

ROCKY BURN

THE SITUATION

An operations - caused fire originated on August 15, 1973. When controlled, on August 20, 1973, the fire had burned approximately 7400 acres, of which approximately 970 acres were Oregon Game Commission land and 436 acres were under multiple private ownerships.

A private summer recreational development was damaged and valuable winter big game range was heavily damaged. The drainages upon which two irrigation districts rely on were completely denuded. Livestock was lost and approximately 70 MMBF of timber was killed or damaged.

Without immediate rehabilitative efforts, serious soil erosion would occur and water carried accumulations of debris and sediment would present serious flooding problems. Although slopes are generally moderate (less than 30%), the light ashy soils would move readily without preventive measures.

The rehabilitation report and the emergency flood prevention report ("Section 216") detail the extent of the damages, the potential for further damage and the estimated cost of rehabilitation.

REHABILITATION RECOMMENDATIONS

The comprehensive findings and detailed recommendations are found in the Rehabilitation Report listed in the Bibliography.

A summary of their recommendations are as follows:

1. Seed and fertilize the hot burn area.
2. Install protection fence.
3. Stream cleanout.
4. Sediment check dams.
5. Seed and fertilize medium burn area.
6. Fertilize non-seeded area.
7. Hardwood plantings.

Actual accomplishment varied considerably from the recommended quantities due to fund limitations and re-evaluation of the on-site conditions and specific recommendations.

PLANNING

The organization for the project is summarized in Figure 1.

The rehabilitation leader's job was primarily one of organization and management within the various constraints that were established. He was expected to plan, organize and provide the needed technical assistance to insure the prompt establishment of a timber salvage program. Organization and administration of emergency rehabilitation efforts was a key facet of his job. Coordination with various local, state and federal agencies as well as private individuals and groups was required.

Personnel and equipment for the project were drawn from existing district and forest personnel. Some additional local people were hired to meet specific time frames.

District and forest personnel showed great flexibility and resourcefulness in meeting the time schedules and shifting their short range programs.

Contract and rental agreement aircraft were used for reconnaissance and application of seed. Contractors furnished all seed except for some small quantities supplied by the Game Commission. Experience at Entiat in 1970, indicated that contractor furnish and apply was cheaper than Forest Service furnish.

RESULTS

Full scale operations began on August 26, 1973, with detailed surveys of damages to improvements (fences, roads, etc.) and marking of wildlife and reforestation reserve on two existing sales. Felling operations started on these sales on the 10th of September.

All firelines were waterbarred and then seeded with a helicopter by the 10th of September.

Range fences damaged by suppression activities were placed back in usable condition by the 11th of October. A force account crew was used at about half the cost of a contract crew.

Initially, the Forest committed itself to reprogramming funds to accomplish the highest priority item-seeding of the "hot" burn. On 8/31/73 the Washington Office made available some \$32,050.00 for this work. Extremely competitive bidding on this initial contract lowered the cost to \$23,000.00. This savings allowed the rehab efforts to move into stream cleanout on critical streams and trash racks on selected roads where there had been problems in the past.

The seeding of the "hot" burn area and the stream bottoms was accomplished on the first of October by John Shearer of The Dalles, Oregon. Fertilization and the rest of the seeding would take place if additional funds became available.

A suitable landing strip was available immediately adjacent to the fire at the Rock Creek Work Center. This area served as a heliport for the later helicopter applications. This shortened the trip times and the cost per acre.

Stream cleanout started on 9/19/73 with crews made up of casuals and regular Forest Service personnel. A total of 4½ miles were cleaned out prior to cessation of the work because of funding limitations and early snows.

Trash racks, although not recommended by the rehab team, because of maintenance problems, were installed on streams that had a history of trash damage to roads. These trash racks were completed on 9/29/73.

On October 12, 1973, the Forest decided to reprogram approximately \$9,000 to build the range protection fence. We had delayed on commitment of forest funds based on information indicating early allocation of "section 216" monies. A fall start on the fence was necessary to have it ready for the 1974 grazing season.

On October 25, 1973, \$95,000 of "section 216" monies were received to continue the rehab efforts. Immediately, a contract was let to finish aerial seeding and ground activities were resumed.

Evergreen Helicopters was declared the winning bidder with a low of \$24,000. This contract was finished on December 6, 1973. Bitterbrush and Bulbous Bluegrass seed furnished by the Oregon State Game Commission was applied to the critical winter game habitat. Bitterbrush seeding was not planned originally because enough seed was not available to cover all of burned over winter game habitat. The OSGC did find enough and this item was included in the final seeding.

Stream cleanout and fence building activities started on October 29, 1973. All streams are to be cleaned out by January 15, 1974. Fence building was curtailed by winter snows on approximately November 30, 1973, with approximately 1.5 miles constructed of the total of 5.3 miles planned.

Sediment check dams were not built because it was felt the money could be best spent in cleaning streams and accomplishing rapid revegetation. On the ground examination by forest, district and Corps of Engineers' personnel indicated that the costs for the dams would be many times the estimate. Some were put in on Wildcat and Rock Creeks on a trial basis.

Hardwood plantings will be made along Threemile and Rock Creeks to quickly replace scenic values and restore fisheries habitat. Approximately 1500 rooted container stock and 4500 bare unrooted cuttings will be used. Planting will be done in the spring with Boy Scouts on a 10' spacing.

A continuous water quality monitoring program has been established by the District on streams flowing through the fire and into Rock Creek Reservoir.

Fertilization of the fire area will take place in the spring of 1974 when and if fertilizer is available. A reduced acreage will probably be fertilized since the cost of fertilizer has doubled between September 1, 1973 and November 1.

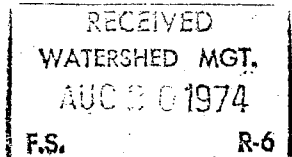
Detailed cost breakdowns by item of work are shown in Table 1 of the Appendix.

COOPERATION

All local, State and Federal agencies who it was felt might be interested in the project and the planning process were contacted. Invaluable data and assistance was obtained from several sources. Agencies included the U.S. Army, Corps of Engineers', Oregon State Extension Service and Game Commission as well as concerned private landowners.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Region 6
P.O. Box 3623, Portland, Oregon 97208



REPLY TO: 2510 Watershed Surveys & Plans

SUBJECT: Burn Rehabilitation, First year Evaluation of the
Rocky Fire, Mt. Hood N.F.

TO: Watershed
ATTENTION: Loren Herman



On August 9, 1974 the Regional Office Burn Rehabilitation team made a follow-up trip to the Rocky Fire on Mt. Hood NF. In general, most species of vegetation were performing well.

It was difficult to detect the burned and unburned areas in the ponderosa pine/Oregon white oak/bitterbrush/bunch grass type except where there had been enough heat to thoroughly scorch the ground. Burned oak was resprouting. Bitterbrush sprouting from old plants was not evident. New plants from the aerial seeding were doing well. Of the seeded species, 2 lbs. ladak alfalfa, 3 lbs. sainfoin, 5 lbs. bulbous bluegrass, and 1 lbs. hard fescue only the bulbous bluegrass was not showing an excellent stand.

On the commercial forest land the 3 lbs. of orchardgrass and 1 lbs. of timothy had produced an excellent ground cover. White clover included in the mix at 1 lb. per acre was not performing well. The two grass species have provided approximately an 80%-85% ground cover the first year.

Several stream bottoms were over-seeded with 10 lbs. of Italian ryegrass. This treatment has produced the objective results of quick cover along the streams and critical bottom areas. Sufficient timothy and orchard grass is present in the stand to eventually take it over. Hardwoods planted along stream bottom to provide shade were not performing well. Only a few individual plants could not be found.

Several problems were discussed and observed:

1. Livestock were present on the burn seedings. Evidence of use was seen in all areas. Even though an excellent ground cover was established, plant pullup has reduced cover to about 60% on most of the burn, when it could have exceeded 80%. Most of the stream bottom and critical side slopes have received heavy livestock use. Cover reduction was 50% or more based on running sample pace transects. Root systems on all perennial plants were poorly developed and plant pullup excessive.

2. Logging on the commercial forest land and slash piling in the fuel breaks appears to be doing less damage to the initially established ground cover than the impact of livestock. If at all possible, it would be a great benefit to protect the stream channels and side slopes. These areas should be logged last to allow as much root development under the ground cover as possible. The older plants could provide many times more protection than the new plants which will be seeded following logging. Use of annual ryegrass on the dry areas above the wet bottom is not recommended because of the shortage of moisture to sustain the perennials. Competition under moisture stress during establishment would be critical.

3. Skips and overlaps in the aerial seeding were observed. This problem is usually present with either fixed-wing or helicopter seeding and fertilization. The cost of seeding two directions with half rate each way on large areas is a very small percentage increase and well worth the additional cost.



LOU R. SPINK

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Range Management

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Region 6
P.O.Box 3623, Portland, Oregon 97208

August 26, 1974

REPLY TO: 2510 Watershed Surveys and Plans

SUBJECT: Review of Rocky Burn, Mt. Hood National Forest

TO: Loren Herman, Team Leader



I think our trip to the Rocky fire on August 9th was very valuable. This letter is to relay my thoughts concerning the first year success of our rehabilitation efforts for fish and wildlife. I understand these comments will be incorporated into an overall team report. First, I would like to say I was pleased with the Forest's coordination with the Oregon Wildlife Commission in prescribing and evaluating rehabilitation measures for fish and wildlife. The Forest made sure the Oregon Wildlife Commission was involved each step of the way in rehabilitation of the burned area. I think this involvement is very necessary.

The Forest did a commendable job in rehabilitation of this burn and carrying out the recommendations of the rehabilitation team. Greg McClaren did a tremendous job in coordinating and implementing rehabilitation measures.

Most of the recommendations for fish and wildlife were implemented to some degree. I realize these recommendations were difficult to implement and were met with some resistance by people outside the public agencies. The Forest and the Oregon Wildlife Commission jointly prescribed unwritten guidelines for identifying what trees should be left for wildlife. Forage important to wildlife was included in the revegetation seeding. Specific trees were marked for saving for wildlife. There were marked trees still standing in areas that had been salvage logged. Damage to Oregon Wildlife Commission property was repaired. Reseeding grasses and forbs not only provided forage for wildlife but soil stability, thus reducing sediment loads in aquatic habitat. Bird nest boxes were constructed and placed in the field. Apparently, some nesting occurred in the boxes during the 1974 nesting season. Browse plants were planted along streambanks; although apparently little survival was achieved.

I was pleased to see the salvage contract called for leaving all trees with 50% or more of their crowns unscorched. This preserves future options for protecting or creating wildlife habitat. Also, whips were to be left, except where obstructing logging.

I have three recommendations which I believe must be implemented in order to adequately execute the rehabilitation recommendations for fish and wildlife:

1. I believe more snags for wildlife should be left. The Forest and Oregon Wildlife Commission prescribed leaving 3-4 snags per acre. It appeared that approximately 1 snag per acre had been left in the areas salvage logged so far and had been marked in areas to be logged. Three to four snags per acre provide better wildlife habitat.

At the level of one per acre, a windstorm or rapid decomposition could quickly leave us with no snags. The Forest should describe what is the most beneficial type of tree to leave. This would help the District in any marking of the best trees for leaving in areas as yet unlogged. The overall quality of trees marked for leaving was good but it could be improved. In many areas, very little choice is available. Trees with present nesting cavities should be marked for leaving.

2. It would be beneficial to leave snags and whips in clumps, especially around water or just below canyon rims. Some birds require clumps of trees for nesting and perching. Clumping of tree cover around water is especially important for birds.
3. I was disturbed at the logging along the streambank on Threemile Creek. Trees were being felled and dragged across the creek, disturbing the streambanks. Almost all trees were being taken that were immediately adjacent to the stream. This included all trees along the streambank, even those that were hanging above the stream or their roots were binding the streambank. Saving trees along streambanks, protection of streambanks, and water quality - streamside management unit guidelines will be talked about in other sections of the Team report. It seems impossible to log trees on streambanks without seriously disturbing streambanks and aquatic life. Protection of trees along streambanks is necessary for a variety of reasons. Concerning fish and wildlife, this protection is necessary from the bank stabilization, silt, shade, and cover standpoints. Disturbed banks or unstable

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banks mean bank cutting and channel disturbances, which produce silt and sediment. These are particularly harmful to fish and other aquatic organism reproduction. Burned trees along the streambanks will eventually come down but not all at once, as with logging. Unlogged trees will fall within 5 to 20 years; but in that time period, streambanks will be stabilized and the associated herbaceous vegetation will be producing shade, cover, and food. Burned trees are presently producing a varying amount of shade for the stream varying between 10% and 20%. This is resulting in some benefit to aquatic organisms by reducing water temperature increases. With increased channel disturbances, the more important shade will be. The temperature at 1:15 p.m. at Rock Creek was 63 degrees. This area had not yet been logged. On Three-mile Creek, at 11:30 a.m., the temperature was 56 degrees. Logging was being conducted upstream where this temperature was recorded. Aquatic insect composition was good, including caddis fly, mayfly, and stonefly larvae. With several miles of streambank disturbances and lack of shade, the water temperature, especially in Rock Creek, may reach upper acceptable limits of trout. Increased stream temperatures may cause undesirable water temperature in Rock Creek Reservoir and growth of undesirable aquatic vegetation. Some small fish were seen in Rock Creek; however, the Wildlife Commission has decided not to stock fish in these areas until streambanks have been stabilized.

Streambanks must become stabilized and vegetated as soon as possible. Protected and stabilized streambanks mean early re-establishment of streamside vegetation which not only produces cover for fish and reduces stream temperatures but produces food for fish. Streambanks produce riparian vegetation which provides unique wildlife habitat not found in adjacent areas.

4. Livestock were grazing the burned area and causing damage to new vegetation, streambanks, and water quality. Livestock should be removed until the areas are stabilized after salvage logging. Cattle may have been a primary factor causing the loss of browse plants planted along the streambottoms.
5. In planning future installations or repairs of structures in the live streams, consideration should be given for use of rock basket gabions to not only stabilize streams but restore aquatic productivity to the site. Possibly, the Oregon Wildlife Commission would contribute the extra cost for such a structure.

John C. Capp

JOHN C. CAPP

Member Regional Fire Rehabilitation Team

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August 26, 1974

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TO: Loren Herman, Team Leader



HYDROLOGY AND WATER QUALITY

Rehabilitation

Rehabilitation recommendations for hydrology and water quality as made in the September 6, 1973, Rocky Burn rehabilitation team report were reasonably followed. Because the Forest did not receive all of the requested funds, most of the sediment check dams were not installed. Lack of on-site native stone with which to construct these dams was not available, therefore, expected construction costs would have been higher than estimated.

About half a dozen log sediment check dams were installed. These proved inadequate primarily because of improper anchoring, inadequate spillways and splash aprons. Those that were installed should either be repaired or removed before high flows occur.

A few trash racks were also installed. These appeared to have been effective but must be maintained to prevent any problems. These trash racks should be maintained for another couple of years, at least, since there may be further movement of woody debris, particularly since the area is being logged.

There was little success of hardwood plantings. This could partially be because of the youth labor used and/or because of damage from cattle grazing. In any event, it appears that natural hardwoods seedlings and sprouting may provide some shade and bank stabilization in three to four years.

Timber Salvage

Much of the successful rehabilitation efforts along streams can be negated by the continuing salvage of timber as presently being done on Threemile Creek. This observed cable logging and timber falling is unacceptable. In no manner can these practices meet Federal and state water quality or streamside management objectives (FSM 8223).

All burned timber along the major streams is being planned for cut and removal. The only trees not being cut are a few wildlife trees. On Threemile Creek, where active salvage was taking place, trees were felled in and across the stream. Trees were being dragged across the streambed and banks and on the slopes. It appeared that the cable logging observed on Threemile Creek was disturbing perhaps as much as 50% of the ground.

While tractor and cable yarding in other areas of the burn disturbed a large percentage of ground cover also, the logged terrain was gentle and no significant effect on the streams is expected.

The rehabilitation team recommended areas of steep slopes adjacent to major streams not be logged until stabilized by erosion control measures. One year's growing season is not adequate. The grasses are not well rooted enough to withstand harsh disturbance nor dense enough to effectively act as a sediment filter trap for upslope erosion. Fertilizer has not even been applied to stimulate growth but application is planned for this fall.

The light ashy soils along the stream are very susceptible to bank erosion when disturbed. Much of Threemile Creek and Rock Creek are meandering, slow moving streams with low banks which show evidence of being overflowed frequently. Loose, disturbed material in these areas is quite likely to be moved during high flows.

The shading effect from the fire-killed timber is not significant as only about 10% shade is provided. Thus, if this shade is completely removed along one mile of Threemile Creek about a 1° increase in water temperature would result. Considering some cooling from ground water inflow and bank shading, temperatures would be within prescribed water quality standards.

Timber salvage recommendations insofar as protecting stream courses are:

1. Immediately reseed current logging-disturbed areas (the Forest did provide for collecting erosion control funds in the timber sale contract). Along stream courses, reseed logging disturbed areas with annual ryegrass for possible cover before fall rains start.
2. Delay falling and removal of any further fire-killed trees along major streams until at least one more growing season has elapsed (summer of 1975). This will provide an opportunity for fertilizer application and response.

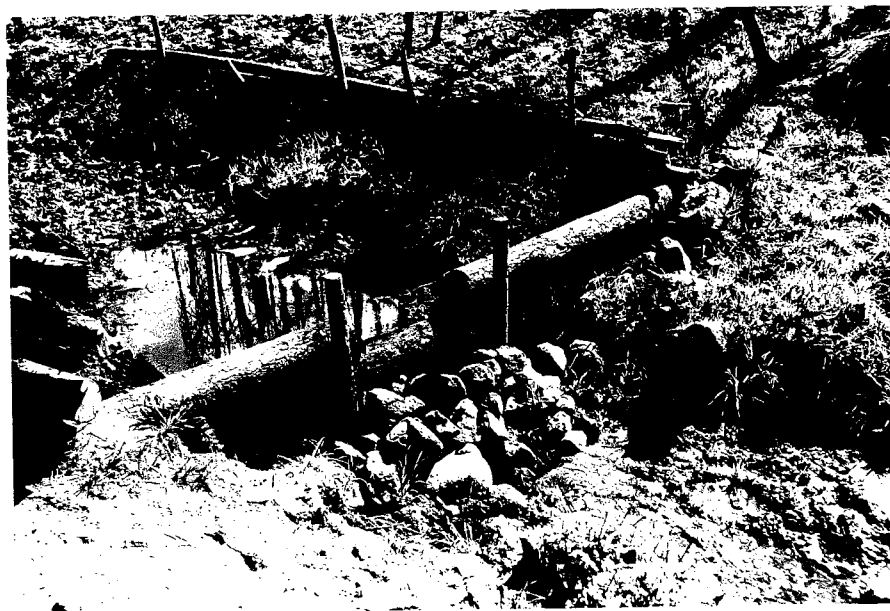
3. In the future, provide a buffer strip along major streams in which only trees are cut which will not fall in or across streams or result in disturbed stream banks and remove these trees in such a manner as to maintain an effective ground cover sediment filter trap.



Heavy grazing use along a fork of Wildcat Creek.



Effective trash rack on Threemile Creek.



Log sediment check dam on Wildcat Creek.



Threemile Creek - Felled but not yarded timber in foreground.



Threemile Creek - Cable yarding operation.

Gerald W. Swank

GERALD W. SWANK
Forester, Watershed