

UNITED STATES GOVERNMENT

Memorandum

TO : Regional Forester

FROM : J. K. Blair, Forest Supervisor, By

SUBJECT: Soil Survey (Soil Management Service -
Wenatchee N.F.)

TBG	
WRB	11/22
GWS	
JFG	11/22
LDH	
HRB	11/22
JDM	
RMW	
WJM	
MPT	
WAP	
SRR	
RJS	
GHB	
ML	11/22

One copy of the Hornet Creek fire team report is herewith returned with our comments as requested.

Staffman Cliff Fink, Entiat District Ranger Bob Nelson, and Entiat Timber Management Assistant Duane Simmons, reviewed the report. In general, we are in agreement with your recommendations. There are a few areas where we need further clarification and they will be identified below and also in this report by circled numbers.

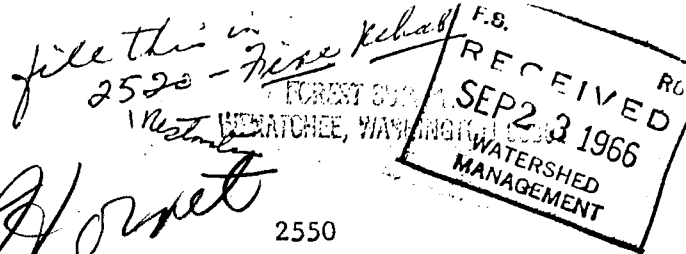
(1) The team recommended the establishment of five or six permanent photo points on the Hornet Creek burn. We agree this should be done and presume the cost will be borne by 094 although no estimate appeared in the report. Ranger Nelson estimated \$100 for this work.

(2) Under cutting practices you failed to mention jammer logging. You may recall our concern about getting skyline or portable spar equipment at Entiat. Jammer logging is the accepted practice, outside bidders are rare and we will jeopardize the salvage of fire killed pine timber unless we allow jammer logging. We recognize its limitations and agreed that there will be some critical areas excluded from the proposed salvage sales.

(3) Our forest wildlife biologist, Dick Pedersen, has asked for research reference material on the hand application of strychnine treated oats, if available.

(4) On page 3 the cost of bait for hand rodent baiting should be \$160.00 instead of \$1600.00.

(5) Under helicopter sowing of conifer seed, item 24, we think each species will need to be flown separately and recommend a unit cost of \$3.00/acre instead of \$2.00



DATE: September 22, 1966

Your reference: 9/15



5010-108

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

(6) The corrected grand total should be \$27,126 for reforestation.

Progress to date on rehabilitation of the burn is satisfactory. All fire trails have been cross drained. A contract for hand rodent baiting was negotiated on September 16, and work started last Monday, September 19. A contract for helicopter application of tree seed and grass seed will be negotiated October 3. The treated tree seed and the grass seed are at Entiat. Grass seeding of fire trails, helispots, campsites, and water sump sites will begin when the dwarf yellow clover for the recommended mix arrives.

Field work on two salvage sales is in progress. We plan to advertise about 6 MM bd. ft. before the end of October. Soil stabilization following salvage logging will be planned as recommended in your report.

The total revised cost of rehabilitation of the burn is \$30, 126. By functions this breaks down as follows:

Reforestation (033)	\$27,126.00
Soil Stabilization	
(a) Wildlife (052)	290.00
(b) Watershed (094)	2,610.00
(c) Photo Points (094)	100.00
	<u>\$30,126.00</u>

The Forest takes this opportunity to thank the team members for their prompt service and expert advice. We are certain that the coordinated recommendations in their report will enable Forest personnel to carry on needed rehabilitation work in an efficient manner and will achieve the desired results.

Enclosure

C. R. Jick

Regional Office Team Report of Timber Salvage and
Rehabilitation Needs on the Hornet Creek Burn

The Hornet Creek Burn is located about 12 miles northwest of Entiat, Washington on Hornet Creek, a tributary to Mad River which flows into the Entiat River at Ardenvoir. The blaze originated apparently from a lightening strike on August 26 and was controlled on September 2, 1966. The gross area is 1,520 acres of which 435 acres is state owned land and 1,085 acres is National Forest land. About 770 acres are in need of reforestation and 526 acres need immediate soil stabilization treatment.

- ① Members of the team suggest that the District set up carefully selected photo points to document soil and vegetation conditions at present and at annual intervals during revegetation. These photos may be used to demonstrate reforestation, effectiveness of erosion control measures, effect of animal browsing and will be very useful for I&E work. The team suggests five or six permanent photo points on the Hornet Creek Burn.

Not in cost estimate. An 094 charge?

I. Soil and Watershed Considerations.

Soils of the area were grouped and mapped using several key soil properties important in selecting appropriate erosion control and reforestation measures in materials. For example, soil depth, structure and texture, stoniness and soil temperature were used in evaluating such items as erosion hazard, drouthiness and ease of planting. The soils are shown on the soil map and are described in the "Table of Soil Characteristics." Note that three of the soils, 1, 2, and 4, occupy about 84% of the area and have a high erosion hazard in their current unprotected condition. The impact of this soil condition is especially severe since Hornet Creek supplies water to the town of Ardenvoir.

II. Cutting Practices.

Skidding equipment deep?

- ② Skyline or portable spar skidding is recommended. The Forest pointed out that skyline equipment is not available. A portable spar is now operating on the Cle Elum Ranger District. It may be available. Tractor skidding may be permitted adjacent to ridge top roads or where tractor drum lines can be pulled out to logs near truck roads.

These limitations on skidding equipment will very likely, and probably so, result in some areas not being logged. Soil types and erodability potential were classified (See soil type map). Five classes including rock are shown. Soil type No. 2 is potentially highly erodible.. This type extends into

several classes of burn intensity. In addition the preceding two statements apply to soil type No's. 1 and 4 when slopes exceed 60%. On those areas that are logged intensive erosion control practices will be required, currently performed, as skidding is completed in individual areas. (See erosion control recommendations attached.)

Recommended cutting practices by intensity of burn by areas described on the Ranger District map of the fire are further described below:

<u>Degree of Burn</u>	<u>Cutting Practice</u>
1. Very Heavy	Clearcut.
2. Heavy	Clearcut.
3. Light	Designate individual burned trees which because of the burn are dead or likely to die or were damaged by fire control action.
4. Spotty	Clearcut small burned areas.
5. Unburned	Leave uncut except for those accessible trees damaged during fire control action.

III. Reforestation.

- A. Treatment Recommendations. Rodent bait should be distributed immediately. Tree seed should be sown three to five days after rodent baiting. Details follow:

- ③ 1. Hard bait for ground squirrels and mice. Use 1# per acre of strychnine treated oats. Place baits of 20 to 40 grains beneath logs, rock outcrops and other protected spots at intervals of 30' x 30'. Bait as soon as possible this fall, preferably three to five days before sowing fall seed. Bait five chains inside unburned area inside fireline, spotty areas, and adjacent timber outside firelines. Next spring run trap lines in all parts of the fire immediately after snow melt including heavy to very heavy burned areas. Bait those areas having more than two rodents per acre next spring immediately after trap census, snow melt, and germination. Use same bait as previously recommended.
2. Sow a mixture of Douglas-fir, ponderosa pine, and Englemann spruce in quantities per acre shown below.
3. Sow a mixture of ponderosa pine and Douglas-fir. Refer to attachment for sowing rates.
4. Plant large ponderosa pine in spots where needed to secure adequate stocking. Site is secure so the average number per acre should be less than on higher quality sites. For the area as a whole, the average number of trees to be planted is 100/acre.

*Dick Pedersen
wants research
reference on
this*

In addition, on the seeded areas some planting may be required. Trees should be planted as soon as weather and soil conditions permit when seeded areas show less than satisfactory stocking. Prompt rework is required before competitive vegetation develops. Successful seeding on Soil Types No's 2 and 3 is questionable. Therefore germination and establishment of seedlings in these areas should be carefully matched and weakly stocked patches planted promptly.

B. Estimated Costs.

	Area Treatment No. and Type	Unit of Expense	Cost/ Unit	Total
④	1. Hand Rodent Baiting			
	a. Bait	800 lbs	\$.20	\$ 1,600 ✓ 160.00
	b. Application	800 Acs	3.00	2,400
⑤	2. Conifer Seeding			
	a. Seed	269 lbs	13.05	3,510
	b. Helicopter Sowing (3 Flights)	135 Acs	2.00 3.00	270 1105
	3. Conifer Seeding			
	a. Seed	858		6,410
	b. Helicopter Sowing (2 Flights)	360 Acs	2.00	720
	4. Planting			
	a. Trees & transportation	27.5 M	25/M	687
	b. Planting & inspection	275 Acs	30/Ac	8,250
			Total	\$23,847
			Plus 20% Overhead	4,769 4584
⑥		GRAND TOTAL		\$28,616 27,126

C. Allocated Seed and Recommended Tree Needs.

Seed lots allocated to the fire:

Treatment Area No.	Acres	Elev. Range	Seed Source and Species	Rate/ Ac	Total Lbs
2	135	4.0-5.0	13-05-204-4.0-64	1#	135
			17-050-122-4.5-64	1/2#	67
			14-06-093-4.5-61	1/2#	67
			Sub-total	2#	269
3	163	2.5-3.0	17-040-122-2.5(6301)		116
			17-070-122-2.5(6519)		100
			17-010-122-3.0(6502)		110
			Sub-total P.P.	2#	326
			17-01-204-3.0-64		20
			17-02-204-2.5-64		30
			Sub-total D.F. 1/3		50

193	3.0-3.5	17-010-122-3.0(6502)	140
		17-010-122-3.0(6302)	60
		17-060-122-3.0(6514)	50
		13-050-122-3.5(6206)	<u>136</u>
		Sub-total P.P. 2#	386
		13-05-204-4.0-64	66
		13-05-204-3.5-64	<u>30</u>
		Sub-total D.F. 1/2#	96

Estimated tree needs for planting

<u>Treatment Area No.</u>	<u>Acres</u>	<u>Elev. Range</u>	<u>Species</u>	<u>M Trees</u>
4	30	2.0-2.5	P.P.	3
	110	2.5-3.0	P.P.	11
	85	3.0-3.5	P.P.	8
	35	3.5-4.0	P.P.	4
	15	4.0-4.5	P.P.	<u>1 1/2</u>
		TOTAL		27.5 M

IV. Soil Protection of Burned Area.

The study of soil types and percent of slope was used as the basis for the seed mixture recommendations. Soil #1 was considered to be highly erodible and therefore difficult to stabilize. This soil is also considered to be the least irritable for grass establishment of any of the soils on the burn. Therefore greater amounts and somewhat faster growing grass species are recommended.

Soils 2, 3, and 4 are the lower elevation and warmer soils and have a higher potential for grass establishment. A seed mixture is recommended that will likely achieve the objective of soil stabilization with minimum competition to tree seedlings and plantings. Seeding to be done by helicopter.

Following are recommended grass seed mixtures:

<u>Helicopter seeding</u>		<u>Soils 2, 3 & 4</u>
<u>Species</u>	<u>Soil 1</u>	<u>#/acre</u>
Orchard Grass	2	
Timothy	1	
Pubescent Wheatgrass		2
Intermediate Wheatgrass	2	1
Hard Fescue	<u>2</u>	<u>1</u>
	7	4

Estimated costs for erosion control seeding on burned areas (fire rehabilitation fund)

1. Soil types and acreages.

<u>Soil Symbol</u>	<u>Gross Acreage (NF)</u>	<u>Net acreage to be seeded</u>	<u>Slope %</u>
1	509.2	140	40-60
2	272.2	80	60-70
3	148.8	138	70+
4	184.4	168	40-60
Rock	32.4	(35)	70
	<u>1,157.0</u>	<u>526</u>	

2. Estimated Costs for seeding 526 acres.

Soil #1.

Seed per acre	140 acres @ \$3.00	\$420.00
Flying costs	140 acres @ \$2.00	\$280.00
Marking, seed handling	140 acres @ \$.40	<u>\$ 56.00</u>
		\$756.00

Soil #2, 3 & 4

Seed per acre	386 acres @ \$1.70	\$656.00
Flying costs	386 acres @ \$2.00	\$772.00
Marking, seed handling	386 acres @ \$.40	<u>\$154.00</u>
		<u>\$1,582.00</u>

Total	\$2,400.00
20% overhead	<u>480.00</u>

TOTAL ESTIMATED \$2,880.00

V. Soil Protection on Firelines.

It is recommended that firelines and trails used for fire suppression be treated immediately to prevent serious soil erosion losses. The recommendations for water bar spacing and grass seeding are based on potential erosion hazard relating to various combinations of soils and slope along the fireline. Miles or acres of firelines, hand and cat construction, was not estimated. The Forest should complete the estimates that were started during the time the study team was at the Entiat Ranger Station.

The following table contains study team recommendations for stabilization of firelines in the Hornet Creek fire. Water bars on hand lines should be hand constructed.

Hand lines	0-15% (soils 1, 2, 3 & 4)	no bars needed if less than 150' at this gradient.
Hand lines	over 15% (soils 1, 2, & 4)	50' spacing
Hand lines	over 15% (soil 4)	100' spacing

Water bars all constructed 6/20/11

1. Cat lines (includes fire access lanes) 0-15% (soils 1, 2, & 4) 100' spacing
2. Cat lines 0-15% (soil 3) 150' spacing
3. Cat lines 15-35% (soils 1, 2, & 4) 50' spacing
4. Cat lines 15-35% (soil 3) 100' spacing
5. Cat lines 35%+ (all soils) 50' spacing and should be hand constructed.

Water bar construction for categories 1 - 4 may be cat constructed. Hand construction of water bars is recommended for category 5. Percent of slope is for hand and cat lines and not for the percent slope of the general terrain.

Estimated Seeding Costs per Acre for Fireline and Fire Road Stabilization.

Seed Costs

<i>Will be</i>	Orchard grass	2 lbs @ \$.35	\$.70
<i>done when</i>	Timothy	1 lbs @ \$.35	\$.35
<i>yellow clover</i>	Pubescent Wheatgrass	2 lbs @ \$.30	\$.30
<i>arrives</i>	Intermediate Wheatgrass	2 lbs @ \$.35	\$.70
	Dwarf Yellow Sweetclover	½ lbs @ \$1.00	\$.50
			\$2.85

Seeding Costs

\$9.00

\$12.00

Overhead 20%

2.40

\$14.40

Recommended grass seed mixture:

Orchardgrass	2
Timothy	1
Pubescent Wheatgrass	2
Intermediate Wheatgrass	2
Dwarf Yellow Sweetclover	½

VI. Soil Stabilization Following Salvage Logging.

An estimate of acreage and costs of seeding and draining salvage logging disturbed area of the burn cannot be made at this time. The study team recommendation for an erosion grass seeding mixture is:

Orchardgrass	2 lbs per acre
Timothy	1 lb per acre
Pubescent Wheatgrass	2 lbs per acre
Intermediate Wheatgrass	2 lbs per acre
Dwarf Yellow Sweetclover	½ lb per acre

This mixture should be hand seeded on soils disturbed by salvage logging only and should be financed with Cooperative Timber Sale, wildlife and revegetation funds as determined to be appropriate. Because most soils

of the burn have been placed in a high erosion category and because nearly all ground cover of litter and live vegetation has been burned, careful consideration must be given to the need for seeding all soils disturbed during logging operations.

Guidelines for spacing of crossbars on skid trails following salvage logging are contained in Section V, Soil Protection on Firelines and should be followed. This work should be financed from Cooperative Timber Sale erosion control funds.

VII. Total Costs.

Reforestation	<i>27126</i> \$28,600—
<i>Photo Points</i> Soil stabilization	<i>100</i> <u>\$ 2,900</u>
TOTAL	<u>—\$31,500—</u> <i>30,126</i>