest of the highest productivity in the fire areas.

H = high elevation forest, talus and rock outcrops or subalpine savanna (lodgepole pine/dwarf huckleberry, lodgepole/alpine fir/whitebark pine or whitebark pine/green fescue). Largely non-commercial or very poor commercial forest.

Burn Intensity Map Coding

1 = low intensity burn; ground fire which caused 30 percent or less of the overstory trees to turn brown.

2 = medium intensity burn; where more than 30 percent of the overstory trees were turned brown and less than 30 percent of the trees were burned black.

3 = high intensity burn; where less than 30 percent of the trees are brown and more than 30 percent of the trees are black. In many cases all trees were turned black.

Erosion seeding priorities are based upon the following considerations:

1. Most areas have not been heavily grazed by livestock, therefore, ground cover vegetation (grasses, forbs and shrubs) were at maximum density for the site and tree cover. These native plants are very resistant to fire and usually quickly occupy the ground where their pre-fire density was moderately high (tree crown cover of 60 percent or less).

2. Most hot burns (intensity 3) were in dense forest area (tree crown cover greater than 60 percent) where native ground vegetation was sparse and will not adequately protect the site within two years.

3. Most low elevation plant communities (type L) represent severe sites on which domestic plants are poorly adapted (steep south slopes and shallow soils often with abundant rock and stone).

4. High elevation communities (type H) are difficult to establish domestic plants due to a very short growing season, susceptibility to frost any time during the growing season, cold soils and extreme frost heaving potentials.

5. Destruction of native ground vegetation, such as caused by fireline construction, exposes the light weight (bulk density of 0.4 - 0.8) pumice soils to wind and water erosion. Removal or severe disturbance of topsoil will effectively prevent re-colonization by native plants.

Erosion seeding priorities are:

1. All tractor constructed firelines (approx. 800 acres). (F.F. Funds)

2. All hard burned areas; mid-elevation sites (M 3), 37,400 acres and high elevation sites (H 3) 3,000 acres. (216 Funds)

3. All moderately burned areas; mid-elevation sites (M 2). 19,400 acres and high elevation sites (H 2) 1,800 acres. (216 Funds)

4. All logging disturbed areas (unknown acreage) should receive treatment following salvage operations. (Timber sale erosion collection)

Table 1 lists acreages by plant community, burn intensity and fire. The map shows locations of these areas.

Table 1. Acreages By Plant Community, Burn Intensity And Fire.

North Entiat (Stormy Mtn. and Shady Pass Zones)

Type and Burn	Acres	Priority	Commercial Forest
L 1	3,400		
L 2	--		
L 3	--		
M 1	2,200	3	12,900*
M 2	4,200	2	
M 3	6,500	1	
H 1	1,700		
H 2	200	2	
H 3	1,700	1	
	19,900		

South Entiat (Signal Peak Zone)

L 1	1,800		
L 2	200		
L 3	--		
M 1	1,200	3	6,800*
M 2	1,800	2	
M 3	3,800	1	
H 1	1,400		
H 2	600	2	
H 3	500	1	
	11,300		

* but not all is operable.

Table 1 continued.

Gold Ridge

Type and Burn	Acres	Priority	Commercial Forest
L 1	3,800		
L 2	2,200		
L 3	--		
M 1	--		10,100*
M 2	5,400	2	
M 3	4,700	1	
	16,100		

Mitchell Creek (including Okanogan Portion)

L 1	6,200		
L 2	2,500		
L 3	1,100		
M 1	10,300	3	31,400*
M 2	4,300	2	
M 3	16,800	1	
	41,200		

Slide Ridge

L 1	1,300		
L 2	--		
L 3	--		
M 1	4,700	3	14,000*
M 2	3,700	2	
M 3	5,600	1	
H 1	200		
H 2	1,000	2	
H 3	800	1	
	18,000		

* but not all is operable.

Erosion seeding mixes are as follows:

Firelines

4#	Smooth brome (Manchar or pomar)
4#	Topar Pubescent wheat or Greenar intermediate wheatgrass
2#	Durar hard fescue
2#	New Zealand white clover*
2#	Sweet clover*
14#	

Burned Areas (M Type)

2#	Latar orchardgrass
2#	Hard fescue (may substitute 1# hard fescue and 1# Perennial Ryegrass)
1#	Drummond Timothy
1#	Sweet Clover*
6#	

Burned Areas (H Type)

3#	Tall fescue
2#	Smooth brome
2#	Orchardgrass
1#	Timothy
1#	New Zealand White Clover*
9#	

Salvage logging disturbed areas

3#	Latar Orchardgrass
2#	Durar hard fescue
3#	Perennial Ryegrass
1#	Drummond Timothy
1#	Sweet Clover*
10#	

*Sweet clover and white clover seed should be inoculated for best results.

Fertilizer Requirements

The fertilizer requirements may vary according to soil disturbance. Unpublished research has shown a highly significant increased response using nitrogen plus sulphur fertilizer as compared to simple nitrogen applications on soils in the Experimental Watershed (Entiat Fire). Therefore, a 50-50 mixture of urea and ammonium sulphate would be desirable at 100#/acre for all erosion seeded areas, but due to the vast acreage and volume of fertilizer materials an alternative is suggested:

Firelines (800 acres)

A. 100#/acre of 50-50 mixed urea and ammonium sulphate, or

B. 140#/acre of ammonium sulphate

Burned areas and logging disturbance

70#/acre of urea

Hydrology and Water Quality

I. Situation

Approximately 25 percent of the Entiat drainage and 11 percent of the Lake Chelan drainage (including Safety Harbor) burned. Some tributaries within these major drainages had 100 percent of the area burned. Both of the major drainages and their tributaries have a history of floods prior to wildfire. Where past fires in the same geographic locations have burned tributary drainages, experience indicates that there is an added threat from floods and sedimentation.

Annual precipitation varies from 15" - 70". Rainfall intensities for a 24-hour period vary from 3.0" for a 2-year return period to 6.5" for a 50-year return period.

The vegetation burned will cause consumptive use of precipitation by interception and transpiration to be reduced, thereby increasing the precipitation entering the soil. This will result in a higher potential for more runoff. In addition, snowpack accumulation will be higher but the snow will melt faster since the stands have been opened up to wind and solar radiation.

Natural soil infiltration rates have been reduced in some cases by the burn. This reduction in infiltration will exert more influence on runoff from high-intensity summer rainstorms which fall on the soil during periods of nonsaturation.

Therefore, potential peak streamflows have been substantially increased. These increased peak flows can occur either as a result of snowmelt and/or summer high-intensity rainstorms. SCS Technical Paper 149 and existing streamflow data was used in the development of peak discharge estimates in Table 4.

Associated with potential increased peak flows is increased erosion and sedimentation. Larger volumes of water will be capable of moving and transporting more and larger material (soil, rock, debris, etc.).

II. Rehabilitation Recommendations

In addition to revegetation and water bars, the following rehabilitation measures are recommended:

1. Trash racks
2. Stream cleanout
3. Sediment settling ponds and check dams
4. Log booms
5. Hardwood plantings
6. Drainage structure reevaluation.

III. Fire-caused Problems

Debris

Debris in stream channels can (1) cause a surge in runoff which may make peak flows higher than normal, (2) aggravate erosion processes and cause channel changes, (3) plug drainage structures, (4) endanger other existing facilities (homes, irrigation intakes, power facilities, hatcheries, etc.), (5) endanger boaters on the streams, Lake Chelan and Columbia River, (6) inhibit fish movement or migration, (7) deteriorate water quality (lower dissolved oxygen, change chemical composition, raise water temperatures), and (8) detract from streamside aesthetics.

Since the potential for higher peak flows is greater, debris presently in the stream channel or debris that may in the future get in the channel should be removed. There were many areas where immediately adjacent to the stream, standing fire-killed, noncommercial-sized trees exist which may fall into the stream channel as they deteriorate. These trees should be felled and removed from the high water mark concurrently with removal of existing debris.

Rehabilitation needs to minimize debris problems include trash racks, stream cleanout and log booms.

Sediment

As a result of the burn, there is more potential for movement of additional soil into the streams, plus more potential for movement of existing stream channel and bank material. This material can (1) plug water structures (culverts, irrigation intakes, domestic water supply intakes, fish hatchery and rearing facilities), (2) cause water quality deterioration to the point where it is unsuitable or even unsafe for human consumption, (3) endanger fish and aquatic life and (4) cause excessive erosion, deposition, and stream overflow which may endanger or inhibit the use of land.

Rehabilitation needs to minimize sediment problems (in addition to water bars, grass seeding, etc.) include sediment settling basins and sediment check dams.

Increased Runoff

Some existing drainage structures, particularly culverts, may be inadequate to handle the expected increase in runoff. Rehabilitation needs should include a reevaluation of the existing drainage structures that are presently questionable as to adequacy.

Water Temperatures

Streamside shade along many of the streams was removed by the burn. As a consequence, water temperatures during the summer months will be higher. This increase in temperature may (1) lower the ability of the water to hold dissolved oxygen, (2) cause chemical water constituents to interreact differently. Such effects may render the water undesirable for human and/or fish use.

Rehabilitation needs to minimize this problem include planting quick-growing hardwood species adjacent to the streams.

IV. Criteria For Rehabilitation Needs

Trash Racks

First priority should be given to drainages where investments are endangered. Normally this means above (1) culverts, (2) bridges, (3) irrigation and domestic water supply intakes, (4) fish hatchery and rearing areas, (5) residences, towns, or administrative sites. First priority should be given to (1) live streams or flashy runoff areas, (2) streams where debris cannot be removed, and (3) streams where much of the drainage area was burned. A combination trash rack - sediment check dam in the key locations should be considered. Normally, trash racks can be constructed of native material except possibly in key locations where some degree of durability is desired. In such instances, metal or part-metal trash racks may be justified. The size and specific location of trash racks will be determined to a large extent by stream channel and topographic conditions, and accessibility. Trash racks should be periodically cleaned (at least once a year following peak flows) and may have to be removed as they deteriorate.

Stream Cleanout

Removal of existing stream channel debris, or debris that may in the future get in the channel, will normally consist of material 4 inches or longer (material smaller than 4 inches was consumed by the fire). Similar to trash racks, priority should be given to live and/or flashy streams where investments are endangered. Normally, both trash racks and stream cleanout are recommended. In some instances, if trash racks cannot be installed, debris should be removed or vice versa.

Sediment Settling Basins and Check Dams

Sediment settling basins should be carefully engineered and constructed. Failure of a settling basin dam can cause more trouble than the problem it is designed to correct. Generally, settling basins should be confined

to low-gradient, flat-bottom stream channels. Sediment check dams can be installed in steeper-gradient, V-bottom drainages. Normally, sediment check dams should be constructed in intermittent drainages. Settling basins may be constructed in perennial or intermittent drainages. Priority for location should be based on the same priorities as for trash racks and stream cleanout. FSH 2509.12, Watershed Structural Measures Handbook, contains some specifications for these types of structures.

Log Booms

To capture debris that might escape trash racks and stream cleanout, log booms on Lake Chelan at the mouth of potential troublesome streams are recommended. These booms should be periodically cleaned. Where these booms may inhibit recreation, it may be desirable to temporarily remove them after peak runoff to allow use of the area. A log boom at the mouth of the Entiat River is also recommended to protect the highway and Columbia River boaters. This should be coordinated with the Bureau of Public Roads, Washington State Highway Department, Chelan PUD, or Corps of Engineers, whichever is applicable.

Hardwood Plantings

Hardwood cuttings should be planted adjacent to live streams where the fire burned so severely that the existing hardwoods are not expected to re-sprout within two years. A narrow strip, not exceeding one-half chain in total width, is recommended. This may vary according to stream channel conditions. On the wider streams, a tall hardwood cover (such as cottonwood) is needed to effectively shade the stream; whereas on the smaller streams, willows or alder may be adequate. Priority should be given to live streams (1) supporting a year-long fishery, or (2) streams furnishing domestic water supply.

Drainage Structure Reevaluation

With the expected increase in runoff, a study of the adequacy of existing culverts to handle this runoff should be made. The analysis should be centered on those areas where trouble has developed in the past and where considerable investment is involved. The peak flows developed in Table 4, if interpolated to the areas in question, should aid in this analysis.

V. Special Problem Areas and Priorities

Considering the intensity of burn, topography, investments, and past history of flooding and sedimentation, several particular areas show the need for rehabilitation emphasis. These are only generalities

since specific rehabilitation needs on a site-by-site basis have not been fully developed. These critical areas in order of priority are briefly discussed below:

1. Mitchell Creek Burn (Wenatchee side) - a very hot uniform burn. Protection of irrigation and domestic water supply system needed. Streams from the burn enter directly into Lake Chelan--a major recreation area for the State. The three major streams--Poison, Mitchell and Gold Creek--need intensive rehabilitation work.

2. Entiat Burn - a very hot burn adjacent to the main Entiat River. Residences, highway, fish hatchery, irrigation water and domestic water supplies need protection. The main Entiat River runs directly into the Columbia River, and streams needing particular rehabilitation attention are Preston, Brennegan, and lower reaches of Tommy and Grandma Creeks. Rehabilitation of Burns, McCree and Fox Creek is needed but should be coordinated with the Experiment Station.

3. Gold Ridge Burn - a very hot burn over much of the area. Area furnishes water for the town of Ardenvoir and mill which is located at the mouth. Mouth of what? Mad River?

4. Slide Peak - Twenty-five Mile Creek furnishes water for a fish-rearing area. Burn was spotty but particular attention should be given to rehabilitation where burn was hard. This includes the upper part of drainages on the east slope of Slide Peak that drain directly into Lake Chelan. Numerous residences and recreation facilities are at the mouth of these drainages.

5. Mitchell Creek (Okanogan side) - burn spotty but emphasis should be given to rehabilitation needs in those areas along streams where it burned hot. On-the-ground and historical records indicate this area is subject to damaging floods. Antoine and Washington Creeks need particular emphasis since fire in the recent past has burned part of these drainages.

6. Shady Pass - hot burn over much of the area. Fire-killed standing timber was already falling at time of rehabilitation team examination. Particular attention to stream cleanout is needed.

7. Signal Peak - a close examination of this area was not made. No close-by investments exist. It appears that some rehabilitation efforts are needed in Cougar Creek drainage.

VI. Timing of Rehabilitation

Since revegetation of the burn will not be effective until at least the summer of 1971, it is important that other rehabilitation needs be given immediate attention to prepare the burn for spring runoff. Rehabilitation

measures associated with stream channels (trash racks, stream cleanout, sediment dams, and log booms) should be done in the fall of 1970 when streamflow is at a minimum. Hardwood plantings can be done during the spring or early summer of 1971.

VII. Miscellaneous Recommendations

1. Avoid fertilizing the stream channel proper as a means of preventing nutrient increases in lakes and streams. A 100-foot buffer strip on each side of live streams is recommended. Avoid any direct application of fertilizer to Lake Chelan.

2. Where some past water quality monitoring in the burn area has been done, this monitoring should continue. Since monitoring of water quality is already planned for the Safety Harbor burn and Entiat Experimental watersheds, these results should be currently evaluated and the need for further monitoring on other parts of the burn dictated by the result of these evaluations.

3. More intensive monitoring and evaluation of climatic conditions, snowpack and melt during the winter and spring should be conducted. Existing instrumentation and measurements associated with the barometer watershed, Experimental watershed, and other agency stations may, in some instances, have to be supplemented with additional instrumentation and/or measurements. Recommend the Forest prepare a Flood Potential Evaluation and Warnings plan in conjunction with other applicable agencies (e.g., Experiment Station, SCS, Chelan PUD, River Forecast Center, etc.) which should serve as a guide for monitoring the flood potential.

4. A detailed inventory of specific rehabilitation needs, location, and priority should be developed by the Forest prior to allocation of any funds. Then, if or when funds became available, on-the-ground rehabilitation work can start without undue delay.

Reforestation - Summary

Summary of the fires: Mitchell Creek, Gold Ridge, Entiat.

The following items should be considered for all the fires:

1. Seed should be collected and seeded this fall where possible. This is high priority work. KV funds should be used on sale areas and P&M funds used on the rest. P&M funds should be made available even if some other projects may have to be cancelled. New sales should provide funds for reforestation.

2. Seed should be collected to fulfill the projected future tree production requirements.

3. Rodent control should be done on areas of sufficient natural seed fall.

4. New aerial photos would aid detailed reforestation mapping.

5. The areas are full of mistletoe. One objective of reforestation should be to establish a mistletoe-free stand. The Insect and Disease Control Branch should be consulted and detailed plans made to achieve this goal incorporated in the reforestation plans.

6. Detailed reforestation plans made for the fire areas.

7. The 200-foot strip along the Entiat River should be planted. The primary use of the area should provide the funding for planting.

Work Estimate Summary

Fire	Item	Acres	Cost
Mitchell Creek	Seeding	500	$10,000.00
	Baiting*	3,000	3,000.00
	Planting	15,000	1,500,000.00
			1,513,000.00
Gold Ridge	Seeding	2,000	40,000.00
	Baiting*	2,500	2,500.00
			42,500.00
Entiat South of River	Seeding	1,500	30,000.00
	Baiting*	2,000	2,000.00
	Planting	200	20,000.00
			52,000.00
Slide Mtn.	Seeding	2,000	40,000.00
	Baiting*	2,500	2,500.00
	Planting	1,000	100,000.00
			142,500.00
Watershed and Shady Pass Area	Planting	13,000	1,500,000.00
General surveys until reforestation done			200,000.00
			$3,450,000.00

*See Animal Damage Control Section for more accurate acreage figures.

Reforestation

Individual Fires

Gold Ridge Fire

Reforestation - the Douglas-fir cone crop is excellent over the entire fire area. The area indicated on the map has no seed source. These areas should be aerial seeded this fall. The areas should be rodent baited if a sufficient natural seed falls, or if they are aerial seeded.

The rest of the fire has hot burn scattered throughout; however, the seed source should be sufficient to adequately stock the area. Rodent control should be done as recommended by Rod Canutt.

The evidence of natural stocking on the Hornet Creek fire indicates this area should become stocked without planting. However, seed should be collected for tree production if this should become a reality.

The area should be surveyed in the fall of 1971 and planting plan made to assure full stocking. The south slopes should be reforested in ponderosa pine.

Mitchell Creek Fire

Reforestation - the area should be aerially seeded to Douglas-fir and ponderosa pine. However, the seed is not available. The only seed that will be available is the amount that can be force account collected or locally purchased this fall. The seed that does become available should be used on the north slopes in the inaccessible areas. The Forest will match the available seed with the area. The area above the pipeline in Gold and Mitchell Creeks appear to be the best for aerial seeding. The areas shown on the map should be considered for seeding with the available seed.

The Wind River Nursery should be notified that the seed is intended to be used this fall so extraction plans can be made.

KV funds should be used on the areas where they are available. P&M funds will have to be used on other areas. This is high priority work and other P&M projects should be delayed so this seeding can be done.

Portions of Joe Creek and Little Joe Creek could be aerially or hand-seeded this fall. However, it is apparent the seed will not be available. There is a good crop of Douglas-fir seed on the areas this year. It is estimated that 3,000 acres could be treated with rodent bait to protect the available natural seed.

The grasses being recommended for rehabilitation sowing should not require future machine site preparation. Hand scalping will be adequate where only bunchgrasses are used.

The lodgepole pine types have a seed source in serotinous cones. A survey should be made next year to determine where further work is required. No rodent baiting is considered necessary for the lodgepole pine areas.

The trees that will survive should be left to provide seed for natural regeneration in Joe Creek and Little Joe Creek.

The ponderosa pine with green needles around the terminal bud in the upper third of the crown should survive the fire. The trees that are permanently deformed by the fire will not survive. For further information, refer to the enclosed publication, "Guidelines for Estimating the Survival of Fire-Damaged Trees in California." The Wenatchee Forest has a series of slides showing ponderosa pine immediately after the fire and two years later. These are very good pictures and if local pictures could be taken, they would be helpful for future work.

Mistletoe is prevalent on the Douglas-fir and ponderosa pine. The objective, when reforestation is done, should be a mistletoe-free stand. The areas where reforestation is being done should be considered for followup removal of mistletoe-infected trees. The I&DC Branch should be consulted for specific recommendations.

Entiat Fires

Reforestation - the area south of the Entiat River for the most part is steep, rocky and low site. However, the area indicated on the map should be seeded if seed is available. The area should not be rodent baited unless there is sufficient natural or artificial seed on the area. A field exam should be made to determine natural seed fill.

The Slide Mountain area should be seeded, if possible. However, the area should be rodent baited.

The watershed and Shady Pass areas are planting projects. The slopes are primarily south facing. The opportunities for seeding are less than in other areas. If seed is available, there are some slopes that could be seeded. The surviving ponderosa pine trees are full of mistletoe and will not produce seed until next year. By this time, the grass will be going into the second growing season and it is doubtful if the germinating seed can survive this competition. This area burned hotter than other drainages where surviving trees were saved to aid reforestation. Any sale in the area should make plans to plant the area and remove all unmerchantable trees containing mistletoe.

Rod Canutt will prepare map on aerial baiting acreages along Preston Creek.

These areas and recommendations are to obtain the most accomplishment from artificial and natural seeding. The fire areas are extremely complicated by hard, medium and light burns, intermingled with noncommercial ground. Therefore, a detailed reforestation plan will have to be prepared.