SALMON RIVER RESTORATION COUNCIL
KLAMATH FOREST ALLIANCE
28904 SAWYERS BAR ROAD
ETNA, CA. 96027

SALMON RIVER COMMUNITY RESTORATION PROGRAM -(SRCRP)
(FINAL REPORT FY 94)

A) ABSTRACT

Through the Klamath Forest Alliance (KFA), the Salmon River Restoration Council (SRRC) has performed the tasks identified in our cooperative agreement for **Salmon River Community Restoration** Program (CRP) for Fiscal Year 1994 (FY 94). During FY 94 SRRC continued to enlist community members in a variety of watershed restoration and protection activities. In FY 94, SRRC held 6 specific Awareness Workshops and 6 Training Workdays in the Salmon River sub-basin that focussed on Community Salmon River Sub-Basin Planning, Roads, Fire, Native Plants, and Forest Management. The SRRC provided 115 volunteer days associated with the Awareness Workshops (Workshops) and Training Workdays (Workdays). There were 11 planning meetings associated with these events in which there were 73 in-kind contribution days provided by community members. There was also 188 in-kind contribution days in which community members worked on the SRRC activities associated with the CRP. A total of 376 volunteer days were provided. The funded staff, the Coordinator and the Secretary , worked for 82 days and 40 days respectively.

In conjunction with SRRC's CRP, two other specific projects were included in SRRC's activities this year. These are the Salmon River Community Restoration of Riparian Ecosystems Training Project (94 HR 23) and the Forks of Salmon School Stewardship and Education Project (Adopt-a-Watershed)(94-E-4) program for FY 94. Both of these project were successfully implemented. Separate Final Reports are being submitted for these two projects.

In the Adopt-a-Watershed project for FY 94, the Forks of Salmon School developed and implemented a detailed watershed program that included the students learning techniques used to inventory, monitor, protect, and rehabilitate damaged natural resources in Salmon River sub-basin that are directly associated with the anadromous fisheries.

Through the Riparian Planting Project community members spent 75 days learning and applying riparian revegetation techniques at

prioritized restoration sites for on both private and public lands in the Salmon River sub-basin. They learned what plants to utilize at specific sites and why they are needed. This work was done with the supervision of key Forest Service personnel. Propagation information and assistance was provided by the Forest Service, nurseries in the bioregion, and in utilized written information.

Periodic updates were provided to the Fish and Wildlife Service throughout the year. The SRRC Project Coordinator networked with contact people from the specified agencies and Karuk Tribe. In FY 94 SRRC submitted numerous restoration proposals to various funders, including the Klamath Basin Fisheries Task Force (KTF).

A Draft Salmon River Community Restoration Plan (Plan) was developed and circulated for comment to , managing agencies, members of the Karuk Tribe, technical planning assistants and to community members. The Plan focuses on increasing local awareness of fisheries and ecosystem needs, identifying resource problems and developing resource protection recommendations, and enlisting community members and the local schools to advocate and participate in fisheries and ecosystem protection and restoration activities.

The Final Plan was developed and will be updated as new information, opportunities, or direction arises.
(See Appendix # 5 - Salmon River Community Action Plan - CAP)

SRRC distributed its' information at key locations which serve as community information distribution points. These points are at the Forks of Salmon Post Office, Cecilville Post Office and Sawyers Bar Post Office. We have maintained current information and handouts at these and other points. Notices and informational announcements have also been posted at public bulletin boards in Somes Bar, Orleans, Happy Camp, Etna, Fort Jones, and Callahan.
(See - Appendix # 3 Workshop Notices, Handouts, etc.)

In FY-94 the Salmon River Restoration Council applied for and recieved its' non-profit 501 (c)(3) status. An elected Board of Directors, which is composed of individuals who come from various geographic areas and also represent a diverse walk of life.

The SRRC planning and resource inventory, restoration, monitoring and protection activities were performed in consultation with various managing agencies and the Karuk Tribe.

was given because some of the runs of Salmon are doing better here and that some of the best habitat still exists in this sub-basin. The President's Plan also established Late Seral Reserves in a substantial portion of the mid-upper area of the sub-basin.

Rehabilitation of riparian habitat has been prioritized by the Klamath River Fisheries Restoration Task Force, the Forest Service, and others. Revegetating the areas that have been denuded or washed out in the past is a particular riparian habitat need.

D) METHODS AND MATERIALS

There were various methods and materials that were used in this project. These methods and materials are listed below.

The Program increased local awareness for the anadromous fisheries and watershed resources by enlisting local volunteers to participate in a series of 6 Resource Awareness Workshops and apply this information at the associated 6 Volunteer Training Restoration Workdays. Some of the Workshops had more than one Workday associated with them. (See below Workshop/ Workday Schedule and Appendix # - 1 Workshop & Workday Evaluations and Appendix # 2 - Other SRRC Restoration Activities)

Several community members involved in the SRRC have focussed their interest on riparian revegetation needs and native plant propagation. Through the Native Plant Workshop and Workdays as well as from SRRC's other native plant projects, a number of community members are developing nursery skills. Several home nursery facilities on private land are being used to propagate various native plant species that have been targeted for rehabilitation purposes. Various tools and materials have been donated by these participants.

SRRC has promoted local awareness through its distribution of SRRC information.(SEE Appendix # 3 - SRRC Handouts, Posters, etc.)

Through these and other activities the coordinator has identified and enlisted active members of the Salmon River community and representatives of the Karuk Tribe to form the Salmon River Restoration Council Board of Directors. There have been regular Board meetings to work on planning and business issues. Steering Committee, Board or other Planning meetings took place this year. At these Board meetings and through individual contact, the Board and steering commitee have helped the Project Coordinator to facilitate the FY-94 activities. The Coordinator and the Secretary have worked together to implement and track the schedule of events which occurred this year.

4. Fire Protection Awareness Workshop/Workday I 8/27/94
   Fire Protection Awareness Training Workday II 3/21/94

5. Adopt-a-Road Awareness Workshop/Workday 9/14/94

6. Forest Management Workshop 9/30/94

(See Appendix # 1 - Workshop/Workday Notices & Evaluations)

A Total of 115 In-Kind Contribution Person Days and 20 Technical Assistance Person Days occurred at these Workshops/Workdays

2) FY-93 PLANNING MEETING SCHEDULE (Steering Commitee/Board Mtgs)

11/1/93	(6)
12/14/93	(5)
1/27/94	(9)
2/8/94	(5)
2/17/94	(7)
5/9/94	(7)
5/25/94	(10)
7/9/94	(6)
8/18/94	(9)
8/5/94	(4)
9/9/94	(5)
TOTAL	73 In - Kind Contribution Person Days

During these planning meetings the community members, key agency specialists, Karuk tribe specialists and others participated in the planning, implementing and evaluating the Workshops, Workdays, Project Proposals and other SRRC restoration activities. Notices were sent out for each steering commitee meeting and posted at each of the distribution centers.

A total of 183 In-Kind Contribution Person Days were associated with the Workshops, Workdays, and Planning meetings.

The SRRC Coordinator and Secretary attended each of the planning meetings for which they will be compensated for through their salary. In FY-94 the Coordinator worked for 82 days total. Fifty of these days are paid and the other 32 are in-kind contribution. The secretary worked for 40 days of which 25 will be paid and 15 will be an in-kind contribution.

5) OTHER SRRC VOLUNTEER ACTIVITIES

There were 228 -In Kind Contribution Days associated with these activities where SRRC was involved. Forty of these days were provided by the SRRC Coordinator. Funding will be provided to the Coordinator via his salary. There were 188-In Kind Contribution person days provided by the community members participating in the SRRC activities other than the 6 Workshops and 5 Workdays. These activities include volunteering for the Fall Chinook Carcass and REDD Survey and others work. (See Appendix # 2)

F) SUMMARY AND CONCLUSION

In this year 376 person days of learning and training were provided by members of the community. These awareness and training days focused on the fisheries/watershed restoration and protection that targeted key subject areas. This work was directly related to the Salmon River Community Restoration Program.

In its' task to enlist community members SRRC realized that this may be done more efficiently by integrating and coordinating restoration and protection activities with other groups that already exist in the sub-basin. The Forks of Salmon School Adopt-a-Stream Project is an example of this. In addition to working with the Forks School, SRRC coordinated its' projects with the Forks of Salmon Fire and Rescue. It provided assistance in fundraising areas (grantwriting) and performed coordinated activities in areas such as: fire prevention and fuels inventory.

SRRC has given several presentations to groups within and outside the sub-basin. It has created an initial display which informs the interested public of the SRRC activities. This display includes photos, articles, and written information about SRRC's activities. The SRRC is still in the process of developing a large display which represent its goals and activities.

In the Specimen Fire of 1994 the SRRC coordinator helped the various agencies in making an Evacuation Plan and a Structure Protection Plan for the town of Sawyers Bar. Planning meetings were also attended and valuable input was provided. The SRRC has also been monitoring fire effects and will be participating in rehabilitation activities with the Forest Service

This has been an eventful and rewarding year for the SRRC. This years results have lead to an increased local cooperation for protecting the fisheries and other related watershed resources. A tremendous amount of information has been exchanged from specialists to community members, specialists to specialists, and within the community itself. This project has helped to network

Mr. Ronald A. Iverson
U.S. Fish & Wildlife Service
Klamath River FRO
P.O. Box 1006
Yreka, Ca. 96097

5/1/95

Dear Mr. Iverson,

Enclosed is our Final Report and Appendices for FY 1994. Also included is our Final Invoice for the Salmon River Community Restoration Program FY-94. These submissions are in accordance with the milestones which are to be reached during FY-94 by the cooperator. We hope that you are pleased with our work and products.

During this year there were 376 In Kind contribution person days directly related to this years tasks. Community members will be provided a small stipend for their effort in participating in the Workshops and Workdays. In FY 94 there were additional restoration, monitoring, and inventory projects that SRRC has been involved in for which volunteers will be provided a stipend. (See Appendices # 2)

In Appendix # 3 many of the Workshop/Workday posters and handouts served as the boxholder mailers and/or press releases. In addition there are other SRRC posters, information, and communications included to provide you with some of the products which were used to gain support for the Salmon River Community Restoration Program.

We are enclosing a copy of the Salmon River Community Action Plan. This Plan is a working document which helps provide an direction to the Salmon River Restoration Council (SRRC). The SRRC will be continually updated to include new information, direction, and opportunities. In FY-94, the SRRC held a Watershed Planning Workshop and 2 planning Workdays. Freeman House from the Mattole Restoration Council provided technical assistance and provided a valuable contribution to our process, for early March 1994.

The SRRC has a 501 (C) (3) Non-Profit Organization. A Board of Directors and Officers were chosen by the community. The Board will work with the coordinator and various agency personnel to continue to update the Salmon River Community Restoration Plan. Minimum Impact guidelines for Dredgers and other resource uses are also being developed.

APPENDIX # 1 - WORKSHOP & WORKDAY EVALUATIONS

1. Salmon River Community Restoration Planning Workshop I

The Awareness Workshop occurred on 11/12/93. The goal of this Workshop was to take the next step in completing a Draft Salmon River Community Restoration Plan. Twenty-two community members, various agency personnel, and/or others attended. A planning presentation was made by Freeman House of the Mattole River Alliance. A general discussion on community restoration planning took place and ideas were recorded.

On 11/13/93, Thirteen (13) members of the community participated in a community Planning Workday event. During this planning Workday community members, through the SRRC, identified some new components and refined already identified components of the draft plan.

People of various economic, social, and cultural interests from the community attended. These interests included those involved in fishing, mining, local schools, logging, county road maintenance and other local interests.

Technical assistance was provided by Freeman House to help plan and implement the Workshop and Workday and throughout the draft plan development process. Freeman has been involved in the Mattole River Alliance from conception, several years ago, until now. He has been extensively involved in watershed planning and community restoration involvement. He provided valuable planning assistance to SRRC throughout our planning process.

This event was advertized in the newspaper, at the local stores and post offices of Etna, Callahan, Sawyers Bar, Forks of Salmon, Cecilville, Somes Bar, Orleans, and Happy Camp, and through a boxholder mailing to the town residents of Sawyers Bar, Cecilville, Forks of Salmon and Somes Bar. Invitations were also sent to various key agency personnel, tribal representatives, and other individuals and organizations interested or involved in watershed restoration such as the Mattole River Alliance.

An evaluation of this event revealed that on the up side it was embraced well by a number of community members who expressed interest. Many of the people have continued to participated in this SRRC planning process.

Planning for the Workshop and Workday was performed through a planning meetings, in several individual phone communications and in person discussion between the Program coordinator, technical assistants, various key agency personnel, tribal representatives, community members, other specialists and interested parties.

There were a total of 34 in-kind contribution person days.
total of 5 technical assistance person days

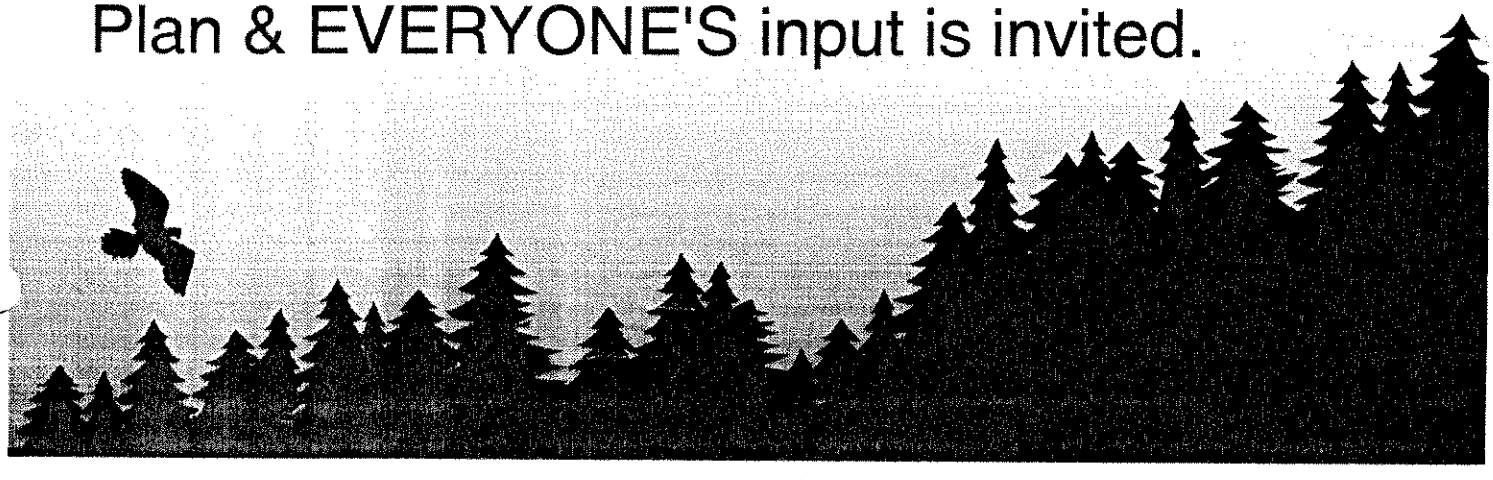
SRRC
WATERSHED PLANNING
WORKSHOP

Friday - Nov. 12 7-10 p.m.
Saturday - Nov. 13 9 a.m.-Noon

@ Forks Community Hall

Special presentation by Freeman House of the Mattole Restoration Council. He will help SRRC in the development of the Salmon River Community Restoration Plan & Inventory.

This workshop will focus on creating a Salmon River Community Restoration Plan & EVERYONE'S input is invited.



SALMON RIVER COMMUNITY RESOURCE RESTORATION PLAN
(DRAFT OUTLINE)

I.) Introduction

In FY 1992 the Klamath Forest Alliance (KFA) and Salmon River Concerned Citizens' (SRCC) were funded by the Klamath River Fisheries Task Force to host a series of cooperative workshops for the communities situated in the Salmon River sub-basin. These well attended workshops were aimed at increasing local awareness to help protect and restore the dwindling populations of spring chinook salmon returning to spawn in the Salmon River. The community response was overwhelmingly positive. As a follow up to the local community's evident desire to want to protect and help the Salmon River anadromous fisheries, KFA and SRCC initiated the Salmon River Community Restoration Program. The Program deirected a coordinator to enlist community members support by continuing to increase local awareness, to stimulate the development of a local Salmon River fisheries restoration group (the Salmon River Restoration Council (SRRC) and Steering Commitee), and to cooperativly plan and implement short term and long term protection and restoration measures.

The Salmon River Community Resource Restoration Plan (CRRP) is a product of the Salmon River Community Restoration Program (FY 93). The CRRP addresses key Salmon River watershed restoration issues (including fisheries protection and restroration as well as multiple resource uses such as: mining, grazing, recreation, logging, etc....). A five person Executive Board was chosen in 4/93 to initially assist and provide the coordinator with feedback and direction and to work closely with the development of the Community Restoration Progam and all of it's' components.

As a result of this CRRP, local citizens, involved agencies, and the Karuk Tribe will cooperatively perform watershed protection, restoration, and monitoring needed to restore the anadromous fisheries of the Salmon River at the same time stimulating the local economy.

II. Goals

A) To Restore the Salmon River sub-basin and anadromous fisheries

B) To enlist community involvement and assist in local economic stability by developing needed restoration proposals to be done through local contracts and labor.

C) To develop cooperative planning, management, and educational effort between the agencies, the Karuk Tribe, and the community for protection and restoration of the Salmon River.

III. Objectives - Short & Long Range

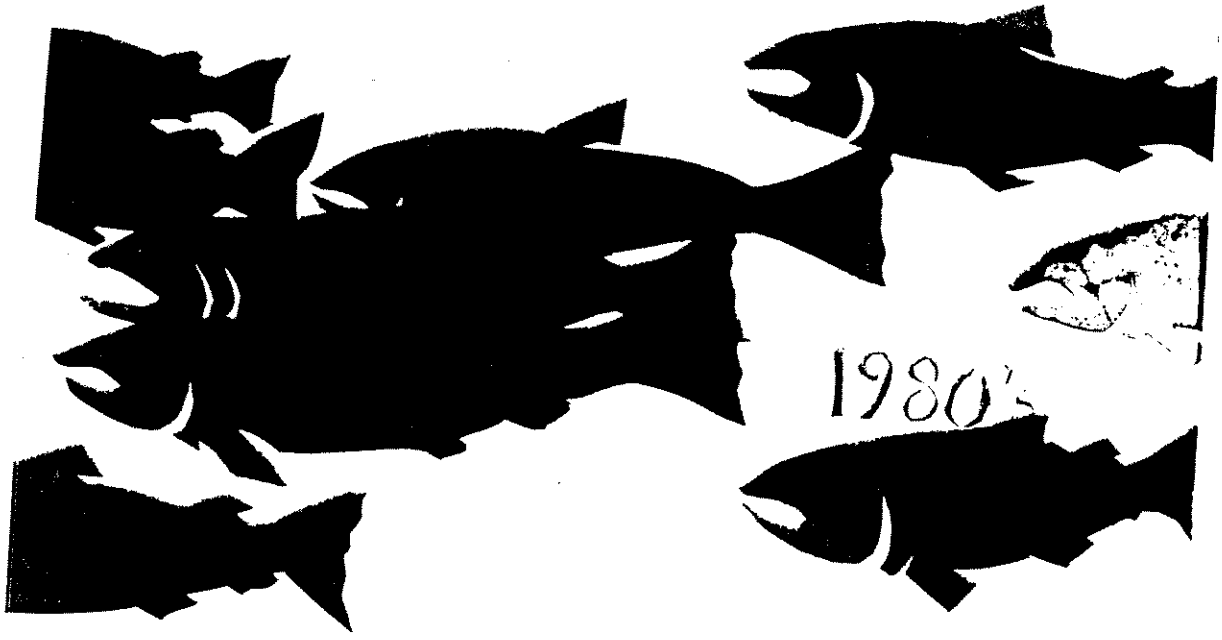
A) Each year develop an annual series of workshops which focus on identifying problems in the sub-basin. Increase local awareness as to the protection and restoration needs of the Salmon River sub-basin and fisheries resource. Enlist support for the Salmon River Community Restoration Program in conjuction with the Klamath River Restoraion Plan.

B) Identify Resource problems and develop Minimum Impact Resource Use Guidelines.

C) Create and seek funding for restoration proposals

D) Develop various types of inventories

E) Perform volunteer and funded restoration/monitoring activities



NOW EVERY SPAWNER COUNTS

OR IT'S GONERS

Salmon Restoration

Engaging the Particulars of the Planet's Recovery

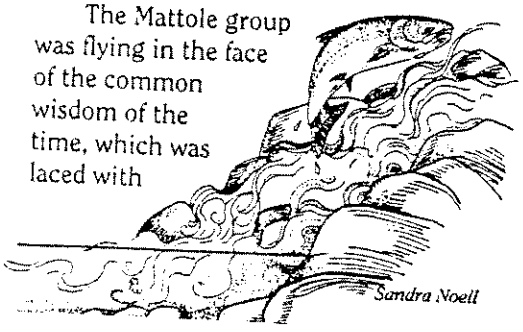
Freeman House

THE MATTOLE RIVER runs coastwise south to north for 64 miles, through a wrinkle in the North American crust formed as the Pacific plate collides with it and dives, pushing up the King Range. Just to the north is Cape Mendocino, California's westernmost point, where the Japanese and California ocean currents meet. Under the sea near the mouth of the Mattole, three fault lines meet to form the Triple Junction, the most seismically active spot in the state. Redwoods grow in its fog-washed headwaters, and a rich mixture of Douglas fir and hardwoods elsewhere. Of the 2,000 or so people living here now, some two-thirds of them have migrated here in the last twenty years, as large sheep and cattle ranches have been subdivided into homesteads.

In the late seventies, a few people began to observe that the native Mattole king salmon population was diminishing in an alarming way. The Mattole run was one of the last purely native "races" of salmon in California, largely because the river was so remote that the state Department of Fish & Game (DFG) had never gotten around to stocking it with hatchery fish. In valleys where salmon run they play a large and dramatic part in the spectacle of life. It became vitally important to some people in the Mattole valley to attempt to reverse the decline. It was important in terms of maintaining the most visible celebration of the mosaic of wildlife in the valley, and it was important to maintain this remnant of genetic diversity for the health of all Pacific salmon.

The Mattole Watershed Salmon Support Group was formed to learn how to make the king salmon population viable once more.

The Mattole group was flying in the face of the common wisdom of the time, which was laced with despair. In the two decades between 1950 and 1970, something more than three-quarters of the Douglas fir and redwood trees which held the watershed's slopes in place had been cut for timber. Enormous amounts of bare soil had been exposed to disastrous amounts of rainfall. Starting in the flood year of 1955, hillsides began to slide into the river system. Deep pools and channels in the river had filled up with silt: the river jumped its banks, taking out whole stands of riparian growth which had shaded and cooled the water.



Sandra Noell

The clean gravels that salmon require for spawning and the deep pools the young fish needed to grow in were gone. The processes that had been cut loose by the too-rapid deforestation of the basin were apparently too huge to be engaged by humans with fragile limbs and frugal means.

The salmon group worked from the assumption that no one was better positioned to take on the challenge than the people who inhabited the place. Who else had the place-specific information that the locals had? Who else could ever be expected to care enough to work the sporadic hours at odd times of the night and day for little or no pay?

Working symptomatically, we discovered a low-tech decentralized tool in the streamside salmon incubator used previously in British Columbia and Alaska, which treated the problem of silted-in gravels by imitating the ideal natural situation. These incubator systems-or hatchboxes- fed filtered water from the client creek through select clean gravels in a box the size of a pickup truck toolbox located by a creek in a neighbor's yard. Cheap to build, without moving parts or external sources of power required, the hatchboxes proved to be relatively trouble-free. They could accommodate as many as 30,000 fertilized eggs and consistently deliver a better than 80% egg-to-fry survival rate, compared to less than 15% survival in the mud-stricken river.

If we were to maintain the native adaptations of the populations we were hoping to enhance, we would have to take our eggs from native stock in the wild, rather than accept eggs from another watershed or from homogenized hatchery stock. It was around this idea that we first began to encounter official resistance to the notion of locals and non-professionals dealing directly with nature. 18 months after the salmon group had first approached the state agency, we were ready to put away our briefcases and put on chestwaders.

To enter the river and attempt to bring this strong creature out of its own medium alive and uninjured is an opportunity to experience a momentary parity between human and salmon, mediated by slippery rocks and swift currents. Vivid experiences between species can put a crack in the resilient veneer of the perception of human dominance over other creatures. Information then begins to flow in both directions, and we are able to learn: from salmon, from the landscape itself.

The first thing we learned from salmon was the importance of the watershed as a unit of perception. If salmon organize themselves so clearly by watershed, wouldn't it make sense for us to organize our efforts similarly? Salmon are not only creatures of unique watersheds, adapted so that generation after generation responds to the timing and flow of utterly specific rivers and tributaries, but they are also dependent on watershed processes in general. During their reproductive time in fresh water, salmon live at the top of the aquatic food chain, but at the bottom, so to speak, of fluvial and geological processes. The success of incubation depends on the availability of river bottom gravels free of fine sediments. The survival of juveniles depends on the presence of cold deep pools cut down to bedrock.

In the Pacific Coast Range, new mountains are still rising out of the ocean bottom at the rate of two to four meters per millenium, and the soft sea silts have rarely had time to metamorphose into competent rock which might stay in

place against the winter storms that wash most of the uplift back to sea. A record storm, combined with any one of the frequent earthquakes which inform this coast, can cause a landslide which will change the course of the river and alter the pattern of salmon reproduction for several human generations. Combine these conditions with a ranching technology that requires a few hundred feet of dirt road for every head of stock; with a timber economy that makes it cheapest to build a road to every tree and remove all vegetation from the slopes; with a homestead ethic that can rationalize miles of benchcut road to protect the privacy of each and every American home, and you have a recipe for catastrophic impacts.

To nurture the health and natural provision of the wild salmon we were going to have to understand them as an integral part of their habitat, and that habitat was the entire watershed, extending all the way to the ridgelines above us, including the human settlements. In order to address the aquatic habitat, we would need to keep the topsoil on the slopes. We would need to attempt to reduce the amount of silt entering the riverine system each year to below the amount which winter flows were able to flush out. The salmon were telling us what was good for them was good for us. Both species benefit from healthy watersheds and an extended sense of commonality.

Bioregionally, there are numerous ways to define "your" part of the planet: physiographic areas, the ranges of species of plants and animals, climatic zones, human language groups. Ecological responsibilities, in individual or social terms, can be most successfully undertaken in the context of a specific place.

The attempt to engage ourselves with a salmon run shifted almost at once from a symptomatic, technical-mechanical approach to a systematic, multi-leveled, ecological approach. Focusing on the crisis of another species had boomeranged into the need to take a close look at our own social organizations and economic activities. Adopting the conceit that our restoration and enhancement projects would hasten the process of watershed recovery, those same projects might be the very means by which we learned how to live integrated lives in living places and discover the appropriate models for our own activities and organization.

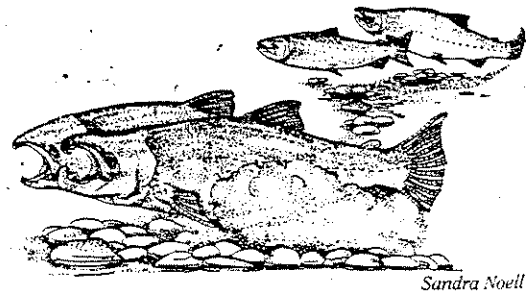
Most of the skills we needed were gained more by experience than training or education. For all the headiness of ecological relationships and hydrological theories, for all the stretched mental landscapes of geological time, when it comes right down to engaging watershed recovery processes, you'll most often find yourself with a shovel in your hand or in conversation with a backhoe operator.

As the physical effort grew, with crews engaging in salmon enhancement, habitat repair, erosion control and reforestation, the need arose for a new sort of organization based on watershed priorities. We needed to invent a process for developing a shared perception of the real ecological parameters of our riverine watershed, to make long-range plans, to make consensual decisions about projects and, increasingly, to take positions on complex issues. The Mattole Restoration Council was formed to serve these ends.

There is an enormous psychic need on the part of North Americans to engage their continent once more, physically and culturally.

By spending the time to reorganize biotic, geologic, and demographic information into a watershed context, we are ritually reanimating a real place that had become totally abstracted. Our maps of salmonid habitat, of old-growth distribution, of timber harvest history and erosion sites, of rehabilitation work, our creek addresses for watershed residents: all these become the self-expression of a living place. Thousands of trees have been planted, thousands of tons of rock moved to armor gullies and streambanks.

It is part of the process of recovery that we gain a new and deeper perception of home. Before this we lived on parcels, on acreages; now we are invited to live in watersheds and ecosystems, rivers and streams, mountains and valleys.



Sandra Noell

It is also part of the process of recovery that we learn the things we need to know to live in places. It is likely that our most important and effective contribution to the solution of the puzzle of humans on this planet will be to develop resource-related industries which are restorative, which tend to improve air and water quality, soil fertility and biodiversity.

It is inevitable that ecological restoration will take its place on the national agenda of the United States. The very flesh and blood of evolution, which is wild ecosystems, may already be so severely diminished that the evolution of large plants and animals can no longer proceed. It is likely that restoration of wild systems will become not only an appropriate human activity, but an essential one.

There is no tradition of extended liability for ecological damages. The historical perpetrators are not going to be hunted down and fined. Rural areas will not be able to generate the funds necessary to restore themselves. But if a national effort at ecological restoration is considered in the context of cultural transformation, and as a pathway to it, it may be possible to limit public costs to a single generation or less, by which time restorative economies can begin to pay for themselves, as consumer appetites adjust to biospheric realities.

One clear function of an ecological restoration movement is to provide individuals and inhabitants the clear experience of themselves as functionally benign parts of living systems. The cumulative effect of these experiences is the transformation of social and economic institutions.

Freeman House is co-founder of the Mattole Restoration Council. The full version of this article appears in Helping Nature Heal: An Introduction to Environmental Restoration *published by Ten Speed Press.*

2. Salmon River Community Restoration Planning Workshop/Workday II

This Planning Workshop/Workday took place on 3/17/93. It was successfully planned and attended by 15 members of the community and 3 resource specialists. There were 2 planning meetings which were held by the Steering Commitee in which the planning for this second planning Workshop/Workday. Various information was prepared and handed out at both the Steering Commitee meetings and at the workshop and workdays. An evaluation occurred at the next Steering Commitee meeting.

This Planning Workshop/Workday was very productive. It accomplished the goal of increasing local awareness towards community watershed planning. Various problems and solutions related to watershed/fisheries needs were brought out in discussion and recorded. This Planning Workshop/Workday accomplished the goal of providing a forum for sharing pertinent information and continuing to open the avenue of interaction between the community members, the agencies, tribal specialists, and the general public. The draft Salmon River Community Action Plan was reviewed and updated by interested community members.

This Workshop/Workday also served as an opportunity to review what had been drafted into written form as a result of previous work.

The input from this Workshop\Workday was incorporated into the Draft Salmon River Community Action Plan. Additional work was done on the Plan during steering committee and Board meetings. The draft plan was sent out for review and comments were solicited from various agencies and tribes. The Plan was will be continually updated by the SRRC as new information and opportunities arise.

There was a total of 15 in-kind contribution person days
and 2 Technical Assistance Person Days

SALMON RIVER RESTORATION COUNCIL

COMMUNITY ACTION PLAN
WORKSHOP

WHERE: FORKS COMMUNITY CLUB
WHEN: THURS., MARCH 17TH
TIME: 5:30 POTLUCK
7:00 MEETING

SRRC WORKING ON DRAFT PLAN FOR COMMUNITY MEMBERS INVOLV-
MENT IN RESTORATION OF WATER-
SHED.

EVERYONE'S INPUT ENCOURAGED!

SALMON SUB-BASIN SEDIMENT ANALYSIS

by Juan de la Fuente and Polly A. Haessig

USDA - Forest Service, Klamath National Forest

1312 Fairlane Road, Yreka, California 96097

May, 1993

Final Report for Interagency Agreement #14-16-0001-91522
Project No. 91-HP-9 11333-1331-1046

Landslides in Undisturbed Lands, 1964-1965

Criteria for listing of sub-watersheds are described in **Table 8-10**. The nine watersheds listed below may be considered as having the highest undisturbed landslide rates attributed to the 1964 flood.

Table 8-10. 1964 flood-related landslide production in undisturbed lands. Sub-watersheds listed mee the following criteria: [a] the sediment delivered by landslides was at a rate of 20 yds³/acre or more, c [b] the landslides in the watershed delivered 100,000 yds³ or more of sediment. Acres used in calcula ing sediment production rates are the total undisturbed acres at that time period in the sub-watershe

1964-1965, Undisturbed

WS	Sub-watershed	Sediment Production yds³/ acre	Total Volume Produced	Number of Landslides
SFS	McNeal	140	263,805	10
MSS	Nordheimer	58	1,143,072	50
SFS	West Fork Knownothing	39	244,055	20
NFS	Headwaters, Little North Fork	30	166,996	23
WOO	Headwaters, Wooley	23	598,129	49
SFS	Plummer	17	154,837	9
WOO	North Fork,Wooley	16	226,359	30
WOO	Lower Wooley	9	127,964	29
NFS	Headwaters, North Fork	4	145,408	55

All sub-watersheds contained undisturbed land. Of the 56 sub-watersheds, 45 had landslides undisturbed land] during the 1964-1965 time interval. Among the nine listed above, the landslide sedim production varies from 4 to 140 yds³/acre, total volume delivered from nearly 128,000 to 1.1 million yds³, a number of landslides from 9 to 55. The most severe damage in undsisturbed land was in McNeal a Nordheimer sub-watersheds.

Harvest-Related Landslides, 1964-1965

By the end of 1965, harvesting had occurred in 17 of 56 watersheds. Harvested lands encompas about 1500 acres in the Salmon basin. Five sub-watersheds produced harvest-related landslides during 1964-1965 period. Of these five, those listed below in **Table 8-11** delivered sediment at a rate greater t 10 yds³/acre.

Table 8-11. Harvest-related landslides, 1964-1965 period. The sub-watersheds listed delivered s ment from landslides at a rate of 10 yds³/acre or greater. Acres used in calculating sediment produc rates are harvested acres present in 1965.

1964-1965, Harvest

WS	Sub-watershed	Sediment Production yds³/ acre	Total Volume Produced	Numbe of Landslid
SFS	McNeal	488	115,787	5
SFS	West Fork Knownothing	33	4,776	4
MSS	Merrill	ND●	19,554	2

Notes: ● Acre data to calculate the sediment production rate is absent. The plantation acres were not accurately indicated in t vegetation data layer. It is likely that the sediment production rate exceeded the minimum value.

McNeal Creek sub-watershed was greatly affected by the 1964 flood and had significant numbers of landslides in undisturbed and harvested lands. Merrill Creek had landslides in harvest units; it did not have any in undisturbed lands.

Road-Related Landslides, 1964-1965

By 1965 33 of 56 watersheds had roads in them, totalling about 2000 acres. Only sub-watersheds with a sediment production rate of 100 yds³/acre or more are included in **Table 8-12**. A total of 16 sub-watersheds had road-related landslides during the photo interval; of these, six are considered to have high road-related landslide rates. The others have rates that range from 4 to 99 yds³, and delivered no more than 3,500 yds³.

Table 8-12. Road-related landslides, 1964-1965 air photo period. Sub-watersheds listed have a landslide sediment production rate of 100 yds³ or greater. Acres used in calculating the rate are the acres of road present in the sub-watershed in 1965.

1964-1965, Roads

WS	Sub-watershed	Sediment Production yds³/ acre	Total Volume Produced	Number of Landslides
MSS	Lower Main Stem Salmon	10,929	1,495,114	9
SFS	St. Claire	3,527	9700	1
MSS	Monte	1,614	23,242	5
SFS	Lower South Fork	1,211	209,821	8
SFS	McNeal	554	31,483	6
NFS	Lower North Fork	182	39,971	4

Of the sub-watersheds listed, the Lower Main Stem Salmon River had the most landslides and delivered the most volume of sediment to the stream system. The large landslide volume associated with the Lower Main Stem is due in large part to the Bloomer landslide which delivered about 1 million yds³.

Landslide Production, 1965-1975 Period

By 1975, disturbance levels in the Salmon River watershed had increased over previous levels seen in 1965. Undisturbed lands comprised 470,000 acres, harvested lands 8,000 acres, and roads about 3,000 acres. The storm events during this time period were much less severe than the 1964 flood.

Landslides in Undisturbed Lands, 1965-1975

A total of 40 sub-watersheds recorded landslides in undisturbed lands during the 1965-1975 time period. Of these, 22 delivered sediment from landslides at a rate of 5 yds³/acre or more, or delivered 20,000 or more yds³ of sediment to streams. Note that the rate of 5 yds³/acre is 25% of the rate used to list sub-watersheds in **Table 8-10** 1964 flood -related landslides in undisturbed lands.

Salmon River Subwatersheds

Scale 1:250000

Salmon River Riparian Ecosystem

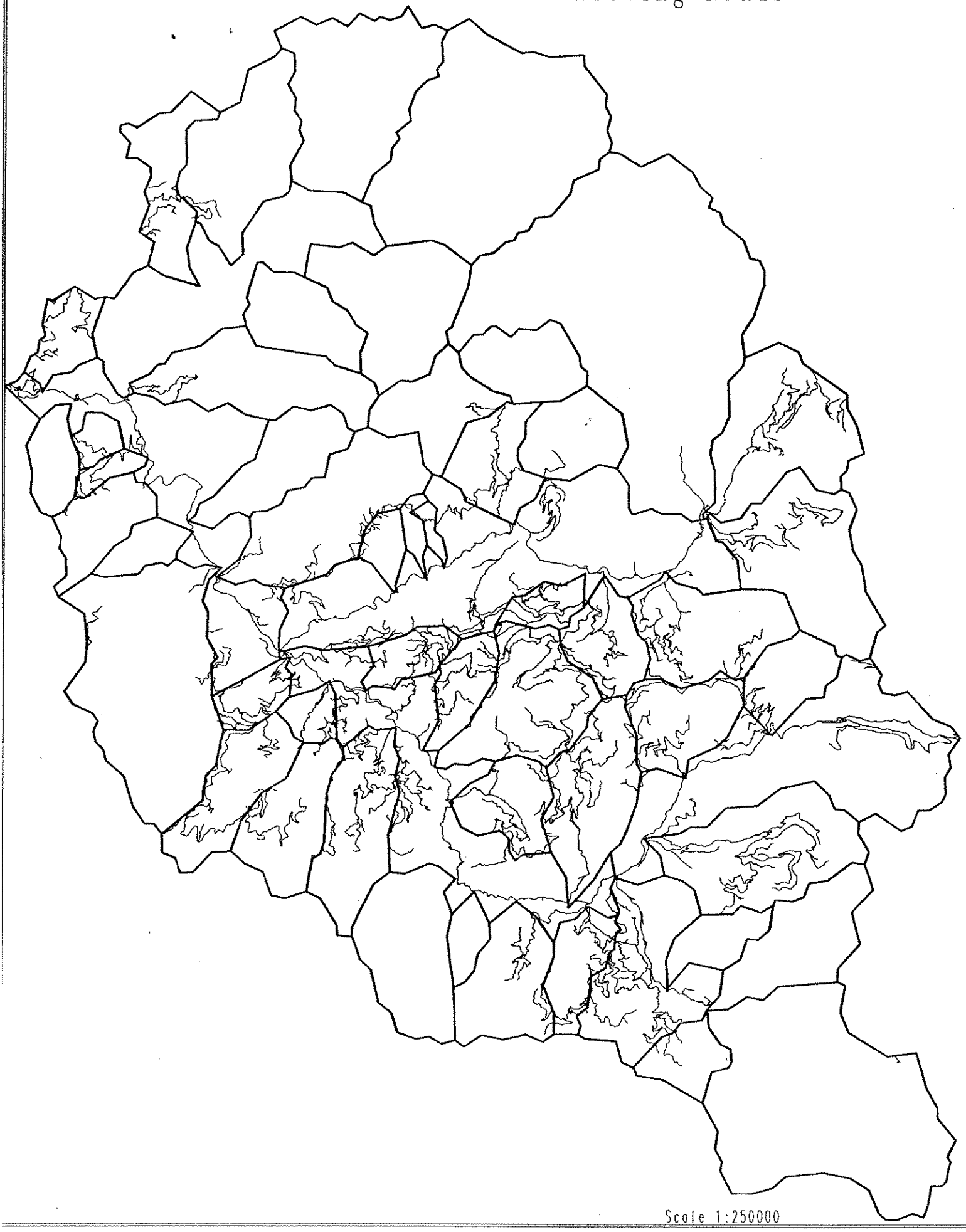
Riparian (Streamside) Area

Salmon River
Watershed Boundary

Subbasin Boundary

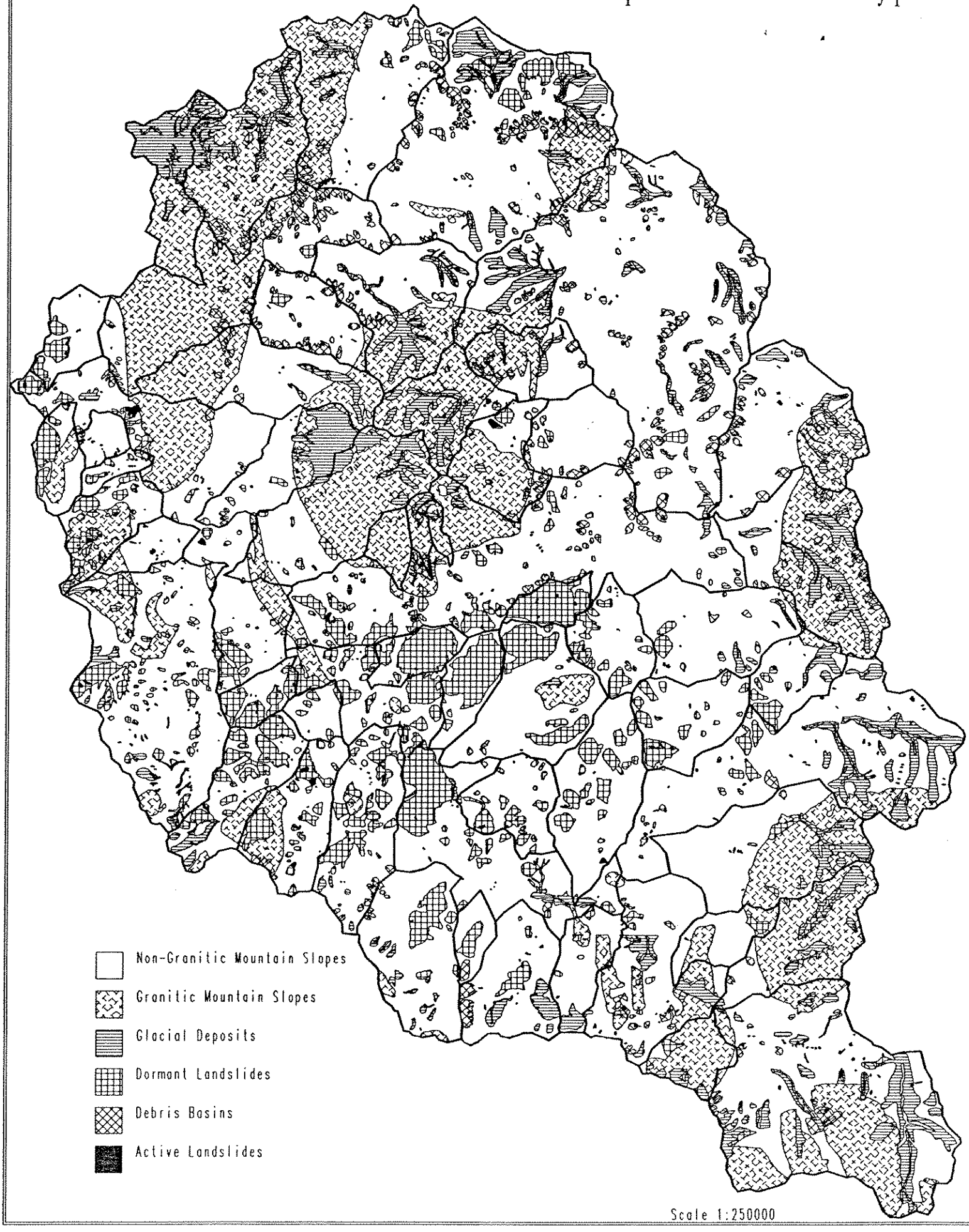
5 0.0 5 *Miles*

Salmon River Watershed - Existing Roads



Scale 1:250000

Salmon River Watershed - Geomorphic Terrain Types



3. **Native Riparian Plant Workshop\Workdays**

SRRC held a Native Riparian Plant Workshop on 6/22/94 at which 10 community members participated in. There were several Workdays associated with the Workshop.

In the Native Riparian Plant Workshop & Workday(s) technical assistance was provided by Marla Knight, botanist, and Roberta Vanda Water, watershed restoration coordinator. Both technical assistants were Forest Service specialists from the Salmon River Ranger District. Technical information was also recieved from nurseries, literature, the Native Plant Society, and others involved in native plant propagation and use in rehabilitation.

At the Workshop, Marla Knight made a presentation that identified the roll of native plants in restoration. We took a discussion into the field where we identified several native plants and discussed their relationship in the ecosystem. We also looked at exotic plants, such as Scotch Broom, that are invading the Salmon River sub-basin. These plants are threatening populations native plants and promote unbalanced natural conditions, such as increasing the fire hazard potential. The SRRC is creating an inventory with the Salmon River Ranger District's botanist, as to where the Scotch Broom sites are. The SRRC has committed to eradicating this species.

In association with the Workshop, SRRC participants volunteered time to collect native seeds and cuttings for restoration purposes. There were 3 Workdays associated with this Awareness Workshop. These Workdays took place on 2/24/94 (6 person days), 2/25/94 (4 person days), 7/18/94 (5 person days) The community volunteers collected seeds or cuttings willows, red bud, elderberry, hazel, and several varieties of native grasses. The SRRC are propagating many of these species for restoration use.

Through these efforts SRRC has initiated a seed bank for native plants from the Salmon River sub-basin. Through these Workdays the SRRC is developing a inventory for collectable native plant populations. The native seed bank species include seeds and cuttings from various grasses, forbes, brushes and trees. There were 15 person days associated with providing plant materials to SRRC' Native Seed Bank. In addition to these Workdays, other seeds and cuttings were collected at various times throughout the year.

There was positive feedback from those who attended these events. Local school children attended the Workshop and the associated Workdays. The goals for these events were more than accomplished. Open information sharing and increased networking opportunities occurred at these events. The Workshop and Workdays has helped provide the SRRC with additional awareness and focus on native plant use for watershed rehabilitation.

Native Plant Workshop -Continued .....

Planning and evaluation for this Workshop/Workday took place in 2 steering commitee meetings. Native plants used for restoration was the key focus. An outcome of this Workshop/Workday is that SRRC has committed to eradicating Scotch Broom and other exotic and highly competitive plants. SRRC has also adopted several areas in the sub-basin to provide on-going revegetation work when needed.

At the Native Plant Workshop and Workdays there were a total of 25 In-Kind Contribution Person Days and 4 Technical Assistance Person Days provided.

SALMON RIVER RESTORATION COUNCIL'S

NATIVE GRASS SPECIES IDENTIFICATION & SEED COLLECTION

WORKDAY/FIELD TRIP

Place: meet @ Forks Community Club parking lot
Date: Wednesday, June 22, 1994
Time 9 a.m. - bring your lunch

Marla Knight - F. S. Botonist will join us in the field
Any plants you want identified - bring fresh samples

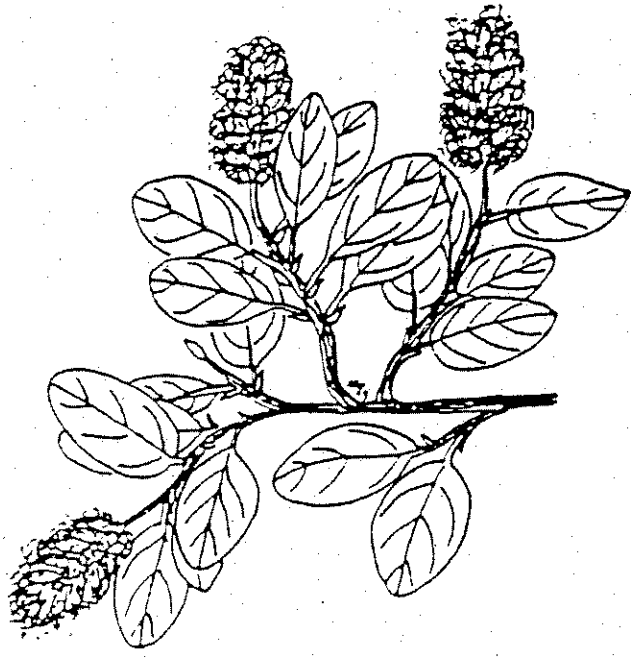
EVERYONE WELCOME

INTRODUCTION

Native Species for Ecosystem Restoration

The Forest Service is undergoing a shift of direction from an emphasis on utilization of resources to one that focuses more on stewardship and restoration of native ecosystems. This new emphasis on ecosystem management demands that we turn our attention to planting other species in addition to conifers and nonnative grasses on National Forest System lands. The public is also asking for the use of natives on public lands. Plants and seeds of native species are not readily available commercially, and those that are, usually did not originate in the area they will be planted. There is potential danger in introducing plants that are not genetically adapted to local areas. This concern includes questions regarding the long-term ability of these plants to survive and reproduce in an environment that may be different from their place of origin. There are also concerns about pollution of the gene pool of existing plant populations, when nonlocal plants are introduced into an area. There is an increasing demand for production of noncommercial native species to satisfy a wide range of resource objectives. Native species are currently being grown for a variety of management goals. Some examples are:

- Gene-pool preservation - Pacific yew, an important long-lived understory species used for cancer research.
- Erosion control on roadcuts - Hairyleaf manzanita, California hazel, bitterbrush, and ocean spray.
- Riparian habitat improvement - Cottonwood and willow (from cuttings), and bigleaf maple (from seeds).
- Wildlife forage - Bitterbrush seedlings are produced to provide food for wildlife, especially helpful in critical winter habitat.
- Recreation site rehabilitation - Producing source-identified, locally-adapted large caliper stock (sturdy plants).
- Forest health - Planting pest-resistant species in heavily impacted areas.
- Ecological restoration - Human impact has radically changed the composition of many plant communities. Reintroduction of a full range of native species can help bring these impacted lands back into a more diverse and ecologically resilient condition.



Definitions Referring To Plant Origin

Native: Plant species present on the Mt. Baker-Snoqualmie N.F. prior to European arrival, circa 1800.

Example: fireweed (Epilobium angustifolium).

Local Native: A population of a native plant species which originated, i.e., grew from seeds or cuttings, from genetically local sources. The geographic and elevational boundaries that define a species' genetically local source are determined by plant movement guidelines. (see Plant Movement chapter in this notebook)

Example: Douglas-fir (Pseudotsuga menziesii) seedlings grown from seed collected from the local seed zone.

Non-local Native: This term has two meanings: 1) a population of a native plant species which does not occur naturally in the local ecosystem and 2) plant material of a native species that does not originate from genetically local sources.

Examples: 1) black cottonwood (Populus trichocarpa) planted on an alpine ridge.
2) Douglas-fir (Pseudotsuga menziesii) seedlings originating from east of the Cascades.

Non-local natives should NOT be used because planting them can effect existing plant communities, plant-animal relationships, and the local gene pool increasing the risk of mortatility and maladaptation.

Desirable Non-Native: Annual or short-lived perennial that is not persistent or competitive with native vegetation. Useful species for erosion control or soil improvement or as a noxious weed competitor.

Example: sterile wheat.

Naturalized species: Non-native species that were introduced by humans to northwest Washington and have "gone wild" or become a part of natural communities.

Example: foxglove (Digitalis purpurea)

Exotic species: Non-native species that are not known to occur in northwest Washington except possibly in landscape plantings or botanical gardens.

Example: southern magnolia (Magnolia grandiflora)

Undesirable Plant Species: Either one of the following:

* Plant species on the Washington Department of Agriculture noxious weed list.
  Example: hairy cats-ear (Hypochaeris radicata)

* Horticultural varieties of native species.

KLAMATH NATIVE SPECIES TEAM PROPOSAL
For Presentation to the Klamath Forest Leadership Team
April, 1994

This proposal is a result of several Klamath employees attending a Region 6 Native Species conference in Bend Oregon. Some of the speakers related the importance of forming local interdisciplinary teams to set policy and guidelines for the use of native species as many of the forests in Region 6 have done successfully. Our proposal is based on established teams from the Mt. Hood and Mt. Baker-Snoqualmie National Forests.

The third leading cause of native plant species extinction is the spread and colonization of alien species (C. Topik, Native Species Conference, 3/94). Federal policy in the form of President Carter's EO# 11987, May 24, 1977 states that agencies will restrict the introduction of alien (exotic) species in natural ecosystems on National Forest lands. We have been lax in applying the intent of this order, and we feel it is time to follow up with a Forest native plant species policy that will address the use of alien grasses, and non-local native plantings which have plagued us in the past.

We are proposing that the Klamath National Forest form a team to develop a native species policy that would be reviewed and adopted by the Forest Leadership Team. This team would be interdisciplinary and at a minimum should have representatives from the following disciplines: genetics, engineering, botany, ecology, silviculture, hydrology, and fire. The policy to be developed would include a purpose statement that addresses both the philosophical and ecological use of native and alien species. The team would identify opportunities for the use of native plant species in the fields of watershed revegetation, rehabilitation, reclamation, restoration, and recovery projects. Guidelines to prevent the further spread of aliens would be developed. The team would also produce a native plant notebook to serve as a reference for using native stock in projects-- as called for in Appendix J, FEMAT report, 1993.

Some of the other objectives of the native species team would be:

1. Collecting information and maintaining resources - keeping an updated library, produce the notebook, brochures, public information, and a "natives" mailing list for info/network/training opportunities/sowing and contracting reminders.

2. Set genetic guidelines - map the seed zones, produce collection guidelines for seeds and cuttings.

3. Native seed bank - production, storage, and rejuvenation of a native grass seed bank for use after fire or other unanticipated activities where the soil stabilizing effect of grasses is needed; and other native plants, including shrubs for restoration work.

4. Prescriptions - write model prescriptions, help with project design, create/model projects, and draft sample contracts.

5. Funding - provide information on how to fund projects (KV, restoration $,etc.); make R5 competitive with R6 for restoration funding.

6. Assure cost effectiveness of projects - provide some quality control to make sure that funds are spent on projects that have a higher return for the investment.

7. Nurseries - make a list of public and private nursery contacts and resources, form partnerships with nurseries to propagate new species.

8. Monitoring - set guidelines for monitoring and follow-up of projects, summarize Forest accomplishments, report to staff.

9. Noxious weeds - document and track the spread of noxious weeds, develop and implement a strategy for control of noxious weeds, and maintain contacts with County Agricultural Services regarding erradication of noxious weeds.

10. Training - set up training sessions and provide a cadre to teach.

11. Project implementation - coordinate with watershed restoration, provide field expertise, and recruit volunteers.

12. Links - tie native species policy to the forest plan and link native plant communities with animal communities.

The above objectives will help to bridge the gap between our present inability to obtain local native stock and the myriad of restoration projects proposing revegetation for damaged ecosystems.

The future holds more direction against the use of aliens (FSEIS Vol.2, pgs. B-131-132, summarized): non-native species (plant and animal) should not be introduced into Late-Successional Reserves. Proposals of such actions will require assessments of impacts. Current situations should be evaluated and plans for eradication and/or control of non-native species within reserves are recommended.

We would like to offer our services to the Forest to organize this team since our interests and professional training lie in this area.

Dan Blessing
District Culturist

Marla Knight
District Botanist

Herbert Stone Grass Seed Production and Cost Estimates

Species		Lbs/acre Yr. 1	Lbs/acre Yr. 2
Agropyron spicatum	Bluebunch wheatgrass	Information not compiled	
Bromus carinatus	Mountain brome	500	500
Bromus vulgaris	Columbia brome	100	200-300
Danthonia californica	Calif. oatgrass	Information not compiled	
Danthonia unispicata	One spike oatgrass	Hasn't grown yet; recommend establishment of demonstration area.	
Elymus glaucus	Blue wild rye	500	500
Festuca idahoensis	Idaho fescue	~0	500
Koeleria cristata	Prairie Junegrass	~0	Info. not compiled (good spp.; grows well at Stone)
Poa sandbergii	Sandberg's bluegrass	Hasn't grown yet; recommend establishment of demonstration area.	
Poa scabrella	Pine bluegrass	250	250
Sitanion hystrix	squirreltail	Information not yet compiled (good spp. - grows well)	

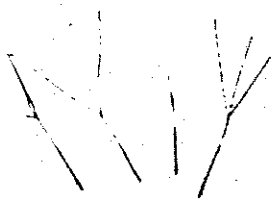
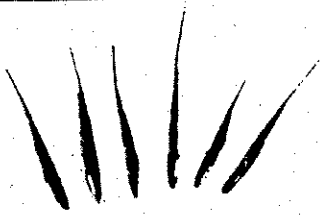
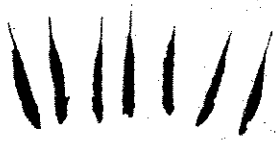
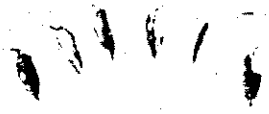
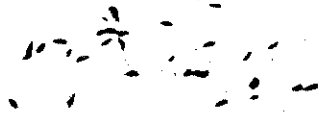
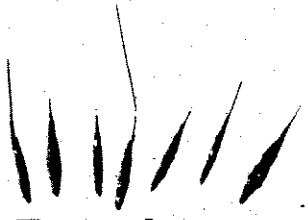
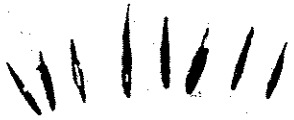
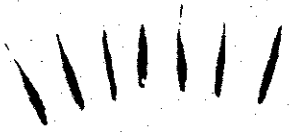
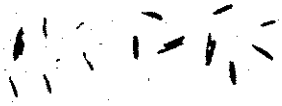
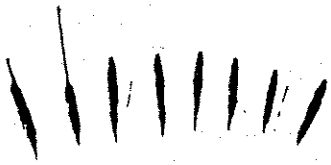
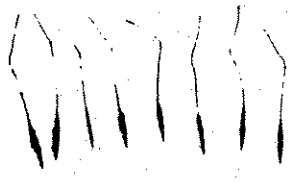
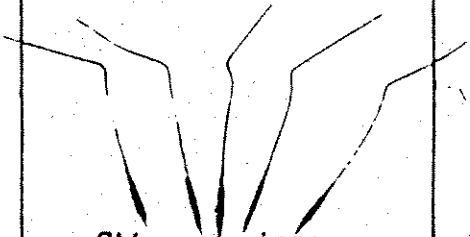
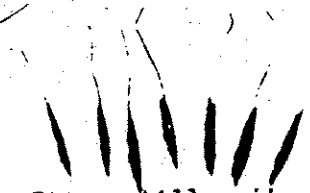
First year costs for production beds are estimated to be ~$3-4 M/acre, and include seed handling, sowing, fertilization, and weeding. An additional ~$1000/ac will be charged for seed harvest. Demonstration areas are established at no cost to the Forest.

REDWOOD CITY SEED CO., Box 361, Redwood City, Cal. 94064
 Phone (415) 325-7333

APPENDIX to CAL-OREGON REVEG.NOTES

HOW TO GET LOCALLY COLLECTED NATIVE GRASSES SEEDS,

WITHOUT SPENDING THE FORTUNE THAT YOU DON'T HAVE!

 ristida fendleriana	 Bromus carinatus	 Bromus orcuttianus	 Bromus vulgaris
 anthonia californica	 Deschampsia elongata	 Elymus glaucus	 Festuca californica
 estuca occidentalis	 Glyceria elata	 Melica aristata	 Oryzopsis hymenoides
 Poa incurva	 Poa scabrella	 Stipa comata	 Stipa coronata
 Stipa lemmoni	 Stipa lettermanii	 Stipa speciosa	 Stipa stillmanii

Examples of native grass seeds collected from National Forests in Regions 5 & 6

Native Grasses

This list is not all-inclusive; other species occurring in the area may also be useful. Names are from Hitchcock and Cronquist's *Flora of the Pacific Northwest*. Blank spaces indicate that the information was unavailable. Seeding rate is very general, and is displayed in pounds of pure live seed per acre.

Scientific Name	Common Name	Riparian/Upland	Seeds/Pound	Seeding Rate
Agropyron dasytachyum	thick-spike wheatgrass	R-U	154,000	8
Agropyron spicatum	bluebunch wheatgrass	U	95,000	8
Agropyron trachycaulum (*caninum*)	slender wheatgrass	R-U	159,000	8
Agrostis exarata	western bentgrass	R		
Bromus carinatus (*marginatus*)	mountain brome	R-U	71,000	10
Bromus vulgaris	Columbia brome	U		
Calamagrostis canadensis	bluejoint reed-grass	R		
Calamagrostis rubescens	pinegrass	U		
Cinna latifolia	wood reed-grass	R		
Danthonia californica	California oatgrass	R-U		
Danthonia intermedia	timber oatgrass	R-U		
Danthonia unispicata	onespike oatgrass	U		
Deschampsia atropurpurea	mountain hairgrass	R-U		
Deschampsia caespitosa	tufted hairgrass	R-U	2,500,000	2
Deschampsia elongata	slender hairgrass	R-U		
Elymus cinereus	giant wild rye	R-U	130,000	9
Elymus glaucus	blue wild rye	R-U	137,000	10
Festuca idahoensis	Idaho fescu.	U	450,000	8
Festuca occidentalis	western fescue	R-U		
Festuca ovina var. *rydbergii*	sheep fescue	U	680,000	10
Festuca viridula	green fescue	U		
Glyceria elata	tall mannagrass	R		
Glyceria striata	fowl mannagrass	R		
Koeleria cristata	prairie Junegrass	U	2,315,400	2
Melica bulbosa	oniongrass	U		
Melica subulata	Alaska oniongrass	U		
Melica spectabilis	purple oniongrass	R-U		
Oryzopsis hymenoides	indian ricegrass	U	141,000	8
Phleum alpinum	alpine timothy	R		
Poa nervosa var. *wheeleri*	Wheeler's bluegrass	U		
Poa sandbergii (*secunda*)	Sandberg's bluegrass	U	925,000	3
Poa scabrella (*canbyi*)	pine bluegrass	U	926,000	2
Puccinellia pauciflora	weak alkaligrass	R		
Sitanion hystrix	bottlebrush squirreltail	U	192,000	9
Sporobolus cryptandrus	sand dropseed	U	5,298,000	1
Stipa comata	needle and thread grass	U	115,000	10
Stipa lemmonl	Lemmon needlegrass	U		
Stipa occidentalis (*columbiana*)	western needlegrass	U		
Stipa thurberiana	Thurber's needlegrass	U		
Trisetum canescens	tall trisetum	R-U		
Trisetum spicatum	downy oat-grass	U		

Section 4 - COLLECTING NATIVE SEED

The following collection procedures apply to both hard and fleshy seeds. Differences in collection methods are described under each heading. Most grass and herbaceous plant seeds are hard, while many shrub seeds are surrounded by fleshy fruits. The methods described here are low cost, low tech and simple. For really big projects, there are machines available that are designed for large-scale harvesting. Check agricultural and horticultural publications for information on more sophisticated equipment. Experiment and share new information with other people working on these types of projects.

There are many techniques for hand-harvesting seed. Use the one that works best in a given situation, or develop something new. Some techniques that have proven to be effective are:
Cutting: Used for herbaceous plants, especially grasses, this involves gathering all the stems of one plant in one hand, and then cutting the seed heads with a sickle in the other hand. Wear leather gloves for protection from sharp blades!
Stripping: Used also for herbaceous plants and some shrubs, when the seeds are ready to shatter (fall off), this requires only pulling along the seed head to dislodge seeds into a container held beneath. Gloves should be worn for this.
Beating: Used for shrubs, this method involves gently tapping branches with a stick to dislodge seeds onto a tarp spread under the plant.
Shaking: Used for shrubs, this is similar to beating but involves gently shaking branches to dislodge seeds onto a tarp.
Pruning: Used for tall shrubs or trees, this involves cutting branches and then collecting the seed off the plant. Use this method only when all others fail. The goal is minimal impact to existing vegetation.

General Collection

→ OBTAIN EQUIPMENT LISTED IN APPENDIX B.

- For each population in a seed lot (one elevation band and subwatershed) collect from at least 30 to 50 parent plants in good condition. Try to collect from as many separate populations as is feasible in a seedlot. Strive to collect a similar amount of seed from each population harvested. Separate populations by at least 1/4 mile. These tactics will ensure that a representative sample of genetic variation is collected.

- Leave some seed for regeneration of the native population. Never take more than 50% of the seed from a given area.

Summary of guidelines for native plant collections to ensure genetic diversity and adaptation to planting environment

Collect from 30-50 unrelated plants.

Collect an equal number of seeds/cuttings from each plant.

Use seed zones (and 500 ft elevation intervals, i.e., 250' above and below the elevation of the project site) for collection of seeds/cuttings of upland tree species.

Use watersheds (and 500 ft elevation intervals) for collection of seeds/cuttings of shrubs, forbs, grasses, and riparian tree species.

HARDWOOD CUTTING COLLECTION GUIDE

FOR ECOSYSTEM RESTORATION

Written by Lucinda S. Huber
Edited by Paula J. Brooks

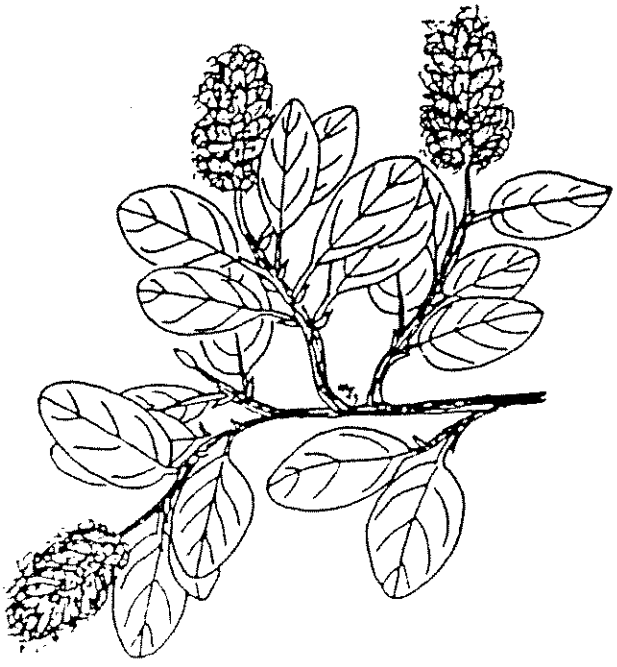
Wallowa-Whitman National Forest
March 1993

INTRODUCTION

Native Species for Ecosystem Restoration

The Forest Service is undergoing a shift of direction from an emphasis on utilization of resources to one that focuses more on stewardship and restoration of native ecosystems. This new emphasis on ecosystem management demands that we turn our attention to planting other species in addition to conifers and nonnative grasses on National Forest System lands. The public is also asking for the use of natives on public lands. Plants and seeds of native species are not readily available commercially, and those that are, usually did not originate in the area they will be planted. There is potential danger in introducing plants that are not genetically adapted to local areas. This concern includes questions regarding the long-term ability of these plants to survive and reproduce in an environment that may be different from their place of origin. There are also concerns about pollution of the gene pool of existing plant populations, when nonlocal plants are introduced into an area. There is an increasing demand for production of noncommercial native species to satisfy a wide range of resource objectives. Native species are currently being grown for a variety of management goals. Some examples are:

- Gene-pool preservation - Pacific yew, an important long-lived understory species used for cancer research.
- Erosion control on roadcuts - Hairyleaf manzanita, California hazel, bitterbrush, and ocean spray.
- Riparian habitat improvement - Cottonwood and willow (from cuttings), and bigleaf maple (from seeds).
- Wildlife forage - Bitterbrush seedlings are produced to provide food for wildlife, especially helpful in critical winter habitat.
- Recreation site rehabilitation - Producing source-identified, locally-adapted large caliper stock (sturdy plants).
- Forest health - Planting pest-resistant species in heavily impacted areas.
- Ecological restoration - Human impact has radically changed the composition of many plant communities. Reintroduction of a full range of native species can help bring these impacted lands back into a more diverse and ecologically resilient condition.



Types of Plant Materials

A variety of different plant materials can be used in natural resource planting projects. "Plant materials" is a general term for anything that can be used to establish a plant: seeds, cuttings, or seedlings. These materials must be genetically suited to the specific environment they will be planted in, and properly hardened to withstand the stresses of handling, storage and outplanting. Plant material that meets these standards is called "source-identified and locally-adapted."

Depending on the needs of the project and the site conditions, plants can be established by direct sowing of seed, transplanting wildlings or unrooted cuttings, or planting nursery seedlings or rooted cuttings.

The use of unrooted cuttings can be a gamble; the success rate is highly variable and usually very low. Unrooted cuttings may seem economical, but once the low success rate and other project costs are factored in, they become very expensive. Give your cuttings a good start: Put roots on them before planting them out in world!

Obtaining rooted cuttings for revegetation purposes requires planning ahead and adhering to the procedures described in the five sections of this guide: NATIVE PLANT PROJECT PLANNING, PARENT PLANT SELECTION, COLLECTING CUTTINGS, STORAGE AND TRANSPORT, RECEIVING ROOTED CUTTINGS. The appendices contain species-specific information, contacts, an equipment list, and a glossary.

This guide explains procedures for obtaining rooted hardwood cuttings only. Potential future guides will cover other propagation methods, such as softwood cuttings, root cuttings, sucker collection, and seed collection, as well as planting and maintenance of seedlings.

Nurseries - Forest Service and Private

Forest Service nurseries have a long tradition of providing plants for reforestation and other conservation plantings. Their personnel understand the biological and operational aspects of growing, handling, and storing plant materials. They are willing to help natural resource specialists make effective decisions about how to obtain and propagate appropriate plant materials, handle and store them, and transport them to the outplanting site. Forest Service nurseries can be particularly useful for species that are difficult to produce in large quantities. These nurseries are complete facilities which can offer the full range of plant propagation services.

Forest Service nurseries have no intention of competing with private nurseries. Do not hesitate to contract with private nurseries for propagation of local hardwood cuttings. Caution: Care must be taken to verify that private nurseries are offering source-identified native plants. The same criteria for movement and tracking of plant materials applies, regardless of species grown or location of nursery (see Parent Plant Selection, page 5).

NATIVE PLANT PROJECT PLANNING

Planning ahead and communicating with specialists are crucial to the success of native plant regeneration projects. Coordination with nurseries is critical, from the initial planning stages through the delivery of rooted cuttings. The following specialists can provide help at various stages of project planning:

- Nursery culturist - Assistance with planning, from start to finish.
- Botanist - Assistance with selecting species to collect, and accurate identification of specific parent plants.
- Ecologist - Evaluation of project area ecosystem, role of species being considered, and project monitoring design.
- Geneticist - Assistance with plant movement guidelines to ensure genetic diversity and adaptation of plant materials.
- Silviculturist (Reforestation specialist) - Assistance with district cooler storage, coordination with shipping and receiving of seedlings, and planting.
- Hydrologist - Assistance with watershed names, codes and maps.
- Range Conservationist - Adjustment of grazing systems and allotment plans to prevent destruction of plantings, and assistance with fencing plans.

Native plant revegetation projects must be planned well in advance! Eighteen to thirty months are required from the time parent plants are located in the summer, to the time rooted cuttings are received from nurseries after one or two growing seasons.

Native Plant Project Planning Checklist

1. **Establish objectives of the project:**
   ____ Determine desired objectives, such as shade, erosion control, reintroduction of native species, forage enhancement, visual quality, habitat improvement, ecological restoration.

2. **Consider timeframes, from locating parent plants to outplanting:**
   ____ Coordinate with nurseries, specialists listed above, and nearby districts.
   ____ Allow 1½ - 2½ YEARS from tagging parent plants to planting rooted cuttings.
   ____ Willow and cottonwood often develop sufficient root systems and top growth after one nursery growing season. Discuss plans with nursery.

3. **Attempt to anticipate future budget and project area opportunities:**
   ____ Focus revegetation plans and collection on areas that are likely to be funded in the future.
   ____ Secure funding for all people involved in the project.
   ____ Investigate funds for watershed improvement, ecosystem restoration, forest health, recreation projects, fish/wildlife/range habitat improvement, and KV.

4. **Determine appropriate species to fulfill project objectives:**
   ____ Refer to Appendix II for species that are suitable for propagation by hardwood cuttings.
   ____ Gather species information from botanists and ecologists. Coordinate plans with them in advance, and allocate funding for their time spent working on the project.
   ____ Plan on using more than one species in a project area.

Native Plant Project Planning Checklist (Continued)

5. **Select only native species that occur in the project area watershed:**
   - ____ See Parent Plant Selection section for plant material movement guidelines.
   - ____ Identify, tag and map parent plants to collect from, while plants are in leaf, flower, and/or fruit. This is done during the field season before collection.
   - ____ Insist on complete and accurate collection documentation. Long-term success requires locally-adapted and source-identified stock.

6. **Contact nurseries for propagation of the species you want:**
   - ____ Consider sending cuttings to more than one nursery, in case of failure at one location.
   - ____ Consider private nurseries, district evaluation plantations, and seed orchards, as other options to Forest Service nurseries.
   - ____ Refer to Appendix I for a list of Forest Service nursery contacts.

7. **Incorporate protection measures for planted area:**
   - ____ Plan on measures to deter wild and domestic browsers and grazers from utilizing planted area for at least one or two years. Fencing has proven to be by far the most effective deterrent.

8. **Estimate quantity of cuttings needed -- then double that amount:**
   - ____ Calculate acres treated and stocking level for each species (plants per mile, or per acre).
   - ____ Evaluate necessity for full initial stocking, or partial stocking combined with subsequent natural regeneration.
   - ____ DOUBLE ESTIMATES to compensate for mortality before and after planting.
   - ____ Consider time/labor available, funds, and replanting needs.

9. **Prepare for receiving rooted cuttings in time for spring planting:**
   - ____ See section on Receiving Rooted Cuttings for details.
   - ____ Discuss cost factors with nursery personnel. Payment to Forest Service nurseries is due on delivery of rooted plants.
   - ____ Specify to nurseries if one or two year rooted cuttings are needed. A trip to the nursery to view the progress of cuttings will help in making this determination.
   - ____ Organize with nurseries regarding needs for winter storage of lifted cuttings, packaging and return shipping instructions.

10. **Include maintenance and monitoring in project planning:**
    - ____ Plan on maintenance that might involve replanting, fence repair, weed control, watering, fertilizing, and individual plant protection.
    - ____ Monitor planting project results to provide information on survival rates, and to increase knowledge for success of future projects.

PARENT PLANT SELECTION

Selecting Species

● Determine what species are appropriate to fulfill project objectives.

● Select species that normally occur in the area, and try to include more than one species in a project area.

● Contact district or forest botanists who will provide accurate species identification. Botanists can accompany those who select parent plants during the summer. Another option is to bring samples of each tagged/flagged plant to botanists for identification, including flowers and/or fruit if possible. Positive identification of some species is very difficult after plants are dormant; this is especially true of willow species. Willows also are dioecious, so both male and female plants need to be selected for collection, in order for the population to remain viable in the future.

→ REFER TO APPENDIX II FOR A CHART OF SPECIES THAT CAN BE PROPAGATED BY HARDWOOD CUTTINGS. Species in the upper chart involve the least risk of failure. Many species not listed are best propagated by other methods.

● Maintaining species diversity is a primary objective of ecosystem restoration, so it is highly desirable to work with nurseries in experimenting with more species than those currently being grown.

Locating Parent Plants

● Identify potential parent plants during the field season, while plants are in leaf. Unstocked allotments, riparian exclosures, and pastures in a rest year may all be good options. Make sure the areas are reasonably accessible.

● Obtain cuttings from areas as close to planting sites as possible. Identify several sites with various elevations, aspects, and geographic locations for each species desired.

● Select parent plants with adequate size and branching to allow for removal of branches without destroying the original plant; this would be counter-productive.

● Select only vigorous, healthy parent plants. Avoid those with signs of insects, disease, and damage due to repeated or excessive browsing.

● Do not collect in research natural areas, near sensitive plant sites or other environmentally sensitive areas.

For the Mt. Baker-Snoqualmie NF, see chapter titled "plant movement guidelines".

Plant Material Movement Guidelines

● Plant material movement criteria presented here are considered guidelines. If limitations of a project area make compliance impossible, then come as close to these recommendations as is feasible. It is preferable to have some local native stock, from as close to the planting site as possible, even if "ideal" goals cannot be attained. The most important factor is to keep complete and accurate records of the entire process. Plantings of native species need to be tracked similarly to tree plantings, so that knowledge can be gained about how well cuttings survive and grow, what size plants survive best, what diseases and insects are a problem, and how far they can be successfully moved from collection points.

● Mapping, tagging parent plants, data forms, and GIS mapping will be used to ensure genetically acceptable movement of plant materials in project areas. Planting rooted material as close to the collection site as possible will help maintain the long-term genetic viability of native populations within a given watershed. Polluting the gene pool by introducing plants from other elevations and watersheds can risk degradation of locally-adapted native species.

● On the Wallowa-Whitman National Forest, materials grown from cuttings should not be moved outside of the National Forest System Watershed that they were collected in. National Forest System Watersheds correlate to fourth or fifth order stream drainages. Consult a hydrologist to obtain a copy of the Wallowa-Whitman National Forest Watershed Codes Handbook. This handbook lists two-digit codes for each watershed, and adds a one letter code for each subwatershed. Tracking plants by subwatersheds is recommended.

● Parent plant material will be collected and tracked in 500 foot elevation bands, according to established silvicultural guidelines. Codes for the elevation bands are explained on page 15. Complete and accurate documentation is critical to ensure that nursery lots can be returned to the correct planting area. The bundles from each watershed elevation band will be a nursery lot, and must have Nursery Lot Form 158A attached when shipped (see page 13).

● Outplanting - Planting rooted cuttings within the same subwatershed they were collected from is ideal, but plants can be moved within an entire watershed. Movement of plant materials is restricted to 1,000 feet (two bands) within each watershed. Cuttings from a given 500 foot elevation band can be planted within that band, within one band above, or within one band below the collection band. In some instances, it may be acceptable to move material lower than 1,000 feet from the parent plant, but moving rooted cuttings higher than 1,000 feet will greatly increase mortality in the long run. Begin collecting at the highest elevation of the project area to acquire as many cold-tolerant individuals as possible.

Parent Plant Documentation

→ USE THE COLLECTION FORM ON PAGE 9 FOR FIELD DOCUMENTATION OF PARENT PLANTS AND CUTTINGS. Some of the information can be filled out before or after collecting cuttings, to reduce time spent in the field.

● Mark each plant location on topographical maps and aerial photos, to facilitate relocation of parent plants in winter, and for tracking purposes.

● Tag parent plants with metal identification tags indicating the species of each plant. Make sure tags are attached above the winter snowline! Be careful to not girdle the main stem; put the tag on a branch, or nail a circular metal tag to a larger branch. Flagging might also assist with relocation. It is not necessary to track each parent plant individually by number, unless there is special interest in a particular plant. The recordkeeping involved with individual tracking would be excessive for districts and nurseries.

Estimating Quantities Of Cuttings

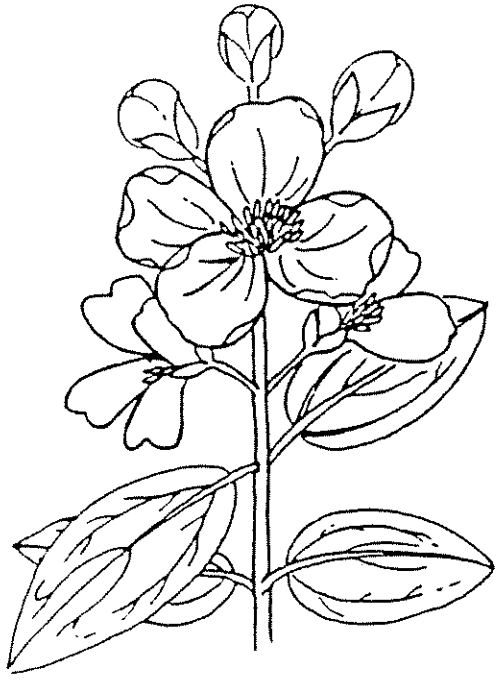
● Calculate miles or acres treated and stocking levels for each species (plants per mile, or per acre).

● Evaluate necessity for full initial stocking, or partial stocking combined with subsequent natural regeneration. Project objectives will be a factor in this determination. The number of parent plants available in the project area may also be a factor: For each species, locate 30 to 50 individual parent plants in good condition, separated by at least 100 feet. The separation is necessary because many plants spread by rhizomes. Less than 100 foot separation could result in the genetically identical plant being considered as more than one parent plant.

● Geneticists and ecologists emphasize that collecting from a sufficient number of individual parent plants within a watershed is critical to the success of planting projects. Collecting from many parent plants ensures the genetic diversity of each nursery lot. Variations among individuals makes the difference between temporary landscaping, and a healthy, self-perpetuating population that is an integral part of the ecosystem.

● Consider time/labor available, funds, supplemental planting. The last section of this guide, Receiving Rooted Cuttings (page 17), briefly describes propagation costs. Obtain details from the nursery involved.

● DOUBLE ESTIMATES - at least. Small lots of cuttings are more susceptible to nursery losses than larger lots. For orders of less than 10,000 plants, collect twice the number of hardwood cuttings needed for planting. Additional mortality will occur after planting; this can be as high as 50 percent again, depending on various factors.



COLLECTING CUTTINGS

● Hardwood cuttings must be collected when trees and shrubs are dormant, generally in late winter. Do not make cuttings after the buds begin to swell, because they usually die.

→ OBTAIN EQUIPMENT LISTED IN APPENDIX III.

● For each species, relocate the 30 to 50 individual, tagged parent plants, each separated by at least 100 feet. This provides a representative sample of genetic variation for the species.

● Remove no more than 30 percent of the branches from any one plant. Leave the plant with adequate reserves for regrowth!

→ DOCUMENTATION! BEFORE CUTTING ANY BRANCHES, RECORD PARENT PLANT INFORMATION ON PLANT MATERIAL COLLECTION FORM. Form and instructions are on pages 9 and 10. Mark each plant location on topographical maps and aerial photos, if this was not done when plants were selected. It is not necessary to fill out Form 158A until just before the cuttings are shipped to a nursery.

● Collect an equal number of cuttings from each parent plant.

● Take cuttings from the ends of branches, including the terminal bud (tip). Cuttings must be from wood that is one to three years old -- no older! The youngest wood will root most successfully.

→ SEE FIGURE 3 ON PAGE 11 TO DETERMINE AGE OF BRANCHES.

● Cuttings can be about 8 - 24 inches long, and a minimum of ⅜ inch diameter (thickness of a pencil). Thick, young stems root better, and grow more vigorously. They contain greater carbohydrate reserves that provide energy for rapid growth. Long cuttings can be cut down to shorter lengths later, depending on nursery preferences.

● Make the bottom cut at a 45 degree angle. Cut off any side shoots close to the main branch. Side shoots of sufficient size can be used for more cuttings.

● Bundle cuttings together from each 500 foot elevation band, fastening with a large rubber band. Do not combine cuttings from different elevation bands, or from more than one species. Bundle workable amounts together, possibly 25 to 50 sticks. Count the number of cuttings in each bundle, and record this number on the bundle tag.

● Securely attach to EACH BUNDLE the white Forest Reproductive Material Identification Tag R6-FS-2400-112, accurately completing information for numbers 1 - 6.

→ SEE FIGURE 4 ON PAGE 12 FOR BUNDLE TAG AND INSTRUCTIONS.

● While collecting cuttings, keep bundles cool and moist, in damp burlap sacks inside plastic bags, damp sawdust in boxes, or sealed three-ply paper seedling bags. Be sure to keep wrapped bundles in a shady place; even in winter, sunshine can heat and dehydrate shoots quickly. If buds and bark dry out, cuttings will die. Label or tag containers so contents can be identified.

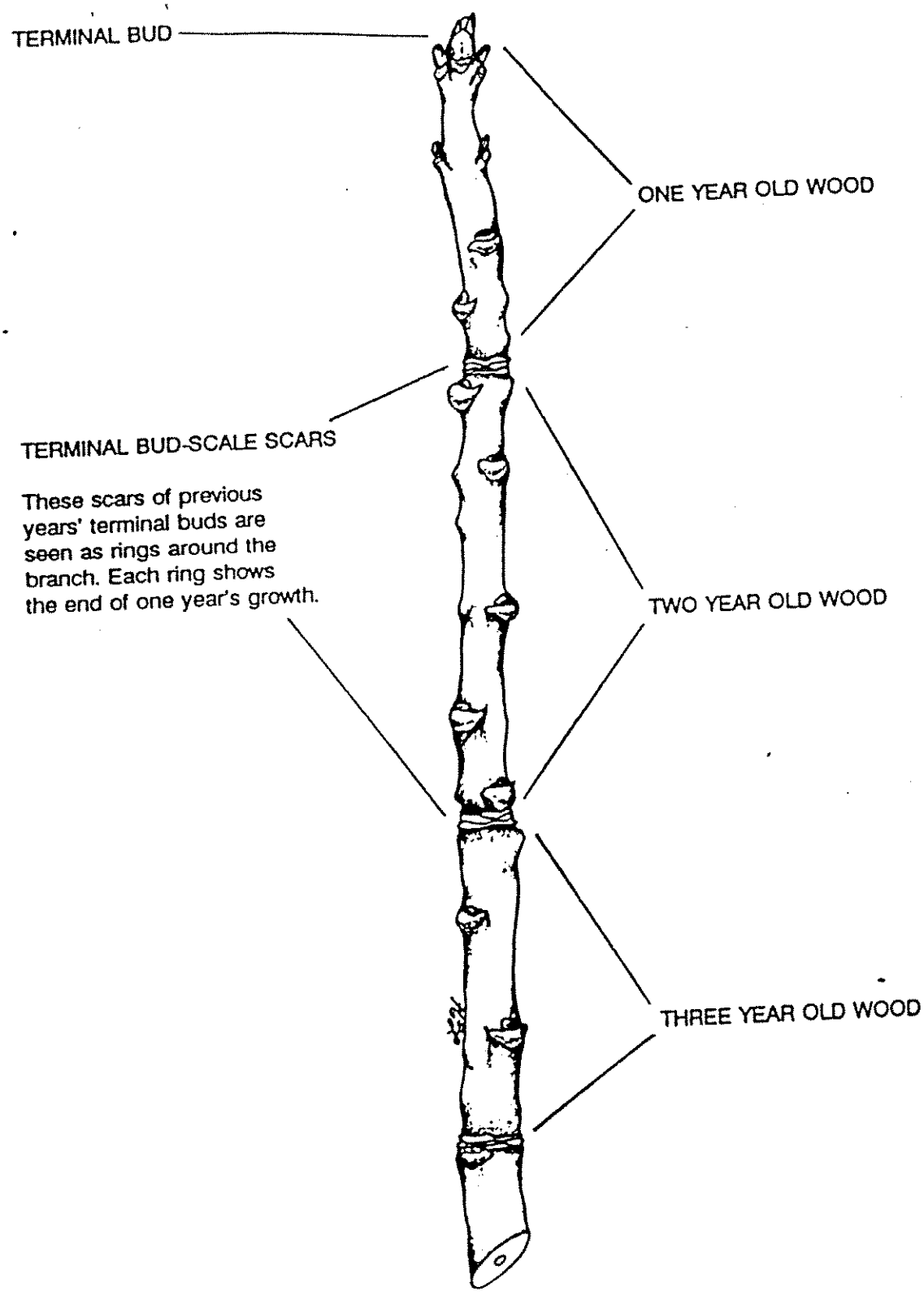


Figure 3 - Branch Age Determination

STORAGE AND TRANSPORT

☺ Discuss plans with nursery personnel well in advance, so that preparations can be made to receive shipments of cuttings. Each group of bundles from one watershed 500 foot elevation band will be a nursery lot, and have an attached Nursery Lot Form 158A.

→ SEE PAGES 14 AND 15 FOR NURSERY LOT FORM 158A AND INSTRUCTIONS. Data collected in the field on the Plant Material Collection Form can be used to complete Form 158A before cuttings are shipped to the nursery.

● Reforestation processes have been developed for regeneration of commercial conifer species. Consult with your district silviculturist or reforestation specialist to learn about the system used for cold storage, and shipments to and from nurseries.

● Packing for storage and transport: If cuttings will be stored for a short period (a few days to a few weeks) before shipping, proper temperatures and packing will help provide for high survival rates.

● Cuttings must be kept at 34 to 38 degrees F., and protected from freezing. Warmer temperatures may induce bud break, causing eventual mortality. Cooler storage is highly recommended. If no cooler is available, an alternative method is outside storage.

Storage in cooler:
— Sealed in three-ply brown bags, or damp burlap bags inside plastic bags, will retain sufficient moisture for cuttings.

Storage outside:
Protect from freezing and warm temperatures. Pack bundles in plastic or damp burlap, surrounded by moist sawdust, sand, peat moss or vermiculite to a depth of about four inches. Place bags or boxes of cuttings along the north side of a wall, well protected from drying winds and sunshine.

● Coordinate with silviculture on storage and shipping dates prior to collection. Districts with a cooler (refrigerated storage room) have established timelines when the cooler is operational, and shipments via refrigerated trucks are received for reforestation. There may be space available for short-term storage of cuttings until shipping to the nurseries. When trucks deliver tree seedlings to districts, cuttings could be shipped back to the nurseries on the return trip.

● Contact nearby districts to determine if a group shipment can be made from several districts at the same time. This coordination effort would save money.

● Dormant cuttings can be shipped via UPS if burlap or paper bags are wrapped in plastic bags and placed in boxes. Do not ship cuttings after Thursday, as conditions could be harmful if cuttings sit in a warehouse over the weekend.

☺Now sit back, relax, and wait for the sticks to metamorphose into healthy, happy native plants.☺

APPENDIX IV

Glossary

Bud break - The opening of buds on branches of deciduous plants, that occurs in early spring. Bud break is the beginning of leaf and shoot growth in a new growing season.

Bud swell - Enlarging buds on branches of deciduous plants, occuring in late winter or early spring. Bud swell precedes bud break, and indicates the end of dormancy.

Deciduous plants - Woody plants (trees and shrubs) that loose their leaves during the winter dormant season. Deciduous plants include both hardwood and softwood species. Black cottonwood and willow are examples of deciduous trees.

Hardwood cuttings - A nursery term for sections of woody branches cut from dormant deciduous or evergreen plants for the purpose of reproduction. These cuttings are taken from branches that are one to three years old, the growth having occurred at least one growing season previously. Hardwood cuttings are collected during late fall and winter.

Hardwoods - A group of trees having dense, hard wood often utilized for this specific quality. Walnut, maple, and birch are examples of hardwood deciduous trees.

Outplanting - A nursery term referring to planting rooted cuttings or seedlings in their permanent environment, after they have been propagated in a nursery.

Root cuttings - Sections of plant roots (usually rhizomes) that are cut and dug up, for the purpose of reproduction.

Softwood cuttings - A nursery term for sections of soft, growing branch ends, cut from woody plants during the current growing season while plants are in leaf. Softwood cuttings are collected in late spring and early summer.

Sucker division - Sprouts from a parent plant that grow from ground level. These can be cut and rooted for propagation.

4. **Fire Protection Awareness Workshop/Workdays**

The first Fire Prevention Workday took place on 3/21/94. This event coordinated between the SRRC, the Forks of Salmon school, and the Forest Service. There were three technical assistance personnel who attended from the Forest Service. At this project 6 adults from the community worked with the Forks of Salmon School children to reduce the fuels problems around Ed and Mickey Mathewsons structures and fuels storage areas. We removed and burned the fuels. This effort was greatly appreciated by the Mathewsons. There were 2 Technical assistants from the USFS.

At the second Fire Protection Awareness Workshop/Training Workdays there were 18 In-Kind Volunteer Person Days volunteered from the community and 2 Technical Assistance Person Days. SRRC coordinated the events with the Forks of Salmon Fire & Rescue.

At the 8/27/94 Workshop/Workday there was a presentations made by Robert Goyeneche of the California Department of Forestry and Fire Protection (CDF&FP), members of the Forks of Salmon Fire & Rescue, and the SRRC. We discussed the need for fire protection in the Salmon River for both structures and in the general forest. Also included in our discussion was how we can improve on fire protection and suppression methods.

The group shared and performed fire prevention activities at Irene Berkerey's, elderly widow, who has resided in the Salmon River area for many years. Both live and dead vegetation, milled wood and other flammable items were removed around the structures, propane tank, and other areas. This event has led to a on-going cooperative program directed at fire prevention and fuels reduction around elderly local residencies in the Salmon River community. This is project gained general support for SRRC.

A highlight of this event is that SRRC will continue to work closely with the Salmon River Fire & Rescue to promote fire prevention and awareness in the Salmon River Sub-basin. Developing residential and wildland inventories for fuels will be among the projects that will be performed cooperatively.

There were various other events where the Salmon River Restoration Council promoted and helped perform fire prevention and fuels reduction activities on several pieces of private land in the Salmon River sub-basin. There were over one hundred person days of fire prevention activities that SRRC promoted on private lands in the Salmon River area.

One problem that surfaced is that during the fire season many of the Forest Service Fire personnel are often times not easily

Fire Protection Workshop/Workday continued ....

available for workshops and/or workdays. Slash disposal was also another problem that occurs outside of the burning season.

There was a total of 24 In-Kind Contribution Person Days
and 4 Technical Assistance Person Days.

Trees

SALMON RIVER RESTORATION COUNCIL
with Forks of Salmon Fire & Rescue

WORKSHOP/WORKDAY

Focus: Fire Prevention - Fuels Management

August 27, 1994, 9 a.m.
@ Forks of Salmon School
middle classroom

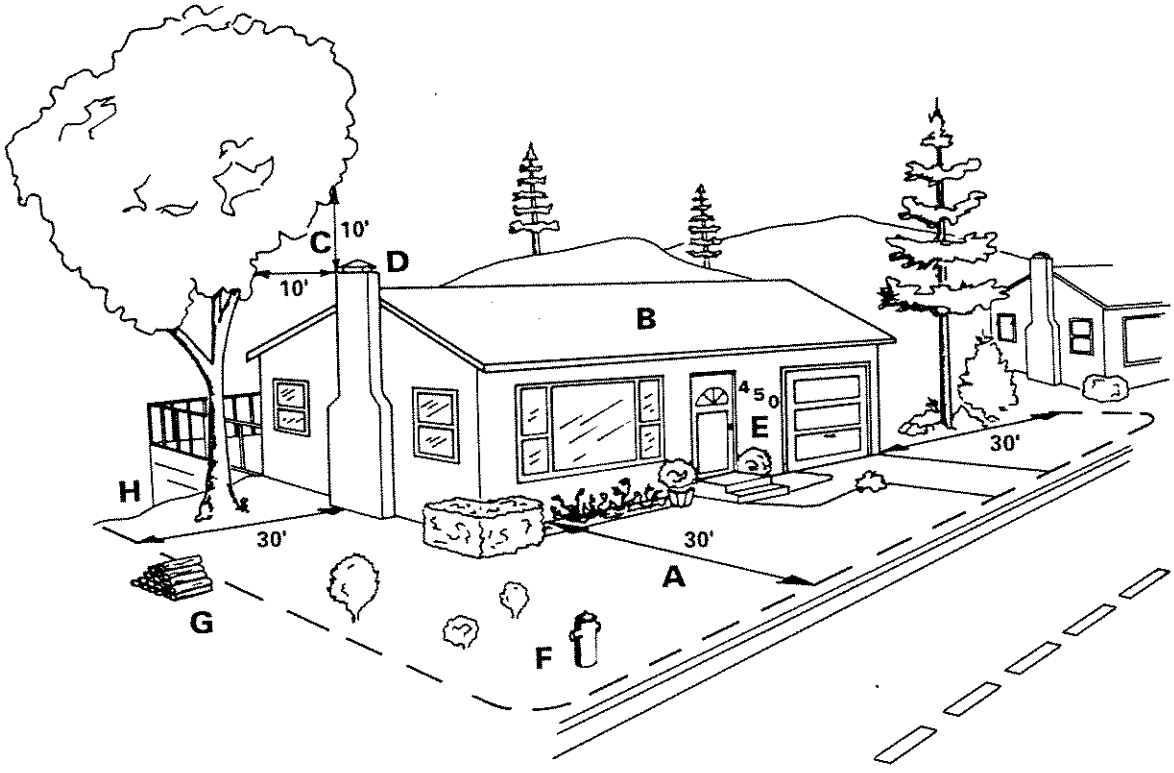
Bring your lunch & water
also hand tool: McLeod, shovel, rake, etc.

PRESENTATION BY: FORKS FIRE & RESCUE
& S.R.R.C.
Discussion with CDF, USFS, & Community

Everyone encouraged to attend!

Fire Safe, California!

Make Your Home Fire Safe!



Millions of Californians live in residential developments that border fire-prone wildlands. Each year, hundreds of homes in these "suburban" and rural areas are lost to wildfire outbreaks. According to the California Department of Forestry and Fire Protection (CDF), homeowners can substantially increase the chance of their home surviving a wildfire by following these fire safe practices:

A Maintain a "defensible" space around your home by clearing all flammable vegetation a minimum of 30 feet around the structure. Clear dead leaves and branches to leave widely spaced ornamental shrubbery and trees.

B Clean all needles and leaves from the roof, eaves and rain gutters.

C Trim tree limbs within 10 feet of your chimney and trim all dead limbs hanging over your house or garage.

D Cover your chimney outlet or flue with a spark arresting 1/2" mesh screen.

E Make sure your address is clearly visible for easy identification in an emergency.

F Make sure your home is located near a fire hydrant, or that you have a water storage supply of at least 2,500 gallons for use in emergency situations.

G Stack woodpiles at least 30 feet from buildings, fences and other combustible materials.

H Clear all vegetation and other flammable materials from beneath your deck. Enclose undersides of elevated decks with fire resistive materials.

For more information, contact the nearest CDF office listed in your telephone directory under State of California, or your local fire department.

FIRE RESISTIVE LANDSCAPING
CAN SAVE YOUR HOUSE AND YOUR LIFE

The following list of fire resistive plants should be considered when landscaping around your home. By replacing highly flammable native and landscape vegetation with these recommended species, you can significantly improve the survivability of your home when a WILDFIRE threatens. These plants should not be planted in continuous beds, but should be separated to prevent fire spread. To maintain their fire resistance, they need to be watered and pruned to remove dead leaves and branches. Routine care and maintenance will provide you with an attractive defensible space against wildfire. Contact your local nursery for selections appropriate to your area.

COMMON NAME	BOTANICAL NAME	COMMON NAME	BOTANICAL NAME
Ground Covers:			
Yarrow	*Achillea tomentosa*	Silver Mound	*Artemesia caucasica*
Rock Rose	*Cistus vellosus*	Capeweed	*Arctotheca calendula*
Dwarf Coyote Bush	*Baccharis pilularis prostratus*	Snow in Summer	*Cerastium tomentosum*
		Winter Creeper	*Euyonymus radicans*
Morning Glory Bush	*Convolvulus cneorum*	Ivy	*Hedera*
Australian Fuchsia	*Correa*	Aaron's Beard	*Hypericum calycinum*
African Daisy	*Osteospermum fruticosum*		
Sunrose	*Helianthemum nummularium*	Candytuft	*Iberis sempervirens*
			Lippia repens
Ice Plant	Many varieties		*Myoporum parvifolium*
Statice	*Limonium perezii*	Creeping Rosemary	*Rosmarinus officinalis prostrata*
Honey Suckle	*Lonicera halliana*		
Freeway Daisy	*Osteospermum*		
Green Lavender Cot.	*Santolina Virens*	Periwinkle	*Vinca major*
Perennial Verbena	*Verbena peruviana*		
Dwarf Periwinkle	*Vinca minor*		
Shrubs:			
Bearberry	*Arctostaphylos uva-ursi*	Star Jasmine	*Trachelospermum jas.*
		Hopseed Bush	*Dodonaea viscosa*
Silver Spreader	*Artemesia caucasica*	Toyon	*Heteromeles arbutifolia*
Escallonia	Several varieties	Oleander	*Nerium oleander*
Texas Privet	*Ligustrum texanum*	Carolina Cherry	*Prunus caroliniana*
Italian Buckthorn	*Rhamnus alaternus*	Catalina Cherry	*Prunus lyonii*
Lemonade Berry	*Rhus integrifolia*	Carmel Creeper	*Ceanothus horizontalis*
Trees:			
Carob	*Ceratonia siliqua*	African Suman	*Rhus lancea*
Calif. Pepper	*Schinus molle*	Brazilian Pepper	*Schinus terebinthifolia*

How To Reduce Fire Hazards

Your assistance is requested in making our mountain area a fire-safe place to live, work and play year-round. The following regulations are for your protection and are set forth under the Uniform Fire Code.

"Every person owning, leasing, controlling, operating or maintaining any building, structure, or apiary in, upon, or joining any hazardous fire area, and any person owning, leasing or controlling any land adjacent to such building, structure or apiary shall, at all times":

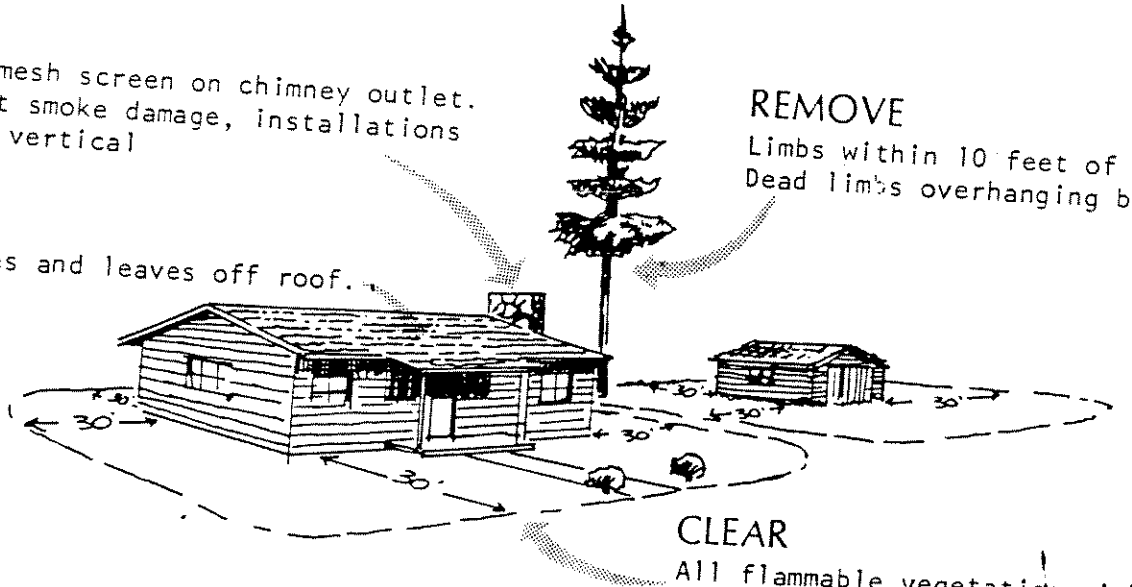
1. Remove to bare mineral soil for 30 feet, or to property line, from all structures, all dead weeds, needles, leaves, grass, and dead trees.
2. Remove all needles, leaves and debris from roofs.
3. Remove all weeds, grass, brush, trash or other combustible material a minimum of 10 feet away from all liquid petroleum (propane) gas tanks or containers.
4. Chimney and flue openings must be covered with 1/2" wire mesh spark arrester, visible from the ground.
5. Remove tree limbs for 10 feet away from chimney openings.
6. Remove accumulation of debris and haul to public dump.
7. Dispose of ashes according to Code. (Place ashes in a metal or other fireproof receptacle and soak in water for at least 24 hours.)

SCREEN

1/2 inch mesh screen on chimney outlet. To prevent smoke damage, installations should be vertical

CLEAN

All needles and leaves off roof.



REMOVE

Limbs within 10 feet of chimney. Dead limbs overhanging buildings.

CLEAR

All flammable vegetation within 30 feet of buildings.

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

SALMON RIVER RANGER DISTRICT

HOMEOWNERS BE PREPARED!

The wildland fire problem in California is the worst in the United States. Urban areas have infringed upon the wildlands, each year resulting in disastrous fires destroying homes and property located in our foothill and forested areas. You can minimize the danger to your family and property by pre-planning your actions while making your property fire resistant. Here are some steps you can take in safeguarding your family from the effects of a wildfire.

- ☐ Keep roofs and rain gutters free of leaves, pine needles, and other flammable debris.
- ☐ All combustibles, such as firewood, picnic tables, boats, etc. should be kept away from structures.
- ☐ Remove large native shrubbery as much as possible for a minimum of 30 feet around structures.
- ☐ All shrubbery around structures should be fire resistant and well-watered. Junipers, palms, eucalyptus, and pines are extremely combustible and should be removed, pruned, or thinned.
- ☐ Landscaping should be maintained free of dead and dying plants.
- ☐ Keep enough hose on hand to reach all parts of your home.
- ☐ If a wildfire is burning near your neighborhood:
  - Cover all eave and roof vents.
  - Cover large picture windows with sheets of plywood.
  - Close all windows and doors, open drapes.
  - Fill garbage cans and other large containers with water in the event of water pressure failure.
  - Consider moving family members and pets to a safer location.
  - Keep someone on watch.
- ☐ If a wildfire burns through your neighborhood and evacuation is impossible:
  - Stay calm.
  - Stay inside your home until the fire storm passes.
  - Immediately after passage of the fire storm, quickly inspect the exterior of your home and extinguish all smouldering material and small fires.
  - After making certain your house is safe, check on your neighbors.

The Forest Service and your local fire department are greatly concerned about protecting your property and the forest lands surrounding it. If you have any information regarding fires in your neighborhood, please help by calling your local fire department or U.S. Forest Service ranger station.

Trinity Bio Region Group
Shaded Fuelbreak Proposal
for FY 94 and FY 95

August 17, 1993

Background

Although the President's Northwest Forest Plan is released, a great deal of uncertainty exists as to future activities on the National Forests. Judge Dwyer must lift the injunction on timber sales before activity within suitable habitat can occur.

Option 9, the chosen option in the President's plan, faces considerable obstacles. Based on the science used to formulate the plan, it will only be credible if considerable money is spent accomplishing forest and watershed rehabilitation. Speaker Foley and the northwest delegation are threatening to scuttle the plan. Both the timber industry and the larger environmental interests are opposed and want substantial changes made.

Provided all these problems are resolved, the Forest Service will still not be in a position to implement many projects in FY 94. This is because ecosystem-system management planning must precede activities in the Adaptive Management Areas (AMA). The Shasta-Trinity and Six Rivers National Forests estimate that even with an increased budget they can only accomplish planning on about 40,000 acres a year.

A typical ecosystem-system plan will take two years and result in many projects for the area. Only a few projects can be carried out in any one year to avoid too much watershed disturbance. The end result is a very slow restart of on-the-ground, job-producing activities on the National Forest.

Proposal

Trinity Bio-Region Group (TBRG) believes activities within the Hayfork AMA must begin in FY 94 and FY 95 providing that the political and legal problems are resolved. The need for jobs is too urgent to await the outcome of the normal planning process.

TBRG is in agreement that fuel reduction must be a major activity in the AMA. The first step in carrying out this work would be to create strategic shaded fuel breaks along roads and ridges.

TBRG proposes that the Forest Service seek funds and proceed with a priority planning process that would have as a goal creating 300 miles of shaded fuel break in FY 94 and 600 miles in FY 95 within the Hayfork AMA. This work should begin along main traveled roads and ridge top roads. The fuel break should be 100 ft. on each side of the road with minor variations up to 50'. Operations would be conducted from the road with machinery allowed off the road only on slopes of less than 20% where precautions against erosion can be assured. The fuelbreak would remove ground fuels, brush and small trees to the road for chipping and other uses. Small trees that are left would be pruned to reduce the chance that they would become fuel ladders into the larger trees. The goal of these activities is a shaded fuel break where fire could be stopped or controlled aad reduced fuel results in less chance of a fire staring or spreading. Canopy cover would be maintained to retard grass and brush growth. On sites where conifers exceed the stocking necessary to accomplish this goal, thinning would produce commercial sawlogs.

In order to facilitate planning and implementation, specialists would flag off all areas that pose problems, e.g. riparian zones, archeological sites, areas of special habitat needs, etc. These areas would not be treated at this time but might be in future years after more detailed planning is accomplished. 300 miles in FY 94 and 600 in FY 95 would be net miles after areas are excluded by specialists.

The Forest Service should divide this work into separate contracts of a size that would encourage local contractors to bid and be able to accomplish during the 1994 work season. If Forest Service contracting requirements are to cumbersome to accomplish the task in a timely manner, consideration should be give to contracting with an entity such as the Resource Conservation District. Use of CCC or inmate crews should be minimized to help increase local employment and family wage jobs.

After operations are completed road maintenance should be done promptly to open ditches and drains and cure any other potential erosion from fuelbreak activities.

5. **Adopt-a Road Awareness Workshop/Workdays**

The SRRC held an Adopt-a-Road Awareness Workshop/Training Workday on 9/14/94. The goal of this Workshop/Workday was to increase the community and residential awareness for aquatic and terrestrial habitat problems related to roads. Roberta and Richard Vanda Water and Yolanda Larson, a Roads Inventory Technician, from the Forest Service provided technical assistance regarding preventative maintenance and restoration methods. There were 11 members of the community who attended this Workshop.

Several handouts were distributed by the Forest Service and the SRRC. Community members assisted the Salmon River Ranger District personnel in the culvert inventory for the Godfrey Road (39N40). After the initial field review of the road was complete, the group cleaned out several culverts, installed flow deflectors, and improved the drainage at various sites that were prioritized during the road review.

The Adopt-a-Road project on the Godfrey Road has become an ongoing activity for the road users and others in the community to participate in. Monitoring, culvert management, erosion control, revegetation - maintenance and release, fuels reduction, and riparian habitat protection activities are a few areas where on-going work has been performed on this road. There were 6 additional person days where SRRC participants responded to immediate road needs, such as culvert and ditch maintenance and light road repair. This project tied in very well with other SRRC projects . The SRRC is in the process of developing a partnership agreement with the Salmon River Ranger District for the management of this road. There project utilizes a stewardship management design.

For the Workshop/Workdays there were 17 In-Kind Contribution Person Days and 3 Technical Assistance Person Days provided.

SALMON RIVER RESTORATION COUNCIL

will be holding a
ROAD RESTORATION & MAINTENANCE
WORKSHOP/WORKDAY

SEPTEMBER 14, 1994
WEDNESDAY
start @ 9 a.m. @ Godfrey Ranch Road
South Fork of Salmon River - Box 610

Discussion will focus on Problems & Solutions!
Rain is best time to view erosion - bring raingear
Need: Lunch, water, tools (shovel, McLeod, etc.)

Road Restoration Specialist will attend also.

KLAMATH NATIONAL FOREST ROAD LOG

ROAD NO.____________ ROAD NAME ____________________ DATE __________

LENGTH-MILES__________ TERMINI-BEGIN________________ END______________

JURISDICTION (FS,PRIV,COOP)__________ RD.MTCE.LEVEL (I,II,III,IV,V)________

HAUL CLASS (I-VI)________________

CLOSURE ORDER Yes/No ________________

CLOSURE DEVICE ________________

MILE POST	(1) ROAD SHAPE	(2) ROAD SURFACE	AVG. WIDTH FT	AVG. GRADE %	STRUCTURES (3)	PHYSICAL FEATURES (4)	REMARKS

(1) I=In-Slope
O=Outslope
C=Crown
F=Flat

(2) N=Native
C=Crushed
P=Pit Run
B=Bituminous

(3) Culverts
Bridges
Over-side Drains
Under Drain
Dips
Ditches
Cattleguards
Gates

(4) Intersections
K-Tags (info)
Property line
Turnouts
Fences
Disposal Areas
Rock Sources
Signs

KLAMATH NATIONAL FOREST ROAD LOG

ROAD NO._____ ROAD NAME _____ DATE _____

LENGTH-MILES_____ TERMINI-BEGIN_____ END_____

JURISDICTION (FS,PRIV,COOP)_____ RD.MTCE.LEVEL (I,II,III,IV,V)_____

HAUL CLASS (I-VI)_____

CLOSURE ORDER Yes/No _____

CLOSURE DEVICE _____

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K-Tags (info)
Property line
Turnouts
Fences
Disposal Areas
Rock Sources
Signs

EROSION CONTROL PRIORITIES

at Redwood National Park

The excessive amount of sediment in Redwood Creek, and its impact on park resources, was defined as a major resource problem in the park. Studies identified roads as a major cause of the accelerated erosion. Road related problems were evaluated for the relative volumes of sediment generated by each different type of erosion. These are ranked below by their relative sediment production and impact on park resources. A major goal of the restoration program is to minimize the amount of sediment added to the stream system.

A. Correct or prevent stream diversions.
This is one of the most cost-effective and erosionally significant treatments in roaded watersheds. Stream diversions, or diversion potentials, exist at stream crossings where the flow is, or may be, diverted from its natural course if the drainage structure fails. Excavation of the road fill from these stream channels can prevent major hillslope gullies and/or landslides. If the crossing has diversion potential, but the road needs to remain drivable, a rolling dip (large drivable water bar) can be constructed to prevent diversion in case of drainage structure failure.

B. Prevent debris flow style road failures.
Removal of potentially unstable road fill on steep slopes can prevent debris flows or torrents which can impact resources for hundreds or thousands of feet downslope. These commonly occur along roads in steep headwater swales and inner gorges.

C. Prevent stream wash-outs.
Removal of drainage structures (culverts, etc.) and complete excavation of the fill will prevent erosion of the fill that occurs when the drainage structure fails to function as intended. Most drainage structures will fail, given enough time, water and debris, especially where road maintenance is infrequent. The future erosion potential of each stream crossing (intact or otherwise) must be evaluated. Stream crossings that have already washed out may be fairly stable and simply an eyesore; they may not need treatment.

D. Prevent road fill failures.
Removal of sidecast fill, particularly fills that exhibit signs of potential instability, in conjunction with restoring natural slope drainage, will prevent these mass movements. Sidecast fills along older roads often contain large amounts of organic debris. As this material decomposes, the fill may lose its integrity. Water ponded on road surfaces, or in the inboard ditches can

Redwood National Park Watershed Restoration Manual. 1992. P.O. Box 7, Orick, CA 95555. (707) 488-2911.

saturate the fill and cause failure. Fill failures are similar to debris flows but can occur anywhere along a road. How far they travel depends on slope steepness.

E. De-water gully systems.
Correcting flow diversions and keeping slope runoff dispersed will often minimize further gully development. To effectively treat a gully, its cause must be addressed.

F. Correct or prevent management related factors which may contribute to landslides.
Landslides are natural in this youthful, tectonically active terrain. They are costly and often difficult (if not impossible) to truly control. To cost-effectively minimize landslide potential, it is important to insure that landslide is not being aggravated by artificially concentrated or diverted runoff.

IX MAINTENANCE

Grading

Regular road maintenance is essential to protect the road. This requires attention to the road surface. Smoothing the road surface with a road grader is needed for this operation. In addition to the road surface itself, attention should be given to other elements of the road. These include such items as maintenance and cleaning of ditches and culverts. A yearly safety check for brush, trees and snags that need removal will help to keep the road safe and usable. Periodic dust control may be needed near homes and work areas. Regular watering may be needed during periods of heavy use.

Erosion Control

Even though consideration was given in the planning and construction part of the job, additional work is usually needed to correct problems. For example, it may be necessary to bypass water around a cut slope to avoid erosion and soil slump problems. Fill and cut slopes may need reseeding to be sure erosion is kept to a minimum. Every effort should be made to assure that only clean water reaches the stream.

Closing Out Roads

Roads that are not used should be put to "bed". (Installing the needed measures to protect the roads during periods of nonuse.) Barriers should be placed across them and the road may be outsloped and adequately water barred to assure drainage. Placing of water bars should be done before the start of the rainy season. See Figures 27 and 48 for details.

OUTSLOPING TO CLOSE ROADS

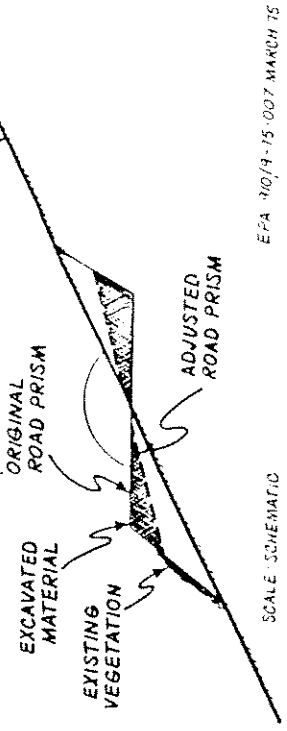


Figure 48.

Hydrologic Integration of Forest Roads with Stream Networks in Two Basins, Western Cascades, Oregon

by:

Beverley C. Wemple

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

Completed January 21, 1994

Commencement June, 1994

VI. CONCLUSIONS

This observational study suggests that roads function hydrologically to modify streamflow generation in forested watersheds by altering the spatial distribution of surface and subsurface flowpaths. Nearly 60% of the road network in Lookout Creek and Blue River drains to streams and gullies and is therefore hydrologically integrated with the stream network. Field observations suggest that roadside ditches and gullies function as effective surface flowpaths which substantially increase drainage density during storm events. Thus roads may alter basin hydrographs by extending the surface flow network. Since the volume of runoff from roads and its speed of delivery to the basin outlet (which were not measured in this study) vary according to road design, road hillslope position, road age, seasonal soil saturation, geologic substrate, and climate, these factors may explain the conflicting results from paired-watershed studies of road effects. Results of this study suggest that addressing and mitigating the integration of roads with streams may be an obvious and effective first step toward watershed restoration. Further research is needed to fully understand the downstream hydrologic effects of these integrated road segments on the generation of peak flows.

Figure 2: Road runoff and drainage

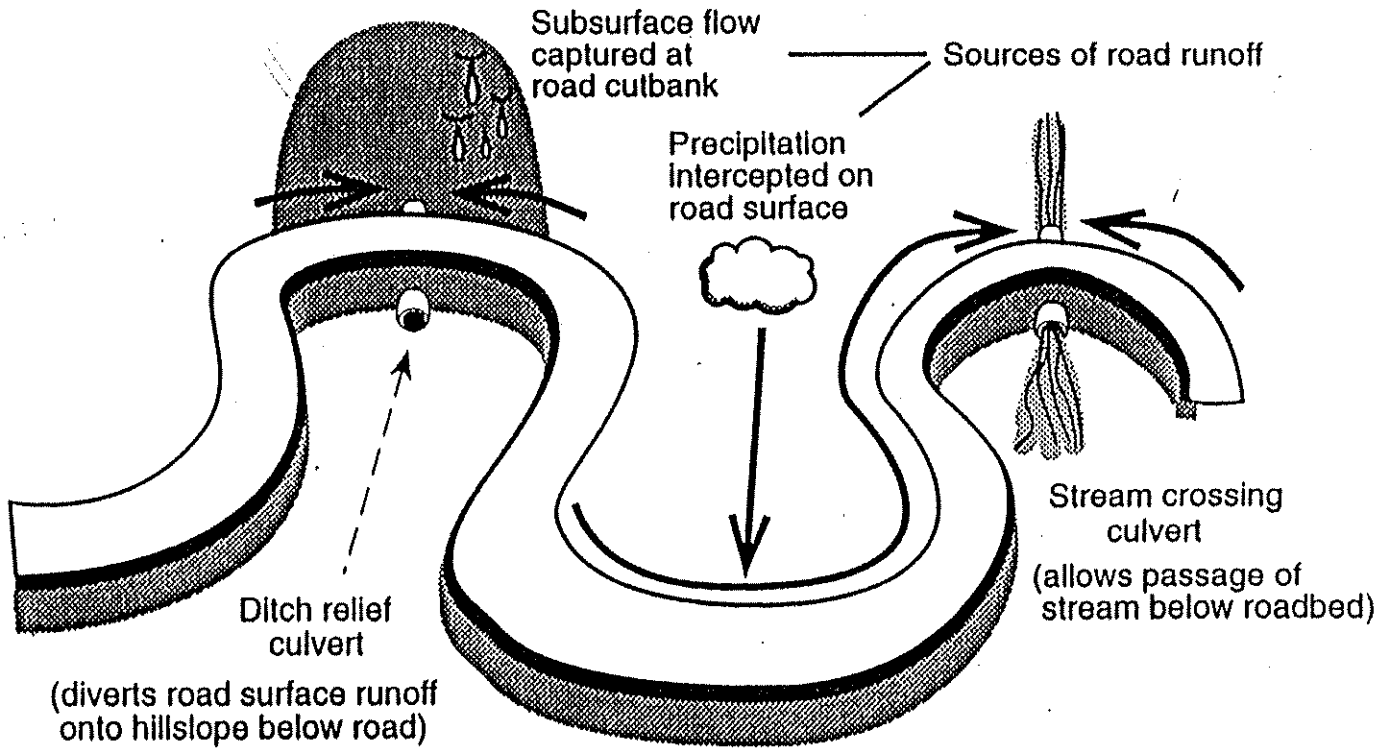
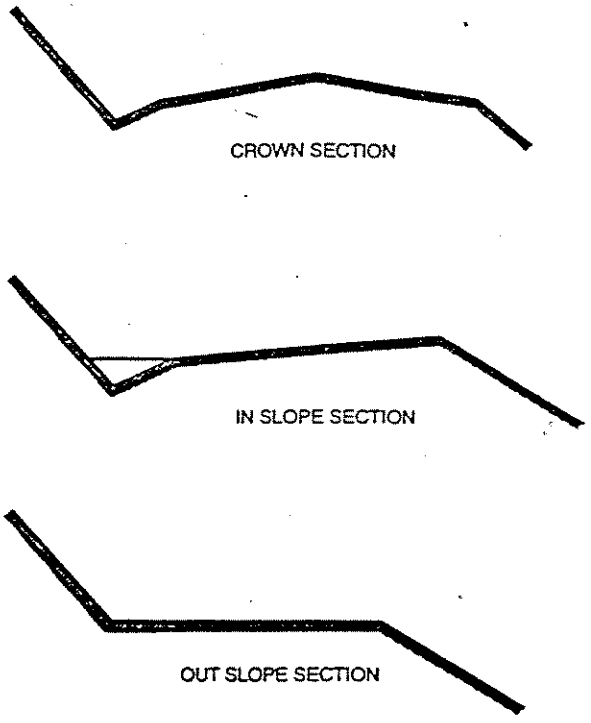
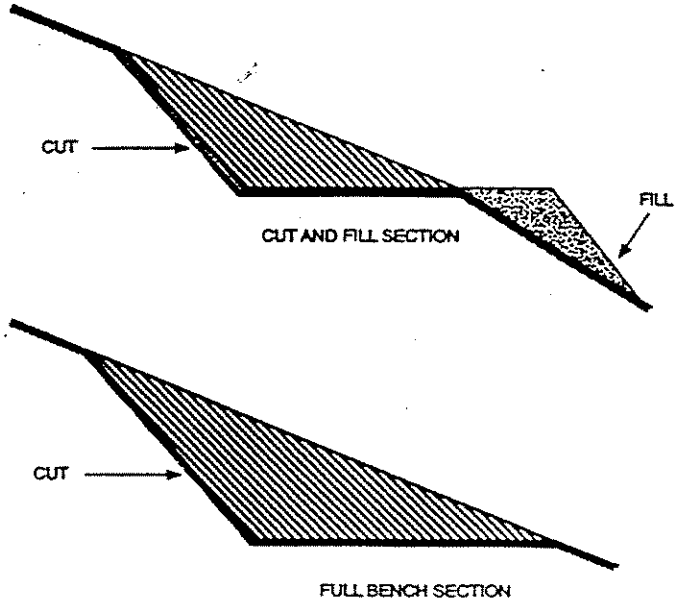


Figure 1: Road design

(a) Road-surface templates



(b) Slope excavation for road construction



A HOMESTEADER'S GUIDE TO ROAD MAINTENANCE

Why maintain your roads?
fish habitat, get to where you're going

Objectives:
- keep water off the road
- keep all flowing water clear and clean
- keep dirty water out of streams

What to do:
Remember that water flows downhill, ALWAYS. Don't try to fight that, it won't work. Work with gravity to get water off your road.
- **Do road work when it is raining.** This way you will know where the water is flowing.
- **Keep water off the road.** Try to get it to run in ditches with little disturbance to soil, so it flows clear (it will probably turn brown while you're working with it, but it should clear up within an hour or so of when you've finished for the day).
- **Follow the water on the road to the point where it starts and try to correct it there.** It may be useful to drain water flowing on the road in several places as a backup, but get to the source of the problem and fix it.
- **Keep your ditches clean.** Keep an eye on them, and make sure there is no debris blocking the even flow of water. Remember to allow enough room in your ditches for high flow. When you're clearing ditches, allow enough space so the water won't flow over the sides during a really big storm.
- **Don't build barriers between your road and your ditch.** You want to allow the water to flow off the road as often as possible.
- **Check your culverts often!** Many homestead culverts are undersized for their needs, therefore, they tend to clog up easily. Check them every few weeks, more often during a big storm. Just look at both sides, where the water flows in and out, and make sure it is flowing. Check for debris clogging the entrance and clear it, either with a shovel or your hands. KNOW WHERE ALL CULVERTS ARE ON YOUR ROAD, and mark them if necessary with a piece of rebar or a stake. A clogged culvert can take out a road in a few hours.
- **Don't drain water off a road onto the top of a culvert.** This will weaken the ground holding the culvert, and you may lose your culvert. Don't drain water anywhere that it is causing the side of the road to erode away.
- **Try to fix eroding roadsides.** Use rebar or fence posts to support plywood, and pile dirt behind to make a wall to keep the road from falling away. Old tires also work well to keep eroding areas from eroding further. Try to get something to grow in the erosion, grass or "erosion mix" from your nursery work well. Eventually try to establish coyote brush or other shrub species so trees can eventually return to the site. Think carefully about what plants you are introducing into the ecosystem.

Bring some drinking water and snack food with you when you go out to do road work, it can be very tiring, and you need to keep up your strength. Wear layers of clothes, with a waterproof layer on the outside, wool is a good upper layer too. You may get warm working, and will want to take a layer or

REDWOOD NATIONAL PARK ROAD INVENTORY

October, 1992

SITE INFORMATION AND SUMMARY

1. Site #_____ 2. Mileage:_____ 3. Date Mapped:_____ 4. Mapped By:_____
5. Photos Taken: Y N 6. Watershed:_____
7. Land Ownership:_____

8. Map Sheet:_____ 9. Map Code:_____ 10. Quad ID:_____
11. Flight Line / #_____ 12. Date:_____ 13. Scale: 1:_____

ROAD INFORMATION

14. Road Name:_____ 15. Abandoned: Y N 16. Driveable: Y N
17. Rebuild: Minor: Y N 18. Major: Y N
19. Built By:_____ 20. Year of Constr._____

SITE INFORMATION

21. Fluvial Erosion Site (Section I) 22. Mass movement Site (Section II) 23. Sketch: Y N
24. Comments:

SECTION III: EXCAVATION AND EROSION VOLUMES

EXCAVATION VOLUME WORK SPACES:

I. FLUVIAL SITE WORKSHEET: Y N	*II. MASS MOVEMENT (FILL FAILURE)* road length X vol/L.Ft. of road (from chart)

167. Total VOLUME of fill to excavate:_____ yd^3

EROSION VOLUMES

	Past	Future
I. ROAD FILL AT CROSSING:	168	169
Caused by Diversion; erosion offsite of Crossing:		
Inboard Ditch	170	171
Down Road Surface	172	173
Gullied through Road	174	175
Gullied Natural Slope	176	177
Gullied Natural Channel	178	179
Fill Failure	180	181
Hillslope Failure	182	183
Other 186	184	185
II. MASS MOVEMENT:		
Volume mobilized: show dimensions for each on back	187	188
VOLUMES: Total mobilized	189	190
% Delivery to channel	191	192
Total Yield to channel (% X 191 (192))	193	194

DOWNSTREAM IMPACT SUMMARY - STRICTLY A "GUESS-TIMATE"

195. Significant Offsite Impacts: Y N
199. EP: H M L 200. Extreme EP: Y N 201. Extreme Eros Vol:_____ yd^3
202. Extreme Erosion Comments (nature & likelihood):

SECTION I: FLUVIAL EROSION SITE

FEATURE TYPE

25. Stream Xing 26. Headwater swale 27. Ditch/Road Relief

EXISTING EROSION FEATURE

28. Gully 29. Gully-Stream/Bank Erosion 30. Rilling/Surface 31. Spring

DRAINAGE STRUCTURE

32. Culvert 33. Humboldt 34. Bridge 35. Fill 36. Cul Type: CMP Conc Alum WellCase Other
37. Culvert Diam:_____inches 38. Headwater Ht:_____inches 39. Culvert Capacity:_____cfs

Inlet Condition:

40. OK 41. Rusted 42. Holes 43. Band Separation 44. Crushed 45. Plugged
46. % Crushed_____ 47. % Plugged:_____ 48. Plug Cause: Wood Sediment Vegetation
49. Plug Potential: H M L 50. Trash Rack 51. Drop Inlet

Outlet Condition:

52. OK 53. Rusted 54. Holes 55. Band Separation 56. Crushed 57. Plugged
58. % Crushed:_____ 59. % Plugged:_____ 60. Shotgun 61. Feet to Grade:_____
62. Culvert Placement: Center Right Left 63._____ft from center

CHANNEL DESCRIPTION

64. Grade: upstr._____% 65. downstr._____% 66. Width: upstr._____ ft. 67. downstr._____ ft.
Armor: 68. < Bldr 69. Bldrs 70. BedRk 71. SmOD 72. LrgOD
73. Soil/BR Type:_____

BASIN DESCRIPTION

74. Area:_____ 75. 50 yr Q (cfs):_____ 76. DP: Y N 77. Exit: Y N 78. Rd Grade:_____%
79. Now Diverted Xing History: 80. diverted 81. Washed out 82. No History 83. Unknown

COND OF FILL: 84. Intact 85. Sag 86. Pond H_2O 87. Cracks 88. Scarps 89. Holes 90. Gully /Rills
91. Fill Failure Potential: Y N

POSSIBLE TREATMENTS

92. Replace Culvert 93. Larger Culvert 94. Add Culvert 95. Clean IBD 96. Clean Culvert
97. Trash Rack 98. Rolling Dip 99. Berm 100. Pull Fill @ Xing 101. Waterbar
102. Other_____ 103. None
104. Immediacy: Y N 105. MAINTENANCE NEEDS: Y N
106. COMMENTS:

SECTION II: MASS MOVEMENT SITE

FEATURE TYPE

107. Earthflow 108. Shallow debris slide 109. Rotational slump 110. Torrent 111. CB 112. FF

FEATURE DESCRIPTION

113 Active 114. Waiting 115. Totally Evacuated
116. Average Scarp height:_____ 117. Range of scarp heights:_____
118. Cracks 119. Scarps 120. Sagging 121. Holes 122. Partial Evacuation
123. Wet Veg 124. Ponded Water 125. Leaning Trees
126. Natural 127. Road related 128. Skid Trail 129. Excess H_2O diverted onto feature
130. Stream channel undercutting 131. Spring
132. Upper 133. Middle 134. Lower 135. Inner Gorge 136. Concave 137. Planar 138. Convex
139. BIS 140. Slope Above_____% 141. Slope Below_____%
142. Stream side 143._____ft. to stream 144. Landing 145. Swale
146. Road Reach

SOIL CHARACTERISTICS

147. Soil/Br type:_____ 148. Soil Depth:_____ 149. Few Rx: Y N
150. Cohesive 151. Mottled 152. Deep Colluvium

POSSIBLE TREATMENTS

153. Pull back fill 154. Correct Diversion 155. Dewater Slope 156. Buttress 157. Other
158. Immediacy: Y N 159. MAINTENANCE NEEDS: Y N
160. COMMENTS:

6. Forest Management Workshop

The SRRC planned and held a Forest Management Awareness Workshop/Workday 9/30/94. There were 10 members of the community who participated in this event. Steve Knight, a Registered Professional Forester from the private sector, provided technical assistance both in planning the event and during implementation.

The SRRC Coordinator worked with various members of the Forest Service to develop the Workshop/Workday. A filed trip and on-the-ground review of various forest management prescriptions was planned.

The purpose of this event was to initiate a cooperative community/agency project where forest management would be examined. We reviewed the land management constraints that currently exist on the Klamath National Forest, including direction from the Klamath Resource Land Management Plan and the President's Forest Plan. The group discussed past problems and successes associated with timber harvest. One of the most significant problems that the group continually focussed on was fuels management and catastrophic fire. Several private landowners expressed concerns about fuel loading on adjacent federal lands.

SRRC will continue to identify local forest workers and others to commit to an on-going discussion aimed at examining and providing perspective for some of the problems currently existing in forest management. This commitee will work with the forest managers, their staff, and others from the timber, fisheries, and environmental communities.

One problem that developed was that the Specimen Fire event was taking place while this Workshop/Workday occurred. This reduced the amount of involvement that was available from the United States Forest Service and the California Department of Forestry and Fire Protection.

There was a total of 10 In-Kind Contribution Person Days
and 2 Technical Assistance Person Days

SALMON RIVER RESTORATION COUNCIL

FOREST MANAGEMENT
WORKSHOP/WORKDAY

September 30, 1994
Fieldtrip with Discussion

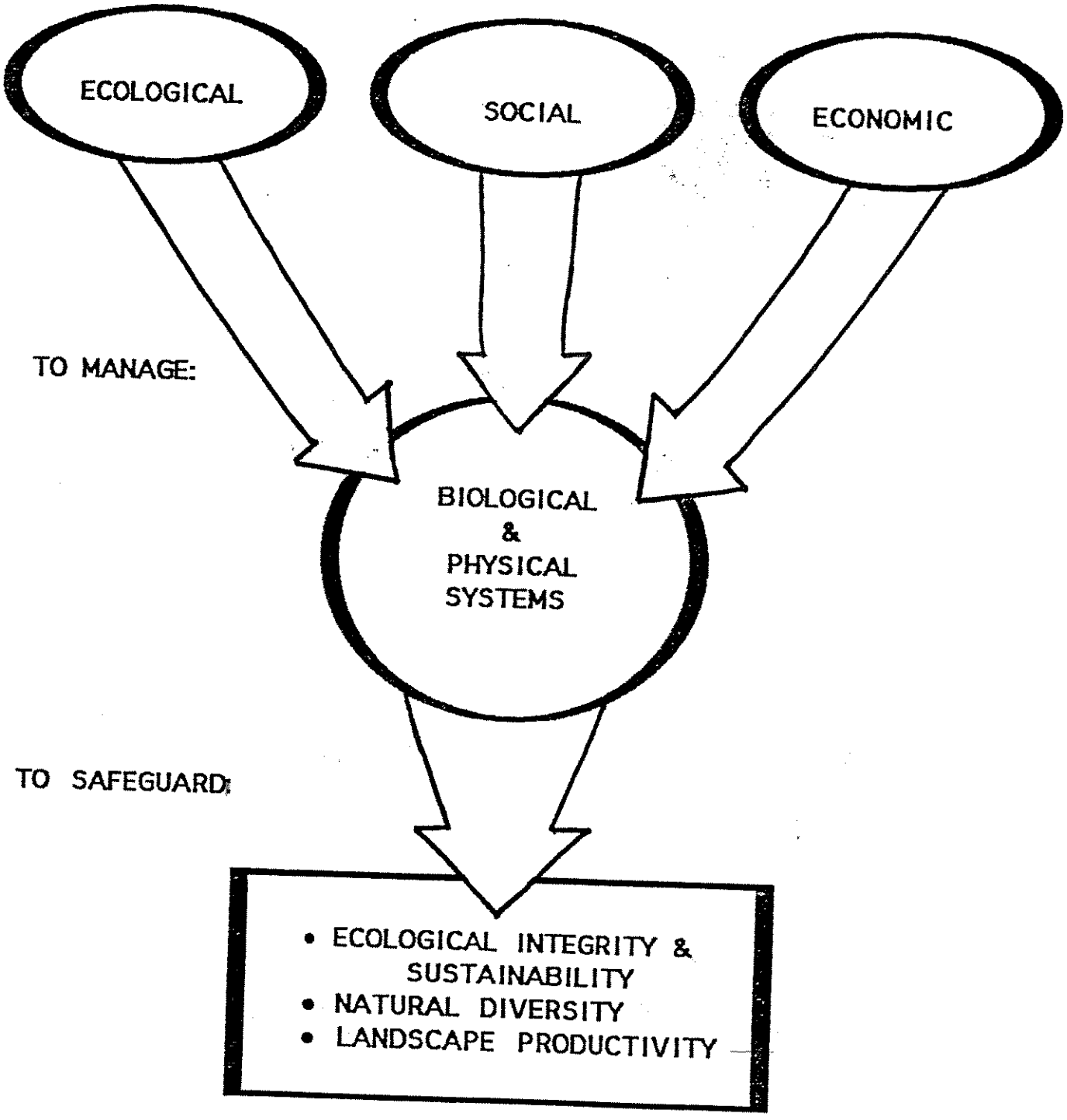
1-4 p.m. drive field trip "Tower Timber Sale"
(meet @ Sawyers Bar Town Hall)
5-6:30 p.m. Potluck @ Town Hall
7-9 p.m. - Discussion

>Fire Impact< >Salvage Logging<
>General Forest Management<

Various Specialists to attend.
Loggers encouraged to come! Discussion will be held on Salmon River watersheds.

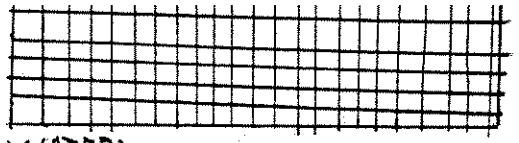
ECOSYSTEM MANAGEMENT

PRINCIPLES:

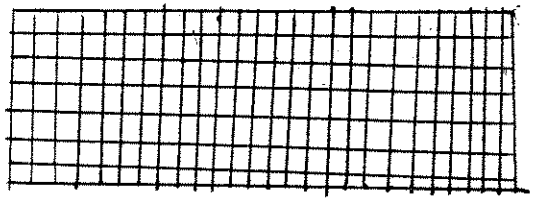


MONEY:

WEAPONS:

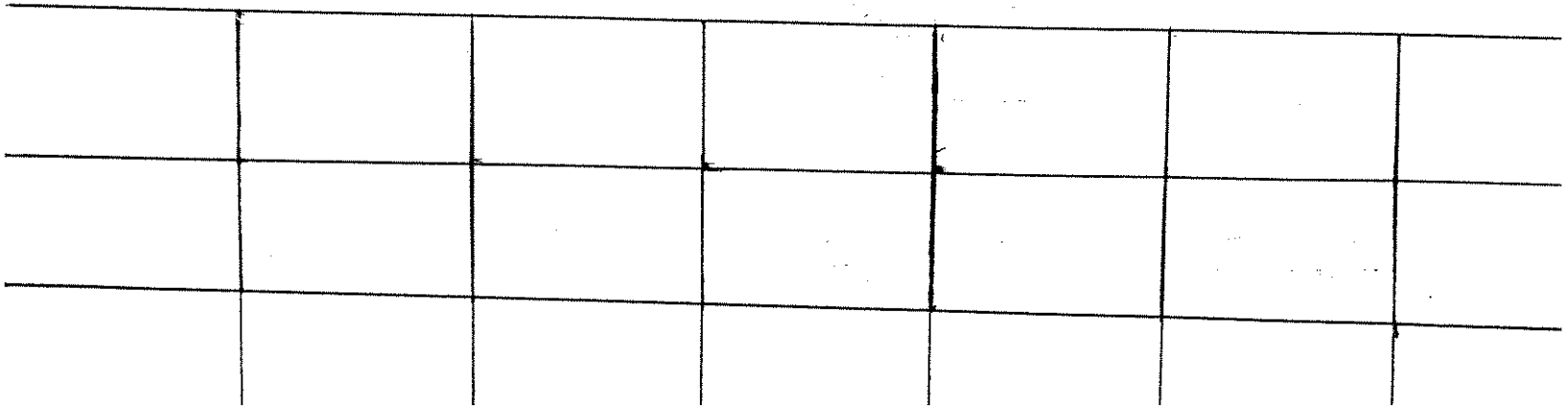


WATER:



ITEMS:

SKILLS:



BILL MANNIX (707)823-8783

FOR IMMEDIATE RELEASE

FOREST ENVIRONMENTAL REFORM WILL ALSO DOUBLE FOREST PRODUCTIVITY

Most citizens don't realize that as well as environmental reasons, there are economic advantages in better forest management.

Let's start with one basic biological fact: conifer forests produce timberwood fiber at the highest rate during their middle age -- much faster than when the same forest was younger, somewhat faster than when older. For example, an average second-growth redwood/Douglas fir or Ponderosa pine forest has not reached its highest periodic rate of growth until 70 to 80 years of age. By this time, only one-third of its total growth has occurred during its first 40 years, while <u>two-thirds</u> occurred between 40 and 80 years. (Ref. California Forestry Handbook, pp. 215-219.)

Does this fact relate to the current flap over wastage of our timber resources under present timber harvest practices? You bet it does, when one realizes that current policy of the corporate giants of this region is to log (usually clear-cut) their redwood forests every 40 years. (In many cases much sooner: I have recently studied four Timber Harvest Plans in which the ages of regrowth were between 33 and 40 years. Mercifully, even our compliant California Department of Forestry disapproved one of these THP's -- but hundreds more are routinely approved every year.)

To illustrate how these shortsighted practices waste the resource -- and therefore jobs as well -- I have prepared two charts:

<u>Chart 1</u> plots growth rate against age, and shows what happens when the forest is clear-cut at 40-year intervals -- well before the growth rate has had a chance to reach its peak at 70 to 80 years. The crosshatched area under the growth-rate curve shows the total trunkwood produced per acre, over each cutting cycle. (In an average redwood case, 37,000 board feet in 40 years.) Had the same trees been allowed to grow to 80 years, the total lumber production for this same acre would have been 115,000 bd. ft., <u>over three times as much in only twice the time</u>. The irretrievable loss in wood production over the first 80 years is 41,000 bd. ft.,* over one-third of the total potential growth. Beyond 80 years, after growth and harvest are stabilized, the advantages of middle-aged harvesting are even greater.

<u>Chart 2</u> shows total growth over typical harvest cycles, and the harvest allowable each time, to achieve the maximum sustained yield. A comparison of selection harvesting (upper falling arrows) with clear-cutting (lower falling arrows) shows that after several cycles, timber production is <u>more than doubled</u>. (And, of course, quality is much higher with mature lumber.)

Note that the phrase "sustained yield" (meaning the rate of harvest is not allowed to exceed the rate of growth) is an empty phrase unless a <u>level</u> of growth and harvest are specified. One can have "sustained yield" in a ten-year-rotation pulpwood plantation, producing only a small fraction of the productive capability of the land. This is why we specify sustained yield at <u>maximum productivity</u>, while other forestry proposals have ignored this key concept.

* Ref. Chart 2: 115 m bf. (see total selection growth bar at 80 years)
<u>minus 74 m bf.</u> (2 x 37 m when clear-cut twice at 40 & 80 yrs)
equals 41 m bf. (irreplaceable loss)

The upper part of Chart 2 presupposes three key requirements for maximum sustained yield:

1) Within any recently clear-cut area, the first 40-year harvest is foregone in allowing the trees to reach about 80 years of age, thus attaining their maximum periodic growth rate.

2) At this point the larger trees would be selectively logged (not clear-cut) -- possibly 20 to 25% of the stand (in board-foot measurement). These trees can be logged by tractor when skid-roads are already in place (most likely) or by cable or helicopter on steeper ground. Minimal damage to forest cover, wildlife habitat, water absorption, soil nutrition or viewshed would occur. Also, the danger of severe crown fires would be greatly reduced, compared to the dense even-aged stands which follow a clear-cut.

3) The degree of selective logging at the second through fourth cycles would be outlined within the timberland owner's Sustained Yield Plan, which allows 150 years for a worst case (poor site, recent clear-cut) to reach maximum productivity. After 150 years (or much sooner in most cases), this forest land can be <u>selectively</u> harvested at its full rate of growth every 20 years or so, into the foreseeable future.

Note: The extra 40-year wait to harvest in this scenario applies only to the worst case of a fresh clear-cut. Some of the fast-disappearing industrial second growth contains residual trees which were too small to log in the 1940s, '50s, and '60s, but will soon be ready for harvest. Fortunately, most smaller non-industrial timberlands contain a higher percentage of older trees, because these owners have been under-harvesting; therefore, this reserve of non-industrial timberlands will be available for optimum harvesting much sooner than the recently clear-cut corporate lands. Also, fortuantely, this non-industrial reserve constitutes over one-half of the available sawlog forest; whereas industrial timberlands, where most of the overcutting in recent years occurred, make up only about 35%. (The balance is State and Federal timberlands.)

It should also be noted that higher quality lumber wood is harvested from a more mature forest, with a greater likelihood of job-producing value-added work in the intermediate steps between harvesting and final sale out of the area. Furthermore, even the regular 37,000 B.F./acre clear-cut harvesting of Chart 2's lower part assumes the soil's repeated ability to regenerate equal growths after a succession of clear-cuts -- an assumption being greeted with increasing skepticism.

Summarizing, there are several major bonuses shown by Chart 2:

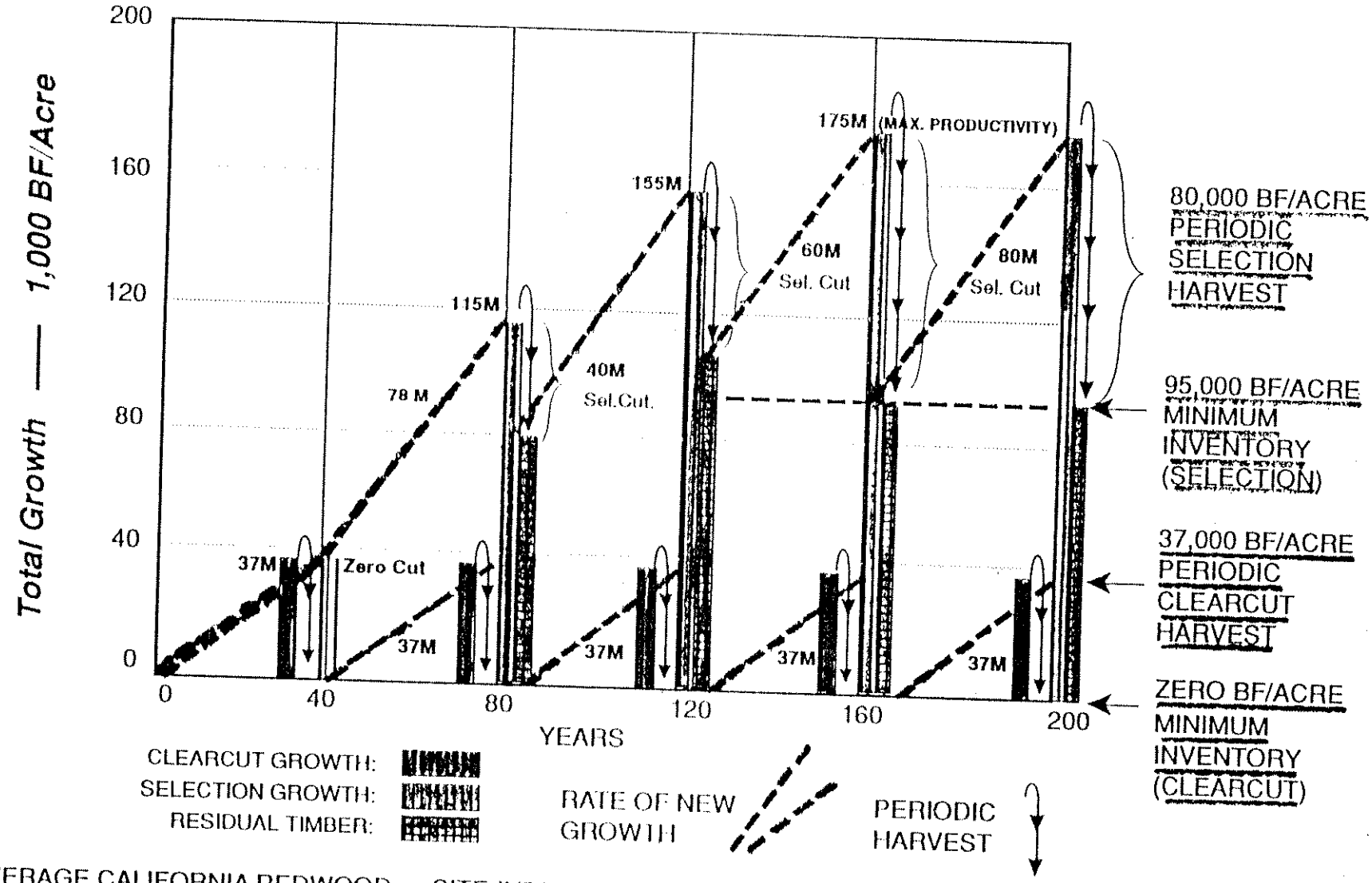
1) Over <u>double</u> the harvest over time (80,000 B.F./a every 40 years, compared to 37,000 B.F./a every 40 years); more and steadier work in logging communities, not less as in current trends.
2) Minimum forest inventory of 95,000 B.F./a indefinitely, compared to zero inventory after each periodic clear-cutting.
3) Less soil erosion and more water retention since substantial forest cover is always present.
4) More natural forests from all wildlife and environmental standpoints.

Somehow, we realized some time ago (even within our limited wisdom) that we could not deplete our region's salmon, or trout, or deer, or abalones, below some non-renewable level; and we are learning to limit or delay harvesting to protect these valuable resources into the future. We also saw the folly of harvesting immature specimens and placed well-accepted limits thereon. We know in our gut that the same principles apply to trees, but find these biologic facts harder to face, simply because trees grow more slowly and live much longer than we.

True forest reform will recognize these facts and propose that we finally reorder our timber harvest practices accordingly, to minimize these irreplaceable losses. It will realize that, as in any economic investment meant to be productive over the long term, we must never spend the principal, only the interest. Every sensible person now understands that there is simply no other way to correct the horrible depletion of our forest resources, caused by the greedy over-harvesting of the last fifty years.

Chart 2:

How To Achieve Maximum Sustained Yield

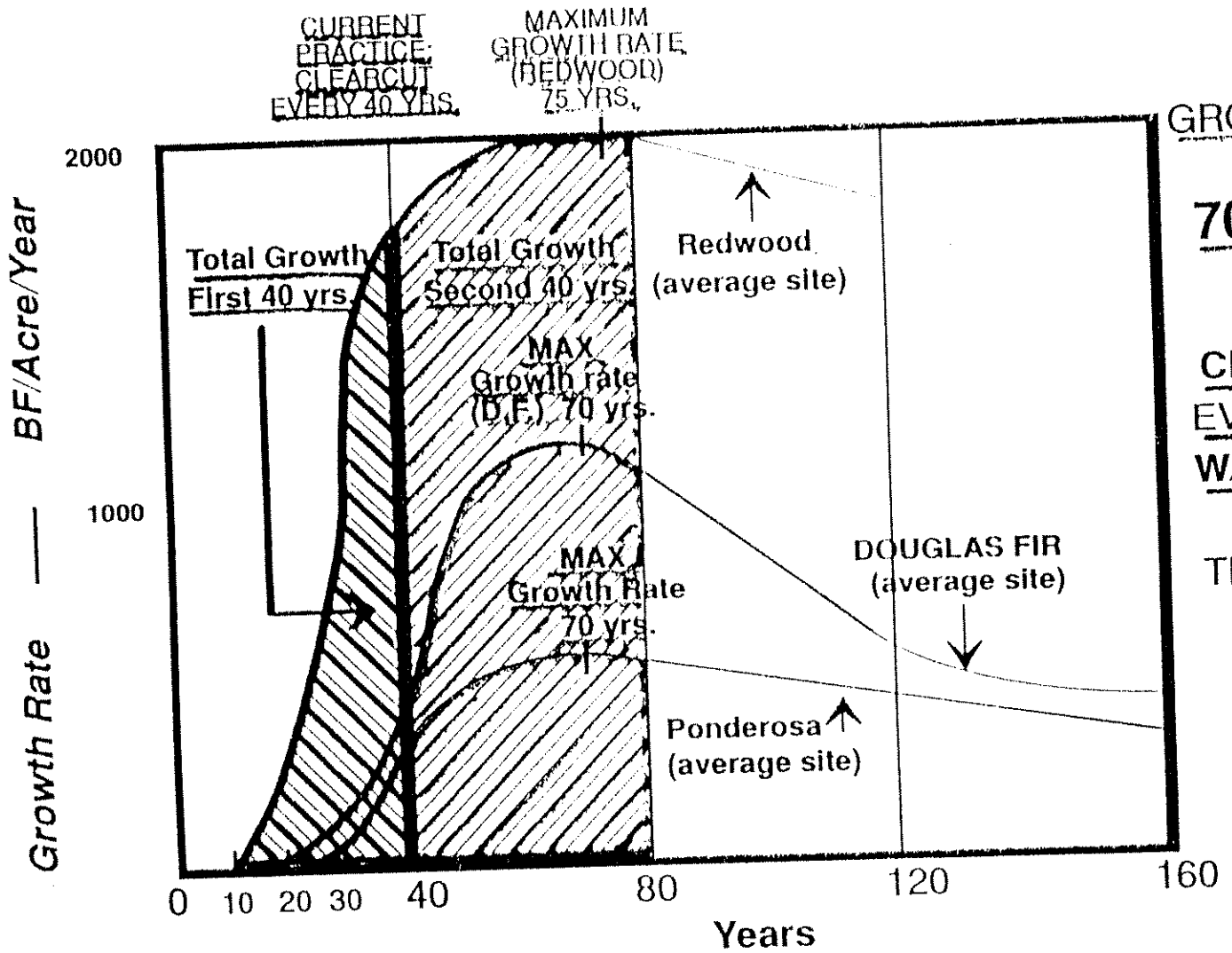


AVERAGE CALIFORNIA REDWOOD — SITE INDEX 160
DATA FROM: CALIFORNIA FORESTRY HANDBOOK, 1978

For More Information,
Call Bill Mannix: (707) 823-8783

Chart 1:

Wasteful Timber Harvesting



CONIFER GROWTH RATES PEAK AT **70-80 YEARS**

CLEARCUTTING EVERY 40 YEARS **WASTES ABOUT ONE-HALF** THE RESOURCE (ALSO JOBS AND COUNTY INCOME)

Data From: CALIFORNIA FORESTRY HANDBOOK, 1978

For more information, call Bill Mannix:707-823-8783

SISKIYOU COUNTY FOREST MANAGEMENT ROUNDTABLE
WORKING AGREEMENT

January 17, 1994

PURPOSE

The Siskiyou County Forest Management Roundtable was formed by a group of concerned citizens, community groups and businesses in order to seek consensus on forest management issues in Siskiyou County. Listed below are the working agreements, the goals and objectives of the Roundtable, and the practices with which we have agreed to by consensus. This working agreement provides input and direction to the Forest Service for forest management projects that include timber removal on public land in Siskiyou County. Consensus agreement on development, implementation, and results of these on the ground projects will enable us to further refine this document and to apply it to future projects. If consensus on an issue cannot be reached, that issue will not be acted upon by the Roundtable.

WE AGREE THAT;

A) The forest is an ecosystem comprised of both below and above ground flora and fauna and their interaction.

B) The desired future condition of the forests of Siskiyou County includes providing levels of resource outputs which are compatible with maintaining healthy communities and healthy forest ecosystems. The levels of resource outputs will be derived from the rehabilitation and maintenance of a healthy forest ecosystem.

C) The forest in the past was not static. The pattern of seral stages was always changing yet was relatively in balance over the long term.

D) All natural disturbances including fire, wind, drought, insects, and disease played a role in changing the pattern of seral stages and forest structures. Many of these processes can be mimicked through management practices including timber harvesting.

E) Landscape patterns and features prior to intensive fire control can help give a baseline for determining the characteristics of a healthy mix of seral stages, landscape patterns and forest structures. The maintenance of a diverse, dynamic landscape should provide for healthy, viable populations and a diversity of species of flora and fauna.

F) A forest with diverse and dynamic structures and functions is healthy. In order to maintain a healthy forest, we need to develop or maintain large scale vegetation patterns, a broad mix of seral stages and a diversity of forest structures and species.

G) Private forest lands are part of the forest ecosystem and those lands may have different management goals than public lands. Private land can play an important role in testing adaptive management strategies, providing forest products and maintaining forest health. In areas of intermingled private-public ownerships, management coordination is important and desirable for providing a higher level of assurance that ecosystem health can be maintained or restored.

H) Ecosystem management should be applied to the entire forest. Strategies should be developed, including action and no action areas, which restore or maintain the health of forest ecosystems.

I) A well formulated monitoring program is essential to ecosystem management.

J) The forest ecosystem and its interactions are not completely understood. As new knowledge becomes available, objectives and practices should be refined or changed to reflect this knowledge.

GOALS AND OBJECTIVES

This working agreement outlines a set of goals and objectives which the Roundtable supports for the Forest Service to begin planning and implementing rehabilitation and maintenance projects that include timber removal in order to move toward the long term goal of ecosystem and community health.

1 - The overall goal is to maintain the entire forest in a healthy condition and to rehabilitate the forest where necessary. Our approach to managing for a healthy forest emphasizes maintaining the complex processes, pathways, and interdependencies of forest ecosystems and keeping them functioning well over long periods of time. A healthy forest will provide resilience to short term stress and adaptation to long term change.

2 - Projects to rehabilitate and then maintain forest ecosystem health will, in the near term and in the future, work toward changing the forest as described. We agree that practices to mimic natural processes will be utilized to:

A) Reduce the risk of catastrophic fire on a landscape scale in order to grow and harvest wood which otherwise would be lost, to protect wildlife habitat, prevent water quality degradation and loss of property.

B) Put fire back into the forest on a light intensity level.

C) Provide for viable populations of naturally occurring species.

D) Provide for a diverse pattern, mix and balance of all seral stages.

E) Provide for diverse forest structures.

F) Provide for harvests from thinnings, salvage and from mature trees consistent with the above.

We envision these projects as part of an adaptive management process. As ecosystem management practices, as advocated by the Roundtable, are demonstrated to work on the ground, it will be appropriate to expand their use.

3 - Promote local economic stability based on a stable supply of resources, economic diversification and community problem solving.

4 - Explore the mechanisms for ecosystem management coordination between private industrial and public forest lands.

FOREST MANAGEMENT PRACTICES

The following management practices are needed to accomplish the goals and objectives of the Roundtable. The Roundtable assumes Forest Service compliance with applicable laws, regulations and plans and private forest landowners compliance with the California Forest Practices Act and other applicable laws.

1 - Silvicultural systems utilized will be appropriate to the steepness of the terrain and frequency of entry. Silvicultural systems will be altered to more closely mimic natural change and disturbance regimes. For example, both even and uneven aged timber cutting systems will leave some large green

trees, snags and woody debris into future rotation periods. Rotation ages will take into account the influence of natural disturbance regimes and forest ecosystem processes. Where significant watershed impacts will occur that cannot be mitigated regardless of the silviculture system used, those lands will be removed from the timber base until adequate mitigation is available.

2 - Fire and fuels management practices will:

A) Utilize thinning from below and pruning to reduce excessive fire hazard.

B) Salvage dead and dying trees which are not needed to meet snag and woody debris requirements.

C) Treat excessive fuel buildup, including logging slash, to reduce the threat of catastrophic fire.

D) Re-introduce managed fire into the landscape to maintain or create low fuel loadings.

3 - Forest management practices will maintain or rehabilitate aquatic and riparian ecosystems. Practices will aim for high water quality and desirable flow timing. These practices will include:

A) Developing a cutting schedule and cutting unit sizes to accomplish watershed objectives where timber harvest is appropriate.

B) Utilizing effective techniques for road design, reconstruction, maintenance, or removal.

C) Planting trees and other vegetation in both riparian and upslope areas.

MONITORING AND EVALUATION

The Roundtable endorses the Adaptive Management process. Adaptive Management is a process wherein lessons learned from projects are applied to current and future management practices.

1 - Evaluation of management practices will include;

A) Review the scientific information related to the forest process which is being mimicked.

B) Evaluate the project goals, objectives, design, implementation and performance of practices to determine if success was achieved.

C) Change practices as appropriate.

D) Make recommendations for other applications and areas where the practice should be used.

2 - The Roundtable will participate in developing a monitoring program to quantitatively evaluate ecosystem management projects.

SISKIYOU COUNTY FOREST MANAGEMENT ROUNDTABLE

PARTICIPANTS

Gerry Bendix	Hi-Ridge Lumber Co.
Charlie Brown	Fruit Growers Supply Co.
Tom Dimitre	Marble Mountain Audubon Society
Jim De Pree	Klamath Forest Alliance
Jim Ostrowski	Sierra Pacific Industries
Felice Pace	Klamath Forest Alliance
Rich Renouf	Mt. Shasta Audubon Society
Mary Roehrich	Marble Mountain Audubon
Bob Rohde	Karuk Tribe
Joan Smith	Klamath Alliance for Resources and the Environment
Frank Tallerico	Siskiyou County Office of Education
Roger Zwanziger	Siskiyou County Board of Supervisors
George Thackeray	Siskiyou County Board of Supervisors

GLOSSARY OF TERMS FOR IMPLEMENTING THE PRESIDENT'S PLAN
(version 2.0, draft)

NOTE: This glossary of terms is associated with implementing the President's Plan and was developed to help planners and others gain an understanding of the many facets and inter-relationships involved in this effort. Additional terms and definitions will be added as needed. No apologies are made for the acronyms as some titles are real tonque twisters. However, prudence is warranted when using jargon and acronyms with the public.

This version includes the following changes, additions and helps:

1. glossary terms have been divided into two categories, GROUPS (teams, entities, etc.) and THINGS (reports, analysis, processes, etc.) to better understand how everything ties together and relates to one another;

2. at the end of most glossary definitions, alphas were added for source reference;

3. a diagram is included that attempts to display how the various GROUPS are related to one another, and;

4. the last page is an alphabetical list of acronyms that are numerically cross-referenced to the glossary terms.

GROUPS

1. INTERAGENCY OFFICE OF FORESTRY AND ECONOMIC DEVELOPMENT - Authorized by the White House. Director Tom Tuchmann. To be located in Portland, Oregon. Sunset in two years. Director will oversee the Regional Interagency Executive Committee (REIC) and the Community Economic Revitalization Team (CERT). Director serves as liaison to the Interagency Executive Committee in Washington D.C. and Multi-agency Command and serves as the Administrations representative on all issues relating to the implementation of the plan. All agency personnel to give Director full cooperation. [g,h]

2. NATIONAL INTERAGENCY STEERING COMMITTEE - or "NISC". A group based in Washington D.C. to establish overall policies governing prompt coordination and effective implementation of the President's Plan. This committee will report directly to the various Department Secretarys and Administrators. The authority for the ISC and the RIEC comes from the White House Office of Environmental Policy.

A Memorandum of Understanding for Forest Ecosystem Management was signed by the various Secretarys and Administrators which established a framework for cooperative planning, improved decision making, and coordinated implementation of the forest ecosystem management component of the President's Plan. [c,f]

3. REGIONAL INTERAGENCY EXECUTIVE COMMITTEE - or "RIEC". Regional or state heads of the various agencies such as the USFS (ex. John Lowe), BLM, USFWS, EPA, and NMFS. Located in Portland. This committee makes decisions regarding implementation of the President's Plan. The RIEC is guided by the National Interagency Steering Committee (NISC) in Washington D.C. John Lowe, Regional Forester is the FS representative. [c, f]

4. REGIONAL ECOSYSTEM OFFICE - or "REO". Located in Portland. Acting Director George Smith from the BIA starting January 10th 1994. This office will continue the concepts of the IIT. The IIT will no longer exist as an entity. The REO will consist of agency representatives from the BLM, USFS, BIA, USFWS, EPA and NMFS with four Information Resource Management (IRM) positions plus administrative support. Phone (503) 326-7600. [c]

5. INTERIM INTERAGENCY IMPLEMENTATION TEAM - Commonly referred to as the IIT. Located in Portland. Consists of representatives from various agencies whose primary role is to coordinate and facilitate implementation decisions, prepare implementation plans, establish necessary working teams, make recommendations to the Regional Interagency Executive Committee (RIEC), and to take whatever actions are needed to implement policy and decisions flowing from the RIEC. The IIT established 18 working groups which are addressing various topics related to implementation of the President's Plan. The working groups are made up of various agency representatives. The IIT is a "sunset" team that will evolve into the Regional Ecosystem Office, (REO) in January, 1994. [b]

6. PROVINCIAL INTERAGENCY EXECUTIVE COMMITTEE - or "PIEC". Heads of various agencies such as the USFS and BLM located at the Povincial level with authority to make respective agency decisions within the province. Should include appropriate non-federal provincial stakeholders. Will include states, tribes and local governments and other federal agencies as appropriate. Will invite participation of states in assessing related ecosystem problems and necessary actions for state and private lands in the province and representation from local governments in assessing economic impacts and opportunities. Tribes with ceded lands in the province will also be invited to participate. PIEC's will report to the REO. Once PIEC's are established, they will establish interagency technical teams that will be operated under PIEC guidance; however the PIEC is accountable and responsible for fullfilling it's assigned responsibilities. There needs to be close coordination between adjacent PIEC's. [d,o]

7. SCIENTIFIC ADVISORY GROUP - or "SAG". A small group of scientists selected from the larger group who participated in the development of the FEMAT Report. Located in Portland. The IIT refers questions of scientific concern regarding FEMAT intent and clarification to the SAG when preparing implementation plans. [e]

8. RESEARCH AND MONITORING COMMITTEE - Referred to in the interagency Memorandum of Understanding (MOU), for implementation of the President's Plan. Composed of research scientists and managers from a variety of disciplines that will provide advice to the REIC through the REO on implementation of the Forest Plan including adaptive management areas and watershed assessments. [c]

9. INTERAGENCY RESOURCE INFORMATION COORDINATING COUNCIL - or "IRICC". This council includes representatives from various participating agencies. The purpose is to address technical and policy issues and recommendations in the utilization of resource information, inter-governmental communications and data sharing, public access, standards, data compatibility, GIS systems, and related technologies. IRICC recommendations will be made to the RIEC thorough the REO. [i,o]

9. LOCAL INTERAGENCY INTERDISCIPLINARY TEAMS - or "LIITs". Teams formed by National Forests and BLM districts to identify priority watersheds where restoration work can be completed in fiscal year 1994. The LIITs will conduct Preliminary Watershed Restoration Assessments (PWRAs) and submit package summaries to Province Level Interagency Teams (PLITs). [j]

10. REGIONAL OVERSIGHT TEAM - A team established to coordinate the non-Owl Pilot Watershed Analysis Program. This team will ensure consistency between the Owl and non-Owl forests. A FS entity maintained in the RO ERW office. [n]

11. PROVINCE LEVEL INTERAGENCY TEAMS - or "PLITs". Teams that will select watershed restoration projects in coordination with the state Community Economic Revitalization Teams (CERTs). [j]

12. PILOT ANALYSIS COORDINATION TEAM - or "PACT". May also be called the "Watershed Analysis Coordinating Team" or "WACT" (Formally called the Interagency Watershed Analysis Implementation Team in the IIT Bulletin #1). Will consist of a core group of 6-8 full-time federal agency representatives plus other part-time federal, state, and tribal members. This group will initiate and guide a pilot watershed analysis program that leads to an effective long term process and develop and implement the Preliminary Watershed Restoration Analysis (PRWA) and determines application in FY 94. Reports to the REO and provides advise to the PRWA and pilot watershed analysis teams [i,o]

13. COMMUNITY ECONOMIC REVITALIZATION TEAMS - or "CERTs". A team affiliated with the community assistance part of the President's Plan. Will be helping in selection of watershed restoration projects. There is a Regional (RCERT), State (SCERT) and there could be provincial and local CERTs. [j]

14. EIS TEAM - a team that is developing and writing the Final Supplemental Environmental Impact Statement for the Spotted Owl et. al. Final SEIS is to be published Feb. 28, 1994. Plan and ROD to be published March 31, 1994. Team headed up by Bob Jacobs.

1. FEMAT - "Forest Ecosystem Management Assessment Team." This team was comprised of some 50 people from various federal agencies. Together they developed the report titled "Forest Ecosystem: An Ecological, Economic, and Social Assessment" commonly referred to as "the FEMAT Report." The team leader was Jack Ward Thomas. The FEMAT report was presented to the Office of Environmental Policy at the White House on July 1, 1993. The FEMAT report is Appendix A of the Draft Supplemental Environmental Impact Statement (DSEIS), on Management for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.

2. THE PRESIDENT'S PLAN - Option 9 of FEMAT. Alternative 9 and the preferred alternative of the DSEIS. Sometimes referred to as the Forest Plan, (not to be confused with the National Forest Management Act of 1976 (NFMA) definition of a Forest Plan.) The other part of the President's Plan includes local community economic revitalization. A Plan (containing management direction specifically related to the President's selected option and seperate from the SFEIS) may be published at the time the ROD is published.[a]

3. PROVINCE - A geographic area having a similar set of biophysical characteristics and processess due to effects of climate and geology which result in patterns of soils and broad scale plant communities. Habitat patterns, wildlife distributions, and historical land use patterns may differ significantly from those of adjacent provinces. NOTE: Provinces and boundaries have been established for province planning for the "westside". Provinces have been mapped using physical watershed boundaries to follow an established hierarchy and to facilitate aggragation of watersheds. Eastside provinces will be established thorough the "Eastside Ecosystem Management Project" at Walla Walla WA. [m,d,o]

4. PRELIMINARY WATERSHED RESTORATION ASSESSMENTS - or "PWRAs". An assessment that will identify potential restoration projects and support project proposals. This assessment resembles the intent of the Federal Guide for Pilot Watersheds for FY 1994. Projects will be submitted to the PIECs. Projects will need to conform to NEPA, ESA and flow through the tentative selection process with the SCERT at the Province level. [j,o]

5. FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT AND RECORD OF DECISION - or "FSEIS" and "ROD". The FSEIS supplements the Final Environmental Impact Statement on Management of the Northern Spotted Owl in the National Forests (USFS, 1/92). The Draft SEIS was published in July of 1993. The FSEIS is proposed to be published on February 28, 1994. The ROD for the FSEIS is to be published on March 31, 1994 and will amend the Regional Guide and respective Forest Plans.

6. NATIONAL FOREST MANAGEMENT ACT or "NFMA." - An Act passed by Congress in 1976 that requires a Forest Plan for each National Forest. This law is still in effect and is not changed by the FEMAT Report, the final environmental impact statement or the Record of Decision. However, new draft regulations are planned to be published in February of 1994 that incorporates more information and detail on planning for ecosystem based management and the amendment and revision process. Unless and until the law is changed by Congress, Forest

Plans will continue to exist and will be updated as the need to change dictates.

7. FOREST PLANS - By law (NFMA), each unit (Forest) of the National Forest system is to have a Forest Plan. Forest Plans (and the Regional Guide) will be amended by the SFEIS ROD. Region 6 will review each Forest Plan as amended by the Record of Decision and assess need to change issues as determined by the Forest Supervisor and Regional Forester per 36 CFR 219.10 and 12.

8. FOREST PLAN ADJUSTMENT STRATEGY - or FPAS. A Region 6 strategy to adjust (non-significant and significant amendments and revisions) Forest Plans based on monitoring and evaluation of new information and changed conditions. Developed and approved by the Regional Forester in 1992. Remains relevant as FPAS is based on planning convention, NFMA regulations and NEPA. Implementation is delayed pending outcomes of the SFEIS and ROD for the President's Plan for westside forests and the Eastside Ecosystem Management Project for eastside forests. [k]

9. FOREST PLAN RECONCILIATION DOCUMENT - or "FPRD." A document that displays the Forest Plan (allocations, standards and guidelines and opportunities) as it was amendmened by the SFEIS ROD. Each affected National Forest will develop such a document for public information and management guidance. NEPA is not anticipated unless the Forest should propose a change to a plan component that was not affected by the FSEIS ROD. [l]

10. RIVER BASIN - A part of a river basin, or the entire drainage within a province where restoration analysis can take place. An area, defined by physical boundaries, in which all surface water flows to a common point. River basins are associated with large river systems and are typically 1000's of square miles in size. Example: Willamette river basin, (3rd field). Because they are large, some river basins are synonomous with Provinces as defined for the FY 1994 restoration strategy. For organizational purposes, river basins may be subdivided into sub-basins....example: South Fork of McKenzie River (4th field) is a sub-basin of the Willamette River basin.

11. WATERSHED - A watershed is an area within a river basin and in which all surface water flows to a common point. There are many watersheds within a river basin. Watershed areas as defined in FEMAT, range from 20 to 200 square miles in size, (5th field). For analysis purposes, FEMAT identified some watersheds as Key and further defined them as Tier I or Tier II. (See FEMAT Report page V-74).

12. FEDERAL AGENCY GUIDE, PILOT WATERSHED ANALYSIS - A procedural guide developed by Federal agencies to help facilitate meeting meeting FEMAT watershed analysis requirements. The guide watershed analysis is not a decision process. Watershed analysis is an intermediate level of analysis which derives information from larger scale (river basin, provincial, Forest, District) plans and which provides information to smaller scale, site analyses, both of which are formal decision points under NEPA. Watershed analysis will also provide information to river basin planning and receive information from site analysis. This guide (version 1.2) was published in January of 1994.

[a] -"The FOREST PLAN for a Sustainable Economy and a Sustainable Environment" by President Clinton and Vice President Gore, July 1, 1993, Washington, D.C., 7 pages.

- Draft Supplemental Enviromental Impact Statement on "Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl." July, 1993.

[b] - 1200 memo July 30, 1993, Interagency Implementation Team.

[c] - Memorandum of Understanding among five parties: The Director of the White House on Enviromental Policy, the Secretary's of Agriculture and Interior, the Administrator of the EPA, and the Under Secretary of Commerce for Oceans and Atomosphere. MOU circa November 1, 1993.

[d] - 5400/3500, 1730 BLM January 21, 1994 memo, Establishment of Provincial Teams.

[e] - Interagency memo of August 16, 1993 requesting participation of certain individuals to be on a "Scientific Advisory Group". This group is to make interpretations of, and advise on the FEMAT Report to the Interagency Implementation Team.

[f] - Memorandum to Secretary Babbitt, Secretary Espy, Secretary Brown and Administrator Browner from Katie McGinty, Director, Office on Environmental Policy, White House. November 4, 1993.

[g] - Memorandum to various Secretarys and administrators and others from Roy Neel, Deputy Chief of Staff, the White House. November 29, 1993.

[h] - News release on item that the White House is to establish Regional Office in Portland to Oversee Implementation of Forest Plan. December 14, 1993.

[i] - IIT Information Bulletin #1, 12/30/93, page 2.

[j] - 2500 (7220 BLM) RF memo of December 29, 1993, Fiscal Year 1994 Watershed Restoration Strategy.

[k] - 1920 RF memo of 12/10/92.

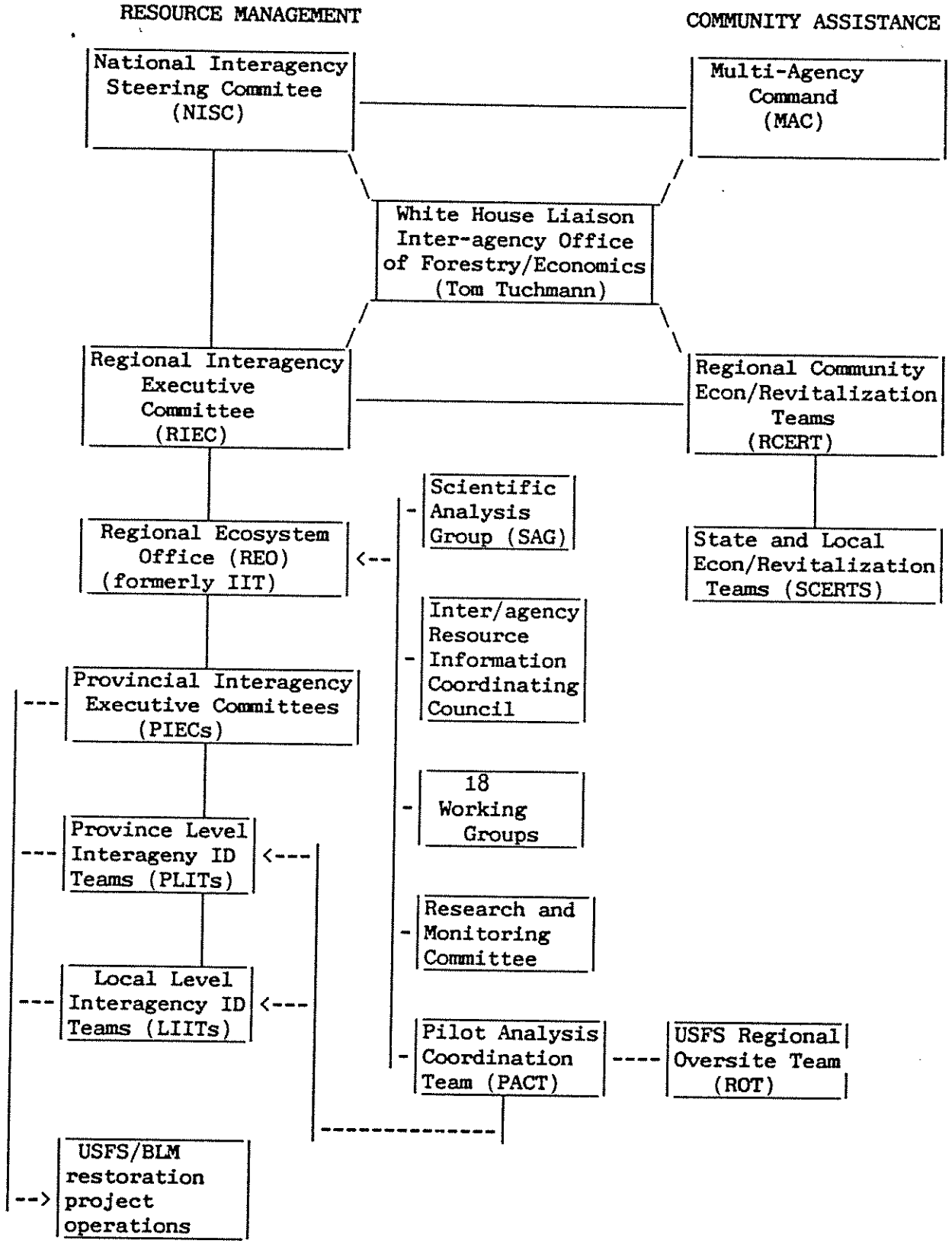
[l] - Draft Charter developed by Regional Office Strategic Planning, 1/5/94. Document to blend President's Plan and Forest Plans.

[m] - FEMAT report page IX-26.

[n] - 6520 RF memo of January 7, 1994, FY 1994 Draft Final Allocation.

[o] - Regional Ecosystem Office (Interagency Implementation Team Bulletin #2.

COMPONENTS OF THE STRATEGY TO IMPLEMENT THE PRESIDENT'S PLAN



CERT	(Group-13)
EIS Team	(Group-14)
FEMAT	(Thing-1)
FPAS	(Thing-8)
FPRD	(Thing-9)
FSEIS	(Thing-5)
IIT	(Group-5)
IRICC	(Group-9)
LIIT	(Group-9)
NFMA	(Thing-6)
NISC	(Group-2)
PACT	(Group-12)
PIEC	(Group-6)
PLIT	(Group-11)
PRWA	(Thing-4)
REO	(Group-4)
RIEC	(Group-3)
ROD	(Thing-5)
ROT	(Group-10)
SAG	(Group-8)

APPENDIX # 2

OTHER SRRC RESTORATION ACTIVITIES

Listed below are other activities with SRRC involvement:

These activities are directly tied to the overall Salmon River Community Restoration Program,

There were 228 -In Kind Contribution Days associated with these activities where SRRC was involved. Forty of these days were provided by the SRRC Coordinator. Funding will be provided to the Coordinator via his salary. There were 188-In Kind Contribution person days provided by the community members participating in the SRRC activities.

I. Public Education/ Networking:

A) The Coordinator and others from the SRRC helped to develop a Jobs in the Woods commitee of the Siskiyou Rountable. This commitee is a consortium of watershed restoration groups, the tribes, land management agencies, educators, private contractors, employment development agencies, foresters, resource user groups- (logging, mining, recreation, etc) biologists, and others. Interaction between the various players has helped provide insight to the Forest Service and other land managing agencies as they implement the President's Forest Plan. Through this group opportunities and difficulties connected with local communities who are experiencing employment reduction associated with commercial natural resource output (logging, grazing, fishing, etc.) were identified and discussed. (13 person days)

B) SRRC staff and volunteers attended various workshops and meetings which focussed on several aspects of small business opportunities associated with Forest Service partnerships, contracts and other forms of agreements. Meetings and workshops were with the Forest Service, Women's Economic Growth, and with other community based restoration groups and businesses.
(11 Person Days)

C) The SRRC staff and active members of the SRRC attended several workshops and conferences to further their knowledge about rehabilitating damaged habitats in the Salmon River sub-basin. Some of these conferences and workshops include a: 1) Watershed Analysis Workshop 2) Roads Evaluation and Rehabilitation Workshop 3) Geographical Information System Workshop, 4) Grantwriters Workshop, 5) and Presidents Forest Plan Workshop.
(18 person days)

D) The SRRC coordinator and others associated with the SRRC attended various Watershed Analysis meetings connected with the Salmon River Key Watershed. SRRC provided input at the these events and through subsequent telephone discussions and meetings. SRRC has been interested in the outcome of the Watershed Analysis

because it provides prioritized sites which SRRC sees as opportunities to help rehabilitate. (7 person days) .

E) The coordinator gave 4 presentations, separate from the workshops, at the Forks of Salmon school and donated 2 days of planning and coordinating to this effort. In addition several SRRC participants assisted at the Forks of Salmon School's Adopt-a- Watershed Project. (25 In Kind Contribution Person Days)

F) The SRRC coordinator held a field trip on catastrophic fire. The coordinator and 4 other participants spent a day on the ground reviewing the effects of the Specimen Fire. Watershed rehabilitation, fire suppression, logging, fuels management and the role fire plays in the forest were some areas focussed on during this field trip. SRRC will work with the Forest Service in the Specimen Fire area by providing volunteers to the Forest Service for such activities as treeplanting, erosion control, native plant propagation, monitoring among others.
(4 In-Kind Contribution Person Days)

G) The SRRC Coordinator attended 3 meetings with the other sub-basin CRMP coordinators to share experiences and information and to provide feed back to each other.
(3 In Kind Contribution Person Days)

H) The Coordinator and 3 other SRRC volunteers gave an SRRC presentation and performed the Salmon River "Upriver Down" Play for the Para Los Ninos Camp at Somes Bar. Several inner city and local children attended and participated in the play.
(4 In Kind Contribution Days)

I) The SRRC held a mini-workshop on 11/17/93 that focussed on teaching community members how to write grants for watershed rehabilitation and protection as well as for economic development in the community. (6 person days)

J) The SRRC helped sponsor a musical festival (Cotton Woodstock) on June 17,18,& 19. This was a benefit to raise finding for the Salmon River Restoration Council. Although there was not a lot of profit after expenses, a number of people were exposed to the SRRC's activities.

K) The SRRC Coordinator and others from the SRRC attended the Klamath Basin Fisheries Symposium in Eureka on March 23-24. The SRRC provided participated in the discussions and networked with various tribes, groups, agencies and individuals from the region.

L) The SRRC has continued to enlist community members to perform "Citizens Watch" activities. Several perspective poacher were discouraged and actual poaching incidences were reported.

Appendix # 2 CONTINUED

III) SRRC Project Development/Funded Projects

A) The SRRC developed and submitted several project proposals Northwest Economic Adjustment Initiative (NWEAI) funding process. These proposals focussed on: riparian nursery development, watershed restoration crews, equipment needed by SRRC, Habitat Inventory- Documenting local information, and local landfill alternatives. SRRC held a workshop to provide technical assistance to various members of the community for project proposal development. (30 In-Kind Person Days)

B) The SRRC received funding to perform a Salmon River Riparian Nursery Feasibility Study. This study will identify the feasibility for a riparian plant nursery located in the Salmon River that would focus on riparian habitat revegetation. The project coordinators have visited several nursery around the region that specialize in native plants. A final report of the studies findings will be completed by July. This Report will include propagation techniques for several native plant species targeted for riparian habitat rehabilitation. A copy will be provided to Fish and Wildlife Service and the Klamath River Fisheries Task Force. (NOT INCLUDED IN THE IN-KIND CONTRIBUTION TALLY FOR THIS COOPERATIVE AGREEMENT)

C). The Coordinator has promoted the Stewardship Incentive (SIP) habitat rehabilitation programs to private landowners in the Salmon River sub-basin. He has worked with the California Department of Forestry, a local Registered Professional Forester, and several local landowners to develop project proposals. There are three projects currently in process. Two will have plans and work done on single pieces of land. The third SIP project will incorporate several adjacent private parcels of land into one plan. The SIP and other sources are becoming a great mechanism for local private landowners to rehabilitate their land in the Salmon River. (12 person days)

D) The Salmon River Ranger District and the SRRC successfully engaged in a Challenge Cost-Share Agreement for the Collection and Propagation of Native Plant Materials. (Agreement # 54-9) Through this agreement the SRRC collected and propagated several species of native plants to be used for habitat rehabilitation purposes. Seed collection and cuttings were taken from native plant species that includes: Lupin, Buck Lotus, Willow, Manzanita, Blackfruit Dogwood, Mock Orange, Ca. Fescue Grass, Wild Blue Rye Grass, Onion Grass, and Hair Grass. (90 person days were provided by SRRC to the Forest Service, NOT INCLUDED IN THE IN-KIND CONTRIBUTION TALLY FOR THIS COOPERATIVE AGREEMENT)

E) The SRRC submitted 2 project proposals to the Klamath River Fisheries Task Force for Fiscal Year 1995. (8 person days)

Appendix # 2 cont.

II. Monitoring/Inventory:

A) Four community members involved in the SRRC participated in the July 1994 Spring Chinook Salmon and Summer Steelhead population survey for 2 days. Four Community members also participated in the August Spring Chinook and Summer Steelhead survey for one day. After this event SRRC hosted a community dinner with Trout Unlimited. (12 Volunteer Person Days)

B) Three SRRC activists participated in 1994 Fall Chinook REDD and Carcass Training, Population Survey and Evaluation. Involved in this activity was: two days of training each, conducting the REDD and Carcass survey two days a week for six weeks, and one day each for evaluation. (45 In Kind Contribution Person Days)

C) Volunteers from the Salmon River Restoration Council performed V-Star monitoring activities in Plummer Creek and Nordhiemer Creek. These streams were remote and required the surveyors to camp out. The participants learned several different measurement techniques involved in aquatic habitat surveying. This work was a continuation to Workshops and Workdays held previously. (18 In-Kind Contribution Days)

D) The Coordinator was assisted by various community members in the development of a Salmon River Roads Inventory which has initiated inventorying erosion problems associated with roads. An initial identification of where water crosses the roads in the sub-basin was recorded on a map. The SRRC has shared this information with the Forest Service. (5 Days)

E) The SRRC Coordinator provided valuable assistance to the CDF&FP, the Forest Service, and the Siskiyou County Sheriffs Department, and the Forks of Salmon Fire and Rescue during the Specimen Fire. Through an extensive inventory of local residencies, the SRRC coordinator helped to develop a Sawyers Bar Structure Protection and Evacuation Plan. This plan will be updated and adopted by the community as one of SRRC's 1995 activities. (5 days)

F) SRRC is developing for the Forks of Salmon Fire and Rescue a fire prevention and structure protection inventory of all of the residencies in the Salmon River. Access, fuels, floor plans, water supplies, and other information will be collected and utilized. This will increase the ability for fire to be controlled in the Salmon River sub-basin. (4 person days)

G) The SRRC has been monitoring the Zane landing and associated rehabiltation project. Native grass seeds that SRRC collected were used to stabilize the large excavation. The SRRC will be setting up photo points to monitor the Zane site.

Appendices # 3

HANDOUTS, POSTERS, PLANNING MEETING NOTICES, ETC.

This section comprises of handouts, posters, planning meeting notices, special function announcements, and a map of a Workday site. The handouts were used and in some cases reused at the various Workshops and Workdays. The Posters were put up at the various designated points.

Appendices #3 A are Posters - " This Community is Committed to Restoring and PROTECTING Salmon River Fisheries" and " The Fish are in hot Water" have been used at local bulletin boards and at the distribution centers.

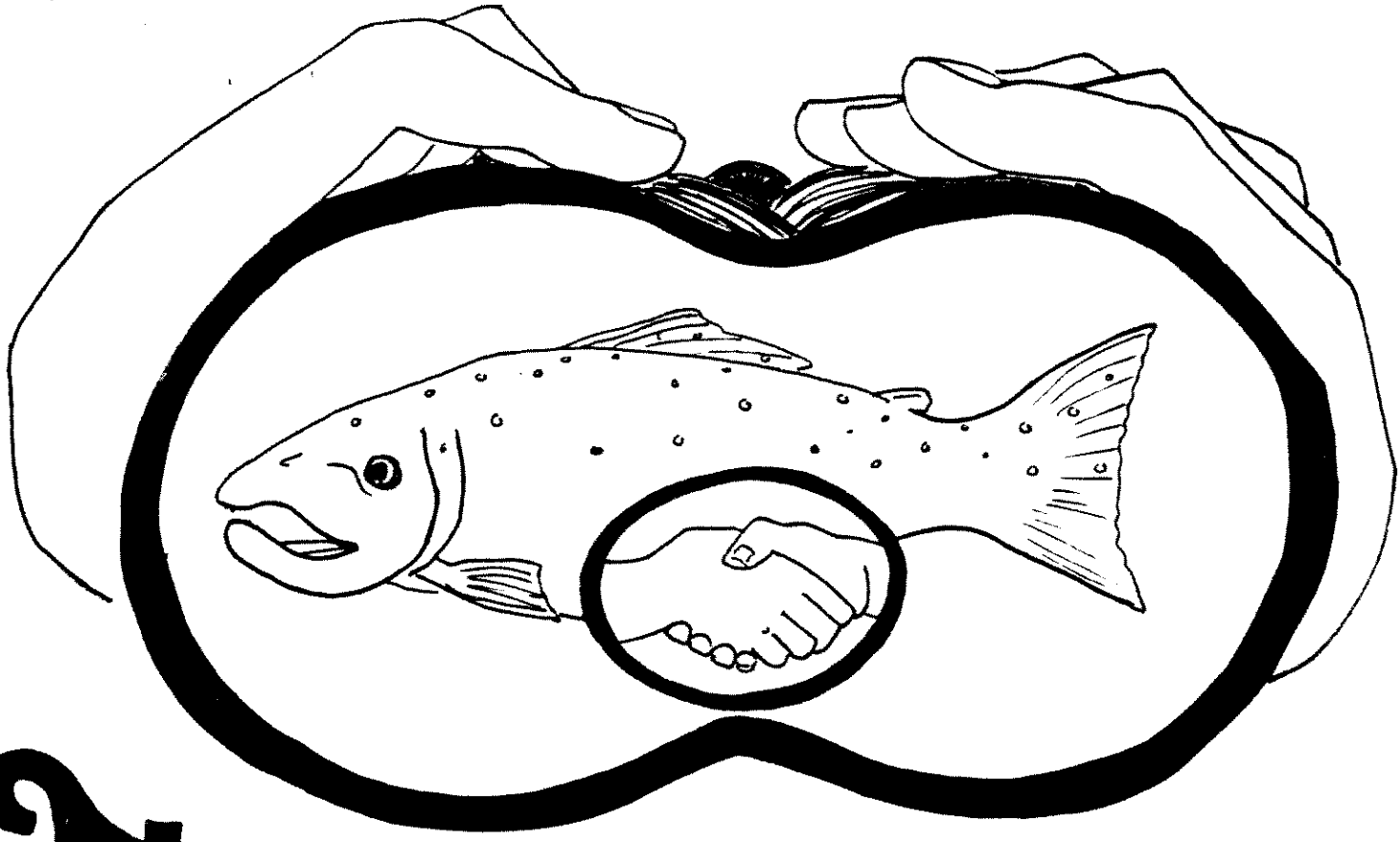
Appendices # 3 B is a Poster for an educational music benefit for the SRRC - Cottonwoodstock

Appendices # 3 C are examples of the Notices that were sent out to the mailing list for the planning meetings. These notices were also posted at the different distribution points.

Appendices # 3 D is an example of a handout that was used in the Workshops, Posted at the distribution points, and used to update interested parties through the mail. Some of the Workshop Notices and Packages were used as posters and handouts aside from the Workshops.

Appendices # 3 E is an examples of Workshop/Workday notification.

3A



This community is committed to restoring and PROTECTING Salmon River Fisheries

On the Salmon River The fish are in hot water!

This summer the water temperature reached a deadly 78˚.
Ideal temperature for the fish is in the 50˚'s.
The spring Chinook and Steelhead eggs start to die at 72˚.

The estimated count from July, 1994 was only 38 Steelhead (down from 90 in July '93). 700 Spring Chinook Salmon

Every fish matters now to the gene pool.
Are we looking at extinction?!

On the day of the fish count 37 adult Spring Chinook carcasses were observed and countless dead juveniles were seen.

Unless the few fish that return are left to spawn, there will be
NO MORE WILD SALMON HERE

Salmon River Restoration Council

3-B

COTTON-WOODSTOCK

June 17, 18, 19, 1994

Jam'in for Salmon Music Festival

Saturday:

Lee Super

Those Guys

Sonny Boy &
Road House

Sunday:

Salmon River
Super Fines

Nitecrawlers

This is a benefit concert for the Salmon River Restoration Council.

To assist us in producing this Music Festival please ***purchase your tickets now!*** Send a self-addressed stamped envelope and your check or money order for $15.00 each, $25.00 family (How many?), payable to Cottonwood Creek Ranch, P.O. Box 141, Fort Jones, CA 96032, or come by our office, 12036 Main St., Fort Jones, California. Office hours 1pm - 7pm, M-F. For information, phone **916-468-2814**. A map to the ranch will be with your ticket. There are still campsites available. Come enjoy family fun, friendly people and lots of ***Good Music!***

3C

S.R.R.C.

We need your input on projects that are already being developed for the Siskiyou Bio Group project proposals.

These projects are for...

-Business & Industry
-Community Infrastructure
-Workers & Family
-Ecosystem Investment
-Recreation/Tourism/Special

Wednesday
November 17th
3-8 p.m.
6:30 Potluck

Forks School Center Classroom

3-D

Feature

Stabilizing Forest Roads to Help Restore Fish Habitats: A Northwest Washington Example

R. Dennis Harr and Roger A. Nichols

ABSTRACT

As part of total watershed rehabilitation to improve fish habitats and water quality and to reduce flood hazards, 30–40-year-old, unused, largely impassable roads and landings in the Canyon Creek watershed within the North Fork Nooksack River watershed were decommissioned by stabilizing fills, removing stream crossings, recontouring slopes, and reestablishing drainage patterns to reduce the landslide hazards. The average cost for decommissioning a road was $3,500 per kilometer (for earthmoving by excavator and bulldozer) where considerable amounts of alder brush were cleared and sidecast material was pulled back upslope. Lower costs were associated with lesser earthmoving jobs; the highest costs resulted when fills at stream crossings or landings had to be removed. In contrast to unused roads not treated, decommissioned roads and landings were largely undamaged by rain-on-snow runoff that produced a 50-year flood in the North Fork Nooksack River in November 1989 and sustained little damage during rain-on-snow runoff in November 1990 that severely damaged main haul roads in northwest Washington.

Introduction

Timber harvest often has conflicted with quantity and quality of fish habitats where harvest activities or related road construction has led to unstable soil masses. Such is the case in Canyon Creek, a tributary to the North Fork Nooksack River in northwestern Washington. Most of the Canyon Creek watershed is located on land administered by the Mount Baker-Snoqualmie National Forest.

A 1985 inventory revealed that landslides associated with forest roads have a failure rate (number of landslides divided by area and number of years) disproportionate to the land area roads occupy (Peak Northwest 1986). During 1968 to 1983 the failure rate for roads was 110 times greater than that of undisturbed forest and six times greater than the rate for logged areas. Most of these forest roads had been constructed in the 1950s and 1960s and, in contrast to more recently constructed roads, failure often resulted from poor design, location, and construction methods. Midslope locations were common, and excavated material had been sidecast (dumped over the edge of the road). Most of these roads were covered with alder trees and brush and had not received maintenance for perhaps 10–15 years.

Since the early 1950s, sedimentation caused by logging activities has progressively degraded habitats for anadromous fish in the Nooksack River system (Schuett-Hames and Schuett-Hames 1987). Sediment has not only inundated spawning gravel and smothered salmon eggs but also has caused stream channels to shift and isolate incubating salmon eggs from flowing water. Sediment-filled pools have reduced juvenile rearing habitat and adult holding habitat. The Nooksack native coho salmon, *Oncorhynchus kisutch*, stock is extinct, and the Nooksack spring race of chinook salmon, *O. tshawytscha*, has a high risk of extinction (Nehlsen et al. 1991) because by 1986, 70% of its spawning habitat had been lost (Schuett-Hames and Schuett-Hames 1987). Restoring the critically depressed spring run of the Nooksack River chinook salmon has been the goal of a rehabilitation program undertaken jointly by federal and state agencies and the Nooksack and Lummi Indian tribes. In 1987, largely because of concern for the cumulative effects of timber harvest on fish habitats, the U.S. Forest Service placed a moratorium on roadbuilding and logging in the Canyon Creek watershed until the condition of the watershed and the stream improved.

In the Pacific Northwest, fisheries biologists are assuming a role in fish habitat restoration that extends far beyond instream projects. The championing of watershed restoration may be left to fisheries biologists, and their efforts will be more successful if their familiarity with methods, equipment, and costs of restoration activities enables them to argue more effectively.

Description of Area

Canyon Creek, a 21-km-long 5th-order stream draining a 60-km² basin, flows into the North Fork Nooksack River 37 km east-northeast of Bellingham, Washington, just south of the Canadian border. Soils in the Canyon Creek watershed are derived from overconsolidated till, recessional outwash, or lake deposits. Throughout the middle and upper basin, shallow, noncohesive soils derived from recessional outwash have been deposited in numerous steep-gradient streams that do not support fish but transport sediment to downstream fish habitats. Except for step-like topography associated with earthflows in the lower-middle part of the basin, sideslope gradients exceed 35%, and numerous landslides have occurred. The 1985 inventory iden-

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tified 111 landslides that had occurred between 1940 and 1983 (Peak Northwest 1986).

About a third of the Canyon Creek basin lies within the transient snow zone, the range of middle elevations where both rain and snow are common (Harr 1981). U.S. Forest Service records, accounts in local newspapers, and other sources of information indicate most landslides and high streamflows in Canyon Creek have been associated with snowmelt during rainfall. Recent research shows that clear-cut logging, by increasing snow accumulation and the rate of melt, can increase the rate of water delivery to soil over what commonly occurs under forest (Harr 1986; Berris and Harr 1987). Increased water delivery can trigger landslides on steep, marginally stable slopes, particularly older road fills and stream crossings constructed before the mid-1970s.

Logging along Canyon Creek from the mid-1950s through the early 1970s, coupled with extremely high peak flows resulting from landslide-related floods, has led to insufficient large woody debris to maintain the number of deep pools required for holding habitat for adult chinook salmon, to trap sediment, and to protect streambanks from erosion. In some cases, the high flows have been caused by the failure of temporary dams formed by landslide deposits (dambreak floods) or by a moving dam of large woody debris.

Lower Canyon Creek is inhabited primarily by spring chinook but also by coho salmon, *O. kisutch;* chum salmon, *O. keta;* and pink salmon, *O. gorbuscha;* as well as by steelhead trout, *O. mykiss;* cutthroat trout, *O. clarki;* and Dolly Varden char, *Salvelinus malma.*

Watershed Rehabilitation

A moratorium on logging and roadbuilding does not reduce future delivery of sediment from past road construction and timber harvest. Any program to rehabilitate fish habitats in Canyon Creek, therefore, had to include reducing failures of old roads. To accomplish this, the U.S. Forest Service adopted a strategy of reducing landslide hazards. The sediment-reduction procedure is part of a total watershed rehabilitation program that includes reconstructing active roads, placing instream structures to deflect streamflow from erodible banks, managing large woody debris in the stream, and improving road maintenance. This paper focuses on reducing sediment from inactive roads and landings.

Rehabilitation of the Canyon Creek watershed began with a landslide inventory that related type and size of landslide to age of road, its position on the slope, and specific road-related problems such as poorly spaced or plugged relief culverts, culvert outflow onto unstable soil, unstable sidecast material, and unstable stream crossings (Peak Northwest 1986). Collectively, the information in the Canyon Creek landslide inventory pointed to roads constructed in the 1950s and 1960s as having the greatest chance of failing. The inventory also showed the site characteristics likely to result in a landslide that would be most damaging to fish habitats in Canyon Creek.

Road Condition Survey

The first step in the sediment-reduction procedure was a road log and condition survey of all roads. This consisted of closely examining every road in the watershed for its rehabilitation needs, marking each need by road milepost, and providing a narrative to describe the needed work in detail. An experienced surveyor considered results from the landslide inventory in deciding what work was needed. Work was summarized by road segment, costs were estimated, and work was prioritized in the field by a person experienced with road-related landslides and their potential for damaging fish habitats.

In all, 97 km of roads were surveyed. The estimated total rehabilitation cost was $179,000 in 1988. This figure has increased substantially since the rain-on-snow runoff of November 1989.

Some of the work to reduce sediment delivery to the Canyon Creek stream system involves fairly common procedures such as installing additional ditch-relief culverts and larger culverts at stream crossings, cleaning ditches, replacing culverts to improve gradient or alignment, and installing flexible downpipes on culverts. Active roads (those being actively used for hauling logs or for recreational access) are targeted for this work. Other procedures, including removing culverts, installing waterbars, and closing roads, were used on inactive roads (those no longer used for commercial hauling but still used for fire suppression, forest management activities, etc.). Still other work involved decommissioning 30–40-year-old roads. Decommissioning means reducing erosion hazard by controlling surface and subsurface drainage, pulling sidecast material upslope onto the stable portion of the road surface, and

removing fill material in stream crossings to reduce the likelihood that they will contribute sediment to Canyon Creek. Pulling sidecast is the major difference between decommissioning a road and preparing it for abandonment in accordance with the Washington Forest Practices Rules (Washington State Forest Practices Board 1988).

Decommissioning Techniques

The most dramatic decommissioning work involved pulling back sidecast, reshaping roads and landings, and reestablishing natural drainage patterns. A tracked excavator was used to pull sidecast material onto the bench of the road and to construct frequent, deep waterbars (ditches dug diagonally across roads to divert water off the road surface). A small bulldozer equipped with a six-way blade then insloped (sloped the road surface away from the outer edge of the road and toward a ditch paralleling the road) and compacted this material.

Control of surface water is an essential part of the sediment-reduction program. Drainage water from waterbars was directed to natural watercourses or to areas where past landslides had already removed soil. Ditches were placed to keep water from saturating sidecast material already pulled up, piled, and compacted on the road surface. Where culverts were removed, fill slopes were sloped back to 2:1 or 1.5:1 or stepped.

On one road, landings had been constructed by sidecasting excavated material. At these landings, sidecast was replaced on the landing, and natural drainageways were reestablished. This work was similar to what was done to the roads, except the amount of material moved was considerably greater. All disturbed areas were grass-seeded and fertilized by the inspector as work progressed.

We wish to emphasize the importance of properly directing water flow on restored or decommissioned sites. During a large storm, subsurface water, as well as surface water, can quickly undo excellent work and good intentions. Because sidecast material pulled back and piled against the cutbank can fail if it becomes saturated, extreme care must be taken to ensure that water is kept away from this material. Similarly, water from culverts or waterbars must drain onto stable soil rather than onto sidecast material.

Access always will present special problems for decommissioning roads and landings. For example, the prudence of crossing unstable areas (i.e., rebuilding a failed stream crossing in order to treat additional road segments) probably always will be questioned. For the road segments described here, reducing landslide hazards far outweighed the disturbance caused by reconstructing a few failed stream crossings to reach more distant road segments needing treatment. Where isolated road segments are inaccessible to conventional equipment, other techniques such as blasting road fills at stream crossings and other areas of high hazard should be considered. In a test in July 1990, the U.S. Forest Service successfully used a Spyder walking excavator to decommission a half-mile of road that was inaccessible to other equipment. This machine, which is small enough to be ferried by helicopter, could eliminate the need to reconstruct failed stream crossings for access to distant road segments.

Similar techniques were used to rehabilitate that part of Redwood Creek watershed located in Redwood Creek National Park in northern California (Weaver et al. 1987). In the Redwood Creek case, however, another objective was to encourage the return of natural vegetation on roads, skid trails, and stream crossings. Sidecast was pulled back, the road was outsloped (sloped toward the outer edge of the road), and return of forest vegetation was encouraged through planting. In the Canyon Creek case, the intent was not to remove logging roads completely, but rather to reduce their chance of failing. In the future, decommissioned roads in the Canyon Creek watershed could be reconstructed for access for timber harvest.

Costs

Table 1 summarizes the costs of decommissioning 11 road segments. Segments A-D were grouped together because they had similar physiography and needs, they required only minimal removal of alder trees less than 150 mm in diameter and brush for access, and all had been previously waterbarred. Because of the amount of subsurface water present, all of these segments needed insloping, rebuilding of waterbars, dipping the road grade through draws, and some pulling back of sidecast. The 11.3-km of road work required 232 hours to complete. Time was divided about evenly between the excavator and bulldozer.

Segments E-G (Table 1) are grouped together because of similar physiography and needs and because they required extensive clearing of alder trees larger than 150 mm in diameter from the road surface. All these road segments required more sidecast be pulled back than did segments A-D. The 2.6-km of road work required 135 hours to complete, and, again, time was divided about evenly between the excavator and the bulldozer. The high cost for segments E-G resulted from extensive pulling back of sidecast and recontouring landings.

Segments H-K all required removing trees and brush for access, pulling sidecast, and constructing waterbars. The high cost of work on segment H was due to reconstructing a stream crossing to gain access for decommissioning higher priority, more distant sections of the road. Later, this stream crossing was decommissioned also.

Decommissioning costs ranged from $1,328 to $6,625 per

Table 1. Costs of operating equipment to decommission road segments at Canyon Creek, Washington, in 1987 and 1988.

Road segment	Length of segment (km)	Time required (h)	Cost	Cost/km
A,B,C,D[1]	11.3	232	$18,250	$1,615
E,F,G[2]	2.6	135	10,800	4,154
H[3]	3.25	240	17,445	5,368
I[3]	0.53	23	1,825	3,443
J[3]	0.24	21	1,590	6,625
K[3]	1.31	24	1,740	1,328

[1]Segments A-D had similar needs and required only minimal removal of alder trees <150 mm in diameter. These segments were decommissioned in 1987.
[2]Segments E-G had similar needs and required extensive clearing of alder trees >150 mm in diameter. These segments were decommissioned in 1987.
[3]Segments H-K all required removing trees and brush, pulling sidecast, and constructing waterbars. These segments were decommissioned in 1988.

kilometer. A cost of $3,500 per kilometer was average for roads that needed clearing of alder and pulling back of sidecast. Lower costs were associated with minimal clearing of alder and no major earthmoving jobs; highest costs resulted when landings had to be decommissioned or stream crossings had to be removed. A full-time inspector at about $18 per-hour should be included in planning and budgeting.

Administration can influence the cost of work in decommissioning roads and landings. In the work we have described, contracts were for equipment rental rather than for construction because quotes for the latter to do the same work have been about 30% higher due to bonds and other requirements. Requiring the excavator operator to be experienced likely will increase the cost of the equipment rental contract, but the higher production rate usually compensates for this. Conversely, soliciting bids and awarding contracts well in advance of the construction season also could result in lower costs.

Discussion

From the initial road condition survey to the earthmoving activities, projects like this have to compete for funds within the U.S. Forest Service as in any other forest land management organization. This method of reducing sediment is not traditional, so it requires a champion to work aggressively to ensure that the project is approved and funded. Once roads have been treated in several drainages, the program becomes established, and the work becomes more systematic. Also, documenting its successes helps the program gain recognition and support. The chance occurrence of extreme runoff and resultant damage, as occurred in November 1989, aids immeasurably in raising awareness and selling additional projects of this nature.

Effectiveness of decommissioning roads in this case study is difficult to evaluate because of the extent of the decommissioning work. From 1967 to 1983, 17 road-related landslides deposited 191,000 m³ of sediment into streams (Peak Northwest 1986) during four episodes of rain-on-snow runoff with recurrence intervals of 2 to 5 years. After decommissioning work only one road-related landslide occurred during the record rain-on-snow runoff of 1989 and 1990, and none of its sediment reached a stream.

In some cases, alder brush had not been removed from unused roads primarily because of the belief that brush will stabilize the road. Although brush may decrease surface erosion, its shallow root system does little for deep mass wasting of sidecast material, a major source of sediment from roads at Canyon Creek. Rather, brush-choked roads are likely to be forgotten and poorly maintained and will not receive due consideration as sediment-producing hazards.

The survey to determine needed work, scheduling work, and project execution all are critical steps in the sediment-reduction procedure. The person making the survey of road deficiencies must be trained or experienced in recognizing road-related problems and must be able to understand and express concerns for aquatic resources. This person should work with a construction supervisor who is experienced in estimating costs and familiar with equipment capabilities.

A self-evident yet easily overlooked aspect of this type of work is the need to have one construction supervisor follow the project through from start to finish. For the work described earlier, design, costing, and inspection were done by three different people. This required frequent orientation of the project inspector to ensure that objectives for specific sites were accomplished.

Traditional survey, design, and inspection techniques are unsuitable because of the number of small, site-specific details involved in making the project successful. Many possible treatments and variation in the road prism necessitate a full-time inspector. Preferably, the same inspector and equipment operators should be assigned to the project from beginning to end, so that as they gain experience, they become more efficient.

The work described here is only the first round at treating old, inactive, largely impassable roads and landings. Follow-up inspections and corrective actions must be made to ensure that the decommissioning work remains effective in eliminating old, unstable roads and landings as sources of sediment to streams. Proper design, execution, and follow-up inspections all help ensure that decommissioning these roads and landings will be an important part of an effective

program to reduce stream sedimentation and improve fish habitats.

Renewed and intensified environmental awareness and concern likely will carry into the next century, and society will continue to make its views known through environmental activism and the political and judicial arenas. Results of a recent court case (Wilson versus Georgia-Pacific Corporation and Washington State Department of Natural Resources, Skagit County, Washington, 86-2-00164-9 "Failure To Inspect and Maintain Logging Roads") affirm that landowners are responsible for ensuring that all roads are safe from potential landslides in the state of Washington. Apart from legal requirements to do so, properly treating old, unstable, inactive, and abandoned roads is good land stewardship.

Many of the native naturally spawning Pacific salmon and steelhead stocks that appear to be facing a high or moderate risk of extinction are endangered because of habitat loss and damage (Nehlsen et al. 1991). Where habitats have been degraded by human-induced sedimentation, reducing sediment delivery to streams will require a basin-wide approach as in the Canyon Creek case described here. In such cases, decommissioning old, unused, largely impassable roads could be a key element in reducing landslide hazard and increasing the likelihood that endangered native salmon stocks will be able to survive.

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Appendices # 4

KLAMATH FOREST ALLIANCE
SALMON RIVER RESTORATION COUNCIL
PO BOX 820
ETNA, CA. 96027

FINAL INVOICE

Billing Date: 5/20/95

Project Name: Salmon River Community Restoration Program

Cooperative Agreement Number: 14-48-0001-93517

Period Covered: 10/1/93 - 1/31/95

Budget Line Items	**Approved Amount**	**This Billing**
A) OPERATING EXPENSES		
Phone	$ 589.65	$ 600.00
Postage	$ 410.35	$ 410.35
Duplicating	$ 265.00	$ 300.00
Travel	$ 1,200.00	$ 1,200.00
B) PERSONNEL		
1. Coordinator	$ 4,000.00	$ 4,000.00
2. Secretary	$ 2,000.00	$ 2,000.00
3. Coordinator & Secretary Benefits @ 20%.	$ 1,200.00	$ 1,200.00
C) STIPEND		
Stipend for Volunteers (average $10.91 /Day)	$ 4,080.00	$ 4,100.00
D) TECHNICAL ASSISTANCE	$ 2,000.00	$ 1,900.00
Total Program Cost	$15,700.00	$15,700.00
E) ADMINISTRATIVE OVERHEAD at 25 %	$ 3,925.00	$ 3,925.00
GRAND TOTAL	**$19,625.00**	**$19,925.00**

Peter Brucker
Signature (Cooperator)

3. Duplicating - Total = $ 265.00

500 copies (poster/flyers/ Workshop announcements and information posted or left at distribution points)

1840 copies (Workshop Programs and handout materials)

980 copies (Steering Committee handouts, Restoration Proposals, Reports, etc.)

725 copies (Handout Materials at Events attended by SRRC events)

1,255 (Reports, Proposals, Displays, Maps, etc.)

5,300 copies X $.05/copy = $ 265.00

PERSONNEL COSTS:

A) Stipend for Volunteers.... Total = $ 4,100.00
6 Workshop and associated SRRC Workdays
376 people days at $10.91/day = $ 4,100.00

B) Coordinator (50 days @ $ 80/day)= $ 4,000.00

C) Secretary (25 days #@ $ 80/day)= $ 2,000.00

D) Benefits at 20 % ..... $ 1,200.00

F) Technical Assistance .....Total = $ 1,900.00

Net Total - $15,700.00

ADMINISTRATIVE COSTS: $ 3,925.00
@ 25 %

TOTAL BILLING = $19,625.00

Invoice Details for Workshop, Workdays & Planning Mtgs

OPERATING EXPENSES:

1. Phone - Total = $ 589.65

The coordinator and others associated with the SRRC made numerous phone calls in arranging the Workshops and Workdays, developing the FY 94 Task Force and other proposals, coordinating SRRC's other activities and for phone reporting to key agencies

2. Postage - Total = $ 410.35

A) A boxholder mailer was sent out to the Salmon River Community, including Somes Bar, as part of the advertising for each of the Workshops and Workdays. (225 boxholder notices per mailer) In addition for each Workshop/Workday , 25 other notices were sent to the various agencies, Karuk tribe, and interested parties not living in the Salmon River community. (250 mailed notices per Workday/Workshop)

6 Workshop/ Workdays (6) X 250 letters X $.29/letter = $ 362.50

B) 15 notices were mailed for the 11 Steering Meetings

11 Steering Commitee Meetings X 15 letters X $.29/letter =$ 47.85

SALMON RIVER RESTORATION COUNCIL
28904 SAWYERS BAR ROAD
ETNA, CA. 96027
(Phone # 916 462-4716)

SALMON RIVER RESTORATION COUNCIL COMMUNITY ACTION PLAN

I.) HISTORY

In FY 1992 the Klamath Forest Alliance (KFA) and Salmon River Concerned Citizens' (SRCC) were funded by the Klamath River Fisheries Task Force (KRFTF) through the United States Fish and Wildlife Service (US F&WS) to enlist community members to host a series of cooperative workshops for the communities situated in the Salmon River sub-basin. These well attended workshops were aimed at increasing local awareness to help protect and restore the dwindling populations of spring chinook salmon and summer steelhead returning to spawn in the Salmon River. The community response was overwhelmingly positive and illegal harvest of these species was noticeably reduced.

As a follow up to the local community's evident desire to want to protect and help the Salmon River anadromous fisheries, KFA and SRCC initiated the Salmon River Community Restoration Program. The Program directed a coordinator to enlist community members support by: 1) continuing to increase local awareness, 2) to stimulate the development of a local Salmon River fisheries restoration group (the Salmon River Restoration Council (SRRC) and Steering Commitee), 3) to cooperatively develop a local restoration plan and 4) to implement short term and long term protection and restoration measures.

Increased local awareness and broadened volunteer effort has led to a community response culminating in the formation of the Salmon River Restoration Council (SRRC). During 1993, a five person Board of Directors for SRRC volunteered and were chosen by consensus at a 4/93 publicly announced meeting. The Board works with the coordinator to develop and implement the various activities and tasks identified in the SRRC Community Action Plan.

II. OVERVIEW

The SRRC Community Action Plan (Plan) is directed to be produced by the Salmon River Community Restoration Program (FY 93 Program). The Plan aims at addressing key Salmon River watershed restoration and community related issues which emphasize increased local protection and restoration of the anadromous fisheries resource of the Salmon River. It utilizes a variety of methods and techniques to accomplish these goals such as: improving habitat awareness in the multiple resource uses in mining, grazing, recreation, logging, etc....). The Plan is an ongoing process which include periodic

amendments to reflect the current knowledge and direction.

The Plan will facilitate community members to work with the managing agencies and participants from the local tribes to perform watershed protection, restoration, and monitoring activities needed to assist the anadromous fisheries recovery and entire ecosystems of the Salmon River. The Plan promotes a more diverse local economic base which includes local fisheries and watershed restoration jobs that directly includes community participation as a key component.

Through the Plan, the SRRC will create an interperative center and business office. This center/office will be room or structure that is easily accessible to the community, the school children, specialists and the public. This location will provide a central office space for SRRC planning activities as well as for storing materials and information. It will also serve a place for the school children and the public to review and/or utilize SRRC information and equipment.

Also as a key component is the role of the local schools as a learning center for community members, both children and adults, who are participating in the Adopt-a Stream Program. In this program governmental and private specialists are providing information to the schools and local adult volunteers. These people will be adopting Nordhiemer Creek on the Main Fork of the Salmon River for which they will develop a watershed inventory and perform restoration and monitoring activities through the Adopt-A-Stream Program (See .. Plan - II, B, 2).

III. ENVIRONMENTAL SETTING

The Salmon River is one of the major sub-basins of the Klamath River Basin. The 744 square mile watershed is entirely within the Klamath National Forest. Four communities lie widely dispersed within this watershed. The Salmon River has long been known for its exceptionally high quality waters and high value fisheries as well as boasting one of the richest regions of species diversity in the temperate zones. In general, the headwaters of the Salmon River are characterized by coniferous tree associations that change with elevations. The major forest types have various understory elements that characterize them more specifically, depending on soil type and exposure.

The Salmon River region is a geologically complex area including three distinctive rock belts, which consist primarily of metasedimentary rock. There many granitic intrusions. At elevations below 4,000 feet, the granitic rock is deeply weathered and the terrain is highly dissected. These slopes are prone to shallow rapid landslides. Landsliding is a dominant landforming process in the sub-basin, and large earthflow deposits occur in the area.

The Salmon River watershed is one of the highest fire risk areas on the Klamath National Forest. It has a high natural frequency of lightening occurrence. In recent years the Offield Fire (1973) burned the area near the river confluence. The Hog Fire (1977) burned extensively in the lower North and South Fork Watersheds and in Nordheimer and Crapo Creeks. The total area was about 80,000 acres. In 1987, wildfires burned 90,900 acres in four separate areas, covering much of the Salmon River sub-basin. Fuels management, fireprotection and fire suppression will be a major focus of SRRC. Catastrophic fire is seen by SRRC as being the most likely cause of increasing negative impacts to the native anadromous fisheries resource and the rest of the aquatic and terrestrial ecosystems.

In the South Fork of the Salmon River maximum summer water temperatures frequently exceed 20 degrees Centigrade in rearing and summer holding habitat, and may result in reduced survival of fry and holding adults, especially under drought-flow conditions. (Salmon River Spring Chinook Recovery Plan - West USFS 1991). Salmon River riparian area damage suffered in the 1955 and 1964 floods was severe and most heavily damaged areas are still in poor vegetative condition. (West et al, 1990)

IV. SOCIAL SETTING

There is an estimated 300 people who live within the Salmon River watershed. The Salmon River Restoration Council is made up of members of the Salmon River community who come from a variety of economic backgrounds, such as in: logging, agriculture, mining, the public school system, county road crews, the US Forest Service, small cottage industries, among other jobs. There is a large number of people and families per capita who have traditionally relied on logging as a source of income and are now displaced from their logging jobs. There are a number of Native American families residing within the sub-basin.

V. GOALS

Long Term:

A) Enlist community members in a cooperative approach to Protect and Restore the Salmon River aquatic and terrestrial ecosystems, emphasizing the anadromous fisheries

B) Create economic stability in the community through diversifying job opportunities based on restoration and conservation of the Salmon River aquatic and terrestrial ecosystems, emphasizing the anadromous fisheries resource.

C) Promote cooperative planning, management, implementation, and educational effort between the agencies, the local tribes, and the community for protection and restoration of the Salmon

River.

Short Term:

A) Reduce the potential for the recurrence of catastrophic fire to a low level that is not likely add further significant impacts to the watershed and specifically fisheries resources.

B) Increase local awareness through educational functions and enlist community members to participate in restoration training activities.

C) Identify key resource problems and provide assistance to community members for the development and funding of restoration projects.

VI. TASKS - Short & Long Range

A) Enlist support for the Salmon River Community Restoration Program in conjunction with the Klamath River Restoration Plan.

1) Provide presentations locally, regionally, nationally which display materials and activities to educate the public about the ecosystem problems and of the local restoration and conservation solutions being offered on the Salmon River.

2) Utilize the local centers, bulletin boards, media businesses including newspapers and postal service to distribute information related to SRRC's activities and general updates.

3) Enlist members of the community to coordinate conservation and restoration activities with the managing agencies, tribes, interested organizations,

a) Communicate regularly with the involved agencies and promote their support through cooperative planning and implementation of the SRRC's activities.

1. Provide progress reports to the various agencies and tribes which identifies SRRC's assessment of recent cooperative efforts.

2. Adopt Partnership Agreements and Memorandums of Understanding to formally link SRRC with the key agencies, tribes, and other organizations. and the general public.

B) Increase local community awareness for the protection and restoration needs of the Salmon River sub-basin and fisheries resource.

1) Each year develop an annual series of workshops and workdays which focuses on identifying and addressing key current ecosystem problems in the Salmon River sub-basin.

2) Adopt-a-Stream. SRRC has been working with Salmon River elementary schools to develop the Adopt-A-Stream Project which will develop and implement a school curriculum based on conservation, restoration, and monitoring. In this curriculum the students are adopting a stream and learning monitoring techniques and performing needed restoration measures in the tributary stream. Interested community members working with SRRC are joining the school in learning and applying these monitoring and restoration techniques. Adult participants adopt their own watershed and apply their newly learned inventory, conservation, restoration and monitoring skills.

3) School activities - Adopt-a-Stream activities , poster drive, fire prevention, fish population surveys, water quality monitoring, and others .

4) Identify key watershed problems and perform volunteer and funded restoration and monitoring activities

C) Identify Resource problems and suggest Minimum Impact Resource Use Guidelines focussing on the various resource uses. Incorporate these suggested Guidelines into the CAP.

D) Identify and secure various sources of funding for education, protection, and restoration proposals which are needed to restore the damaged aquatic and terrestrial ecosystems, emphasizing the anadromous fisheries of the Salmon River.

E) Develop and inventory of the Salmon River at a sub-basin and tributary level in different Phases.

Phase 1 - Phase 1 of the SRRC's Salmon River Inventory will collect and assemble the available and relevant data from the various agency and tribal sources. The SRRC recognizes that there currently exists large amounts of data which assesses a variety of characteristics within the Salmon River ecosystem. The managing agencies and the Karuk Tribe have generated and now possess much of this data.

Phase 2 - In Phase 2 of the SRRC's Salmon River Inventory, community members will document and assemble a data base of local knowledge. In addition to the technical data that the agencies and tribes have, the SRRC recognizes that there also exists a vast amount of anecdotal and archival information that exists within the minds of the community residents.

Phase 3 - In Phase 3 of the SRRC's Salmon River Inventory, these data bases will be assembled to compare the information of the agencies, the Karuk Tribe, oral statements and archival sources. The SRRC will coordinate these data bases. In addition SRRC will coordinate with these sources to identify and generate data which is missing from the information gathered in Phases 1 and 2. The result will create a more complete and expanded data base bringing together the technical, experiential, and traditional knowledge.

F) SRRC has identified the need to become its own entity, which can formally seek and secure funding for its actions independently.

1) Attain 501 C. 3 status for the Salmon River Restoration Council.

2) Seek funding from public and private sources.

G) Annual Report

There will be an annual report created each year that outlines the years goals and activities to measure the years progress.

H) Monitoring -

SRRC has been and will continue to be involved in many types of monitoring projects.

1) Such projects as: anadromous fisheries population surveys, stream conditions, habitat conditions, and other activities.

2) SRRC will also be monitoring there restoration activities to identify the effectiveness of various projects and techniques and methods. Such as in the Adopt-a Stream or Adopt-a Road, Riparian Planting and other projects.

3) At a number of volunteer and paid monitoring events the equipment necessary to participate in these surveys was not available to the local volunteers

including the school children who showed up for the events. If equipment was available, it was often in poor shape and barely fit. As a result SRRC would like to provide various kinds of monitoring equipment needed to perform the desired monitoring efforts.