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Monitoring and Evaluation Report FY 2002

Mt. Hood National Forest
Land and Resource Management Plan

Monitoring Report

Fiscal Year 2002

Mt. Hood National Forest
Land and Resource Management Plan

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Summary

Progress Towards Sustainability on the Mt. Hood National Forest

During 1999 through 2001, the Mt. Hood National Forest, in partnership with Portland State University, participated in the Local Unit Criteria and Indicator Development (LUCID) pilot test to determine whether adopting a program of sustainability monitoring could enhance current monitoring programs at the local scale in the Forest Service. Two key outcomes of the LUCID pilot test were the use of a systems approach to monitoring and development of a locally relevant suite of criteria and indicators as the framework for the monitoring process. Using the tools and lessons learned from the LUCID test, the Mt. Hood National Forest is transitioning into a monitoring program that can answer the key sustainability questions on the Mt. Hood National Forest and build a long-term method for looking at our forest. The purpose is to enhance understanding of the ecological, social, economic and institutional conditions and trends related to the Mt. Hood National Forest in order to contribute to a continuing dialog on achieving progress in sustainable management.

The term sustainability expresses the human desire for an environment that can provide for our needs now and for future generations. Finding a specific definition of sustainability that is broadly acceptable is difficult because it is about values that vary among groups and over time. It requires decisions about what to sustain, for whom, for how long, at what cost and how. It is best achieved by optimizing the critical components of social, economic, and ecological systems. Sustainability is the understanding of all the components and their interactions. Over the past several decades, the quest for sustainability has emerged as a central theme of economic development, social

policy, and natural resource management at local, regional, national, and international levels.

There are many reasons we should care about sustainability, some of these include:

- So that the actions we take today don't compromise the choices of future generations.
- Steer us in the direction of systems thinking in our everyday management of the forests.
- To make better management decisions that would improve sustainable conditions.
- To help focus on the key issues or components helping managers to prioritize management actions and resources.
- To identify areas contributing to sustainability and areas that may be improved through adaptive management.
- Changing values and demands on our forest affects ecological carrying capacity to provide goods and services. Engaging in a dialogue with our publics about what sustainability means on our forest will help to set a common understanding and vision.
- Sustainability is addressed in the 2000 and proposed new planning rules as the overall stewardship goal for National Forest Systems.

Highlights for Key Resource Areas

Noxious Weeds

A total of 294 acres of noxious weeds were treated on the Forest in 2002. Emphasis continues to be placed on the detection of satellite populations of non-native hawkweeds that originate from the primary infestation along the Big Eddy-Ostrander transmission line west of Lolo Pass. Small populations were detected and these were manually and mechanically treated. It is expected that this situation will not change until the primary population is treated with more effective methods than mowing and cutting.

Other species targeted on the Forest include hound's tongue, knapweeds, tansy ragwort and common toadflax. Knapweed is well entrenched and established across the eastside of the forest but because of a combination of control efforts and it's habitat preferences, it has not become wide spread on the west side. Hound's-tongue continues to spread into new areas within its general area on Barlow but does not seem to be spreading out.

The total area of documented noxious weed infestation on the Mt. Hood National Forest exceeds 7,000 acres. This vastly underestimates the total area because only targeted weeds are monitored and because we do not have the financial resources to conduct a thorough survey. Species such as quack grass, voodoo grass, sheep sorrel, Canadian thistle and foxglove are typically not surveyed or treated. Tansy and Scot's broom are not tracked on the westside.

Threatened, Endangered and Sensitive (TES) Plants

Sensitive plant species found in forested habitats are likely stable at this time due to the reduced level of timber management that has occurred in the recent past. Species in non-forest habitats such as meadows, grasslands and balds continue to be vulnerable to impacts from noxious weed encroachment, off-road vehicles and dispersed recreation. Monitoring efforts in FY 2002 will continue to focus on species found in nonforested areas.

Timber/Silviculture

Prescriptions to treat forest health concerns and provide wood products have been implemented over the last several years. Timber harvest is occurring on a very small portion of the landscape. In 2002, harvest occurred on 620 acres, which equals approximately 6/100th of a percent of the total acreage of the Mt. Hood National Forest. All of the harvest occurred on lands designated as Matrix in the Northwest Forest Plan. Commercial thinning accounted for 81% of the acres treated and shelterwood harvest accounted for the remaining 19%. Overall annual growth is more than 13 times harvest and yearly mortality exceeds harvest by a factor of 8 to 1. Current and potential future forest health issues continue to be a concern on the Forest. These include a backlog of overly dense, young stands in need of precommercial thinning, large acreage of natural fuel accumulation on the eastside of the forest, and large acreage of overly dense stands in the small diameter size class. Recommendations are for more thinning to improve forest health in both the precommercial and commercial size classes; however, adequate funding has been a barrier.

In FY 2002, the Forest was budgeted to sale approximately 27.3 million board feet (MMBF), 43% of the Northwest Forest Plan Probable Sale Quantity (PSQ) of 64 MMBF. With the resolution of some litigation issues and removal of a Survey and Manage mollusk species, the Forest was able to offer for sale 29.5 MMBF. Of this, only 11.5 MMBF was actually awarded. This was due to a combination of reasons including a lack of interested bidders, bidders who did not meet Forest Service business requirements and a new litigation. The Forest did make progress on new NEPA planning efforts, as well as preparing timber sales that would be offered in FY 2003. The Forest has not been providing a “predictable” supply of forest products to the region. This has contributed to less milling capacity in the region, fewer purchasers willing to buy Forest Service timber sales, and a few timber sales with no bidders. This in turn has caused timber sales from the Forest to be of less value. Based on estimates of future budget levels, the Forest projects that it will be able to plan and sell approximately 20-25 MMBF per year for FY 2003-2005. With the decline in timber harvest levels over the past 5 years, the Forest’s ability to provide forest products such as Christmas trees, firewood and boughs is becoming limited.

Wildlife/Plants

The Forest has now shifted from an emphasis of monitoring threatened, endangered and sensitive species to a broader focus which includes survey efforts for species presence of Northwest Forest Plan Survey and Monitoring Species.

The Mt. Hood National Forest currently has no mapped lynx habitat. Lynx habitat is based on availability of adequate amounts of subalpine fir plant associations.

The small populations of bald eagle and peregrine falcon appear to be stable. Very little monitoring efforts have been completed recently for spotted owls. The philosophy on the Mt. Hood has been that the retention of adequate habitat has precluded the need to monitor the spotted owl populations. Additionally, there is an ongoing demographic study that may support this theory.

Many sensitive species were not surveyed due to increasing demands on personnel and decreasing budgets. For the species that were surveyed there appears to be little change in their populations.

Sensitive plant species found in forested habitats are likely stable at this time due to the reduced level of timber management that has occurred in the recent past. Species in nonforest habitats such as meadows, grasslands and balds continue to be vulnerable to impacts from noxious weed encroachment, off-road vehicles and dispersed recreation. Monitoring efforts in FY 2003 will continue to focus on species found in nonforested areas.

Access & Travel Management

The Mt. Hood National Forest continues to advance toward the goals of the Forest Service Roads Agenda. We are decreasing the size of our transportation system. We are maintaining or improving our mainline road system while decommissioning or closing unneeded roads. Our priority in road decommissioning continues to be decommissioning roads in unstable geological areas or roads with unacceptable environmental impacts. Due to the high cost of road decommissioning, we focused our FY02 efforts on storm-proofing and closing roads, rather than decommissioning a few roads at a high cost.

2002 accomplishments include 1.5 miles of new road construction, 2.8 miles of decommissioning, 50.0 miles of reconstruction and 40.3 miles of storm-proofing. Five culverts were replaced to allow passage of anadromous fish and 3442 miles of road received maintenance.

Recreation

The Forest is exploring a new model for collaborative discussions with recreation stakeholders. Given the Forest's relatively large recreation demand and the importance of involving stakeholders, the Forest has developed a project to foster relationships, understanding and trust that would form the basis for addressing recreation conflicts, forging a common vision, and finding ways for stakeholders to work together on projects of common interest.

The Forest has begun to systematically survey and evaluate the health and long-term management of the vegetation in developed campgrounds. In the past, many trees identified with root and stem decay in the campgrounds have been removed to improve the safety for campers. In 2002, a broader approach to vegetation management was begun with an objective of long-term forest health and regeneration as well as hazard removal. The first campgrounds evaluated were Green Canyon and Indian Henry.

The Forest has been focusing on improving accessibility for those with disabilities at Timberline Lodge, one of the two National Historic Landmark buildings within the National Forest System. Construction of a new public entry elevator to the Lodge was completed in December of 2002. In addition, the Forest, in cooperation with the Special Use Permit Holder (RLK Inc.) who operates the Lodge, and the State Historic Preservation Office,

began designing additional accessibility projects for the Lodge.

Visitation and utilization data was recorded for concessionaire-managed campgrounds and day-use sites in 2002. The data indicates that existing developed recreation facilities do not currently reflect customer preferences. The Forest did not collect use data in dispersed recreation setting in 2002 and does not routinely survey public demand or preferences. During 2003, the Forest is participating in the National Visitor Use Monitoring project which will provide statistically reliable information at the Forest level for dispersed uses.

Fire Management

The continued direction of the Mt. Hood Hazardous Fuels program should be on reducing fire risk and restoring and maintaining stand conditions in areas that are most at risk. These are former short interval, low-intensity fire regime areas that have missed two or more fire cycles. The prolonged absence of periodic, low-intensity surface burning in fire dependent ecosystems has resulted in forest conditions that have been significantly altered. The changes in stand structure, species composition, and accumulated fuels have predisposed extensive areas to insect infestations, disease, and high-intensity wildfires that may threaten nearby communities, watersheds and key ecological components. These are the areas specifically targeted by the 10 Year Comprehensive Strategy and Cohesive Strategy.

Estimates of the magnitude of the fire-dependent ecosystems on the Mt. Hood National Forest that are ecologically outside the range of natural conditions are varied. An effort to update the fire regime condition classes and forest vegetation and fuels data is continuing and will greatly enhance our ability to quantify any deteriorating conditions in these ecosystems. This effort should provide fire managers with the landscape-scale information that will help improve strategic decision-making in both the prescribed fire and wildfire arenas.

The application of prescribed fire to natural fuels will continue to contribute to the maintenance of a healthy fire-dependent ecosystem on the forest's eastside zone. In 2002, 180 acres out of 1200 acres planned were treated for hazardous fuels. Weather conditions prevented treatment of all of the planned acreage.

Where feasible, mechanical treatment of activity-generated fuels will continue to maintain a high priority of choice for treatment methods. Mechanical treatment of natural fuels and timbered stands will also be necessary throughout portions of our eastside zone prior to the reintroduction of management-ignited fire.

Air Quality

The management activities that affect air quality by the Mt. Hood National Forest remained in compliance throughout the monitoring period (10/01 – 9/ 02). No deviations from the State's Smoke Management Plan occurred and compliance with all Forest Service and State Air Quality Guidelines were maintained. A total 650 acres were treated during the course of the period with a total of 3,415 tons being consumed. No intrusion into smoke sensitive areas occurred as result of Forest management activities. Visibility in the Mt. Hood Wilderness Class I Area was not impaired as a result of management activities. All burning operations were properly recorded and submitted to Salem Smoke Management for approval and record purposes. The Forest continues to reduce emissions from burning activities. The goal of the Forest Plan is to reduce emissions 63% by the end of the first decade of the Plan, and that is being achieved to date.

In addition to monitoring prescribed fire emissions, air quality monitoring on the Mt. Hood National Forest occurs within a cooperative framework among the National Forests of western Oregon. The focus of the work is on assessment of air pollution effects to forests through biomonitoring, specifically by monitoring of lichen abundance (especially of those species known to be sensitive to air toxins) and tissue analysis.

In 2002, the 1994-2000 data was analyzed and showed the following results:

- PNW Air Program lichen community data from the Mt. Hood, Willamette, Umpqua, Gifford Pinchot, and Siuslaw National Forests and the Columbia River Gorge National Scenic Area were combined with data collected throughout western Oregon and Washington by the USFS Forest Health Monitoring Program lichen indicator section, and with special collections in urban areas, coastal Oregon and Washington, and BLM lands in the Willamette Valley and Coast range. More than 75% of Mt. Hood air scores fell within the two best air quality categories (-1.4 to –0.02). Twenty of the 143 plots, or <14% of plots, had air scores in the fair range (-0.03-0.21) and 2 plots (1.4%) were rated as degraded with regard to air quality. In contrast, about 14% of the total land area of western Oregon and Washington was rated fair and 24% was given a worse pollution rating. Nearly all the plots with a fair or degraded rating were in the Columbia Gorge and Hood River Ranger Districts.

A trend analysis of combined data from ten NADP monitors in Oregon and Washington provides strong evidence that, after accounting for site and precipitation, median annual wet deposition (kg/ha) of nitrate and ammonium ions and total inorganic-N have increased by 21-25% between 1980 and 2001. Proximity to an urban area is the most important variable.

In contrast, regional wet deposition of sulfate decreased by 80% over the same time period.

Water

With continued implementation of Best Management Practices (BMP's), watershed restoration efforts, water quality and watershed conditions are expected to be maintained and in some areas show an improving trend. The evaluation of the water quality data collected in the past several years indicates very good water quality at most of the monitoring sites, with the exception of several streams which do not meet current water temperature standards. In some cases the elevated water temperatures are naturally high, while in others a fire or timber harvest activity may be partially responsible.

For some of the streams that have been identified as water quality limited by the Oregon Department of Environmental Quality (DEQ), Water Quality Restoration Plans, the Mt. Hood National Forest watershed staff is working with DEQ on Total Maximum Daily Load (TMDL's) and providing water quality data to delist streams that were inappropriately identified as water quality limited.

In order to monitor current water quality condition and trends in water clarity over time, permanent monitoring stations have been installed on the Clackamas River (Carter Bridge below Fish Creek), Alder Creek (Forest boundary), and Eagle Creek (Fish hatchery).

The Clackamas and Alder Creek watersheds serve as municipal water supplies. A continuous turbidity monitoring station is planned for installation on Fish Creek (USGS gaging station) by December 2003. The water monitoring stations will continuously monitor turbidity and flow depth.

A network of water temperature monitoring stations across the forest monitors summer water temperature trends. The data will be used to study long-term trends and monitor recovery in streams currently identified as water quality limited for water temperature.

Fisheries

The role of Federal lands is critical in providing "anchor" habitats for rebuilding fish populations to sustainable levels. Total redd counts in 2002 were high compared to the previous three years; however, available habitat on the Forest continues to be underutilized.

The overall abundance of anadromous fish and bull trout are low in those streams and rivers monitored on the Mt. Hood National Forest. For example, over 25 miles of known steelhead spawning streams were monitored on the eastside of the Forest, and surveyors found an average of only two redds per mile. Spawning survey results on the Salmon River were better, revealing an average of nine redds per mile for Chinook salmon. As far as bull trout monitoring in the Hood River system, the distribution of bull trout has expanded significantly over the past decade, yet abundance is still quite low. The actual utilization of habitat by various fish species is far below the overall productive capacity of rivers and streams on the Mt. Hood National Forest. Therefore, Forest Service fish biologists continue to work in partnership with watershed councils across the Forest to assist in all fish recovery aspects at the whole-river basin level.

Soil

Monitoring results from the last several years suggest that progress is being made in reducing the number of harvest units where soil damage has exceeded the standards. No specific soil monitoring of harvest units was done in 2002.

Soil compaction damage related to timber harvest remains a concern on the Forest. On a Forest-wide basis, the extent of damage has decreased as timber harvest levels have declined since the beginning of the decade. Where stands have been entered for the first time, regardless of the silviculture prescription, designated skid trails have been effective in limiting soil resource impacts in a manner consistent with Forest Plan standards. Activities in stands where multiple harvest entries have been made, the cumulative impacts from these prior activities plus planned treatments have a much higher likelihood of exceeding the standard for protecting soil productivity.

The reduction of damage is primarily due to three main factors. First, sale administrators and operators are working together to minimize impact. Second, advances in equipment technology reduce impacts. Third, sale areas are located on soil types that are more resistant and resilient than past sale areas.

Key Management Issues

The following represent key management issues of concern for the Mt. Hood National Forest as perceived from the evaluation of the monitoring data. The intention is to elevate these issues to the Forest Leadership Team for consideration in the budget and program of work process. They highlight relevance to the Mt. Hood National Forest, priority for sustainability concerns, and influences which cross ecological, economic and social systems.

Impacts Related to the Shifts in Land Management and Resource Use on the Mt. Hood

Increasing population growth, urbanization, and changing demographics bringing new perspectives, lifestyles and values have influenced resource use and impacts. Over the last decade, a shift in resource use and associated impacts has become evident with the growing importance of recreation and decline in timber harvest. Along with that, a growing concern about biodiversity, species management and protection, and municipal water use. This affects the Forest's capacity to provide goods and services and shifts environmental impacts:

- With the decline of timber harvest, less than 1% of the land base is being treated to meet various resource objectives. The Forest is unable to provide a predictable timber supply, and forest products such as Christmas trees, firewood, and high quality boughs. Transitory range and forage habitat are becoming limited. Funds generated by timber sales for habitat improvement, road maintenance and construction projects have substantially declined with declining timber harvest.

- With the increase in recreational demands, the Forest is incurring resource and social impacts from dispersed use such as Off Highway Vehicle (OHV), target shooting, and garbage dumping, particularly on the westside wildland/urban interface. This is resulting in wildlife harassment, soil erosion, and impacts to water quality. Conflicts and impacts to riparian areas and along lakeshores are also increasing with increasing recreation pressures. Back-country use and high elevation recreation such as snowmobiling are becoming more intrusive, impacting high elevation habitat and species. Also, current recreational user preferences are not meshing with the distribution and configuration of existing developed recreation facilities raising questions of financial sustainability.

This shift in resource use requires the Forest to explore new strategies, opportunities and funding sources to address these changes and to continue to provide for our customer needs while maintaining healthy ecological conditions. Management decisions need to incorporate social, economic and ecological considerations.

Role of the Mt. Hood on the Larger Landscape

The Mt. Hood provides unique properties (like the mountain) and contributions of species habitat in the larger landscape spanning multiple ownership and multiple jurisdictions outside of National Forest boundaries. For example:

- Given the predominance of federal land ownership making up the river basins of the Mt. Hood National Forest, the role of federal lands is critical in providing the "anchor" habitat for fish, wildlife and unique plant populations as well as protection of water quality, and long-term production and flows from the watersheds on the Forest. Management focus is shifting towards a larger system assessments.

- The Mt. Hood National Forest is committed to being partners with our neighbors in a vision of long-term sustainable community development and community capacity to address social, economic and environmental challenges.

- Increased urbanization and growing recreational demands on the Mt. Hood NF require a new model for collaborative discussions with recreation stakeholders to foster relationships, understanding and trust which help to form the basis for addressing recreational conflicts, forging a common vision and developing partnerships on projects of common interest. Mt. Hood National Forest's unique natural properties (such as the mountaintop), landscape and proximity to the Portland metro area contribute to meeting the regional and local recreational demands.

- Fire and fuels management requires planning and implementing fuels and vegetation management projects at larger spatial scales, along National Forest boundaries, wildland/urban interfaces and across multiple ownerships.

This requires the Forest to shift into larger system assessment, working partnerships, collaborative approaches, management decisions with long term perspectives and gathering data to support assessments of ecological conditions.

Fire

The changes in vegetative structure, species composition, and accumulated fuels have predisposed areas especially on the eastside of the Mt. Hood National Forest to insect infestation, disease and high intensity wildfires that could threaten nearby communities, watershed values and key ecological components. The key focus must be on reducing fire risk and restoring and maintaining healthy ecological conditions on high priority areas. Priority areas for restoration work should include those areas where communities are at risk and ecosystems are at risk (ecologically sensitive areas). This would require us to continue to improve our ability to assess and actively address fuel conditions, fire hazards, potential fire effects, insect and disease risk and our agency's capabilities and resources to implement work.

Noxious Weeds

Over 7,000 acres are documented as infested with noxious weeds on the Mt. Hood National Forest. Invasive (nonnative) species are recognized by the Chief of the Forest Service as one of the four threats to National Forest System lands, as well as neighboring private, state and Tribal lands across all ecosystems. Invasive plants pose unsustainable social, economic, and ecological impacts. Scientists estimate that invasives contribute to the decline of up to half of all endangered species and are the single greatest cause of loss of biodiversity in the United States, second only to loss of habitat. To build our understanding and awareness of the extent of this growing threat on the Mt. Hood National Forest, would require us to improve our effectiveness through data management capabilities, expand our partnerships, increase applied technology and research transfer, improve collaboration and coordination both internally and externally, increase budgets, and put an emphasis on prevention measures across all agency activities.

In conclusion, based on overall forest condition, review of monitoring information and ongoing management activities, the Mt. Hood Forest Plan, as amended by the Northwest Forest Plan of 1994, is sufficient to guide management of the Forest over the next year. Minor nonsignificant amendments will be made as the need arises. A review/revision of the Forest Plan is expected upon completion of revised planning regulations, which are currently being written. The Mt. Hood Forest Plan is currently scheduled for revision beginning in 2008 with a Final Environmental Impact Statement issued in 2011.

Table S-1 summarizes key reporting items by Fiscal Year.

Table S-1: Summary Comparison Chart (by Fiscal Year)

Element	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	Recommendation/ Comments
Fire Management												
Human caused fires	49	42	55	29	43	27	32	45	40	54	41	Continue monitoring, management direction achieved.
Natural occurring	30	3	11	19	2	9	38	22	1	24	14	
Total fires suppressed	79	45	66	48	45	36	70	67	41	78	55	
Air Quality												
Acres treated by prescribed fire	3,559	2,727	2,809	1,962	2,448	1,082	1,643	2,161	2,258	1,563	650	Continue monitoring, management direction achieved.
Geologic Resources												
Created openings on mapped earthflows	13	19	0	7	19	7	0	3	11	8	1	Continue monitoring.
Created openings on mapped landslides	3	16	0	3	2	0	0	1	0	0	2	
Mineral Resources												
Mineral material used by other agencies (cy)	187,500	23,000	5,000	82,000	191,850	25,500	216,700	76,200	85,000	63,500	0	Complete development plans for common variety sources.
Mineral material used by MTH (cy)	78,400	4,800	9,000	12,550	13,300	151,800	52,900	56,800	20,375	17,270	7,400	
Mineral material sold to public (cy)	900	910	900	1,400	1,600	865	1,160	350	319	248	474	
Transportation/Roads												
Miles constructed/ Forest Plan projection	6.4/16.6	3.3/16.6	7.7/16.6	2.4/16.6	.6/16.6	2.3/16.6	5/16.6	4.6/16.5	0/16.5	0/16.5	1.5/ 16.5	Adjust Forest Plan.
Miles reconstructed/ Forest Plan projection	19.3/ 91.5	3.2/91.5	15.5/ 91.5	15.4/ 91.5	31.9/ 91.5	111.4/ 91.5	35.7/ 91.5	39.5/ 91.5	28.3/ 91.5	3.4/ 91.5	50/ 91.5	Adjust Forest Plan.
Road miles obliterated	41.0	47.5	47.4	29.4	38.9	84.2	27	89	18	4	2.8	
Timber Resources												
% timber offered of Forest Plan Total Sale Program Quantity	15	20	13	19	30	34.4	31	22	0	4	13.7	Initiate Forest Plan adjustment to match NFP.
% timber offered of Forest Plan Allowable Sale Quantity	17	23	14	22	34	39	35	25	0	4.7	15.6	Initiate Forest Plan adjustment.
% of PSQ target offered for sale			39 27.3 mmbf	106 41.4 mmbf	122 63.6 mmbf	114 74.0 mmbf	104 66.6 mmbf	73 46.5 mmbf	0	13.8 8.8 mmbf	46.1/ 29.5	

Element	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	Recommendation/ Comments
Silviculture acres treated (harvest methods)	5,190	3,722	1,637	2,030	1,685	1,948	3,344	3,044	3,245	808	620	Continue monitoring.
Silviculture activities (Ac.) (planting, fertilizer, etc.)	10,191	8,954	7,193	12,361	9,852	6,172	7,589	5,282	3,750	7,010	6,659	Continue monitoring.
Recreation Resources												
Miles trail constructed/projections	0/6.6	0/6.6	5/6.6	0/6.6	0/6.6	0/6.6	0/6.6	0/6.6	0/6.6	0/6.6	0/6.6	Continue monitoring.
Miles trail reconstructed/projections	7.9/30.5	14.9/ 30.5	12/30.5	14/30.5	21/30.5	14.8/ 30.5	14.8	63/30.5	12.7/ 30.5		2.2/ 30.5	Continue monitoring.
Financial Review												
Full Plan implement budget/actual expense	65.3MM 39.5MM $	65.3MM 40.9MM $	65.3MM 32.7MM $	65.3MM 31.7MM $	65.3MM 30.4MM $	65.3MM 38.2MM $	65.3MM 33.7MM $	65.3 MM 39/5MM $	65.3 MM 24.7 MM	63.5 MM 25.6 MM	63.5 MM 23.2 MM	

Chapter 1
Introduction

Chapter 1
Introduction

The Mt. Hood National Forest continues with a strong commitment to the Forest Service motto of "Caring for the Land and Serving People." Inherent in this commitment is monitoring for sustainability of our national forest. Our goal is to work with our partners in finding an appropriate balance between sustainable social, economic, and ecological systems. Our intent is to satisfy the values of the present without compromising the needs of future generations.

The Land and Resource Management Plan (Forest Plan for the Mt. Hood National Forest) as amended in 1994 by the Record of Decision for the Northwest Forest Plan, was approved by Regional Forester John F. Butruille on October 17, 1990, and implementation of the Forest Plan began on February 11, 1991. The Forest is now in its twelfth year of management under the Forest Plan direction.

The Forest Plan established integrated multiple use goals and objectives, established standards and guidelines for resource activities, identified management areas and set their direction, established the maximum decadal sale quantity, and determined various monitoring and evaluation requirements.

A part of implementing the Plan involves a commitment to monitor and evaluate how well we are doing. Monitoring provides the decision makers and the public information on the progress and results of implementing the Forest Plan. This document highlights what the Forest is doing now and attempts to describe trends, in key resource areas, that are important to understanding long term effects which ultimately affect our opportunity to sustain our needs now and in the future.

Monitoring is the gathering of information and observing management activities to provide a basis for periodic evaluation. An objective of monitoring is to ensure that the Forest Plan Standards and Guidelines are being correctly applied and are achieving the desired results. Based on review of information collected, adjustments in management actions or anticipated results can be identified.

Monitoring is fundamental for us to fulfill our responsibilities as stewards of the land. The year's activities are not complete unless we monitor the effects of those activities, evaluate the results (i.e. what do the results mean?) and recommend actions or modifications to be made (i.e. what should be done now?). This process allows the Forest Plan to remain an active, usable document.

As we begin to move into the second decade since the adoption of the Forest Plan in 1991, we are beginning to switch the focus from short-term implementation monitoring to long-term outcomes of management with respect to key social, economic and ecological systems. This report begins the attempt to discuss the connection between short-term actions with long-term outcomes.

This report is composed of five chapters:

Chapter 1 – Introduction

Chapter 2 – Accomplishments/Results/ Recommendations

Summarized individual resource program accomplishments, activities monitored, evaluations, and recommendations.

Chapter 3 – Financial Review

Contains information which describes the Mt. Hood National Forest in financial terms.

Chapter 4 – Forest Plan Amendments

Reviews amendments made to date.

Chapter 5 – Ongoing Planning Actions

Highlights a variety of additional planning and analysis activities, and implementation of the Northwest Forest Plan.

Although information with respect to Forest Plan implementation has been reported for approximately a decade now, continued monitoring will allow meaningful evaluation and adaptive management decisions to be made. As monitoring continues, trends are being established that will provide valuable information for shaping the future management of the Forest.

A review of the plan was made six years ago in an effort to determine if major changes had taken place to cause a significant amendment or revision to our plan. It was determined that because the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl had significantly modified our plan in 1994, no further significant revision was needed at that time. New planning regulations are in the development process now. Once they are completed, the Forest Plan will likely be revised to reflect changing management activities and priorities. The current schedule calls for revision of the Mt. Hood Forest Plan is to begin in 2008.

Chapter 2
Accomplishments/ Results/ Recommendations

Chapter 2
Accomplishments/Results/ Recommendations

Fire Management

Goal

The overall goal of fire management is to support land and resource management goals and objectives. This program includes all activities for the protection of resources and other values from wildland fire. Fire and fuels programs are to be implemented consistent with Forest Plan Standards and Guidelines, Management Prescriptions, and the Pacific Northwest Plan.

The 2002 Fire Season

Although snow pack for 2001 – 2002 winter was 110 to 150% of average, the precipitation summary as of May of 2002 was <50% of average. At the first of May, the Palmer Drought Index indicated near normal conditions throughout the state. By the first of September the Drought Index was showing Severe to Extreme drought across most of the state.

A total of 55 fires were reported in 2002: 14 lightening and 41 human-caused fires. Reported burned acres totaled 388. No industrial operations fires occurred in 2002. The Forest was very successful in supporting the National fire fighting effort, dispatching a total of 300 personnel to other Regional and National fire assignments. Other fire management program activities (e.g. Prevention and Detection) were accomplished within expectations.

Monitoring Activities and Evaluation

The Forest Plan identified fire protection and fuel treatment objectives to be monitored and evaluated in determination of fire management's capability to attain other land and resource management objectives. For each objective, information is collected annually and results reported annually or every five years.

One area of concern deals with the numbers of human-caused wildfires and are they within levels considered in the Plan. The unit of measure is the number of wildfires, by cause, for the last five years.

Another area of concern is the number of, size of, and intensity of wildfires and are they within levels considered in the plan.

Fire Protection Objectives Monitored

Two fire protection objectives are monitored in relation to levels considered in the Forest Plan. They relate to number of human-caused wildfires and the number of, size and intensity of wildfires based on 5 years of data.

The threshold of concern is, "no more than 20% departure from the expected number per decade". The Forest Plan anticipated that the human-caused occurrence would average 559 fires/decade or 56 fires per year and an estimated average annual acreage burned by wildfire of 408 acres (MHF-LRMP Chp. 4, p. 25). For the period 1998 - 2002, the average was 42 fires per year and 88 acres per year burned. These numbers are for human caused fires only and are well below the break points established in the Forest Plan. The average number of fires and acres per year for all causes for the last five years are, 62 fires per year and 171 acres per year burned.

In 2002 there were 55 fires that impacted 388 acres. This reflects an increase of 217 acres impacted over the previous 5-year period. There was an increase in ignitions from all statistical causes with the greatest increase in acres burned due to fire ignited by lighting. Of the 388 acres burned in 2002, 370 of these acres were burned in September during the Bowl Fire in the Clackamas River drainage. This fire occurred in Fire Regime IIIc which has a 100 – 200 year return interval with an intensity of mixed severity. This area has also been mapped as Condition Class 1.

This Condition Class indicates that the species composition and structure are functioning within their historical range at the landscape level. Preliminary reviews of the fire area indicate that the burn patterns and fire intensity experienced are consistent with effects expected in this Fire Regime and Condition Class.

Fuel Treatment Objectives Monitored

Two fuel treatment objectives are monitored to see if they meet expected levels identified in the Forest Plan. They are desired residue (fuel) profiles and acres of hazardous fuels treated annually.

As part of the total fire and fuels management program, the forest also continued to meet the desired fuel residue profiles. All districts reported that they had met the profiles with less than a 10% deviation from what was stated in the environmental analysis or other forest standard.

Table 2-1: Fire Causes and Acres 1998-2002

Causes	Number	Percent	Acres	Percent
Lightning	98	31.6	417	48.7
Equipment Use	6	1.9	2	.23
Smoking	36	11.6	21	2.4
Campfire	117	37.7	17	1.9
Debris Burning	1	.32	3	.35
Railroad	0	0	0	0
Arson	17	5.5	5	.58
Children	1	.32	1	.11
Unknown	34	11.06	390	45.5
Total	**310**	**100**	**856**	**100**

Table 2-2: Summary of Wildfires – Acres Burned by Size Class 1998-2002

Size Class	Number of	Acres Burned by Intensity Level						Total
(Acres)	Fires	1	2	3	4	5	6	Acres
E (+200)	1	0	0	0	142.7	0	0	142.7
D (100-200)	2	0	99.2	342.8	88.1	0	0	530.1
C (10-99)	2	10.3	21.4	36.8	0	6.86	0	75.36
B (.26-9)	46	17.1	22.3	5.1	.25	1.7	.86	47.31
A (<.25)	259	58.2	1.7	.51	.04	0	0	60.45
Total	**310**	**85.6**	**144.6**	**385.2**	**231.1**	**8.56**	**.86**	**856**

The goal for the hazardous fuel program is to coordinate a sound, collaborative approach for reducing wildland fire risk to communities, and to restore and maintain land health within fire-prone areas. The forest had projected to treat 800 acres annually of hazardous fuels.

Annual assessments of change in land condition (Fire Condition Class) from the previous year will determine how the goal is achieved. The 10 Year Comprehensive Strategy Implementation Plan will provide the appropriate performance measures to determine success of fuel treatments.

For the current reporting period, 180 acres out of 1,200 acres planned were treated. Of the 1,200 acres planned for treatment, there was 820 acres of under burn and 380 acres of piles to be burned. Spring weather and fuels conditions did not match prescription parameters sufficient to allow ignition of the 820 acre under burn. The 380 acres of pile burning was only half completed due to an early heavy snowfall, which made ignition impossible.

Localized benefits will be realized as treatments are completed. Documentation of changes to broad long-term trends including risks to people and property, native species, watersheds, air quality, and long-term site degradation will take time. Prolonged decline of condition class especially in short interval Fire Regimes and around Urban Interface areas will show an increase in size and severity of fires. The resource damage and value lost will be expected to increase as well.

Benefits from treatment of Hazardous Fuels include:

- Improvement in the resiliency and sustainability of wildland components such as water quality, air quality, wildlife and fisheries habitat, and threatened, endangered, or other special status plant and animal species or habitat.

- Reduction in the amount of lands severely degraded by unwanted wildland fire or by other disruptions to natural fire regimes.

The Forest has placed a priority on planning and implementing landscape scale fuels and vegetation management projects along National Forest boundaries. The Forest has entered into cooperative efforts with State and local landowners to provide for fuels management treatments on both sides of the National Forest boundary. Through Federal collaboration with State, Tribal, and local entities, implementation of these projects will:

- Increase wildland fire safety to the public and firefighters.

- Reduce risk of unwanted wildland fire to communities.

- Reduce risk to recreational opportunities and associated wildand attributes, viewsheds, cultural and historical resources and landscapes.

- Strengthen rural economic sustainability and increase opportunities to diversify local economies, such as through the use of biomass residues, which also reduces air quality impacts.

- Increase public education and understanding for the importance of implementing hazardous fuel risk reduction activities on both Federal and private lands.

- Help local communities with the development of Community Fire Plans.

Recommendations

- Continue to coordinate a sound collaborative approach for reducing the wildland fire risk to communities, and to restore and maintain ecosystem health within fire-prone areas.

- Continue to collect and consolidate data to support the assessment of ecological conditions in the context of the Range of Natural Conditions for fire dependent ecosystems.

- Reduce hazard exposure to firefighters and the Public during fire suppression activities.

- Prioritize hazardous fuels reduction where the negative impacts of wildland fire are greatest.

- Ensure communities most at risk in the wildland-urban interface receive priority of hazardous fuels treatment.

- Continue to focus attention on condition class 2 and 3 in the short interval fire regimes.

Prescribed Fire Emissions

Goal

The overall goal is to manage prescribed fire emissions to meet the requirements of the State Implementation Plan (SIP) for the Clean Air Act. In addition Public health and environmental quality considerations will be incorporated into fire management activities undertaken for the hazardous fuels management program from the planning process forward.

Accomplishment

The management activities that affect air quality by the Mt. Hood National Forest remained in compliance throughout the monitoring period (10/01 - 9/02). No deviations from the State's Smoke Management Plan occurred and compliance with all Forest Service and State Air Quality Guidelines were maintained. A total 650 acres were treated during the course of the period with a total of 3,415 tons being consumed. No intrusion into smoke sensitive areas occurred as a result of Forest management activities. Visibility in the Mt. Hood Wilderness Class I area was not impaired as a result of management activities.

All burning operations were properly recorded and submitted to Salem Smoke Management for approval and record purposes using the FASTRACS system.

Table 2-3: Prescribed Burning - FY 2002

Burn Type	Acres Treated by Area				Total
	Barlow	Clackamas River	Hood River	Zigzag	
Piles	54	596	0	0	650
Underburn	0	0	0	0	0
Total Acres	54	596	0	0	650
Tons Consumed	808	2607	0	0	3415

Conclusions

The Forest Service continues to reduce emissions from burning activities. The goal of the Forest Plan is to reduce emissions 63% by the end of the first decade of the Plan, and that is being achieved to date.

New direction from the National Fire Plan is to:

- Develop and promote efficient biomass residue uses consistent with management objectives in agency land management plans.
- As land management plans are revised, enhance opportunities for the use of biomass in renewable energy production.
- Strengthen rural economic sustainability and increase opportunities to diversify local economies, such as through removal and use of biomass residues to reduce air quality impacts.

This direction provides an opportunity to further reduce emissions or increase acres treated without increasing emissions.

Lichen Biomonitoring

Lichens are used by managers of the Mt. Hood National Forest in collaboration with the Pacific Northwest (PNW) Region Air Program to monitor air pollution, to make decisions regarding management of air resources, and to support recommendations regarding approval or denial of permits that could affect forest ecosystems, especially in Wilderness. Federal Land Managers (FLMs) are required to participate in the New Source Review PSD program, the process by which substantial degradation of air quality in areas in compliance with National Ambient Air Quality Standards is prevented. Under Prevention of Significant Deterioration (PSD), FLMs must contribute their own information and recommendations as to whether a new source will:

- exceed allowable increments for the criteria pollutants, or
- cause unacceptable impacts to Air Quality Related Values in Class I Areas.

Air Quality Related Values are flora and fauna, soil, water, visibility, biological diversity, cultural and archeological resources, and odor. Because the National Ambient Air Quality Standards were devised to protect human health and are not considered sufficient to protect sensitive ecosystem components, docu-

menting concerns regarding the deterioration of Air Quality Related Values is the primary way in which FLMs can act to protect air quality in the remaining wild and natural ecosystems of Oregon and Washington. FLMs do not have any regulatory authority, the final decision is made by regulators at the Oregon Department of Environmental Quality and the Washington Department of Ecology.

On the Mt. Hood National Forest, lichens have a useful role in detecting and documenting the presence and composition of air pollution. Lichens are also an important Air Quality Related Value because they are highly sensitive to air pollution, contribute to biodiversity (we have documented 199 species on the Mt. Hood National Forest), and have important ecological roles in Pacific Northwest forests as critical winter forage for mammals, nesting material for birds, habitat for insects, and moderation of humidity and nutrient throughfall. Providing the necessary conditions to sustain them (and other ecosystem components) is not only made possible by the Clean Air Act, but is also an important goal of Ecosystem Management and a clear mandate of the Wilderness bill and other laws.

The Mt. Hood National Forest has been part of a multi-Forest, coordinated program to monitor air quality with lichens. From 1994-1997 lichen survey and tissue analysis data were collected on nearly all the 3.4 mile Current Vegetation Survey (CVS) grid plots. In 1998 and from 1999-2000, lichen tissue data were collected every two months in the vicinity of the National Atmospheric Deposition (NADP) station in Bull Run watershed.

Results

In 2002 the 1994-2000 data was analyzed.

- *Lichen communities.* A model was created to score 1528 plots surveyed for lichens in western Oregon and Washington, including 146 CVS plots, and 97 off-frame plots (primarily in the Mt. Hood Wilderness), on the Mt. Hood National Forest. The position of each plot on a regional air pollution gradient was determined. These scores were then mapped and interpreted.

- *Lichen tissue analysis*. Seasonal changes in precipitation and deposition on concentrations of sulfur, nitrogen and metals in lichen tissue were analyzed to better understand the response time and sensitivity of tissue analysis to changes in air quality.

- *Wet deposition.* 20-year trends in regional NADP data for nitrates, ammonia, and sulfates were calculated.

Lichen Communities

PNW Air Program lichen community data from the Mt. Hood, Willamette, Umpqua, Gifford Pinchot, and Siuslaw National Forests and the Columbia River Gorge National Scenic Area were combined with data collected throughout western Oregon and Washington by the USFS Forest Health Monitoring Program lichen indicator section, and with special collections in urban areas, coastal Oregon and Washington, and BLM lands in the Willamette Valley and Coast range. An ordination technique called non-metric multidimensional scaling was used to score plots for air quality based on lichen communities.

The mapped scores show air pollution gradients based on lichen community composition. Red areas indicate locations where sensitive species are entirely absent and populations of weedy, nitrophilous lichens are enhanced. In yellow areas there is a reduced diversity and population size of sensitive species. Green areas indicate where sensitive species are abundant and diverse. These three colors correspond with degraded, fair, and excellent air quality, respectively. More than 75% of Mt. Hood air scores fell within the two best air quality categories (-1.4 to –0.02). Twenty of the 143 plots, or <14% of plots, had air scores in the fair range (-0.03-0.21) and 2 plots (1.4%) were rated as degraded air quality. Fair is a borderline air quality score in which sensitive lichens may still be present but often are not. Sensitive lichens are absent at degraded sites. In contrast, about 14% of the total land area of western Oregon and Washington was rated fair and 24% was given a worse pollution rating. Nearly all the plots with a fair or degraded rating were in the Columbia Gorge and Hood River RDs.

Lichen Tissue Analysis

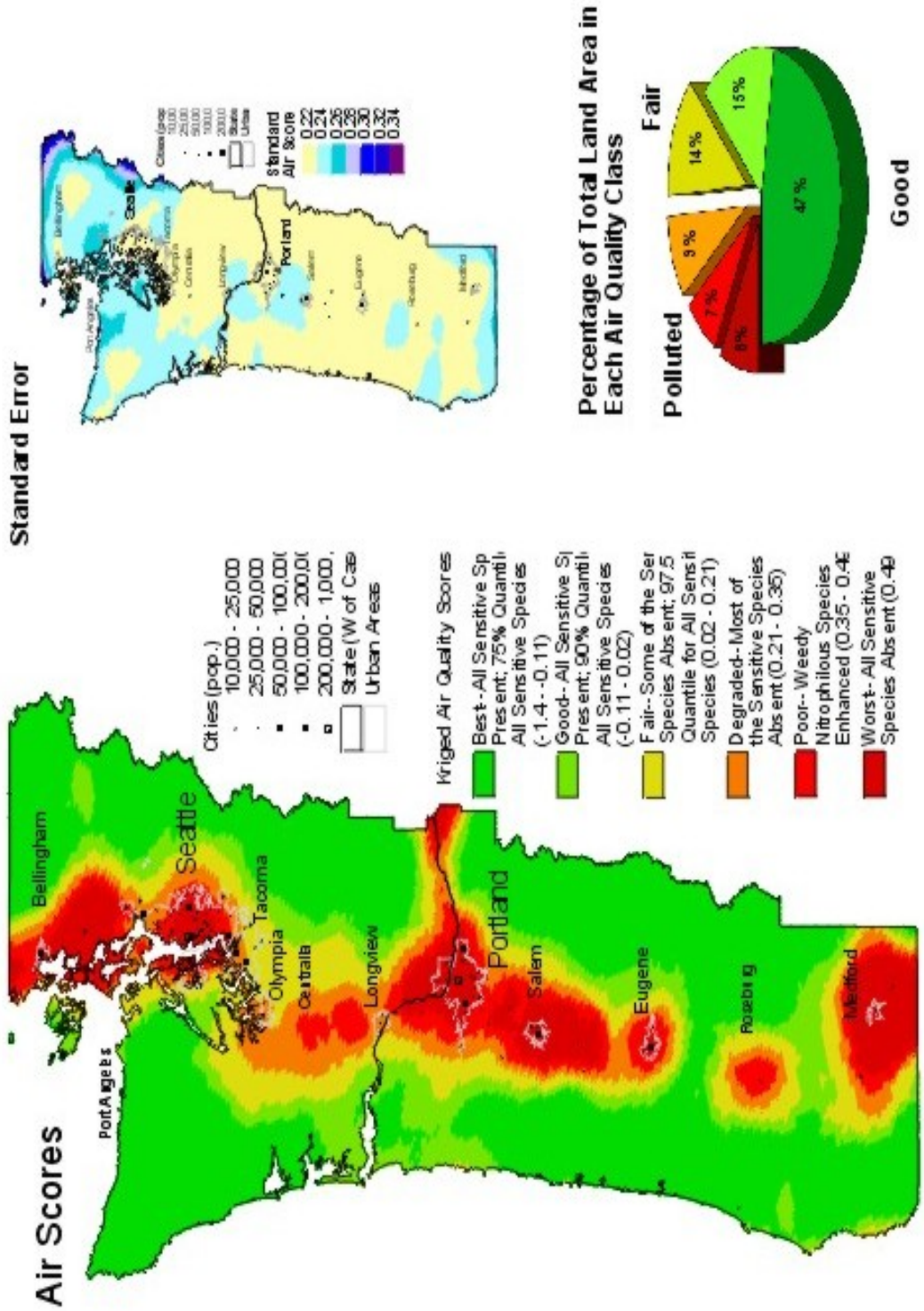
From Fall 2000 through Summer 2001, two lichens (*Platismatia glauca* and *Hypogymnia inactiva*) were collected every two months in the vicinity of the National Atmospheric Deposition monitor in the Bull Run Watershed.

Nitrogen concentrations in lichens were compared to wet deposition of nitrates, ammonium ions, and total inorganic nitrogen for the same time periods at the monitor. Concentrations of nitrogen containing pollutants in precipitation were highest in the driest, warmest seasons, i.e. summer and spring. Concentrations of nitrogen in lichen were highest in late winter and early spring, during the long rainy season. Even though nitrogen concentrations in precipitation were lower at this time, lichens accumulated more nitrogen. Presumably this is because total deposition was highest in winter (total deposition = concentration x amount of precipitation).

Trend Analysis of Wet Deposition Data From the Oregon Washington Regional NADP Network

Between 1980 and 2000, human population in Oregon and Washington grew by 30 and 43%, to 3.4 and 5.9 million people, respectively. Although population and number of vehicle miles per person increased over this time, per capita emissions decreased due to reduced motor vehicle emissions, cleaner fuels, and improved efficiencies in the transportation system. Yet, a trend analysis of combined data from ten NADP monitors in Oregon and Washington provides strong evidence that, after accounting for site and precipitation, median annual wet deposition (kg/ha) of nitrate and ammonium ions and total inorganic-N have increased by 21-25% between 1980 and 2001. Proximity to an urban area is the most important variable predicting a positive increase in wet deposition of N (both ammonium and nitrate) and increases in nitrate deposition were higher at monitors downwind of urban areas compared to monitors in agricultural zones. Presumably, urban expansion and higher number of miles driven per person have combined to outstrip gains from cleaner vehicles. Location of the monitor was important although variable deposition and small sample size masked trends at many individual locations. In contrast, regional wet deposition of sulfate decreased by 80% over the same time period.

Figure 2-1: Blocked Kridged Air Quality Scores Based on Lichen Communities in Western Oregon and Washington



Range Management

Goal

On lands determined as suitable and capable of producing range vegetation and within constraints imposed by Forest Plan Standards and Guides, provide forage for use by permitted domestic livestock.

Existing Condition

Approximately 164,574 acres, or 16% of total acres on the Mt.Hood National Forest comprise 6 designated grazing allotments. **Vegetative composition** within these allotments is a mosaic of grass and shrub lands, meadow complexes, forested areas, and harvested lands. Harvested lands in these allotments generally produce forage for about ten years before the trees are reestablished and again dominate the site. This is called "transitory range."

Economic goods are provided to communities through the issuance of grazing permits to eight local ranchers. A stable supply of summer forage on National Forest land adds an element of economic viability to these ranch operations. Notably, the ranch land in private ownership provides essential big game winter habitat for deer and elk, which is in critically short supply.

Allotment Management Plans (AMPs) contain several important components, which have been implemented as follows:

- Range improvements (fences) were constructed or maintained to gain better livestock control and ensure attainment of Forest Plan Standards and Guides related to riparian protection and allowable use of vegetation.

- Pertinent Forest Plan Standards and Guides have been incorporated into every livestock grazing permit. Permittee's are responsible for meeting the Terms and Conditions specified in these permits.

- If a permittee does not comply with the Terms and Conditions, a "Notice of Non-Compliance (NONC)" may be issued. Two notices were issued for the 2002 grazing season.

In the 1990 Forest Plan, objectives for range were quantified and expressed as an output called "animal unit months" (p. four-14). The current Forest Service measurement of this output is called "head months". Actual livestock use was 1,843 Head Months (HM's) out of a total 3,827 HM's under permit. Fewer animals were grazed due to non-use by some permittees at their request and authorized by the Forest Service.

Monitoring Range Ecosystem Function and Productivity

Long Term - Vegetation Trends

An important aspect of ecosystem function and productivity is related to vegetation. Studies to monitor existing condition and long-term trend in vegetation are in place on all allotments using photo trend methodology. Plots are visited once every 5 to 7 years to record plant species diversity, percent bare soil, plant vigor and other factors, and record changes over time. These measurements, along with other observations made by a professional Range Conservationist, indicate that overall range vegetative condition is stable or improving.

Short Term - Forage Utilization Studies

Forage utilization Standards and Guidelines were developed to ensure that adequate vegetation is left after grazing. Plant health and vigor can be sustained if grazed properly. Utilization monitoring studies were conducted on all allotments. These studies are used to monitor the consumption of the current years forage by both permitted livestock and wildlife. Of the thirty-one established monitoring sites, which are visited annually, twenty-five are located within riparian areas. Of those 25 sites, 75% (19) met Forest Plan Standards and Guidelines for forage utilization, while 25% (6 sites), did not. The remaining six sites are located within the uplands, and 100% (6 sites) met Forest Plan Standards and Guidelines.

Recommendations

Monitoring indicates the majority of acres within grazing allotments are meeting or moving toward Forest Plan objectives. While this is a desirable situation, there are interactions and relationships to other resources that merit discussion.

As mentioned above, six of the monitoring sites located within riparian areas indicated forage utilization levels above those established in Forest Plan Standards and Guides. Permit administration and compliance is vital to ensure that instructions given to grazing permittees are carried out on the ground. Funding to accomplish this task is becoming scarcer. Solutions to this problem need to be identified.

As discussed in the Timber section of this monitoring report, numbers of acres harvested have dropped significantly over the past several years. This results in fewer acres of “transitory range” (as mentioned above) and therefore, less forage. This trend is expected to continue. On allotments where transitory range makes up a substantial portion of the available forage, there is a concern that livestock will rely more heavily on meadows and riparian vegetation. Some of these meadows and riparian areas are also heavily used by recreationists and provide important wildlife habitat. These trends and conflicts should be analyzed through the NEPA process as we proceed with updating allotment EA’s so that appropriate resource decisions can be made.

A productive and long-term partnership has been developed with Catlin-Gable High School. Students and staff work together on ecosystem restoration projects, generally with a fisheries focus, incorporating components of environmental education and monitoring. Many of these restoration projects have been done within grazing allotments, such as fencing riparian areas to control livestock use. The students (and Forest Service) learn a great deal, accomplish needed restoration work, and most importantly, give the students an understanding of the resource conservation issues they will be managing in the future. This important partnership should receive priority so that it will continue.

Noxious Weeds

Goal

Control noxious weed infestations and prevent their spread in accordance with the Mt. Hood National Forest Noxious Weed Plan, the Final Environmental Impact Statement (FEIS) for Managing Competing and Unwanted Vegetation, and the Mt. Hood Forest Land and Resource Management Plan.

Noxious weeds are being monitored because they are displacing native vegetation, altering species composition of forest and rangeland, reducing productivity in terms of biomass and economics, reducing species diversity and adversely affecting recreational quality. Monitoring is conducted on weed control treatments, known populations and new infestations. Monitoring weed control treatments gives us information used to determine the effectiveness of weed treatments and determine how best to allocate financial and personnel resources. Tracking weed populations and new infestations gives us a concept of the impact of the weeds and makes it possible to target the most important sites to treat. As an example, treating a small new site of non-native hawkweed now would economically prevent a large costly effort in the future.

Background on Major Weeds

The greatest total area affected by weeds is the entire drier eastside of the forest where diffuse knapweed and other knapweeds are wide spread especially on roadsides. Except in intensely managed areas and along major roadsides, it is beyond our ability to control on the eastside. On the west side it is not widespread. It may not compete well there but a concerted effort to eradicate every new site on the west side of the forest has been effective in keeping it at bay. Knapweeds have little forage value and displace native forbs and grasses. The result is extensive loss of forage for ungulates and cattle. It comes in where the soil is exposed whether by human activity, fire, large animals (elk, cattle, etc.) or gophers. This is a continuing disturbance process, which is altering the species composition of the herbaceous plants, reducing productivity of forage for native animals and cattle. The result is an ecological legacy from the permanent change in vegetation. Like cheat grass it is now an entrenched part of the ecosystem. It is spread by wind and animals over short distances and is readily caught under vehicles and carried long distances.

Hounds-tongue is also rather pervasive but over a smaller area (approximately 1,400 acres reported), on the south end of Barlow District. There are some small populations on Hood River. This weed, which is toxic when eaten and unpalatable, displaces forage plants for cattle, elk and deer. The seeds are covered with tiny hooked barbs that cling to clothing and

fur. The faces and sides of the cattle are sometimes nearly gray with seed. It varies in density from near 100% cover in very disturbed open areas to scattered under brush and tree canopy. It has continued to move into recently logged stands. Over time it does seem to shade out in dense plantations as the canopy closes.

The area is heavily used by off road vehicle enthusiasts and associated camping. The seeds cling to clothing so it is likely being transported to other recreation sites and the homes of the forest users. Seeds are certainly carried to other sites, by forest workers such as painting crews, survey crews, logging workers and recreationists. The total population is too large and widespread to eradicate. Control efforts with herbicides are concentrated on satellite populations, roadsides and heavily used areas such as McCubbins campground. Prior control efforts using mechanical and handpulling work proved ineffective.

Tansy ragwort is common on the west side of the Cascade Crest where the only control is biological. At higher elevations the moth and beetles have not adapted to the climate and are not very effective. On the east side, populations are smaller and treatment is more effective. Tansy is actively treated by hand pulling and herbicide treatment. Tansy is phytotoxic and unpalatable. It competes well when other factors such as grazing or severe frost limit the native vegetation.

Scot's broom is mostly a west side problem where it has invaded large areas after logging and it is a robust competitor in young forest plantations. The result is fewer surviving trees that take longer to grow over this shrub. It dies out when overtopped by the trees but will persist in openings, along roadsides and particularly in power line clearings. Economically the effects are serious. The dense stands also overwhelm the native understory vegetation. Generally it is not treated on the west side because it is beyond our abilities to handle mechanically and herbicides, while effective, are not a viable option. On the east side it is an occasional weed, probably because it is less vigorous in the drier climate. All east side sites are treated so it has been kept to low levels.

Existing Program

The Mt. Hood National Forest cooperates with the Oregon Department of Agriculture, Wasco and Hood River County Weed Departments, Bonneville Power Administration and the Confederated Tribes of Warm Springs to conduct inventories and manage noxious weeds.

In 2002, efforts were focused on the control of hound's tongue (*Cynoglossum officinale*), knapweed species (*Centaurea* spp.), tansy ragwort (*Senecio jacobaea*) east of the Cascade Crest, common toadflax (*Linaria vulgare*) and non-native hawkweeds (*Hieracium aurantiacum and H. pratense*).

Table 2-4: Acres of Noxious Weed Treatment in 2002

Method	Acres Treated by Method
Chemical	212
Manual	78
Mechanical	4
Biological	0
Fire	0
Total	**294**

Results - Monitoring Evaluation

Chemical control methods were used to treat high priority hound's-tongue and tansy ragwort sites east of the Cascade Crest and knapweed sites on Barlow, Clackamas River and Zigzag Districts. These treatments have been effective in reducing the number of plants; however, plants germinating from seed already deposited in the soil will necessitate treatment in future years until the seed bank is exhausted. The weeds are so widely established that eradication is not possible. Treatment has been effective in treating satellite populations preventing the establishment of new large entrenched infestations.

Surveys continue to locate satellite populations of hawkweed associated with the primary infestation along the Big Eddy-Ostrander transmission line from Lolo Pass west to the Forest boundary. These satellites have been small in size and can be manually controlled; however, there is a possibility that some small infestations may be overlooked and grow to a size where eradication using manual control is no longer possible. Efforts to control the primary hawkweed infestation with manual and mechanical methods have likely reduced the amount of seed dispersed; however, the density of plants and area of infestation at this site appears to have increased. Surveys documenting these weed sites will be used in determining treatment sites when the Regional weed EIS is implemented.

Rock sources and storage sites on Barlow District were targeted as a high priority for chemical treatment due to the possibility that contaminated material could be moved to other sites resulting in establishing a new weed infestation.

Giant knotweed sites associated with summer homes on Zigzag were handpulled. The experience of others and the literature suggests that this method will not result in controlling or eradicating knotweed; however, at this time it is the only methods available to the Forest.

Known untreated weed sites are continuing to spread. New infestations are occurring and new populations of knotweed and hawkweed have been detected during FY 2002. Of greatest concern is hawkweed. Satellite populations have been detected up to 10 miles from the one main population on Zigzag Ranger District. The hawkweeds, from an introduction that was found in '97 or '98, have grown to over 20 acres net on the Lolo Pass Road, as well as satellite populations on the 1828, Lost Creek CG, Mud Creek Loop, as well as a population on BLM land surrounded by the Clackamas River Ranger District. The hawkweed population can be considered to be expanding rapidly. Giant knotweed (*Polygonum cuspidatum*) populations in the Sandy, Zigzag and Clackamas River drainages are also expanding in a low to moderate fashion, with shorter spurts of rapid expansion.

Both weeds form dense populations and can completely crowd out native plants. There is great concern that if either of the non-native hawkweeds becomes established in any of the wet meadows they would overwhelm those habitats. Wet meadows are uncommon in the area and are biologically unique. They are also important foraging and calving habitat for elk. Forage is a significant limiting factor for elk on this forest. The hawkweeds are unpalatable to elk which means displacement of native forage species by the invasive hawkweeds would have an adverse effect on the health of the elk population. The current populations are along roads and in the power line corridor. Trees and tall vegetation are cut down under the power line because of interference with the lines.

The hawkweeds and other weeds such as Scot's broom thrive. The weeds are migrating in this corridor and treatment is difficult.

The giant knotweed forms aggressively spreading dense stands 6 to 8 feet tall along streams, displacing native vegetation and degrading the habitat for riparian associated birds, mollusks, fish, insects and mammals. This annual weed has weak root system and does not bind the soil well like native riparian vegetation, which leads to increased erosion especially during peak flows in the spring. There is also concern that it can change nutrient input to streams. The result may be degraded fish habitat in important anadromous fish bearing streams. Currently the known sites are at lower elevations along the Salmon River, Still Creek, Timber Lake Job Corps site in the Clackamas River drainage and Bear Creek. The only known control method is herbicide. It is in and adjacent to flowing water and we cannot legally apply herbicides in those habitats at present. The Region is working on a Programmatic EIS that may make herbicide treatment possible.

A new weed is showing up on the Willamette National Forest, false-brome (*Brachypodium sylvaticum*). It is a perennial grass with potential to invade low elevation sites. The weed coordinators are aware of it and have been watching for it. So far it has not been found on the Mt. Hood National Forest.

Some widespread weed species with established biological control agents such as Scot's broom (*Cytisus scoparius*), tansy ragwort (*Senecio jacobaea*) at lower elevations, and St. John's-wort (*Hypericum perforatum*) are likely being controlled to some degree. Biological controls for the knapweeds have had minimal effect thus far. No biological controls have been approved for hound's-tongue, hawkweed, knotweed or toadflax.

Biological controls do not eradicate weeds but do decrease their vitality and hold them to reduced densities. Part of the reason noxious weeds out compete natives is because the insects and diseases that affected them in their native habitat did not come here with them. The biological controls for the above weeds are all insects that do not significantly affect native plants.

Mitigation measures to reduce the risk of noxious weed establishment are being implemented for most ground disturbing activities. Mitigations efforts are effective in preventing the introduction of noxious weeds into areas not yet infested.

Mitigation measures are also in place for activities not considered ground disturbing such as back country horse use where weed free hay and straw is required.

All use of herbicide treatments follow established standards and guidelines identified in the FEIS for Managing Competing and Unwanted Vegetation.

Recommendations

- The hawkweed site on Zigzag Ranger District continues to be a high priority for control by the State of Oregon due to its limited occurrence. The effectiveness of the manual and mechanical controls that have been used for the past three years appear to be minimal. Complete an environmental analysis that includes chemical control as a treatment option.

- Giant knotweed is a riparian weed species with the potential to alter habitat for fish and other species that depend on riparian habitats. Manual control has not been effective. Provide information to summer homeowners on how to limit the spread of knotweed and explore methods which may be used to control infestations.

- All projects that result in ground disturbance need to have mitigations in place to reduce the risk of noxious weed infestation and spread. These mitigations should be reviewed post-project to determine their effectiveness.

- Continue to work with Oregon Department of Agriculture to establish biological controls on the Forest.

Heritage Resources

Goal

The monitoring goal is to ensure that heritage resources are being managed, protected, and interpreted according to the Forest Plan's Standards and Guidelines. The Standards and Guidelines are designed to locate, protect, maintain and/or enhance significant prehistoric and historic sites for scientific study, public enjoyment, education and interpretation. A second monitoring goal is to ensure that American Indian rights are being protected on National Forest lands, and that appropriate coordinating activities are occurring.

To accomplish these goals, six monitoring elements were identified in the Forest Plan.

1. Coordination of Projects and Protection of American Indian Rights

The Confederated Tribes of the Warm Springs Reservations (CWTS) are consulted in all projects located on tribal lands, and usual and accustomed areas. The Barlow District Ranger is the Tribal contact for the Forest and meets on a regular basis with the CWTS to discuss a variety of resource issues. In addition to the formal NEPA scoping, the Forest has developed and maintains informal contacts with the CTWS. The implementation of a memorandum of understanding between the Forest and CTWS, signed in July 1997, regarding the management of huckleberry habitat on the Forest is an example of continued cooperation and continues to be very successful.

On Hood River/Barlow Districts, the Confederated Tribes of the Warm Springs are contacted at least once for every project. Follow-up consultation is ongoing, primarily in regard to fisheries. Additional non-project contacts include management of the Bear Springs Compound, ANPO, as well as fisheries planning. Additional consultation by Hood River included discussions on management of Spotted Owl areas across agency boundaries.

Specific meetings with the Confederated Tribes of Warm Springs included:

- Field trip to visit sites and areas associated with the Federal Energy Regulatory Commission on relicensing the Clackamas River PGE hydropower sites with the Culture and Heritage Committee.

Specific consultation with the Confederated Tribes of Warm Springs and Grand Ronde included:

- Consultation regarding the Ruby Creek site and the finding of No Adverse Effect for the proposal to improve Forest Road 46.

- Specific consultation with the Confederated Tribes of Warm Springs regarding recreation area improvement at Bear Springs Recreation Area.

- The archaeology team at CTWS was awarded a contract to perform reconnaissance and findings of effect for Bear Springs recreation area to be completed in fiscal year 2003.

2. Maintenance, Repair and Stabilization of Historic Buildings

Timberline Lodge (National Historic Landmark site)

Historic Building Preservation Plan (HBPP) was completed in FY98. This plan provides managers credible alternatives for routine maintenance, rehabilitation, restoration, and replacement of historic fabric throughout the building. The projects were approved after consultation with the State Historic Preservation Officer in 2003.

Table 2-5: Approved Projects at Timberline Lodge

Project	Date to SHPO	Finding
Menu Board	Not Necessary	Within Timberline Lodge Agreement. Stipulation III.C.1.
Sauna Repair	2/25/02	Within Timberline Lodge Agreement No Adverse Effect. Stipulation III.C.3.b.
Ramshead Bar back bar remodel	03/06/02	Within Timberline Lodge Agreement No Adverse Effect.
Structure Damage- West Wing Room 120	Not Necessary	Within Timberline Lodge Agreement. Stipulation III.C.4.b
Stair Newel Post Maintenance	05/08/02	Within Timberline Lodge Agreement No Adverse Effect. Stipulation III.C.3.b.
Reframe Painting- “The Mountain”.	05/08/02	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Pool Repair	06/05/02	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Swimming Pool Supports	07/29/02	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Ramshead Bar, Front Bar Refinishing	09/16/02	Within Timberline Lodge Agreement No Adverse Effect. Stipulation III.C.3.b.
Austin Paintings, Cleaning	09/26/02	Within Timberline Lodge Agreement No Adverse Effect Stipulation III.C.3.b.
Cleaning “Pack Train” painting by C.S. Price	10/01/02	Within Timberline Lodge Agreement- Stipulation III.C.3.b.
Public Address System	10/01/02	Within Timberline Lodge Agreement No Adverse Effect Stipulation III.C.3.b.

Cloud Cap - Tilly Jane National Historic District

Plan is being developed to provide management guidelines to the historic district, structures and special interest area. We expect to complete this document in fiscal year 2003. The following projects were approved, after consultation with the State Historic Preservation Officer in 2002:

- Restoration work continued on the Cloud Cap Inn on the Hood River Ranger District through the special use permit issued to the CRAG Rats. No Adverse Effect determination was made.

- Restoration work, begun in 2001, on Tilly Jane Guard Station was completed through use of Nordic Club volunteers as well as by Forest Service employees.

- A draft plan that was developed for the Legionnaire's A-Frame by WBGS Architecture and Planning was reviewed but has yet to be accepted.

- A draft plan was developed for the Tilly Jane Cook Shed by Michael Dryden, Eastside Archaeologist for the Mt. Hood National Forest. The plan should be submitted to SHPO for review during fiscal year 2003.

Barlow Road National Historic District

Maintenance plan for the drivable portion of the Barlow Road was written by the east zone archaeologist. Final review should occur in FY 2003.

Marmot Dam

Historic Property Management Plan for Bull Run Decommissioning project was written by PGE/FERC and addresses one site on the Mt. Hood National Forest.

Hawk Mtn Lookout Cabin (Eligible to the National Register)

The following project was approved, after consultation with the State Historic Preservation Officer in 2002:

- Repair and maintenance including replacement of roof shingle, repainting the exterior, and repair of the porch and windows with in-kind materials. Work was completed by Forest Service employees.

Ollalie Meadow Guard Station (National Register of Historic Places)

The following project was approved, after applying the criteria effect:

- Remove current wood shingles and deteriorated roofing purlins replacement with in-kind materials. Repair porch posts with in-kind materials. This project was approved and completed as a Passport in Time Project.

Zigzag Ranger Station (National Register of Historic Places District)

The following project was approved, after applying the criteria established in the Depression-Era Management Plan (VI.A.):

- Painting of Building Exteriors.

Most of the Forest's historic administrative structures were built during the Depression-era (1933-1942) and are under the Depression-Era Management Plan. Maintenance and repair work on these buildings is ongoing as budgets allow.

While all of the work appears to have had "No Effect", they must be reviewed by the District Archaeologist to determine what level of consultation with the State Historic Preservation Office is required. Timberline Lodge, also considered a depression-era structure, is managed under the 1999 "Programmatic Agreement Implementing the Historic Building Preservation Plan for Timberline Lodge".

Because of reduced facility maintenance budgets, many historic administrative buildings are not receiving adequate maintenance and have not for a number of years. Lead paint, in particular, which was used on most buildings up into the 1970's is now a hazardous material concern and expensive to remove or contain. A Facility Master Plan (finalized in 1999) was prepared to address the impacts of the decreasing budget and which administrative buildings were no longer needed. Until the final disposition of these buildings is determined, very little maintenance will be performed. Allowing historic buildings to deteriorate is considered an "Adverse Effect." While a few other historic buildings such as Timberline Lodge and Cloud Cap Inn are being maintained, many others are not receiving any maintenance or stabilization measures. Options such as placing a building under a special use permit or offering as a cabin rental are being explored.

3. Nominations to the National Register of Historic Places

The last National Register nomination was Bagby Guard Station in September 1999. The Cooper Spur Warming Hut nomination documentation work was completed in 1994, including SHPO consultation, but has yet to be submitted. In consultation with the State Historic Preservation Office, the Forest evaluated four sites in fiscal year 2002. One site was determined to be eligible for inclusion on the National Register of Historic Places and three sites were determined to be ineligible for inclusion. Nominations of eligible properties is not a current focus for the Forest at this time because sites found eligible are protected as if they were nominated.

4. Interpretation of Cultural Sites

Three avenues are typically used to initiate public involvement in cultural resources: interpretation, education and volunteerism. Our long-standing interpretive program at Timberline Lodge is often an overlooked accomplishment. Thousands of visitors are contacted each year at the Lodge and learn about the depression-era history on Mt. Hood.

Other interpretive projects are implemented as opportunities arise. One of the best vehicles to interpret heritage resources on National Forest lands is by introducing volunteers to their historic heritage and to let them have the "hands-on" experience of excavating a prehistoric site or repairing a 100-year-old building. The Mt. Hood National Forest sponsored one Passport in Time Project, and one non-Passport in Time group volunteer project in 2002.

Interpretation/Education Projects

- Frequent tours are conducted at Timberline Lodge along with the interpretive displays that the Friends of Timberline oversees.

- The Barlow Ranger District hosted an on-site interpretive program on emigrant use of the Barlow Road. School classes throughout the National Forest area were invited to visit a real covered wagon camp set up at White River Station Campground. This program is held in conjunction with the Oregon Archaeology Month Celebration.

- The Oregonian newspaper wrote an article on the Olallie Meadow Guard Station Cabin Passport in Time volunteer project. Olallie Meadow Guard Station is the earliest administrative site on the Mount Hood National Forest.

Volunteer Projects

- On Memorial Day Weekend, volunteers from the Oregon Archaeological Society assisted on an archaeological project in Wasco County.

- Passport in Time volunteers helped re-roof and repair the historic Olallie Meadow Guard Station in Marion County.

- Volunteers interviewed a former fire lookout for Hawk Mtn. Lookout. The volunteers also assisted in repair and maintenance of the lookout cabin in Clackamas County.

- Nordic Club volunteers helped perform historic rehabilitation at Tilly Jane Guard Station in Hood River County.

- An individual volunteer has provided clerical support to the East zone archaeologist on a regular basis throughout FY 2002.

- Three volunteers provided services to complete the laboratory curation of materials excavated from the Borrow site in FY 2001.

5-6. Ongoing Condition Monitoring/ Cumulative Effects

Several historic buildings and sites such as Timberline Lodge, Silcox Hut, Zigzag Ranger Station, Clackamas Guard Station, and the Barlow Road Historic District receive periodic monitoring. Approximately 109 archaeological sites were monitored. Most of these are located in high use areas or near proposed projects and are visited year after year. To monitor some of the most vulnerable sites, the Forest developed a Memorandum of Understanding with the Oregon Archaeological Society (along with the Gifford Pinchot National Forest and Columbia Gorge National Scenic Area), to establish a site stewardship program in FY98. After receiving training, the OAS volunteers were assigned one or more sites to visit periodically and record site conditions. This partnership continued to be successful in FY02.

Currently, there is no systematic tracking or studies of cumulative effects of forest project activities on cultural resources. Avoidance of impacts to cultural resources has been a goal of the vast majority of projects. Therefore, effects of any kind from projects are rare. The Heritage staff routinely monitors the condition of cultural resources during and after project activities to ensure that the avoidance procedures are followed. No cultural resources were impacted in FY02.

Recommendations

There are many important aspects of the Cultural Heritage program that need ongoing or additional focus which include the following:

- Complete the consultation process for the Management Plan and Memorandum of Agreement for Peeled Trees.
- Complete management plan for Cloud Cap-Tilly Jane Historic District and Special Interest Area.
- Complete the reanalysis of the forest-wide inventory design.
- Proceed with converting site records into electronic databases such as Infra and GIS.
- Evaluate the remaining historic buildings on the Forest for eligibility to the National Register of Historic Places.
- Develop a Forest-wide historic building plan that will include a historic context statement, a summary of National Register evaluations, and direction for disposition of surplus historic facilities.
- Ensure that maintenance and repair work on historic structures is done only after review.
- Develop a facilities plan identifying priorities for maintenance and repair.
- Complete the National Register nomination process for the properties that have already been started.
- Develop a site determination of eligibility schedule to reduce the backlog of unevaluated sites.
- Develop a site-monitoring schedule to increase the number of sites monitored each year, with emphasis on sites that have not been visited in over ten years.
- Make timely decisions on building disposition so that appropriate repairs, maintenance, and stabilization efforts are performed on the building that will be retained.

Geology

Goal

The goal for the geology program is to sustain the productivity of the landscape in areas susceptible to landslides. Long term stability of the area is the overall objective.

Earthflow

There was one timber harvest unit in FY02 on land mapped as moderate earthflow. This 38-acre unit was a commercial thin on the Decoy II timber sale. About 1/3 of the smaller trees were removed to promote more vigorous growth in the remaining trees. The canopy closure was reduced below 70%. It is estimated that recovery to 70% crown closure will occur in approximately 10 years. This unit was field reviewed and modified slightly by slope stability specialists during the project planning stage. Slope stability specialists determined that the short-term risk of initiating or accelerating earthflow movement was minimal and that the enhanced growth of the remaining trees will have a positive long-term effect on earthflow stability. Timber harvesting guidelines in the Forest Plan were designed for clearcut harvest units and no specific guidelines exist for other types of harvest methods. No roads were constructed on B8 (earthflow) land.

Forest Plan standards and guidelines for B8 land have been exceeded several times since monitoring began in FY91. In each case a slope stability specialist determined that the long-term benefits to earthflow stability justified the temporary departure from the standards and guidelines. No acceleration or initiation of earthflow movement has been measured or suspected as a result of timber harvest or road building activities on B8 land since FY91.

Landslides

Two commercial thin timber harvest units occurred on mapped landslides other than B8 land in FY02. Total acreage for the two units was 10 acres. These units were field reviewed by a slope stability specialist before harvest. No roads were constructed on mapped landslides other than earthflows. Long term stability of the area is expected.

There was one major debris flow on Mt. Hood during FY02, occurring during a period of record heat and rapid snowmelt. It occurred on June 14, 2002 in the Muddy Fork of the Sandy River. Debris flow frequency has increased on Mt. Hood since a regional climate change that occurred in 1995. Large debris flows are one of the geologic hazards associated with large active volcanoes. Large debris flows in the stream channels that drain Mt. Hood are likely to continue, threatening public safety and transportation routes. Interagency efforts are underway to redesign stream crossings or relocate roads to minimize the damage from these natural events.

Recommendations

- Continue measurements during FY02 at established earthflow monitoring stations which will provide valuable information to guide future management activities on earthflows. These measurements are primarily for slope movement rates. Measurements have been made annually since 1993 and are showing movement rates ranging from zero to several feet per year. Much additional effort is still needed in verifying the scientific validity of the standards and guidelines for earthflows, particularly those covering hydrologic recovery.

- Additional efforts in 2003 should be focused on continuing the on-the-ground monitoring of the earthflows to enlarge our baseline data to enable the evaluation of future changes due to management activities, continuing the review of the risk classification system for earthflows, and continuing the field verification of the earthflow and landslide boundaries.

Minerals

Goal

The goal of the minerals program is to provide a sustainable flow of mineral resources while maintaining compatibility with other resources potentially impacted.

There were no commercial leasable or locatable mineral development activities on the Mt. Hood National Forest in FY02. Locatable mineral activities were limited to minor sampling and exploration on the Forest. Four Notice-of-Intents were submitted to the Forest. In all cases the planned activity was limited to mineral exploration. There were 21 inquiries from the public regarding laws and guidelines covering locatable minerals on National Forest managed lands. The Forest responded to 100% of these inquiries.

Most of the minerals activity on the Forest was with salable (common variety) mineral resources. These resources were managed using the Mt. Hood National Forest Rock Resource Plan as a guide. There was one project where a commercial operator removed 135 cubic yards from a Mt. Hood National Forest quarry. There were 6 major projects where a total of 5,000 cubic yards of mineral materials were used by the Mt. Hood National Forest. All of the major projects had operating plans and were field inspected for compliance with the plans. 100% of the transportation plans were reviewed. When necessary, operating plans were modified to adjust to changing conditions. Operators were not allowed to leave the source until all the requirements of the operating plan had been met. During FY02 there were 16 operating plans completed for current and future projects. Two small quarries were closed and restored.

There were 19 smaller projects (less than 500 cubic yards each) where salable mineral materials were used by the Mt. Hood National Forest. No operating plan was required for these projects. These projects removed a total of 2,400 cubic yards.

There were 532 smaller projects where salable mineral materials were used by the public. These projects removed a total of 474 cubic yards. These projects produced an insignificant level of surface disturbance and therefore did not require an operating plan. Prices for the various rock products available for sale to the public were adjusted in FY02 following the completion of an appraisal process that examined the prices charged at local commercial rock product businesses.

All the mineral activity took place in currently developed and designated common variety mineral material sources in a manner that did not conflict with other resource objectives. Not all the existing sources have completed formal long-range development plans. No new development plans were completed, although several remain nearly completed.

The Mt. Hood National Forest continues to be able to supply high quality rock products to the general public, other government agencies, and for our own use. Rock is a non-renewable resource, however, this forest has large quantities of high quality rock and with proper resource management, should be able to satisfy demand for many years. Many of our sources are being depleted of the easily accessible loose material by the continuing demand for “landscape rock” by the public. An effort needs to be made to inexpensively create additional loosened material at those sources to meet the public demand for small quantities of salable mineral materials.

Fisheries

Goal

The goal of the Fisheries Program is to maintain or increase fish habitat capability and assure long-term aquatic ecosystem health.

Setting

The Mt. Hood National Forest is home to several populations of salmon, steelhead, and resident trout. There are over 1,600 miles of fish-bearing streams on the Forest with approximately 300 miles supporting anadromous (i.e., ocean-going) populations of salmon and steelhead. The primary river basins on the Forest include:

- Clackamas River Basin
- Fifteenmile Creek Basin
- Hood River Basin
- Sandy River Basin
- White River Basin (Deschutes River system)

The federal lands, predominately Forest Service, comprising these river basins make up the vast majority of land ownership. Federal lands, on average, comprise from two-thirds to three-quarters of the total land ownership in these river basins, thereby emphasizing the critical importance of the aquatic habitat conditions on the Mt. Hood National Forest.

Given the predominance of federal lands in the primary river basins identified above, the role of federal lands is critical in providing "anchor" habitats for rebuilding fish populations to sustainable levels. "Anchor" habitats are considered as those streams or rivers that provide relatively good to excellent aquatic habitat conditions in large watersheds (20-50 mi^2). These areas have the added protective measures afforded to them by statutory federal requirements (e.g., Wild & Scenic Rivers Act, Wilderness Area protection, Roadless Area designation, Northwest Forest Plan Aquatic Conservation Strategy, etc.). While the status of fish populations in each of the primary river basins is of particular concern, given the number of Endangered Species Act listings across the Forest (see Table 2-7, below), the maintenance and enhancement of aquatic habitat on federal lands is crucial for their recovery and long term sustainability. As habitat managers, Forest Service personnel continue to protect and restore valuable stream habitats and riparian areas.

Anadromous fish have a complex life history, which includes freshwater, migration and saltwater phases. Salmon, steelhead, and bull trout production continue to be monitored in the Clackamas, Fifteenmile, Hood River, and Sandy River basins. Forest Service personnel in collaboration with other federal, state, and non-governmental partners monitor fish production differently in each basin. In some basins, redd surveys are conducted annually on index reaches, while in other basins snorkel counts are used. Monitoring of smolt production occurs to the largest extent in the Clackamas River Basin, followed by the Sandy River Basin to a lesser extent.

In addition to fish population trend monitoring, stream habitat restoration projects are also monitored to evaluate their effectiveness for enhancing habitat conditions. District personnel monitor various habitat restoration projects each year. Monitoring of habitat restoration projects may be as simple as photo points, or as complicated as using biofilm collecting tiles in streams to calculate stream productivity.

Table 2-6: Fish Populations of Concern on the Mt. Hood National Forest

Species	Evolutionary Significant Unit	Status	Watershed
Steelhead (*Oncorhynchus mykiss)*	Lower Columbia River	Threatened 3/98	Sandy River, Clackamas River, Hood River
Steelhead (*Oncorhynchus mykiss)*	Middle Columbia River	Threatened 3/99	Fifteenmile Creek, Mill Creek
Chinook (Oncorhynchus tshawytscha)	Lower Columbia River	Threatened 3/99	Sandy River, Hood River
Chinook (Oncorhynchus tshawytscha)	Upper Willamette River	Threatened 3/99	Clackamas River
Coho (Oncorhynchus kisutch)	Lower Columbia River/ Southwest WA	Candidate 7/95	Clackamas River, Sandy River
Bull Trout *(Salvelinus confluentus*)	Columbia River District Population Segment	Threatened 5/98	Hood River
Redband trout *(Oncorhynchus mykiss gairdneri)*	N/A	Sensitive	Miles Creeks, Hood River, White River
Cutthroat Trout (*Oncorhynchus clarki)*	N/A	N/A	Clackamas, Sandy, Hood River, Miles Creeks
Rainbow Trout (*Oncorhynchus mykiss irideus)*	N/A	N/A	Clackamas River, Sandy River, Hood River, Miles Creeks

Fish Population Trend Monitoring

Winter Steelhead Spawning Surveys (Barlow and Hood River Ranger Districts)

Since 1985, winter steelhead surveys have been conducted in the Fifteenmile Creek Watershed. Fifteenmile Creek, Ramsey Creek, and Eightmile Creek have been surveyed since 1985, and Fivemile Creek and Middle Fork Fivemile Creek were added in 1992 and 1993, respectively. Surveys have been conducted in conjunction with the Oregon Department of Fish and Wildlife wild winter steelhead surveys conducted off-Forest.

In 2002, Forest personnel surveyed a total of 21.2 stream miles on the Barlow Ranger District. 7.9 miles were repeat surveys in several Fifteenmile and Ramsey Creek reaches. A total of 87 steelhead redds were found, primarily in Ramsey and Fifteenmile creeks. Surveyors also noted 12 test digs, defined as an area where steelhead appeared to have dug in the substrate but, usually due to small size, the surveyors did not consider it to be a true redd where eggs were deposited. Seventy-one adult steelhead were seen and a total of 10 carcasses found. One lamprey redd was found.

Most redds and fish were seen in the lower reaches of Ramsey Creek and Fifteenmile Creek. No redds or adults were seen in Middle Fork Fivemile Creek and only one redd was counted in the lower 1.8 miles of Eightmile Creek within the Mt. Hood National Forest.

Total redd counts in 2002 were high (Figure 2-2); 150 or more redds were counted compared to any of the previous three years. Reaches and total miles surveyed since 1999 by agency personnel have been similar, and most of the discrepancy in miles surveyed was due to Forest Service personnel not surveying upper reaches in the watershed where we normally do not find many, if any, redds. Therefore, we believe that comparing the last four years gives a reasonable index of steelhead adult run strength within the Fifteenmile watershed upstream from Dufur (excluding Fivemile Creek).

In addition, several streams in the Hood River system were surveyed. Eight-tenths of one mile was surveyed from Coe Branch to the Clear Branch Dam on Clear Branch, and five redds were found. Sections of McGee, Bear, and Jones creeks and West Fork Hood River were surveyed, but no redds were found.

Figure 2-2: Six Year Summary of Steelhead Redd Counts in Fifteenmile Creek Watershed

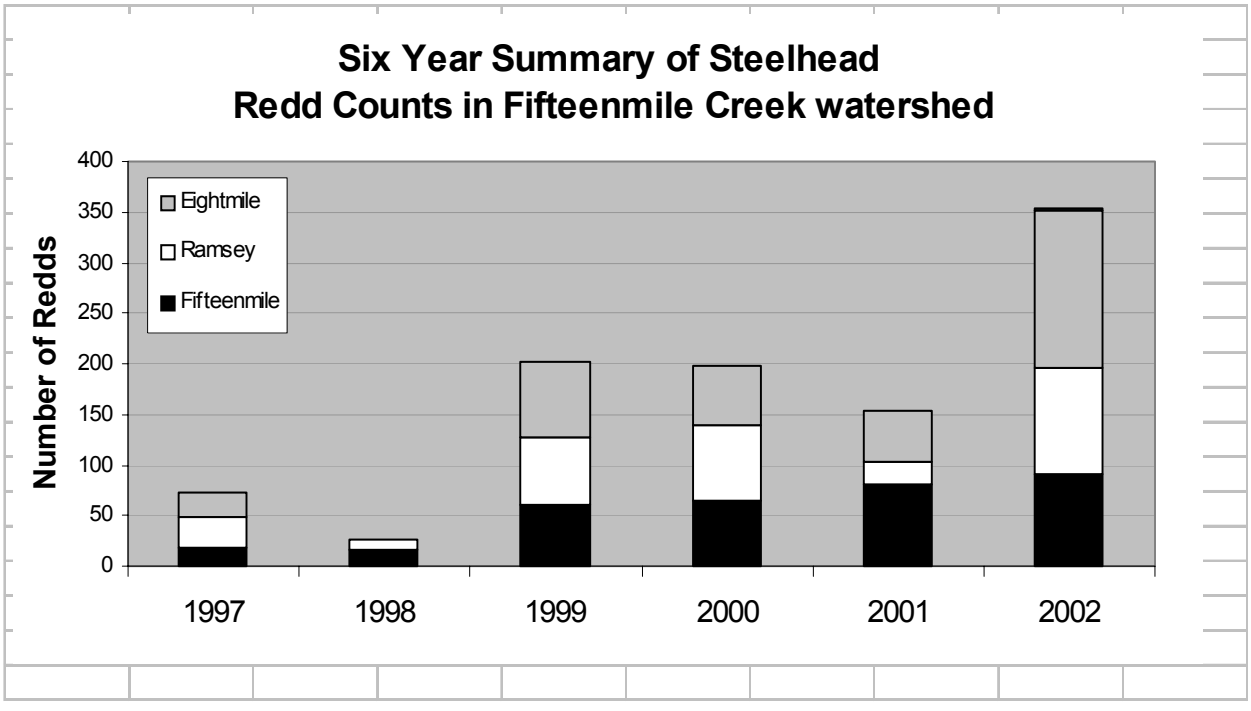
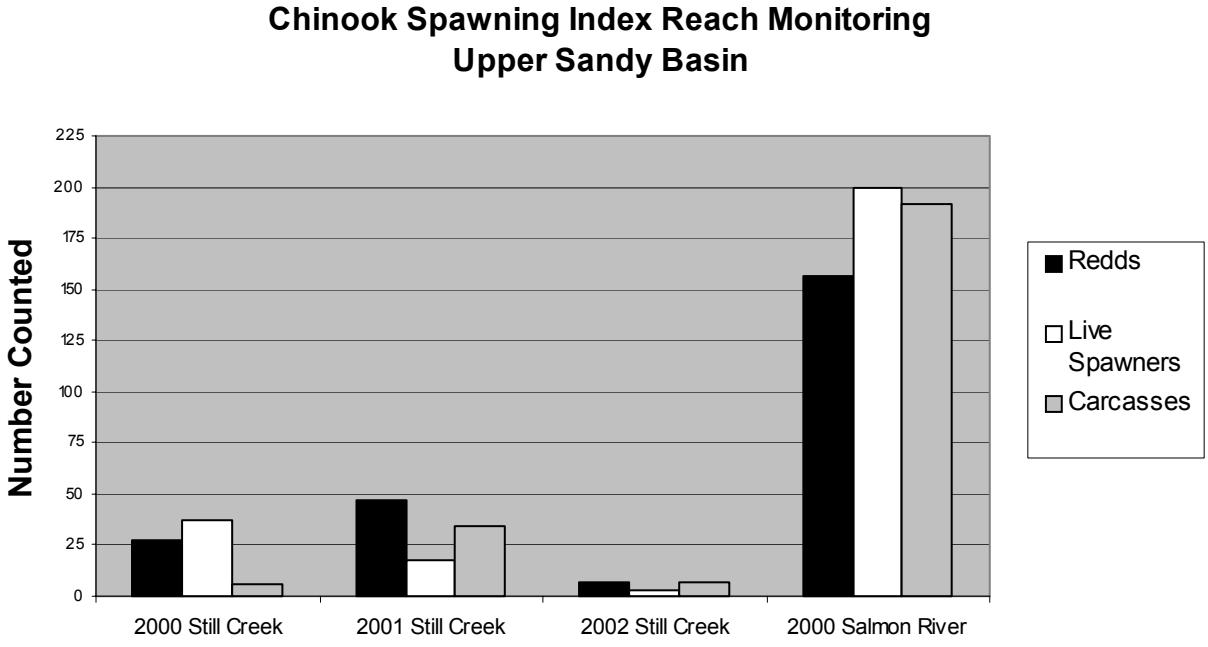


Figure 2-3:Chinook Spawning Index Reach Monitoring, Upper Sandy Basin



Winter Steelhead and Chinook Spawning Surveys (Zigzag Ranger District)

A standardized method to monitor the numbers of steelhead and chinook redds at index reaches on Still Creek and the Salmon River began in 2000. Spawning surveys are conducted each spring and summer for winter steelhead and spring chinook. Figure 2-3 displays the results of chinook spawning surveys. Still Creek counts are from index reaches, and the Salmon River count is taken from a 14-mile section from the mouth to Final Falls. Winter steelhead redd counts in 2000, 2001 and 2003 were not enumerated because of high flows. Salmon River 2000 chinook information is provided for comparison.

Bull Trout Spawning Surveys and Adult Counts (Hood River Ranger District)

Redd surveys are repeated annually in low gradient, non-glacial streams to establish spawning index rates. In 2002, 11 bull trout redds were found in Clear Branch, 10 above Laurance Lake and one below. Two bull trout redds were found in the lower 1.25 miles of Pinnacle Creek.

Snorkeling is the primary survey technique to monitor population trends. Snorkeling at night is the most successful for consistent juvenile census. Night snorkeling is used for all exploratory surveys to find new populations within the Hood River Basin. The results of the annual counts are displayed in Figure 2-6. 2002 is the first year index reaches were snorkeled at night. In the past, day snorkeling was conducted in Clear Branch Creek for the annual count of upstream adult migrants.

The Hood River Ranger District has now switched to night snorkeling only. 2002 is the fifth consecutive year that no adults have been found below the Clear Branch Dam.

Bull Run Lake Cutthroat Trout Monitoring (Zigzag Ranger District)

In 2002, the Zigzag Ranger District continued annual monitoring of cutthroat trout spawning in the tributaries of Bull Run Lake, as required under the Bull Run Lake Mitigation and Monitoring Plan. The lake, used as a source of drinking water by the Portland Water Bureau, has a unique, naturally producing wild population of coastal cutthroat trout. Since cutthroat trout are the only fish in the lake, this population is pure and is not subject to hybridization with other fish.

Figure 2-4: Adult Bull Trout Index Reach Monitoring, Clear Branch Creek

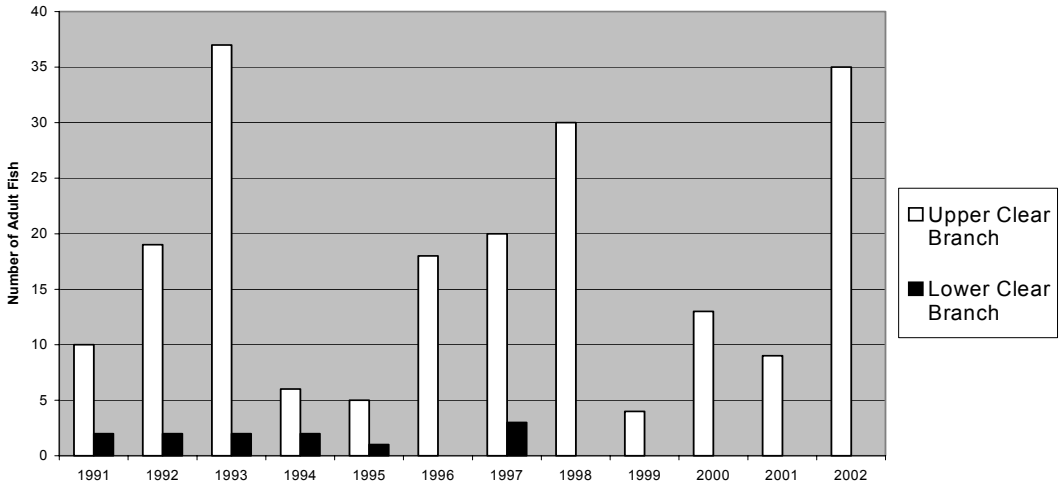
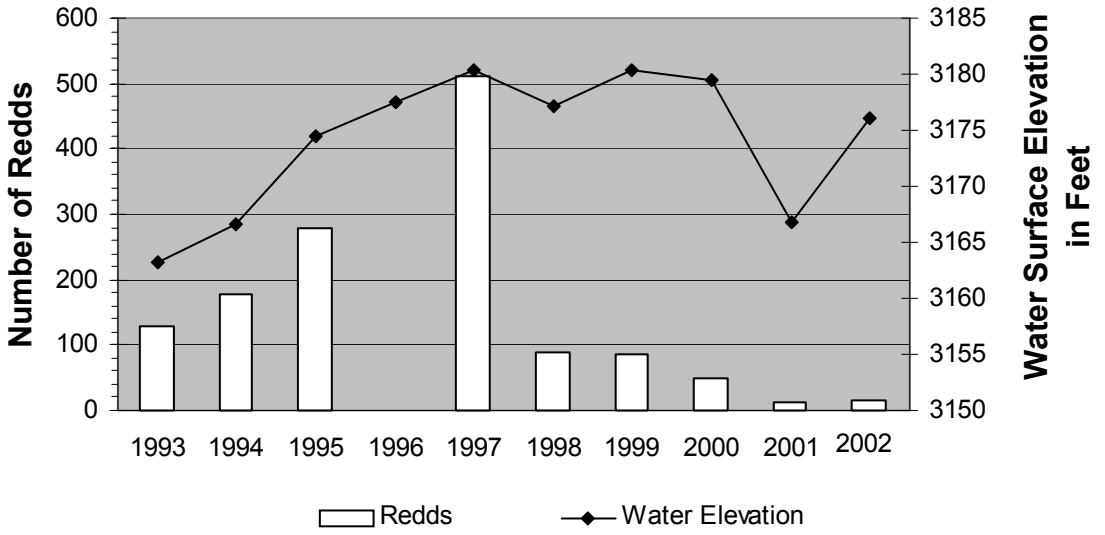


Figure 2-5: Bull Run Cutthroat Trout Redd Monitoring



The drought during the winter of 2000-01 resulted in the lowest lake levels since 1993. Spawners had difficulty accessing spawning streams. As a result, tributary redd counts in 2001 were the lowest since monitoring began in 1998. In 2002, redd counts remained low even though lake elevations were high enough for spawners to access the tributaries (see Figure 2-7).

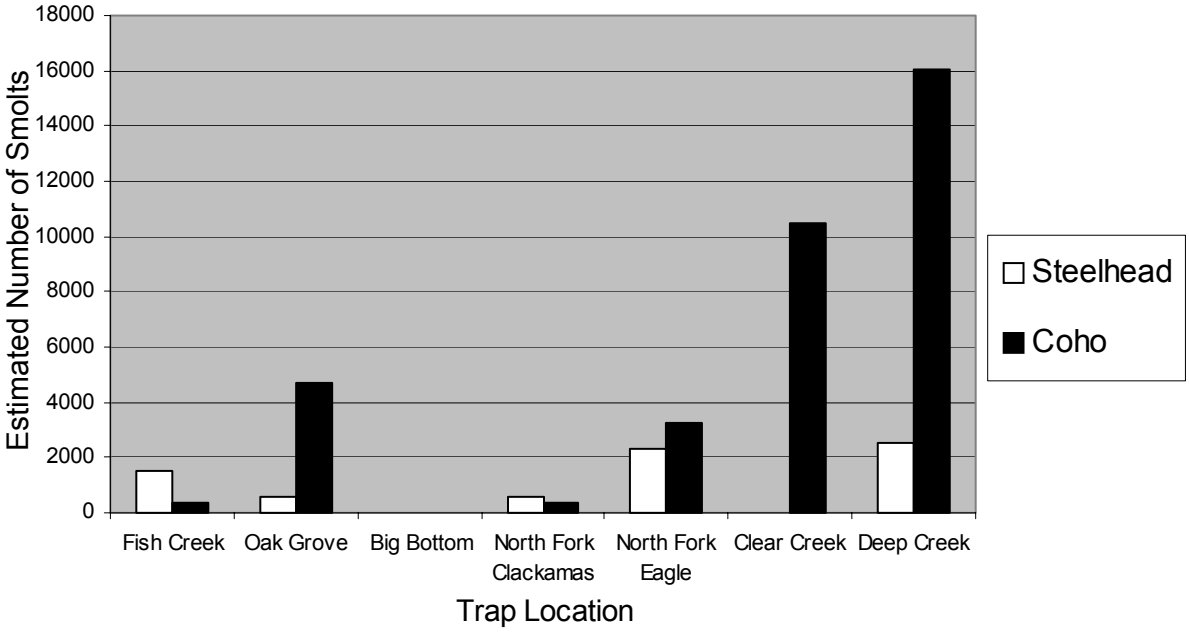
Clackamas River Smolt Production Monitoring (Clackamas River Ranger District)

Since 1993, a consortium of fish biologists from federal, state and private organizations has partnered together to address fish management issues on the Clackamas River. In 2002, the Clackamas River Ranger District continued its role as a principal partner.

Biologists led efforts to monitor out-migrating smolt populations through a system of seven rotary smolt traps at locations throughout the Clackamas River Basin. Four are on-Forest and three are operated off-Forest. All fish caught are enumerated, and population estimates are completed for Pacific salmon and steelhead. Figure 2-8. displays the results of the 2002 trapping season. The trap at Big Bottom was out of service for much of the trapping season, therefore no population estimates are reported.

During the spring smolt out-migration a second study was undertaken to investigate the apparent mortality of a significant percentage of coho smolts originating in the Big Bottom reach of the upper Clackamas. Two hundred coho were given PIT tags at the Big Bottom smolt trap and, of those, only 52% were detected at the North Fork Dam juvenile bypass, 30 miles downstream. No evidence of size-dependent mortality was found.

Figure 2-6: Clackamas River Fish Traps Year 2002



Upper Sandy River Smolt Production Monitoring (Zigzag Ranger District)

In 2002, the Zigzag Ranger District continued monitoring of smolt production in the Upper Sandy River Basin at Still and Lost Creeks. Smolt trapping provides increased accuracy for monitoring recovery of upper Sandy River Basin stocks of threatened steelhead trout and coho salmon. This data will also be incorporated into the Ecosystem Diagnostic Treatment (EDT) Method for modeling productivity in the Sandy River Basin.

In 2002, 987 coho and 569 steelhead fish (juveniles and smolts combined) were captured at the Still Creek trap. Numbers were very low at the Lost Creek trap, only 26 steelhead smolts were captured.

Environmental education is also a key component of the Zigzag Ranger District smolt traps. Beginning in 2001, students from Portland-area high schools and colleges were given the opportunity to help staff the traps as a part of their school curriculum.

Stream Restoration Project Effectiveness Monitoring

Clear Branch Habitat Restoration (Hood River Ranger District)

A major restoration project was recently completed in upper Clear Branch Creek on the Hood River Ranger District (see annual reports from 1999 and 2000). An abandoned side channel was re-opened, creating high quality bull trout habitat. Two subreaches in the project areas were established in 2001 as index reaches. Compared with other index sites in Clear Branch, juvenile densities in the index reaches in 2002 were the highest ever found since the bull trout monitoring program began.

Culvert Fish Passage Monitoring (Clackamas River Ranger District)

Fish passage studies on two baffled culverts conducted in 2000 were repeated in 2002. Minor culvert modifications were made in 2001, and studies were made in 2002 at higher flows. Passage was observed of several cutthroat larger than 78 mm in Tag Creek and larger than 107 mm in Tar Creek (which allowed no fish passage during the 2000 study).

Conclusions and Recommendations

The overall abundance of anadromous fish and bull trout continues to be low in those streams and rivers monitored on the Mt. Hood National Forest. While results for 2003 are slightly higher than 2002, overall abundance is still considered low and habitat capacity is very much under utilized. In 2003, approximately 22 miles of known steelhead spawning streams were monitored on the eastside of the Forest, and surveyors found an average of approximately four redds per mile. Spawning survey results on the Salmon River were better, revealing an average of nine redds per mile for Chinook salmon. As far as bull trout monitoring in the Hood River system, the distribution of bull trout has expanded significantly over the past decade, yet abundance is still quite low. The actual utilization of habitat by various fish species is far below the overall productive capacity of rivers and streams on the Mt. Hood National Forest. Therefore, Forest Service fish biologists continue to work in partnership with watershed councils across the Forest to assist in all fish recovery aspects at the whole-river basin level. In fiscal year 2002, Forest Service fish biologists:

- Served as a major partner in the initiation of the Hood River Subbasin Planning Effort where a full river basin assessment will be completed through the Ecosystem Diagnosis and Treatment (EDT) modeling procedure.

- Participated in a full basin prioritization of culvert-fish passage projects in the Hood River Basin. This represents one of the first collaborative efforts in the State of Oregon to prioritize culvert-fish passage needs for an entire river basin. This effort was undertaken in partnership with all federal, state, tribal, and non-governmental entities.

- Contributed to the full-basin assessment of the Sandy River Basin by completing the EDT modeling effort in partnership with all other Sandy River Basin Agreement (SRBA) participants. This effort also included the identification of restoration project opportunities throughout the basin on federal, state, and private lands.

- Participated in the Clackamas River Basin Fisheries Working Group to monitor fish populations all throughout the Clackamas River Basin and identify actions for recovery of fish populations.

- Contributed staff and materials to complete a high priority, off-Forest stream habitat restoration project in the Clackamas River Basin. This project was initiated and led by the Clackamas River Basin Watershed Council.

All of these efforts highlight the role, both on-Forest and off-Forest, that the Forest Service plays in helping to recover and maintain sustainable fish populations in the major river basins on the Mt. Hood National Forest. Monitoring of fish populations and restoration project effectiveness is often one of the first work items dropped when congressionally appropriated budgets are reduced. Fisheries Program managers at the Forest Headquarters and ranger districts continue to recognize the importance of the monitoring program and will continue to support and implement monitoring items in an efficient manner to the best of their abilities. In fiscal year 2003, Fisheries Program managers will work to better integrate spawning surveys with the Oregon Department of Fish and Wildlife's protocol primarily in the Sandy River Basin.

Water Resources

Goal

A key goal of the Mt. Hood Forest Plan is to protect and maintain the character and quality of water, providing for long-term sustained production resulting in favorable flows from the watersheds on the Forest. In addition, the unique and valuable characteristics of floodplains, riparian areas, and associated riparian and aquatic ecosystems are to be protected.

The purpose of various water resource-monitoring activities is to assess Forest Service compliance with the Clean Water Act, as outlined in a Memorandum of Agreement with the Oregon Department of Environmental Quality (DEQ). Some of the monitoring activities are also designed to monitor the effectiveness of watershed restoration work, such as road decommissioning.

Existing Situation

The Northwest Forest Plan (1994) prescribed various standards and guidelines for resource management activities, many of which are more stringent than those prescribed in the Mt. Hood National Forest Plan. A good example is the Northwest Forest Plan standard for riparian reserve widths, which are typically one or two site potential tree heights. Riparian reserve widths of one or two site potential tree heights are more than adequate for protecting practically all stream shading. As a result, water temperature monitoring for the effectiveness of riparian reserves to protect stream temperature at the project level is no longer needed. Monitoring funds for water temperature are now being used for water temperature trend monitoring at 87 sites across the forest, to gather data on existing water temperature conditions and also water temperature reduction in certain watersheds.

Implementation Monitoring

Implementation monitoring is directed at assessing whether the Forest Service is *"doing what we said we would do"*, i.e. assessing whether specific water quality BMPs and related Forest Plan standards and guidelines were identified, applied correctly (location, design, etc.), and applied in a timely manner.

Best Management Practices (BMPs)

BMPs are those practices used to achieve compliance with State water quality standards and protect the beneficial uses of water.

Post-project monitoring was done using the Best Management Practices Evaluation Process (BMPEP) for a limited number of projects. Visual observation was the predominant method used by watershed specialists to monitor the implementation and effectiveness of BMPs during 2002. Visual observations related to the effectiveness of BMP's for timber sales and road construction work are also made during the regular field inspections by timber sale administrators and/or engineering representatives during the life of a multi-year project. Resource specialists such as hydrologists and soil scientists are consulted if BMP effectiveness issues are identified.

Barlow Ranger District

Three timber sale units were monitored on the Barlow Ranger District using the BMPEP process. The monitored units were from two different timber sales.

Skid trails were monitored for compaction, erosion, rutting, and ripping. Riparian reserves were monitored for damage and width, and landings for location, size, and any rehabilitation needs. Monitoring was also done to check temporary roads for closures, erosion, and ripping as planned.

Of the 9 BMP's monitored, 8 (89%) were implemented as planned. One unit had a temporary road which was not closed and ripped as planned. This temporary road will be used in a future sale and will be closed after that sale is completed.

All skid trails in the monitored units appear to have been ripped as planned. No damage to riparian areas was noted. The riparian areas were distinctly marked on the ground and were the proper width. Landings were ripped and no erosion problems were observed.

Monitoring of Tree Planting Project on Obliterated Road 5410

The objective of the monitoring was to determine survival of trees planted in riparian areas and swales on two miles of obliterated portions of Road 5410. The project was implemented in July 2002. The trees were watered and mesh tree shades installed.

Survival was estimated to be 95% for Douglas fir and ponderosa pine, 85% for alder, 70% for small cedar, and 5% for large cedar. Problems with tree survival were attributed to the length of cooler storage, low soil moistures at planting, and hot dry weather just after planting.

Regional BMP Evaluation

Portions of the East 27 Prescribed Underburn Program on the Barlow Ranger District were monitored for BMP implementation and effectiveness during a Regional evaluation of the BMPEP process on September 11, 2002. Several 100 point transects were run in the prescribed burn area to determine if the groundcover objective was met. The amount of exposed bare mineral soil was within acceptable limits. Very little rilling (from surface erosion) was observed.

Implementation of the Range Management BMP on the Wapinitia Allotment on the Zigzag Ranger District was also evaluated. Implementation monitoring involved determining whether herbacious or residual utilization and stream bank disturbance standards and monitoring methods were incorporated into the Allotment Management Plan, and whether monitoring had been done to determine whether the standards and guidelines had been met. The review team found that BMP implementation of the Range Management BMP was good.

Cumulative Watershed Effects Analyses

During 2002 a watershed cumulative effects analyses was completed for the Orchard timber sale on the Clackamas River Ranger District using the Aggregate Recovery Percentage (ARP) methodology. On the eastside of the Mt. Hood National Forest, work continued on the Juncrock and Bearknoll Environmental Impact Statements which are incorporating cumulative effects analyses using ARP methodology. Work continued on existing projects that have already had cumulative effects analysis completed.

Effectiveness Monitoring

Effectiveness monitoring is undertaken to assess whether applied BMPs and Forest Plan Standards are effective in maintaining water quality.

Monitoring of Olallie Complex Burn Rehabilitation Projects (Wattle installation and Vegetation establishment)

In August 2001, the Olallie Complex wildfires burned 2,622 acres on the Mt. Hood National Forest and the Warm Springs Indian Reservation. The Burned Area Emergency Rehabilitation (BAER) team identified 16 acres of critical seeding on the high severity burned areas immediately adjacent to Monon Lake, Olallie Lake and unnamed pothole lakes on the Mt. Hood National Forest. In addition, approximately 3 acres of shoreline and slope along Monon Lake, Olallie Lake and unnamed potholes were to have 5,300 feet of straw wattles installed for surface stabilization and erosion prevention.

Wattle Installation

The monitoring objective was to observe the amount of sediment caught behind the straw wattles to determine if installation procedures were adequate. Wattle function was observed during rainfall and snowmelt episodes that occurred in October and November 2001. In 2002, observations were made as to amount and location of trapped sediment, condition of wattles, and indications that flow was routed around or beneath the wattles.

Wattles seemed to be functioning properly except in high flow areas where streams formed below overflowing depressions. In these areas water was flowing at high enough volumes to travel under or around the wattle. Wattles also didn't work well where they had been flattened by snow. A barrier to downslope movement of sediment was no longer being provided.

However, smaller amounts of sediment appeared to be moving down slope than anticipated, for one of the following possible reasons. The soil surface is protected in many areas by an ash layer or organic crust. The ash layer, once moist, seemed to be cohesive, which may have allowed water to run over it without picking up many particles. The high elevation of the site (4,950 ft.), freezing temperatures and snowfall occurrence soon after the onset of fall rains, allowed little time for sediment transport by overland flow. When the soil and surface materials are frozen, few particles can be physically detached by water flowing over the surface.

No observations were made during initial rainfall events, therefore no conclusion could be reached about overland flow or sediment movement resulting from precipitation on dry ash surfaces.

The recommendation is to continue monitoring the project area. Install a silt fence prior to October 2003 to collect sediment from fall rains. Visit the site during initial fall rainstorms to observe overland flow and the silt fence. Consult literature and specialists on ash characteristics and wattle function.

Grass Seed Application

On October 10, 2001, 16 acres surrounding Olallie, Monon and unnamed pothole lakes were seeded by helicopter with a 25% Blue wild rye and 75% annual rye grass mixture.

Monitoring showed that germination was most successful on flatter slopes and in depressions where soils were moist and seed was in direct contact with soil. Lack of slope allowed water to remain on site long enough for absorption by entire ash layer and then into soil. Soils on slopes under ash layers and organic crusts were relatively dry, regardless of the time of year. Water did not seem to infiltrate into soil unless the soil was exposed, or water had first been absorbed into the entire overlying ash layer. Rainwater falling on slopes covered by a crust of partially burned organic material tended to run off downslope rather than being absorbed into the crust and infiltrated into the soil. Therefore, soils on slopes under crusts were relatively dry.

In many areas the rainfall is not of sufficient duration and volume prior to ground freezing events (November or December) for moisture to be absorbed completely through the ash layer and move into the soil layer. Therefore, soil moistures can remain relatively dry, even in spring after snowmelt has occurred.

The recommendation is to reseed areas where soil was exposed. Avoid areas where deep ash layers or vegetative crust was present. Hand seed rather than helicopter seed. Wait until fall to reseed to take advantage of fall and winter soil moistures.

Bull Run Road Decommissioning Water Quality Monitoring

Forest Service monitoring activities within the Bull Run Watershed focused on monitoring the effects of specific projects on water quality. For water year 2002, monitoring projects were implemented for the Bull Run Road Decommissioning Project.

Stream sampling above and below road crossings at Nanny Creek on the 1027 road is being conducted in order to evaluate the potential effects on turbidity associated with road decommissioning of a large stream crossing, and the mitigation measures used to minimize erosion at the site. A comparison of the turbidity data above and below the project area before, after, and during the project is used to characterize levels, duration and declines of sediment produced from representative project sites.

Due to the inaccessibility of most of the project area during the winter months, automated sensors able to sample turbidity and streamline were used. Turbidity is measured in NTU's (nephlometric turbidity units) every 30 minutes using turbidity sensors with a self-cleaning wiper. In addition, water levels were measured and related to the turbidity data to determine whether the turbidity values were collected when flows were rising or falling. Turbidity data is telemetered to the NRCS SNOTEL network using the NRCS meteor scatter telemetry system. The data is accessible over the Internet.

Turbidity monitoring was implemented in July of 1999, however due to damage to the downstream site associated with a bear attack it was decided to use the dataset starting on June 27, 2000, where there is paired data from the upstream and downstream sites, for the analysis. Between February 27, 2002 and September 9, 2002 the instrumentation at the site was not operational due to an extreme snowload which crushed the shelter housing the equipment.

The equipment was re-installed in September to catch the winter 2002/2003 storm season. The equipment failed again on March 16, 2003 due to a dead battery and will be restarted again in the late spring or summer of 2003.

During high streamflow events (storms), turbidity levels normally rise rapidly at the start of the event and begin to drop at or before the peak of the event as all the available sediment has been mobilized; this is the case with the turbidimeter at the site below project activities. The turbidimeter above project activities does not correlate well with streamflow, indicating that it is not functioning properly and most likely has been damaged by sand stuck in the wiper scratching the lens of turbidimeter (this problem has occurred repeatedly at the site below project activities).

A trends analysis was completed for the entire dataset (June 27, 2000 through March 16, 2003) at the Nanny Creek site below project activities.

Based on the analysis there is a significant decreasing trend at the 80% confidence level. This would indicate that the site is recovering and turbidity levels at the downstream site are getting lower each year. It should be cautioned that this is based on a limited dataset (3 years) and that the turbidimeter at the downstream site was outfitted with a protective sleeve which may have the effect of slightly lowering turbidities.

Looking at the streamflow records for the Blazed Alder River (approximately 1.5 miles from the Nanny Creek site), it appears that the high magnitude streamflows for the post activity period are similar and the decreasing trend in turbidity cannot be attributed to changes in streamflow.

The Monitoring Plan for the Nanny Creek project calls for monitoring to continue until a five year recurrence event is believed to have occurred near the project area, or until City and USFS staff are convinced that risks for additional erosion are very small (using revegetation, and stability of the area as indicators). As detailed by the streamflow at Blazed Alder gaging station a 5 year recurrence interval event has not occurred so it is planned to continue the monitoring through the winter of 2003/2004.

Trend Monitoring

Trend monitoring is conducted to monitor the quality of water quality (temperature, turbidity, pH, etc.) flowing from larger watershed areas over time. Water quality data collected during trend monitoring is not designed to determine whether BMP's are effective for a specific project, but rather to provide information that may be helpful in assessing whether Forest and Northwest Forest Plan standards and guidelines protecting water quality in a watershed where various resource management and restoration activities have been conducted over a period of time. Trend monitoring also provides important information to determine whether water quality is being maintained or improving over time.

Water Temperature Monitoring

Water quality standards are also regulatory tools used by the State Department of Environmental Quality (DEQ) and the federal Environmental Protection Agency (EPA) to prevent pollution of our waters. States are required to adopt water quality standards by the federal Clean Water Act. States submit their standards to EPA for approval.

The approved DEQ water temperature standards are as follows:

The seven (7) day moving average of the daily maximum shall not exceed the following values unless specifically allowed under a Department-approved basin surface water temperature management plan:

- **64° F (17.8° C),** where salmonid fish rearing has been identified as a beneficial use
- **55° F (12.8° C)** during times and in waters that support salmon spawning, egg incubation and fry emergence from the egg and from the gravels;
- **50° F (10° C)** in waters that support Oregon Bull Trout.

The Oregon DEQ has developed an interim guide for the period of time the 12.8 degrees C. standard for salmon spawning applies in the Hood River Basin. The interim guide for when this standard applies to other basins is unpublished. Compliance with the 12.8 degree C. standard for spawning was assessed for the Clackamas and Hood River Ranger Districts. Compliance with this standard for the Zigzag and Barlow Districts will be included in next year's report.

Barlow Ranger District

During 2002 water temperature monitoring was conducted on thirty-four sites in seventeen streams on the Barlow Ranger District. Twelve of these sites were in the Miles Creeks watershed and 22 sites were in the White River watershed.

Optic stowaway data loggers were used to record hourly water temperatures. DEQ stream temperature monitoring protocols were followed. This involves conducting pre and post deployment calibrations to check the accuracy of the stowaways. Three field audit checks were performed, one at the beginning of the monitoring season, one at mid-season and one at the end of the monitoring season. A NIST traceable thermometer was used for these audits. The monitoring season started in early May for the low elevation sites, and moving upward in elevation as conditions permitted. All stowaways were retrieved from the field in October.

Most of the streams reached daily temperature maximums either on July 12th or 13th or the 25th through the 29th, except for the Badger Creek sites above and below the confluence of Gumjuwac Creek. These sites recorded the daily max.on August 28th and 29th. Most stream flows were higher than normal the first part of May, but normal or lower than normal in October. Overall, the 7-day average maximum temperatures were lower than in 2001 and more comparative to the 2000 readings.

Mile Creeks

Streams monitored in the Miles Creek watershed included sites on Fifteenmile, Eightmile, Fivemile, and Ramsey Creeks. The only temperature monitoring sites in the Miles Creek Watershed that recorded water temperatures (21.4 degrees C) that exceeded the State 7-day

average maximum temperature standard of 17.8 degrees C. (Celsius) was Ramsey Creek at the new Forest boundary. Water temperatures in Ramsey Creek at the new Forest boundary are influenced by tree removal prior to Forest Service ownership, causing lack of riparian shading and also due to low water levels in the late summer. A restoration project aimed at restoring riparian vegetation and channel structure was implemented for a distance of three miles above Ramsey Creek at the new Forest boundary monitoring site. Continued monitoring will identify what changes occur in the water temperature in the future.

Table 2-7: Results of Water Temperature Monitoring on the Barlow Ranger District

Temperature Monitoring Site	7-Day Moving Average o of Maximum Daily Temperature Degrees C 2002	Daily Maximum for Year 2002
Miles Creeks		
Ramsey Creek (old NF boundary)	14.7	16.0
Ramsey Creek (new NF boundary)	21.4	22.6
Eightmile Creek (forest boundary)	14.9	16.2
Eightmile Creek Head	10.1	10.1
Fifteenmile Creek (forest boundary)	16.2	16.7
Fifteenmile Head	9.8	10.4
Fivemile Creek (forest boundary)	16.4	17.0
White River		
Rock Creek (forest boundary)	18.7	20.4
Rock Creek (top of Rocky Burn)	14.4	15.4
Gate Creek (forest boundary)	19	20.2
Badger Creek (forest boundary)	22.5	23.8
Badger Creek (below Badger Lake Dam)	19.7	21.1
Badger Creek (below Gumjuwac Creek)	13.2	13.8
Camas Creek (2 miles downstream of Camas Prairie)	15.1	15.7
Threemile Creek (forest boundary)	9.5	9.8
Threemile Creek (forest boundary)	16.5	16.8
Threemile Creek (above rocky burn)	11.7	12.3
Tygh Creek (forest boundary)	14.7	15.7
Badger Creek (above Gumjuwac)	13.2	13.8
Little Badger Creek (wilderness boundary)	16.6	17.8
Gumjuwac (above the confluence of Badger)	10.8	11.4
Jordan Creek (forest boundary)	15.6	17.0

At Upper Ramsey Creek (old Forest boundary site), the 7-day average maximum was 14.7 degrees C, well below the State 7-day average maximum temperature standard of 17.8 degrees C.

Eightmile and Fifteenmile Creeks did not exceed the 17.8 degrees C. standard at any site. The Forest boundary sites of these streams reached a 7-day average maximum temperature of 14.9 degrees C. and 16.2 degrees C. respectfully, with the headwater sites having much cooler water temperatures of 10.1 degrees C. and 9.8 degrees C.

White River Watershed

Jordan, Tygh, Little Badger, Badger, Threemile, Gate, Camas. Clear, and Gumjuwac Creeks were included in the 22 sites monitored in the White River Watershed. Five sites monitored in the past were discontinued, but 5 new sites were added, of which 2 were in Little Badger Creek, and 1 in Gumjuwac Creek. Both of these streams were not previously monitored. The other two new sites were in Badger Creek above the confluence of Little Badger and Gumjuwac Creeks.

Rock Creek headwaters site has very low flow in the late summer months and will sometimes be dry by September 1, then start flowing again by mid September. This year a trickle of water was flowing on September 10th but was dry in Oct. Several sites did not meet the State 7-day average maximum temperature standard of 17.8 degrees C, of which three were in Badger Creek. The forest boundary site and the above the confluence of Little Badger site were two of these. They are both lowest in elevation (1,700 and 1,810 feet, respectively) of the monitoring sites, with an open eco-class of pine/oak and sparse vegetation. Little Badger above the confluence of Badger is of the same terrain and also did not meet the State standard. Badger creek below Badger Lake has been monitored for the past five years and has recorded 7-day average maximum temperatures between 18.2 and 20.4 degrees C. Warm water flows over a shallow spillway from the top of Badger Lake about 600 feet upstream from the monitoring site. Downstream from the monitoring site, several small, cool streams flow into Badger Creek and two miles downstream below the confluence of Gumjuwac the 7-day average maximum temperature is 13.2 degrees C.

In eight years of monitoring, the sites at Gate and Rock Creek forest boundary have not met state standard, but 2002's 7-day average maximum temperatures were the lowest in those 8 years. Conditions that could influence these temperatures are eastside low elevation, prior tree removal, Gate Creek has a diversion upstream from the monitoring site and the Rocky Burn Fire of 1973. The streamflow diversion on Gate Creek reduces stream flows and results in increased water temperatures. Water temperature at the Rock Creek site is also affected by the Rocky Burn. Restoration work has been ongoing, with log placement in streams and riparian planting. The plantations are established and vegetation is recovering.

As usual, Camas Creek on Camas Prairie had the highest readings on the Barlow District The Camas Creek on Camas Prairie site is probably a naturally warm site. The meadow is flat, marshy, un-shaded, with slow moving water, resulting in naturally elevated water temperatures. About 2 miles downstream, however, after the addition of springs, the stream cools and is well below standards (15.1 degrees C).

Clackamas Ranger District

Year-round temperature monitoring sites were maintained in six sub-watersheds of the Upper Clackamas in 2002; Fish Creek, Oak Grove Fork, the big Bottom reach of the Upper Clackamas, North Fork Clackamas, and the Collawash River. All temperatures (once per hour) were recorded using an Onset brand Optic Stowaway data logger.

Temperature records from the Big Bottom reach, Collawash River, and Roaring River were discontinuous, missing the month of February. The data logger in the North Fork Clackamas was lost to high flows after being downloaded near the end of November.

Water temperatures exceeded the 17.8 degree C. standard in three streams, Fish Creek, Collawash River, and North Fork Clackamas (3 miles below the Forest Service boundary). All basins but the Big Bottom reach and Roaring River exceeded the 12.8 degree C. threshold at least once.

Fifteen temperature monitoring sites throughout the Fish Creek watershed were also maintained as part of monitoring watershed recovery after large-scale road decommissioning. Fish Creek, throughout much of its length, below Wash Creek and three of its tributaries, exceeded the threshhold, making them water-quality limited, according to DEQ standards.

Based on the Restoration EA for Fish Creek completed in 1998, riparian areas lacking adequate shading have been replanted and young plantations have been thinned to accelerate tree growth in an effort to reduce water temperatures.

Table 2-8: Results of Water Temperature Monitoring at Year-Round Sites on the Clackamas River Ranger District

Site	Dates	Maximum Recorded Rolling 7-Day Degree C. Average	Number of Days Over 17.8 Rolling 7-Day Degree C. Average	Number of Days Over 12.8 Degree C. DEQ Standard
Fish Creek	1/1 - 12/31	21.8	37	29
Oak Grove	1/1 - 12/31	17.7	0	17
Big Bottom	1/1 - 1/31, 3/6 - 12/31	13.8	0	0
NF Clackamas	1/1 - 11/25	18.3	12	27
Collawash	1/1 - 1/31, 3/6 - 12/31	20.2	23	19
Roaring River	1/1 - 1/31, 3/6 - 12/31	15.5	0	0

Hood River Ranger District

Twenty sites on 18 streams were monitored for water temperatures with continuously-recording thermographs (Onset's Tidbits) from spring to fall of 2001. Sites were chosen with the following criteria: potential for (or documented use) by bull trout and/or anadromous fish, sensitive species, and/or site was suspected to have unnaturally elevated temperatures due to management.

Monitoring sites include: W. Fk. Hood River, East Fork Hood River (2 sites), Lake Branch, McGee Creek, Red Hill Creek, Robinhood Creek (2 sites), Meadows Creek, Tilly Jane Creek, Doe Creek, Dog River, Upper Clear Branch, Coe Branch, Eliot Branch, Bear Creek, Jones Creek, Tony Creek, N. Fk. Mill Creek and W.Fk. Neal Creek.

General findings are summarized below:

Only one of the twenty sites exceeded the 17.8º C for the 7-day average maximum. This site is on Lake Branch of the Hood River, just below Lost Lake, and is possibly related discharge of warm water from the lake.

All sites exceeded the 10º C standard at some point during deployment of the data loggers. Creeks that contain bull trout and exceeded the 10º C standard were Eliot Branch, Coe Branch, Bear Creek, and upper Clear Branch. The highest 7-day maximum average temperatures for Bear Creek and Upper Clear Branch were 10.7º C and 10.1º C respectively, which are very close to the standard. Coe Branch and Eliot Branch had 7-day maximum average temperatures of 12.1º C and 12.7º C respectively.

Overall, the temperature regimes on Hood River Ranger District are adequate to sustain salmonid species. There are, however, short reaches that have elevated temperatures due to management and/or natural conditions. Due to these concerns, sites will continue to be monitored and, where possible, management actions will be taken to try and reduce stream temperatures so that they are closer to natural conditions.

It is recommended to continue both baseline and project-related water temperature monitoring on the Hood River Ranger District. Continued water temperature data collection will most likely be required as part of the Implementation Plan for the recently released Total Maximum Daily Load (TMDL) for the Hood River Basin.

Table 2-9: Results of Water Temperature Monitoring on the Hood River Ranger District

Stream Name	Highest 7-day Max Avg for the Season (^{o}C)	Times Exceeding 17.8^{o} C 7-Day Max Avg	Times Exceeding 12.8^{o} C 7-Day Max Avg (Spawning Season 1/1 - 5/31)	Times Exceeding 10^{o} C 7-Day Max Avg
Bear Creek	10.7	0	N/A	21
Clear Branch	10.1	0	N/A	2
Coe Branch	12.1	0	N/A	67
Doe Creek	10.4	0	N/A	18
Dog River	13.0	0	N/A	77
East Fork Hood River (lower)	14.3	0	N/A	95
East Fork Hood River (upper)	15.5	0	N/A	108
Eliot Branch	12.7	0	N/A	77
Jones Creek	13.2	0	N/A	72
Lake Branch	20.7	16	N/A	82
Meadows Creek	14.6	0	N/A	68
McGee Creek	12.6	0	N/A	51
NF Mill Creek	14.5	0	N/A	98
WF Neal Creek	14.3	0	N/A	73
Red Hill Creek	11.0	0	N/A	39
Robinhood Creek (lower)	14.1	0	N/A	97
Robinhood Creek (upper)	10.5	0	N/A	5
Tilly Jane Creek	10.5	0	N/A	18
Tony Creek	10.7	0	N/A	21
WF Hood River	12.6	0	N/A	74

Note: Items that are designated N/A didn't have data loggers deployed during that time period.

Zigzag Ranger District

Baseline water temperature data was collected at 13 sites on the Zigzag Ranger District.

All stations monitored except the lower Little Sandy River at the USGS stream gaging station (about 1.5 miles downstream from the National Forest boundary) and the Bull Run River below the reservoirs met the State 17.8 degrees C standard for the 7 day average maximum stream temperature for rearing habitat. Temperature issues for both these sites are being assessed in the Sandy Basin Total Maximum Daily Load (TMDL) Process being conducted by the Oregon Department of Environmental Quality.

Table 2-10: Summary of Stream Temperature Monitoring Results - Zigzag Ranger District

Site	Monitoring Period	Maximum 7-Day Moving Avg of Maximum Daily Temp ^{o}C	Date of Maximum Temperature
Bull Run River (above reservoirs)	June 1 - Oct 1	16.0	August 11
Fir Creek	June 1 - Oct 1	13.4	July 23
North Fork	June 1 - Oct 1	13.2	July 13
South Fork	June 1 - Oct 1	15.3	July 23
Upper Little Sandy	July 16 - Oct 15	15.7	July 23
Middle Little Sandy	July 16 - Oct 15	14.8	July 23
Lower Little Sandy (USFS gaging station)	July 22 - Oct 15	18.9	July 25
Bull Run River below Reservoirs	June 1 - Oct 1	20.1	July 23
Upper Eagle Creek	July 19 - Oct 1	16.4	July 23
Lower Eagle Creek	July 19 - Oct 1	16.8	July 23
Salmon River at Linney Creek	July 2 - Oct 1	12.9	July 23
Linney Creek at Confluence with Salmon River	July 2 - Oct 1	10.0	July 23
Zigzag River at Forest Boundary	June 26 - Oct 1	13.4	July 23
Sandy River at Forest Boundary	June 26 - Oct 1	15.9	July 23

Continuous Water Monitoring Stations

Eagle Creek

An automated water monitoring station was installed in December 2001 upstream of the U.S. Fish and Wildlife Service fish hatchery. Eagle Creek is a tributary of the Clackamas River. Turbidity, water temperature, pH, conductivity, and flow depth are continuously monitored at 15 minute intervals.

Average monthly water quality data for 2002 are listed in Table 2-12 below, based on a preliminary analysis of the data. During a severe storm event on April 14,2002, turbidity peaked at 204.9 NTU's, compared to 406 NTU's at the Clackamas River monitoring site (Carter Bridge) downstream of Fish Creek Overall, water quality is very good at this monitoring station.

Table 2-11: Eagle Creek Monthly Water Quality Parameter Averages

Month	2002 Water Quality Parameters (Monthly Averages), Eagle Creek			
	Turbidity (NTU)	Water Temperature (Degrees F.)	pH	Specific Conductivity microS/cm
January	1.6	39.9	7.46	30.0
February	1.1	39.7	7.51	32.0
March	0.9	39.6	7.45	31.0
April	2.9	41.9	7.43	29.0
May	0.5	43.7	7.43	28.0
June	0.4	50.7	7.45	30.0
July	0.4	59.5	7.60	40.0
August	0.3	58.1	7.63	47.0
September	0.4	53.8	7.60	48.0
October	0.5	46.4	7.42	44.0
November	1.8	42.3	7.42	43.0
December	2.6	40.8	7.34	35.0

Clackamas River

The Carter Bridge water monitoring station was established in December 1999 to record the water quality of the Clackamas River as it left the Mt. Hood National Forest, and to provide the downstream water providers an early warning of turbidity problems. The station is located on the Clackamas River at Carter Bridge, one half mile below the confluence of Fish Creek. Items recorded at 15 minute intervals are date and time of collection, turbidity, water temperature, depth, specific conductivity and pH. Water quality data is available via telephone at various Mt. Hood National Forest and Clackamas County water provider offices. Average monthly water quality data for 2002 are listed in Table 2-13 below, based on a preliminary analysis of the data.

Average turbidity at this monitoring site is relatively low throughout the year, with average values of less than 1 nephlometric turbidity unit (ntu) from June through November, 2002. During non-storm periods turbidity is normally between 0.2 and 2.0 ntu's. During stormy periods when the river rises, instream turbidities can increase to greater than 100 ntu's. During a severe storm event on April 14, 2002, turbidity peaked at 406 ntu's. Overall, water quality is very good at this particular monitoring site on the Clackamas River.

Table 2-12: 2002 Clackamas River (Carter Bridge) Monthly Water Quality Parameter Averages

Month	2002 Water Quality Parameters (Monthly Averages), Carter Bridge, Clackamas River			
	Turbidity (NTU)	Water Temperature (Degrees F.)	pH	Conductivity microS/cm
January	8.9	39.8	7.46	43.0
February	3.0	39.8	7.51	49.0
March	5.0	40.5	7.52	47.0
April	11.8	43.1	7.40	39.0
May	2.1	45.6	7.40	38.0
June	0.6	51.3	7.49	41.0
July	0.5	57.4	7.76	51.0
August	0.4	54.0	7.83	65.0
September	*	*	*	*
October	0.4	46.8	7.78	67.0
November	0.6	42.8	7.70	63.0
December	3.6	40.6	7.60	55.0

**Missing data for month of September 2002*

Alder Creek

In a cooperative effort between the Forest Service, Bureau of Land Management, and the City of Sandy, turbidity monitoring stations have been installed on Alder Creek and the East Fork of Alder Creek at the Forest Service and Bureau of Land Management boundaries respectively.

These water monitoring stations measure stream stage and turbidity with the data telemetered to the Zigzag Ranger Station. The Alder Creek site has been continuously collecting turbidity data since August of 2001. Stage has not been collected intermittently due to a problems with the pressure transducer at this site. The East Fork Alder Creek site has been collecting turbidity data since September 2000 and stream stage data since August 2001. Data is recorded by the data logger at each site every 30 minutes. The data has been telemetered daily to the Zigzag Ranger Station via cell phone modem since September 2001.

Turbidity levels are generally very low at the East Fork Alder Creek site (90% of the turbidity values are less than 0.5 NTU's). The turbidity values at the Alder Creek site are slightly higher and may be attributed to the turbulent cross section at the sampling location and the lack of a protective shroud on the turbidimeter.

The similar turbidity levels between the East Fork Alder Creek and the Bull Run River would indicate that the turbidity levels are associated with natural processes within the watershed and not resource management activities.

Other Monitoring

Mt. Hood Meadows Water Quality

Baseline data for the Mt. Hood Meadows Ski Area continues to be collected on the Hood River Ranger District. This effort consists of two monitoring stations owned and operated by the Mt. Hood Meadows ski area, which have been operating for about eight years. Turbidity, water temperature, conductivity, and stage are monitored continuously. The Mt. Hood Meadows staff checks the monitoring equipment periodically, about every two weeks, and reviews the monitoring data for abnormal readings.

Stream Discharge (Outside of Bull Run)

The Forest funded a telemetered USGS stream gage on Fish Creek (Clackamas River Ranger District), and has reestablished a discharge measurement gage at a previously decommissioned USGS gaging station on the Upper Clackamas River at Big Bottom. Stream flow information from the Fish Creek gage is useful for characterizing the hydrology of the watershed and also providing real-time flow information to provide an alert for implementing flood emergency road maintenance (FERM) surveys and patrols. The Forest has also reestablished a previously abandoned USGS gaging station on the Zigzag River. This site will also be used to characterize the hydrology of the watershed, and also as an "early warning" indicator for FERM plan activation on the Zigzag Ranger District.

Still Creek

As part of the Watershed Analysis Process monitoring questions and data gaps were identified for each watershed. One of the monitoring opportunities and associated data gaps identified was stream flow data on Still Creek. This site was identified as critical due to it's association with the smolt trap used to assess salmonid escapement from Still Creek.

In order to address the monitoring question/ data gap an Aqua Rod was installed in Still Creek where Still Creek intersects the 20 road. The Aqua Rod is an instrument that can measure stream stage to the nearest millimeter. It is planned to measure stream discharge at different stream stages in order to develop a rating curve for this site.

Timberline Ski Area Water Quality Monitoring

The following report is a summary of the Timberline Ski Area annual report for water year 2001 completed by Golder Associates Inc. Seattle, Washington. The Golder Associates monitoring report for calendar year 2002 is not yet available. A more detailed summary report regarding this monitoring is on file at the Zigzag Ranger District Office.

The Timberline Ski Area has operated a skiing venue for over forty years at the Palmer snowfield on Mt. Hood, Oregon. Salt is applied to the Palmer snowfield during summer months to condition the snow surface and maximize its use for skiing. Salt (sodium chloride) has been applied on the Palmer snowfield since the early 1950's, and has expanded since that time to accommodate increased skiing opportunities on the Palmer snowfield.

Timberline Ski Area has conducted an ongoing annual surface water-monitoring program since 1988 to evaluate any potential effects to downstream surface water from salting on the Palmer snowfield. Over the years, additional data needs have been recognized, and the surface water-monitoring program has been modified and expanded to fully characterize the potential effects of salting on the environment. Currently, Timberline Ski Area manages a comprehensive environmental monitoring program that incorporates surface water quality monitoring, environmental fate assessments, salt composition analyses, and an overall salt management program.

This report presents the annual water quality analysis for the Timberline Ski Area for water year (WY) 2001 (October 1, 2000 to September 30, 2001). This evaluation was prepared in accordance with the Salt Management Plan developed by Timberline in 1996. The Salt Management Plan provides a framework for the management of all aspects of salt application on the Palmer snowfield, including all environmental evaluations. The data presented in this report are supplemented by historical data collected by Timberline from 1988 to 1989 (CH2M Hill) and from 1990 to 2000, which were presented in reports prepared by Golder Associates (Golder).

Results

The total quantity of salt applied to the Palmer snowfield in the summer of 2001 was lower than the summer of 2000. The mean chloride concentrations are lower for water year (WY) 2001 compared to WY 2000, although the mean specific conductance and mean total dissolved solids (TDS) values are slightly higher in WY 2001 compared to WY 2000.

The occurrence of slight increases in conductivity and TDS combined with lower concentrations of chloride and decreased salt application indicates that factors other than salting on the Palmer snowfield are affecting the conductivity and TDS. This is particularly apparent from the observation that conductivity and TDS also show slight increases in streams outside the salt application area.

The snow levels and total precipitation levels observed in WY 2001 were substantially lower than previous years. This resulted in lower stream flow levels in Salmon River and Still Creek. However, the decreased snowpack in the summer of 2001 may have resulted in increased solar exposure to the perennial snowpack, which contributed runoff to the streams draining the snowfield.

Short-term seasonal changes in chloride and specific conductance are observed in the upper elevation stations in Salmon River and Still Creek in response to salt application on the Palmer snowfield. Chloride and specific conductance typically increases in Salmon River and Still Creek above the 3,000 ft elevation near the end of the summer salt application periods, and decreases to normal values within a few days after salt application ends for the year. Chloride and specific conductance are typically reduced to levels similar to lower elevation (2,000 ft) or background streams over the winter months.

Chloride and specific conductance at lower elevation (2,000 ft) stations typically increase slightly in late summer, but decline over the winter months. However, there is little variation, as the concentrations observed in lower elevation streams are typically near the range of concentrations observed in background streams.

Still Creek is affected by inflows from Mineral Creek and Mineral Spring. This is evident by the observation that Still Creek Camp Host 3800, located above the confluence of Still and Mineral Creeks, contains lower stream temperatures, and lower chloride and specific conductance levels than Still Creek 3600, located below the confluence of Still and Mineral Creeks. Similarly, Mineral Creek 3800 and Mineral Spring contain higher temperatures, and higher chloride and specific conductance levels than both Still Creek Camp Host and Still Creek 3600.

Conclusions

- The total salt applied to the Palmer snowfield in WY 2001 (907,020 pounds) which is 15% lower than in WY 2000 (1,065,680 pounds), is the lowest (by 25%) since WY 1995.

- The snowpack and total precipitation for WY 2001 were the lowest observed in the 13-year record at Timberline, at 50% and 65% of the 13-year average, respectively.

- Stream flow in Salmon River and Still Creek was reduced substantially in WY 2001 as a result of low precipitation and snowpack.

- The overall chloride levels do not appear to be increasing in the Palmer drainage area.

- Chloride concentrations and specific conductance are elevated above background in upper (>3,000 ft elevations) stream stations within the Palmer drainage area during the salt application period, however, concentrations return to those similar to background over the winter months at the end of the salt application period.

- During the salt application period, chloride and specific conductance are elevated in upper (> 3,000 ft elevations) stream stations within the Palmer drainage, but are similar to background by the lower (2,000 ft elevation) stream stations within the Palmer drainage.

- The low flow at the end of the summer results in increased concentrations of chloride, specific conductance, and TDS because of the reduced dilution of snowmelt runoff from the Palmer snowfield.

- Specific conductance and chloride at Still Creek 3600 are influenced by inflows of geothermal water from Mineral Spring and Mineral Creek. The data logger and stream flow gage at Still Creek Camp Host 3800 provide data that represent Still Creek without the influence of Mineral Creek and Mineral Spring. The Still Creek Camp Host 3800 station better monitors the effects of salt application at the Palmer snowfield on Still Creek.

- Laboratory and data logger measurements of chloride concentrations in the Salmon River and Still Creek in WY 2001 are low and remain substantially below aquatic water-quality standards.

- Laboratory weekly mean measurements of specific conductance in the Salmon River and Still Creek in WY 2001 are all below the ODEQ guidance value of 175 umhos/cm. Data logger weekly mean measurements of conductivity were below the ODEQ guidance value, except at Still Creek Camp Host 3800 from August 19 through September 30, 2001.

- TDS at Salmon River 3445 and Still Creek Camp Host 3800 were below the ODEQ guidance value for TDS (117 mg/L) during WY 2001, with one exception. The weekly mean TDS concentration at Still Creek Camp Host 3800 in the week including August 16, 2001 was 125 mg/L. Nearly all streams, including streams outside the salt application drainage area, experienced elevated TDS during that week.

- The elevated conductivity and TDS observed in Still Creek are likely related to factors other than salting. This is based on the observation of increased conductivity in all monitored streams, including those outside the Palmer drainage area, and the observed decrease in chloride in all monitored streams.

Recommendations

Best Management Practices

Continue implementation of the Best Management Practices Evaluation Process (BMPEP) using the updated tracking forms provided by Forest watershed staff.

Forest Headquarters hydrology staff will assist Districts in accomplishment of BMP monitoring.

Watershed Effects Analyses

Continue the process of providing interpretations and guidelines for implementing Forest Plan standards and reflecting the findings and recommendations of ongoing research efforts. The objective is to develop consistent approaches across the Forest. Additional work is needed to compare the current watershed condition with established thresholds of concern for various watersheds.

Effectiveness Monitoring

Continue both baseline and project-related water temperature monitoring Forest-wide. Continue implementing the program to monitor turbidity at key locations on the Forest, focusing on streams/watersheds which are source areas for domestic/municipal water supplies. For those streams identified as exceeding state water quality temperature standards, do additional monitoring in 2002/2003 to determine if the water temperatures are naturally elevated. If the elevated water temperatures are a result of management activities or wildfire, evaluate restoration options begin working on a Water Quality Restoration Plans if needed.

Continue both baseline and project-related water temperature monitoring Forest-wide. Additional water temperature data collection will most likely be required as part of the Implementation Plan for the recently released TMDL for the Hood River Basin.

Timberline Ski Area Water Quality Monitoring

Timberline should continue collecting data logger measurements of chloride, conductivity, and temperature in Salmon River and Still Creek. The data loggers provide very useful information for monitoring the water quality at these stations on a nearly continuous basis.

The data loggers should be recalibrated and inspected annually to ensure that they function properly and are operating within calibration standards. The optimal time for recalibration is late fall (October or November) after the salting has stopped, and before significant snowfall has begun.

Timberline should continue collecting field measurements and samples for laboratory analyses at least three times per week in WY 2002, and then reduce to once per week beginning WY 2003.

The long-term goal for monitoring at Timberline is to use the data loggers as the primary monitoring tool at the 4,000 ft elevation in the Salmon River and Still Creek since they provide nearly continuous monitoring of stream water quality. The data loggers require further evaluation against laboratory data and further recalibrations to ensure that the data loggers provide reliable and accurate representations of the in-stream water quality. Once it has been shown that the data loggers provide reliable and accurate data for these streams, the sample collection for laboratory analysis should be reduced to once per week for about three years, and then to once per month for the long term.

Transportation/ Roads

Goal

Provide safe and efficient access for those who use the transportation system for recreation or management of the National Forest.

Road Management

The Mt. Hood National Forest continues to advance toward the objectives of the Forest Service Roads Agenda:

- We are decreasing the size of our transportation system.
- We are maintaining or improving our 620 mile mainline road system.
- We are decommissioning, closing or downgrading the maintenance levels on the remainder of our 3450 mile road system.
- Our priority in road decommissioning continues to be decommissioning roads in unstable geological areas or roads with unacceptable environmental impacts.
- Due to the high cost of road decommissioning, we focused our FY02 efforts on storm-proofing and closing roads.

Approximately 50% of our 3450-mile road system is either closed to public access or classified as "available for closure or decommissioning". Many of these roads are being closed naturally by brush. Gates, barricades and berms are used to close some roads but these closure devices are often vandalized and rendered ineffective. In FY02 we began constructing deep, rough water-bars on roads where road closure devices are frequently vandalized. These water-bars serve two purposes: They drain water off the road to prevent erosion. They also discourage use by making the roads uncomfortable to drive. These water-bars have significantly reduced the cost of repairing vandalized gates and barricades. Some of our FY02 accomplishments were:

- New Road Construction = 1.5 miles
- Road Decommissioning = 2.8 miles
- Road Reconstruction = 50.0 miles
- Storm-proofing = 40.3 miles

Reductions of road densities in the thirteen key watersheds is a primary road objective of the Northwest Forest Plan. Road densities in twelve key watersheds have been significantly reduced since the Northwest Forest Plan was implemented in 1992. Road density in the thirteenth key watershed has remained unchanged since 1992.

Some effects of downsizing the road system are as follows:

- Only one main route will be maintained to access an area or developed campground for passenger car use instead of two or three.

- There will be a decreased amount of miles available for recreation opportunities that accommodate passenger car traffic. Recreation opportunities that accommodate high clearance vehicles would be increased.

- The increasing demand of forest recreation use along with the decreased amount of miles available for passenger car traffic will result in more vehicle encounters, raising the probability of accidents occurring. However, maintenance efforts will be more focused on the mainline access roads.

- We should expect fewer landslides to occur.

- There will be less sediment reaching waterways.

- There will be less harassment to wildlife.

Five culvert barriers to passage of anadromous fish were replaced in FY02. Field reconnaissance and prioritization of an additional 10 barriers was completed in FY02. Two additional culverts from this prioritized list will be replaced or removed in FY03. Three others will be replaced in FY04.

Road Maintenance

Partnerships for road maintenance continue with the City of Portland in the Bull Run watershed and with the Oregon Department of Transportation on roads adjacent to the state highways. The Mt. Hood National Forest has used the Payments to Counties Act (Payco) to fund some road maintenance projects. The largest partner to our roads program continues to be the timber sale program with its program of road reconstruction and road maintenance to provide safe, economical timber haul.

Funding for road maintenance has decreased in recent years while the aging road system deteriorated at an increasing rate. Most of our road system was constructed 30 to 50 years ago. Maintenance funding has decreased at a time when it should be increasing to keep pace with the road system's increasing rate of deterioration. The trend of the road maintenance budget can be seen in the table below:

Table 2-13: Road Maintenance Budget

	FY 1989	FY 2002
Annual Road Maint. Needs	$5.2 million	$2.0 million
Annual Road Maint. Budget	$3.8 million	$0.8 million
Percent of Needs Met by Budget	73%	40%

The road maintenance budget has declined because of decreased timber sale road maintenance deposits and declining appropriated funding in the National Forest Service roads budget. The need for road maintenance has declined because of the declining heavy vehicle traffic use (i.e. log trucks), road closures, and a decrease in the prescribed level of maintenance on open roads. However, as the above table shows, we have not been able to decrease our needs fast enough to keep pace with the decreasing budget. Out of necessity we have focused our limited road maintenance funds on the highest priority roads, primarily the low clearance passenger car roads that access major recreation destinations. The table below displays our road maintenance priorities and accomplishments.

Table 2-14: Road Maintenance Priorities

	Total Miles on the Mt. Hood NF	Percent Maintained to Standard in FY02
Passenger Car Roads	643	61%
High Clearance Roads	1,150	37%
Closed Roads	1,649	25%

Deferring road maintenance to future years will lead to additional unsafe or unusable roads. Three solutions to this spiraling increase in road maintenance needs are:

- Decrease the standard of the roads. Maintenance of passenger car roads is five times more expensive than maintenance of high clearance roads.

- Close or decommission more roads. Road decommissioning is typically 2-3 times more expensive than road closure when discounted over a ten-year period. So for economic reasons, the forest has been focusing on road closures.

- Seek alternative funding sources for road maintenance.

The Mt. Hood roads engineering department has aggressively pursued the first two alternatives listed above. We have been less successful at generating additional funds for road maintenance.

Recommendations

- Identify forest priorities in capital investment projects that meet the objectives of reducing road system miles or downgrading road maintenance levels.

- Consider the five transportation management objectives listed at the beginning of this report during the BFES "budgeting process.

- Integrate road maintenance and long-term road management objectives into the objectives of project work.

- Enhance long-term road management objectives and maintenance needs in forest initiatives, activities, programs and responses to catastrophic events.

Wildlife/Plants

Goal

The emphasis continues to be on maintaining persistent and viable populations of native and desirable nonnative wildlife and plant species by:

- Protecting and restoring the biological and physical components, function and interrelationships of forested ecosystems,
- Protecting and restoring rangeland ecosystems,
- Providing quality recreation experiences with minimal impacts to ecosystem stability and condition, and
- Conserving populations of threatened, endangered and sensitive species through recovery and management efforts.

In addition, the implementation of the Northwest Forest plan has meant that consideration is not only given to threatened, endangered and sensitive species during the planning of management activities but to species classified as Survey and Manage species. This group includes lichens, bryophytes (mosses and liverworts), fungi, mammals, amphibians, and mollusks.

Monitoring Program

Threatened, Endangered, and Sensitive Species

Bald Eagle

The bald eagle is listed as threatened by the state of Oregon and the US Fish and Wildlife Service. Bald Eagles are primarily a winter migrant on the Forest. There is evidence of past nesting. Areas are designated in the Forest Plan (LRMP) for existing and established winter communal roost areas.

In all but one instance, all known and identified potential bald eagle nest and roost sites have been protected in accordance with the Forest Plan and USFWS Recovery Plan. Forest-wide Standards and Guidelines pertinent to bald eagles have been applied to activities which might effect habitat of or habitat use by bald eagles.

In one instance, a mistake in communication occurred about the status of the bald eagle nest at the Clear Lake nest site and sale administrators were not aware of the fact that a historic nest was now occupied and the sale was not modified according to Forest Plan and USFWS guidelines. The existing 100 foot buffer, silvicultural prescription, and seasonal restrictions proved adequate to allow for successful nesting of the pair in 2003.

A new bald eagle nest was identified a week prior to the writing of this document and is located near Rock Creek Reservoir. The site is occupied and with young.

One former nest site was monitored in 2002 by Frank Isaacs of Oregon State University. The site was found to be occupied and produced young. No communal roosts have been located on the Forest but an individual roost site was identified. This site had a planned thinning sale surrounding the nest site. The site received a 100 foot no cut buffer around the nest because it was unoccupied at the time the sale was planned. This site was logged in the fall of 2002. The site was occupied again at the time this document is being written.

Northern Spotted Owl

The northern spotted owl is listed as threatened by the US Fish and Wildlife Service. Management of spotted owls is outlined in the Standards and Guidelines (4/94) for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan).

The strategy for managing spotted owls has changed with implementation of the Northwest Forest Plan. The network of sites previously identified has been replaced with LSRs (Late Successional Reserves) and 100 acre LSRs for known sites. These areas are being maintained.

The basic assumption that maintaining required habitat and operating outside of critical periods is sufficient to maintain a persistent and viable population of spotted owls has resulted in less and less monitoring efforts. In 2002, two spotted owl surveys were conducted to protocol by using the Nighttime Survey Using Roads procedure by the Forest Wildlife Survey Crew. No spotted owls were detected. One pygmy owl was located during the survey. There will be little opportunity to increase the monitoring effort for the current year.

There is an ongoing interagency demographic study that is designed to sample a fixed population of owls stratified across the range of the owls. The demographic study is designed to be statistically significant in monitoring the owl population across its range. This has replaced the monitoring of owls on individual Forests.

Current Standards and Guidelines for activities that affect spotted owls are being monitored and followed.

Peregrine Falcon

The peregrine falcon has been delisted as endangered by the US Fish and Wildlife Service in 1999. The Forest Service will continue to manage peregrines as a sensitive species. Potential nesting habitat for the peregrine occurs on all Ranger Districts.

All identified potential habitat has not been validated. Surveys were done prior to 2000 but there have been no current efforts to establish presence or absence on new sites.

Identified areas have not been surveyed for occupancy nor is it known if the populations are increasing or using potential identified sites. There is insufficient personnel to survey all of the potential sites.

Monitoring for peregrine nesting in 2002 was confined to the two known nest sites. One of the two sites was successful. There were two young fledged from the successful site. In an effort to protect known pairs of peregrine falcons, one of the sites has been gated and fenced to protect the site from disturbance. The other known nest is on a major system road but no projects are planned in the immediate vicinity. A management plan was completed for one site and is in draft form on the other.

Lynx

Lynx is listed as threatened in Oregon by the U.S. Fish and Wildlife Service. The Mt. Hood National Forest currently has no mapped lynx habitat. Lynx habitat is based on availability of adequate amounts of subapline fir plant associations. Based on the Lynx Conservation Assessment and Strategy at least 10 square miles (6400 acres) of primary vegetation (i.e. subapline fir) should be present within a lynx analysis unit to support survival and reproduction. The Forest has approximately 1270 acres of subalpine fir plant associations. Therefore, we lack the minimum criteria to identify lynx habitat and develop a lynx analysis unit.

Over the past several years there have been about 13 unconfirmed lynx sightings across the Forest. Any lynx sightings are probably transient individuals that have left good habitat due to population crashes of snowshoe hares or misidentified bobcats.

A lured marking station protocol, twenty-five transect with five stations, was utilized across the forest to determine the presence of lynx. Fourteen hair pads from 10 transects had hair samples. An independent study of snow conditions was initiated on one district but no evidence of lynx were found. Based on trapping records the Oregon Department of Fish and Wildlife feels this species has been extirpated from Oregon or never existed in the state. If lynx are present on the forest their numbers are limited. Surveys for lynx are were completed in 2001 and no lynx were documented from here, on the Gifford Pinchot, Willamette or Deschutes National Forests.

Sensitive Wildlife Species

Red-legged Frog

The red-legged frog was removed from the Regional Forester's Sensitive Species List in FY 2001. The Wetland Wildlife Watch surveys indicated they found red-legged frogs and egg masses in the Bull Run reservoir, Timothy Lake and Little Crater Meadow in 2002. The wildlife biologist consultants working for Portland General Electric on the Federal Energy Resource Commission relicensing effort for the Clackamas Hydroelectric Project located many populations and individual red-legged frogs in the Clackamas River drainage. The population trend for this species across the Forest is unknown although it appears to be an regular breeder across much of the landscape.

Harlequin Duck

Harlequin Ducks were surveyed on approximately 8 river miles of the East Fork of Hood River. Surveys were part of an unique project called Teachers in the Woods. Teachers volunteer for 5 weeks in the summer and receive college credit for their volunteer effort. A total of 7 harlequin ducks were observed. Three of the ducks were young of the year. Based on past efforts, other locations on the Forest may have also had successful breeding.

Sandhill Crane

The sandhill crane was removed from the Regional Forester's Sensitive Species List in FY 2001. Crane surveys were conducted on seven meadows on three districts (Barlow, Clackamas and Zigzag). Approximately 700 acres were surveyed on the Mt. Hood National Forest and 300 acres were surveyed on the Confederated Tribes of Warm Springs land during the 2002 season. Volunteers with Wetland Wildlife Watch and Portland Audubon Society and Forest Service employees were used to maximize the effort. There were 7 adults and 2 colts observed.

Cope's Giant Salamander

A survey for Cope's giant salamander was conducted on the Forest by volunteers from the Wetland Wildlife Watch. There were no sightings of Cope's Giant Salamander during the survey.

Townsend's Big-eared Bat

The Townsend's Big-eared bats was removed from the Regional Forester's Sensitive Species List in FY 2001. No surveys were conducted specifically for this species this in 2002. The distribution and population trend across the forest is unknown.

A bat survey was performed as by PGE biologist as part of the FERC relicensing for the Clackamas Hydroelectric Project. The results of the survey are in the Bat Surveys Final Report (FERC nos. 135 and 2195) dated June 2003. Most of the survey centered around buildings and bridges associated with the Clackamas project. Bats were detected at 9 structures. Four bats were located at Timothy Lake Lodge and five were along the Oak Grove pipeline. *Myotis lucifugus* and *M. californicus* were identified.

Wolverine

No aerial surveys for wolverine tracks were conducted in 2002 and no individuals were observed. Instead there was a remote camera project that was aimed at photographing forest carnivores on the Mt. Hood. The results are summarized below under Remote Camera Surveys.

Common Loon

The common loon was removed from the Regional Forester's Sensitive Species List in FY 2001. Surveys were conducted by the Wetland Wildlife Watch volunteers in 2002. No loons were observed. Nest platforms have been installed on Upper and Lower Bull Run Reservoirs but no nesting has occurred at this time.

Snags and Down Woody Material

The Northwest Forest Plan and the Mt. Hood Land and Resources Management Plan provide guidelines for snags and down and woody material in Matrix lands. All recent timber harvest units retain quantities of snags throughout to meet the needs of most primary cavity nesters with a few exceptions. Wildlife biologist on the Forest believe that we are meeting the standards and guidelines for snag retention on timber harvest units but we are falling below that guideline for down and woody material.

Inventories indicate compliance with standards and guidelines for numbers, sizes, species and distribution of wildlife trees prescribed in EA's and other planning documents.

Surveys done on the Clackamas Ranger District indicate snags are surviving harvest activities and are remaining suitable for predicted length of time.

According to monitoring surveys, wildlife trees are being used by cavity users but probably not at the same rate as naturally created snags due to a difference in the way rot occurs in the trees.

Clackamas River Ranger District performs a variety of snag and down wood monitoring projects. Pre-implementation monitoring snag and down wood transects were conducted on four sales. There were 371 acres monitored in 2002. Post-implementation monitoring was conducted on 62 wildlife management created snags. There were 833 new snags created by topping the trees with chainsaw on the Clackamas River Ranger District in 2002. The Clackamas River RD results indicate that snag and downwood guidelines are being met.

Summer and Winter Range

Deer and elk habitat is typically characterized as summer or winter range, and thermal cover. Thermal cover, which is important in conserving energy for big game during cold temperatures, is not limiting on the Mt. Hood National Forest. However, providing for a good distribution of forage, especially in winter range, has proven to be a difficult situation. With a reduction in regeneration harvest on the Forest and the suppression of fire, less forage is produced for deer and elk. Forage is a limiting factor for much of the Mt. Hood National Forest. In the interest of ecosystem health, the Forest has reduced the amount of non-native grass and forbs it plants for forage. The long term trend is for a slow decline deer and elk population unless some method of creating or maintaining openings for these species is implemented. There is no standardized method of monitoring summer or winter range on the forest. In the absence of systematic monitoring, biologists were queried regarding their professional assessment of the status of big game habitat on their districts. Most districts report that forage is declining in winter and summer range with decreased harvest levels. However, deer and elk populations appear stable. Barlow Ranger District reports that winter range is stable to increasing with their increased use of underburning treatments.

Road densities in winter range in most watersheds are above the standard suggested by the Forest Plan. Efforts are being made to remedy this where possible.

Pine-Oak Habitat

All of the Pine-Oak management allocation is located on the Barlow District. Of the total 22,423 acre allocation, the amount maintained in adequate condition for turkey and grey squirrel was 22,423 and 13,500 acres respectively. There have been no changes from the 1998 figures. Overall, the Pine-Oak habitat on the Forest is considered to be stable.

Pine Marten and Pileated Woodpecker

The Northwest Forest Plan eliminated the need for special management areas for pileated woodpecker and pine martins. Monitoring of habitat management areas, as identified in the Mt. Hood Forest Plan, is no longer required.

Late successional reserves, riparian reserves, and wilderness areas are providing sufficient habitat and the populations appear viable. Very little management activity is occurring in the late successional, riparian reserve, and wilderness areas. Remote camera and tracking surveys have shown good populations of marten. Snag monitoring on Clackamas River Ranger District show good populations of pileated woodpeckers.

Remote Camera Survey Effort

A remote camera survey project was initiated in 2002. Earlier Camera and tracking efforts were done in the 1990's. Wolverine tracks were identified in 1990 in the Bull Run and at Snow Bunny Snow Park. Also a pilot project with the Teachers in the Woods program was initiated in 2002 to refine the remote camera techniques. The full survey was implemented with Cascadia Wild Tracking Club. The current effort was to record carnivore species occurrence. Three species, wolverine, fisher, and American marten were the primary targets of the survey. Of the three mustelid species the marten was recorded numerous times. No wolverine or fishers were recorded. Tracking efforts and the cameras surveys were done in partnership with the Portland based Cascadia Wild Tracking Club. Their efforts were invaluable to the success of this survey. Besides providing valuable data this cooperative effort also was able to involve the public in the inventory process. The following table summarizes the results of the survey effort.

Table 2-15: Wildlife Remote Camera Surveys Mt. Hood National Forest, 2002-2003 (Jan-May)

Species	# Photos (hits)
American marten	50
Spotted skunk	25
Black bear	11
Bobcat	13
Deer	5
Elk	1
Flying squirrel	16
Douglas Squirrel	5
Chipmunk	21
Vole/mouse	2
Rabbit	1
Red-tailed hawk	2
Turkey Vulture	3
Clark's Nutcracker	3
Stellar's Jay	32
Gray Jay	51
Raven	41
Target Species Recorded	**1 (American marten) (50 hits)**

Northwest Forest Plan – Survey and Manage Species

Mollusk Species

The following Survey and Mange (C-3) terrestrial mollusk species are suspected to fall within the range of the Mr. Hood National Forest: *Deroceras hesperium, Hemphillia gladulosa, Hemphillia burringtoni, Hempillia pantheris, Pristiloma arcticum crateris, Cryptomasitx devia, Cryptomasitix hendersoni, Monadenia fidelis minor,* and *Megomphix hemphilli.* A new Record of Decision for Survey and Manage Species removed *Prophysaon dubium* and *Prophysaon coeruleum* from the survey and manage list. The Malone Jumping slug, *Hemphillia malonei,* was also removed from the survey and manage list in 2002.

The Forest Survey Crew surveyed 1,384 acres on the Forest during the Summer and fall of 2002. One timber sale, one range allotment, one recreation area, and one prescribed burn were surveyed on the Forest. Thirty-two mollusks, all *Monadenia fidelis minor*, were found in 2002.

Larch Mountain Salamander

Efforts to survey projects for Larch mountain salamander were undertaken in FY 2002. Several Larch mountain salamanders were discovered during the strategic surveys but no Larch mountain salamanders were found during project surveys. The protocol for this species requires use of many personnel to adequately survey for this species. The survey protocol for this salamander requires searching every 25 meters along a series of transects three times during the season when the temperature and moistures are suitable.

One result of the Larch mountain salamander surveys was to expand the known range and numbers of the Oregon slender salamander on the Barlow and Hood River Districts. Efforts have been made to include these records in the Oregon Natural Heritage program database so they can make refinements in their range and distribution.

Red Tree Vole

Surveys were completed for this species on the west side of the Cascades on the Mt. Hood. There were no confirmed red tree vole nest or potential nests found during any of the surveys. The Forest Survey Crew surveyed very few acres on the Forest during the summer and fall of 2002. Survey areas were small and combined with the mollusk and salamander surveys.

High Elevation Bird Species Monitoring (Special Species Monitoring)

In 1998, the Oregon-Washington Partners in Flight undertook the development of a comprehensive windbreak monitoring and assessment program in cooperation with the Avian Research and Monitoring Support Program of the U.S. Geological Survey. Nearly all the recent emphasis on landbird monitoring has focused on using standardized approaches for broad-scale-landscape or habitat-based monitoring. However high elevation species of birds were not included because their habitat is rare or the typical sampling is ineffective for this group. Concern for this high elevation group prompted a pilot project for monitoring these high elevation birds. Eleven species were targeted including: American pipit, boreal chickadee, boreal owl, Clark's nutcracker, fox sparrow, gray-crowned rosy finch, Lincoln's

sparrow, pine grosbeak, Spruce grouse, three-toed woodpecker, White-tailed ptarmigan, and horned lark. Not all of these species occur on the Mt. Hood.

The Mt. Hood participated in this pilot effort and conducted 5 point count transect surveys above 5,000 feet. Four of the original list of high elevational species were detected; Clark's nutcracker, fox sparrow, Gray-crowned rosey finch, and horned lark. Altogether 24 species were recorded during the project. Horned larks had the highest occurrence and fox sparrows had the lowest occurrence of the target species. Gray-crowned rosey finches are the most specialized of the target species on the Mt. Hood and their detection levels were fairly good.

This effort has lost it's funding and therefore was not carried on for FY 2003.

Wildlife Sustainability

Wildlife Habitat

Seral Stages

Many wildlife species fall into one of two categories of seral stage or successional stage, either late or early stage. Even though the species may be dependant on one stage or another they may at times use both. Examples of late seral species are animals such as spotted owls or red tree voles. Examples of early seral species are elk, blue birds, and Townsend's solitares. Both habitats are equally important to the species that use these stages. The Northwest Forest Plan gave additional emphasis to late seral habitats. These late seral habitats are managed as late successional reserves, congressionally withdrawn areas, riparian reserves, and wilderness. It is now anticipated that this habitat has been sufficiently protected to sustain late seral species. Late seral habitat is difficult to create and it takes many years to produce the size and structure that it takes to sustain late successionally dependent species.

Early seral habitats are much easier to produce and can also be produced by naturally occurring catastrophic events such as fire, windstorms, insect outbreaks, and man-made events such as timber harvest. A continuous supply of early seral habitat, well distributed across the landscape, would be optimum to sustain good populations of early seral obligate species. With the emphasis on sustaining larger amounts of late seral habitats, invasion by noxious weeds, normal succession, effective fire suppression, and the changes in timber harvest practices, early seral habitats are becoming increasingly more valuable and in demand by wildlife.

To sustain these early seral obligate species there should be increased awareness and planning for allowing fires to open up habitat, and allowing openings to seed in naturally. Timber harvest should be planned to provide a continuous rotation of openings adjacent to mature areas. For a majority of wildlife species using the forest, it is important to maintain early seral habitats distributed across the forest.

Forest Fragmentation (breaking up of large habitat areas into small isolated patches) has been a major concern of ecologist for many years now. There are many detrimental effects of forest fragmentation. Increased predation, nest parasitism, microclimate changes and insufficient habitat to maintain some species populations are all the result of fragmentation. The answer to this issue is to maintain large contiguous blocks on the landscape to ensure that fragmentation effects are minimized. This does not however mean that every small block of timber should be eliminated or that every stand needs to be pushed into this same prescription. In order to maintain viability of some less mobile species, isolated small

blocks can serve as a reserve until adjacent stands can develop sufficient maturity to allow emigration into the stand. At the same time, when these small blocks are no longer needed as reserves, they can then become early seral habitat where there is none. These isolated blocks can also serve as dispersal habitat for species as they leap frog from large block to large block.

Riparian Habitat

Riparian habitat has the highest wildlife use of all habitats on the Forest. The Forest Plan provides adequate protection for sustainability of species requiring this habitat.

Wetlands

Wetlands are very important to many species. Several species considered sensitive, use these habitats for breeding, foraging and nesting. Species that use these areas include Oregon spotted frogs and sandhill cranes. In order to sustain populations of these species, efforts should be made to reduce disturbance in these habitats. Major disturbances include grazing, access by roads, and campgrounds located adjacent to wetlands. The presence of campers adjacent to the meadows reduces wildlife use in the wetland. Wetlands should also be avoided as fire staging and camp sites. In addition, increased vehicle and recreational stock use in these areas threatened the wetlands through introduction of weed, seed and invasive plant species.

Unique Habitats

Unique habitats are a diverse group of habitats. Caves, mines, talus, and cliffs are examples of these habitats and they can be important to bats, raptors, and small mammals such as pika. Caves and mines are the most sensitive of these habitats because roosting and maternal colonies of bats whose energy requirements are very high can be affected by human disturbance. Most of these habitats have been protected in one form or another by road closures or bat gates.

Snags and Down Wood

Dead or dying trees can play an important role for many birds, mammals, amphibians, mollusk, and insects. Forest plan guidelines and the Northwest Forest Plan has recognized the importance of these specialized habitats. Thousands of trees each year are added back as snag habitat through tree top blasting, girdling and inoculation methods. Trees scorched by wildfire have also been left for wildlife and this facilitates use by species such as the black-backed woodpecker that requires high densities of snags. This has been one of the most successful programs that has been implemented.

Deer and Elk

Limiting factors for Deer and Elk are forage and usable winter range. Since the winter range on the Mt. Hood is not large and expansive, there is shortage of winter forage and secure habitat. There are no broad valleys for the elk to utilize during heavy snow fall. This limits the elk population on Mt. Hood. Roads can reduce the use of existing winter range and expose elk to legal hunting as well as poaching pressure. In order to sustain populations, openings must be maintained in winter range over a continuous rotation. Also, roads in these areas should be closed when no longer needed.

High Elevation Species

At one time high elevation species were never threatened by human intrusion. This is habitat that has been used for breeding for species such as gray-crowned rosey finch, horned larks, and American pipits, American marten, and wolverine.

Increased back-country use and high elevation recreation are intruding more and more into high elevation habitats. This creates a concern for the sustainability of some of these species and an increased effort should be made to monitor these populations and to limit the amount of intrusion. At some point it may be necessary to utilize a back country permit system to control the amount of disturbance caused by hikers, skiers, and snow mobile users.

Connectivity Issues for Sustainability

Most of the connectivity issues for aquatic species are being resolved by correcting construction errors in fish ladders and replacing culverts with fish and amphibian friendly passage ways. This is a major benefit for both fish and wildlife sustainability. The two other areas of connectivity that must be addressed is connectivity of habitat and road passage. The Northwest Forest Plan has been designed to provide connectivity of late successional species along the Cascades. This plan should be adequate to sustain populations and ensure genetic viability across the Cascade range.

That leaves one area of concern and that is connectivity across roads. Most of our forest roads are not a barrier to wildlife passage. Some roads can be considered barriers due to the large amounts of traffic and will only become less passable in the future.

The Route 26/35 corridor is the road system of highest concern on the Forest at this time. This does not mean that other roads do not have issues with connectivity but the route 26/35 corridor has such a high degree of traffic that it would be very difficult or impossible for some species to get across. Many species are sensitve to vehicle traffic and just the traffic alone would act as a barrier to them trying to cross the corridor.

People Influences on Wildlife Populations

People have the substantial impact on wildlife populations. Both our activities and our presence influence habitat and reproductive success. Some wildlife have an innate fear of people. Only in areas were animals have become habituated to us do they tolerate us. Most animals leave, and usually in a hurry, when we show up. Some animals never learn to accept us as part of their environment and will pick up and leave their territory if we arrive.

We can affect the sustainability of wildlife populations through a variety of our activities. We can influence them when we boat, fish, hike, hunt, ski, snowboard, camp, drive, run cattle, use off road vehicles, harvest timber, gather wood, cut Christmas trees, or collect mushrooms, to name a few. All of these things have an influence on wildlife in some way. Because of the proximity of Mt. Hood National Forest to the Portland metropolitan area, this Forest gets a higher proportion of use and thus influence on wildlife than other more rural forests.

Recreation and off road vehicle plans should consider the influence on wildlife populations. Some seasonal restrictions may be need to be incorporated in some sensitive areas. Limiting or reducing campgrounds in unique habitat areas would allow better utilization and therefore sustainability of wildlife that depend on them.

Recommendations

- Continue to monitor peregrine falcon and bald eagle nesting.
- Develop plans for statistical monitoring of spotted owls to confirm the Northwest Forest Plan assumptions.
- Use GIS to determine the amount and distribution of winter and summer range forage and cover areas.
- Continue use of prescribed fire to enhance big game forage areas on east side districts.
- Implement additional surveys for Wolverine and Fisher to verify sighting reports.

Threatened, Endangered and Sensitive (TES) Plants

Sensitive Plant Species – Management Emphasis

The Regional Forester's Sensitive List for plants has not been revised since 1999. The List includes thirty-four plant species that are documented from or are suspected to occur on the Mt. Hood National Forest. As in the past three years, emphasis has been placed on plants found in non-forested habitat types such as meadows, grasslands, open balds and cliffs. Ten of these species were highlighted, yellow Agoseris (*Agoseris elata),* sickle-pod rock cress *(Arabis sparsiflora var. atrorubens),* moonwort *(Botrychium minganense),* golden thread *(Coptis trifolia),* cold water corydalis (*Corydalis aquae-gelidae*), black lily (*Fritillaria camschatcensis*), Watson's lomatium (*Lomatium watsonii*), Adders tongue (*Ophioglossum pusillum*), violet Suksdorfia (*Suksdorfia violacea*), and grass widow *(Sisyrinchium sarmentosum).*

Results

Agoseris elata - There are only three known sites on the Mt. Hood National Forest. Monitoring has only been conducted at one site, Clackamas Meadow, where the species was not relocated last year.

Arabis sparsiflora var. atrorubens - There are several large populations on the Mt. Hood National Forest; all are on the eastside of the Cascade crest. Monitoring was conducted at a site on Mill Creek Ridge adjacent to The Dalles Watershed/Research Natural Area. Grazing is not permitted in the area.

However, it was observed that the fence between FS land and BLM land was on the ground and there were recent signs of cows in the habitat area. Approximately 25% of the plants had been trampled in an area that was used by cows for bedding. Noxious weeds (knapweed and thistle) were also observed at the site and appear to have increased from 10% cover density to over 25% cover density during the past five years. Non-native invasive grasses at the site have also increased in density over the past five years.

Botrychium minganense - There are more than a dozen populations across the Mt. Hood National Forest. Monitoring was conducted at a site in the Neal Creek area. The site is located in a sheltered riparian corridor adjacent to an old clear-cut. Trees between the rare plant habitat and the clear cut have recently fallen over into the riparian habitat. As a result, the corridor has become dryer and grasses and shrubs are beginning to replace riparian associated vegetation. There were signs of cows, deer, and elk, grazing and bedding in the area. Over the past five years the size of the Botrychium population appears to have decreased by 50%.

Coptis trifolia – This species is known from only a few locations on the Mt. Hood National Forest and it is also found on nearby Confederated Tribes of Warm Springs Reservation. Monitoring was conducted at a site north of Timothy Lake. Cows had trampled the species and its riparian habitat. Damage was observed along the riparian corridor where cattle hooves had caused the stream banks to erode dislodging Coptis plants from the soil. Herbivory damage was also observed.

Corydalis aquae-gelidae –This species is locally abundant but is confined to a small geographic range. Most of the populations of corydalis are located on the Clackamas River Ranger District of the Mt. Hood National Forest and the entire population on the main stem of the Oak Grove Fork of the Clackamas River is within hydroelectric project areas. Monitoring along the Oak Grove Fork of the Clackamas River has continued as part of the license agreement for the Stone Creek Hydroelectric Project. The monitoring will continue until 2009. Preliminary results have shown population numbers to be stable however there may have been a reduction in the number of adult plants producing flowers and an increase in non-flowering individuals.

Fritillaria camschatcensis –The black lily population on the Mt. Hood National Forest represents one of the few populations for this species in Oregon and is in the southernmost extension of its range. *F. camschatcensis* is more prevalent north of Oregon. We are expanding our knowledge of where this species is present at the Bull Run site. Monitoring of black lily through a Challenge Cost-Share agreement with the Native Plant Society of Oregon has found the population to be stable at this time.

Lomatium watsonii - There is only one known population of this species on the Mt. Hood National Forest (Hood River RD). In FY 2002 knapweed plants were manually pulled to reduce competition and limit the amount of weed seed produced around the habitat. Noxious weed encroachment continues to be a problem; hand pulling noxious weeds at the site is a continuing effort.

Ophioglossum pusillum – Although potential habitat for this species exists on all of the Districts, it is only known to occur on the Clackamas River Ranger District on the Mt. Hood National Forest. Monitoring was conducted at two sites. More plants were found at one site than previously observed. At the second site, we were not able to gather enough information to predict stability. A noxious weed thistle, *Circium arvense,* is encroaching both sites; it is possible that there may be negative impacts as a result.

Suksdorfia violacea - There is only one known sites on the Mt. Hood National Forest (Hood River RD). This site represents one of only a few in Oregon where it is at the southernmost edge of its geographical range. It is endemic to the Pacific Northwest. Cooperative management of violet Suksdorfia with a local rock climbing association continued through FY 2002. The site is a popular recreational rock climbing area that also happens to be the habitat of the Suksdorfia. Signing and public education have reduced adverse impacts and informal census shows the population at this site is currently stable.

Sisyrinchium sarmentosum – This species is known from a few different locations on the Mt. Hood National Forest. Monitoring was conducted at Little Crater Meadow. The site is adjacent to a grazing allotment. The meadow has not been grazed for the past five years. Although cows are not permitted to enter the meadow, cows caused severe damage to vegetation in 2002. No *Sisyrinchium* plants were found.

In summary, sensitive plant inventories have been conducted for all ground disturbing activities and implemented mitigation measures have been effective in maintaining the integrity of Sensitive plant sites. All Threatened, Endangered and Sensitive plant standards and guidelines are being implemented.

Recommendations for FY2003

- *Agoseris elata* - Continue efforts to relocate the population (perhaps earlier in the season). Conduct literature search of new information on the species; it might benefit from prescribed burning of the meadow to reduce vegetative competition. Develop management options for habitat enhancement. Consider reintroduction of this species into Clackamas Meadow if it indeed is no longer present.

- *Arabis sparsiflora var. atrorubens* – Contact BLM to fix the fence at the Mill Creek Ridge site to keep the cows out. Conduct literature search of information regarding ecosystems that are associated with frequent fire cycles to see if *Arabis sparsiflora* might benefit from prescribed burning of the meadow to reduce vegetative competition. Develop management options for habitat enhancement.

- *Botrychium minganense* - Continue monitoring the population. Investigate and implement habitat enhancement such as planting cedar as a buffer between the clear cut and the riparian corridor.

- *Coptis trifolia* – Work with grazing permittee to avoid impacts to the populations within allotment and continue monitoring. Develop mitigations to be included in the Wapanitia Allotment Annual that contain Coptis, or utilize these areas during a less sensitive time of the year when impacts can be minimized.

- *Corydalis aquae-gelidae* – Continue botanical review and feedback to the FERC relicensing of the Oak Grove Hydroelectric Power Project (PGE) to protect this species.

- *Fritillaria camschatcensis* - Continue to work with the Native Plant Society to monitor black lily.

- *Lomatium watsonii* - Continue to manually remove noxious weeds from the Watson's lomatium site.

- *Ophioglossum pusillum* – Investigate whether treatment of *Circium arvense* with herbicides would help protect the habitat on known sites. Collect baseline information on the number of plants for the population not included in the 2002 monitoring.

- *Suksdorfia violacea* - Continue to work with the climbing association to eliminate adverse impacts to violet Suksdorfia while allowing for managed recreational rock climbing.

- *Sisyrinchium sarmentosum* – Continue monitoring the effects of grazing and working with the grazing permittee to protect this species. Develop mitigations to be included in the Wapanitia Allotment Annual Operating Plan, which will either reduce utilization of vegetation by cattle within the wet meadows that contain Sisyrinchium or utilize these areas during a less sensitive time of the year when impacts can be minimized.

- Collect baseline monitoring information for all known sites of Sensitive species that occupy meadow habitats including adder's-tongue (*Ophioglossum pusillum*), Strickland's tauchia (*Tauchia stricklandii*), and tall agoseris (*Agoseris elata*).

Timber Resources

Goal

The goal is to help attain sustainable Forest ecosystem conditions, produce a continuing supply of forest products, and to provide a positive economic return.

Providing a Sustainable and Predictable Supply of Commercial Forest Products

Current Condition Providing a Sustainable Supply

The Mt. Hood Forest Plan identified an allowable sale quantity (ASQ) of 189 million board feet per year (MMBF) and a total sale program quantity (TSPQ) of 215 MMBF. The Northwest Plan, which amended the Forest Plan, predicted a Probable Sale Quantity (PSQ) of 67 MMBF. In 1995 the PSQ level was adjusted downward to 64 MMBF to reflect the need to protect 100 acre buffer areas around spotted owl activity centers. **64 MMBF is the current PSQ for the Mt. Hood N.F.**

Fiscal Year (FY) 1997 was targeted as the year when full implementation of the Northwest Plan's 64 MMBF PSQ would be met. This level of "volume offered for sale" was intended to provide the local and regional economic systems with a predictable and sustainable level of forest products.

In FY's 1996 through 1998 the Mt. Hood N.F. offered for sale a level of forest products consistent with the PSQ. In FY 1999 and 2000, litigation against the Northwest Forest Plan and the U.S. Fish and Wildlife Service required us to delay the awarding of timber sales, defer sales that we were planning to sell, and put new planning efforts on hold until issues dealing with spotted owls and survey and manage (S&M) species were resolved. Due to this, only 73% of the PSQ was sold in FY1999 and no timber sales (0% of PSQ) were offered or awarded in FY 2000.

In FY 2001 the Record of Decision which amended the Survey and Manage requirements in the Northwest Forest Plan was signed which allowed the Forest to move forward in awarding certain timber sales, offering some new sales and completing some planning efforts on timber sales that had been put on hold. Even with this, timber sales containing spotted owl-nesting habitat or large numbers of known sites of Malone Jumping slug were not offered in FY 2001. In addition, the budget allocations received by the Forest for timber sale planning, preparation and administration was significantly reduced from prior years. Based on this reduced budget the Forest was scheduled to offer for sale 28.8 MMBF (45% of the PSQ). The Forest was only able to offer for sale 8.8 MMBF (14% of the PSQ) in FY 2001 due to the pending litigation and a very large number of known sites of the Malone Jumping slug within the young stands planned for thinning. Of this only 1.54 MMBF was actually awarded due to a lack of interested purchasers.

In FY 2002, the budget allocation scheduled the Forest to offer for sale approximately 27.3 MMBF (43% of PSQ). Regional litigation issues, which prevented the Forest from moving ahead with certain timber sales, were resolved. The Annual Species Review for S&M determined that protection of Malone Jumping Slug sites south of the Columbia River, were not needed to ensure the persistence of the species. The resolution of both the litigation issues and removing the Malone Jumping Slug from the S&M list allowed the

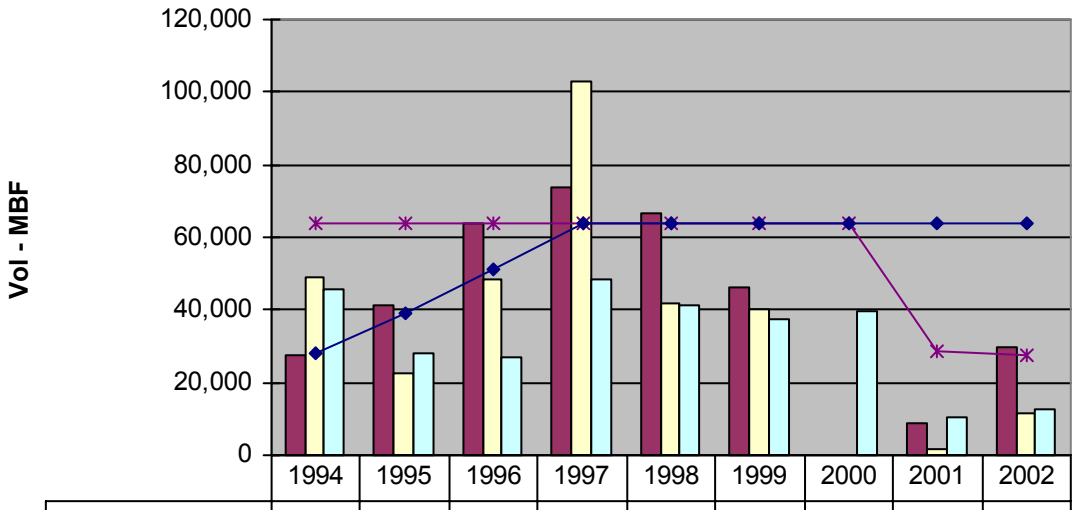
Forest to offer for sale 29.5 MMBF (46% of PSQ). Of this, only 11.5 MMBF was actually awarded. The timber sales not sold due to a lack of interested bidders and bidders not meeting Forest Service business requirements will be reauctioned in FY 2003. The one sale not awarded due to litigation is on hold. In FY 2002 the Forest did make progress on new NEPA planning efforts, as well as preparing those timbers sales that would be offered in FY 2003.

Current Condition Regional Economic System

Since the early 1990's and the listing of the spotted owl and as a threatened species, harvest levels of commercial forest products from the Forest have dropped significantly. There used to be 9 to 11 local mills that bought most of the timber sales. Today, there are only 2 to 3 local mills in existence, and most of them have not recently purchased timber sales from the Forest. Potential bidders on today's timber sales, come from as far away as Springfield, Oregon to the south, Willamina, Oregon to the west, Vancouver, Washington to the north and even as far away as John Day, Oregon to the east. In addition, some of our purchasers are log buyers who do not own mills themselves. Logs harvested from one timber sale may go to 3 to 4 different mills within the region.

Most mills today are tooled to process logs between 5 and 28 inches, though there are still a few mills in the region that specialize in processing larger logs. Mills today also generally require specific species and/or log sizes based on the forest products they produce. Timber sales from the Forest have been contributing a wide variety of logs to the region in terms of both diverse species and a variety of sizes and quality. The Forest has not been providing a "predictable" supply of forest products to the region. This has contributed to less milling capacity in the region, fewer purchasers willing to buy Forest Service timber sales, and a few timber sales with no bidders. This in turn has caused timber sales from the Forest to be of less value.

Figure 2-7:Mt. Hood National Forest Volume Summary



	1994	1995	1996	1997	1998	1999	2000	2001	2002
Offered	27,300	41,400	63,600	74,000	66,592	46,500	0	8,800	29,500
Awarded	48,946	22,440	48,409	102,91	42,073	40,400	0	1,540	11,500
Harvested	45,647	28,088	26,961	48,268	41,148	37,475	39,408	10,400	12,405
Budget Level	64000	64000	64000	64000	64000	64000	64000	28800	27300
PSQ	28,000	39,000	51,000	64,000	64,000	64,000	64,000	64,000	64,000

	MBF	CCF
Volume Offered	29,500	56,730
Volume Sold and Awarded	11,500	22,115
Value (Total Sold Revenue)	$1,367,507	$1,367,507
Volume Harvested	12,405	53,083

Future Expectations Providing a Sustainable Supply of Forest Products

Sustaining a predictable supply of forest products to the regional economic system through silvicultural treatments such as thinning and regeneration harvesting is interrelated with the ecological system. Thinning operations maintain healthy forest, reduce fire hazard/fuel build up, improve wildlife habitat, and restore riparian habitat. Regeneration harvesting restores forest that have high levels of disease and/or mortality to younger healthy forest and at the same time provide forage for wildlife species dependant on early successional vegetation. These operations are also interrelated with the social system. They provide jobs at both the local and regional scales as well as reduce the demand for imported forest products.

Future budget levels for timber sale planning, preparation and administration are expected to be slightly smaller than in FY 2002. The best information we have at this time projects the Forest to plan, and sell approximately 20 to 25 MMBF per year for FY 2003 thru 2005. This level is only 30% to 35% of the PSQ. The Forest is striving to provide a "predictable" level of forest products to the regional economic systems. Nationally and regionally, the Forest Service is addressing planning issues that contribute to an unpredictable supply of forest products. Locally the Forest is addressing planning issues that affect the economic viability of timber sales, which results in sales with no interested bidders. In FY 2003 to 2005 we expect to provide a diverse mix of species, sizes and quality, though the majority will be from smaller sized trees less than 28 inches in diameter. The Mt. Hood National Forest continues to plan, prepare and administer timber sales using environmentally sensitive land management guidelines. We are striving to set a solid example for sustainable forest management.

There are 1,063,450 acres in the Mt. Hood National Forest. If we look at the Northwest Forest Plan, and the FEMAT report of July, 1993, it shows the Mt. Hood Forest having 186,200 acres of Congressionally withdrawn areas; 304,950 acres in Late-Successional Reserves, 16,500 acres in unmapped Late-Successional Reserves, 71,450 acres of administratively withdrawn areas, and 484,350 acres in Matrix lands. The matrix is the federal land outside the four categories of designated areas set forth above. It is also the area in which most timber harvest and other silvicultural activities will be conducted. However, the matrix does contain non-forested areas as well as forested areas that may be technically or administratively unavailable for timber production. After considerations for Riparian Reserves as well as other suitability restrictions, approximately 204,000 acres remain available for scheduled timber harvest.

Providing a Supply of Special Forest Products

Current Condition

Over the past 10 years the Forest has been able to supply high levels of firewood and Christmas trees to the local communities as well as the greater Portland area. The Forest has also been able to supply other special forest products for both commercial and personal use. These have included boughs for holiday wreaths, bear grass for floral arrangements, mushrooms and others such as carving stock and greenery transplants. Due to the adjacent large population and the high value products available such as noble fir boughs, the Forest has a large Special Forest Products program.

While these products do not contribute a large dollar value to the regional economic system, they do provide for a considerable amount of employment for local workers. The gathering of firewood, Christmas trees, huckleberries and mushrooms for personal use is considered by many to be a recreational and cultural opportunity which provides non-market value.

Table 2-16: Special Forest Products Sold and Harvested

Number of Firewood Permits Sold	1,891
Value	$33,060
# of Christmas Trees Harvested	4,883
Value	$24,993
# of Bough Permits	35
Value	$111,817
# of Beargrass Permits	371
Value	$13,030

Future Expectations

Future budget levels for the Special Forest Product programs are expected to be similar to FY 2002. Demand for Forest products, which provide recreational opportunities are expected to increase as the nearby urban population, grows. However the supply of firewood-harvesting opportunities are decreasing due to fewer commercial timber sales. Commercial timber sales have generated most of the firewood harvested. The Forest is attempting to increase firewood availability through roadside harvesting of dead and down material. The Forest is looking for ways to continue to provide firewood.

Christmas trees, firewood and bough harvesting opportunities are expected to be limited in the future. This is due to less regeneration harvesting, and the trees planted in the clearcuts 10 to 20 years ago are growing too large to be cut for Christmas trees or produce high quality boughs.

The Forest expects to continue looking for opportunities to supply special forest products as the demand rises. Recent indicators suggest that harvesting of plants for bio-research may expand in the near future. However, our opportunities is dependent on budget allocations, which directly relates to the number of employees assigned to the task.

Silvicultural Treatments

Affect on the Landscape Structure and Vegetative Composition

Timber Harvest

Timber harvest occurred on only a very small portion of the landscape. Harvest occurred on 620 acres, which equals approximately 6/100th of a percent of the total acreage of the Mt. Hood. All of the harvest occurred on lands designated as Matrix in the Northwest Forest Plan and no harvest occurred in Late Successional Reserves (LSR), Riparian Reserves, or Administratively Withdrawn allocations. The Matrix land allocation is where most scheduled timber harvest (that contributing to probable sale quantity) occurs. Less than .5% of matrix acres were harvested in 2002.

Within the matrix allocation of the Northwest Forest Plan, the underlying management areas of the Mt. Hood Land and Resource Management Plan provide direction. Part of our monitoring effort is to monitor the amount of acres harvested within each of the management areas to help determine if objectives are being met, to monitor the actual rate of harvest, and to test original model assumptions for timber yields during plan revisions. As displayed in the following tables, the bulk of the 2002 harvest occurred in C1 timber emphasis, with the remaining in scenic viewshed, special emphasis watershed, deer & elk summer range, and a minor amount within the earthflow management area. As mentioned previously, we are harvesting at a rate below our annual probable sale quantity.

See Table 2-19 for definitions of A, B, C & D land allocations.

Table 2-17: Percent of Acres Harvested by Management Area Category

	Mt. Hood NF Land Allocations			
*Fiscal Year	A	B	C	D
91	2	46	42	10
92	.3	40.2	52.5	7.0
93	.6	45.6	50.9	2.9
95	1.0	62.3	36.7	0
96	0.8	68.9	30.3	0
97	4.5	40.9	54.6	0
98	11.0	41.0	48.0	0
99	0	33.7	66.3	0
00	2	29	69	0
01	1	28	71	0
02	0	60	40	0

Table 2-18: Acres Harvested by Forest Plan Management Area in FY92-FY2002 (Data not available in FY94)

Management Area		Acres Harvested by FY									
		92	93	95	96	97	98	99	00	01	02
A4	Special Interest Area	6			14	13	372		19		
A5	Unroaded Recreation		14	12							
A6	Semi-primitive Roaded Recreation	3	5								
A7	Special Old Growth						95				
A9	Key Site Riparian	7				75			15	11	
A10	Developed Recreation						14				
A11	Winter Recreation Area			9							
A12	Outdoor Education Area		3								
A13	Bald Eagle Habitat								39		
B1	Designated WS&R Rivers		6	30	20	11					
B2	Scenic Viewshed	1,167	689	644	597	197	876	206	80	70	182
B3	Roaded Recreation		15	4					1		
B4	Pine Oak Habitat Area	179	288		98	268	366	282	62		
B6	Special Emphasis Watershed	465	470	306	70	62	169	191	64		95
B8	Earthflow Area	57	104	125	347	119	191	106	238	74	23
B9	Wildlife/Visual Area	28	63		26	136					
B10	Winter Range	182	34	153	3		156	112	163		
B11	Deer and Elk Summer Range	11	28				23		352	79	74
B12	Back Country Lakes					3					
C1	Timber Emphasis Area	2,723	1,896	744	510	1,064	2,104	1,762	2,257	574	246
DA1	Bull Run Physical Drainage	98	13		0	0					
DA3	BR Research Natural Area	43	45								
DB8	BR Earthflow Area	19									
DC1	BR Timber Emphasis Area	202	49								
Total		5,190	3,722	2,027	1,685	1,948	4,366	2,659	3,299	808	620

Of the total acres harvested in FY 02, all of the harvest occurred in the Matrix land allocation of the Northwest Forest Plan.

Types of harvest methods that were implemented during FY 02 are displayed below. Commercial thinning accounted for 81% of the acres treated and shelterwood harvest accounted for the remaining 19%.

Thinning is a cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality. Commercial thinning is done when the diameter of the trees reaches a merchantable size, 7 inches or larger. The stands are thinned from below which removes trees from the lower crown classes to favor those in the upper crown classes. By this approach the tallest, largest, and fastest growing trees are left to meet desired objectives.

Shelterwood harvest is a type of regeneration method in which a new age class is created. By definition, a shelterwood is the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated environment. Typically this method is used on the harsher sites of the forest along the Cascade Crest or on the drier sites on the east side of the forest. A shelterwood with reserves is the terminology used when some or all of the shelter trees are retained after regeneration has become established to attain goals other than regeneration. This is the case on the Mt. Hood N.F. in which the overstory shelter trees are retained indefinitely to meet the green tree retention standards of the NW Forest Plan or to meet other objectives such as visual quality.

It is recommended that outyear timber program should continue sale planning to provide a predictable supply of commercial forest products and to meet desired land management objectives. Specifically, focus on thinning of stands in LSRs < 80 years of age to accelerate development of late successional characteristics.

Figure 2-8:Silvicultural Harvest Methods (Acres Treated - 620)

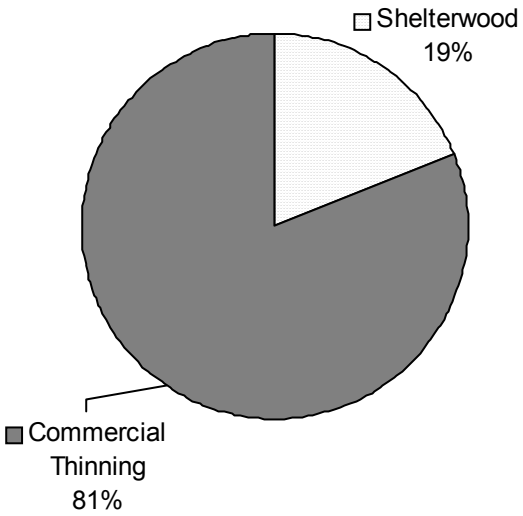
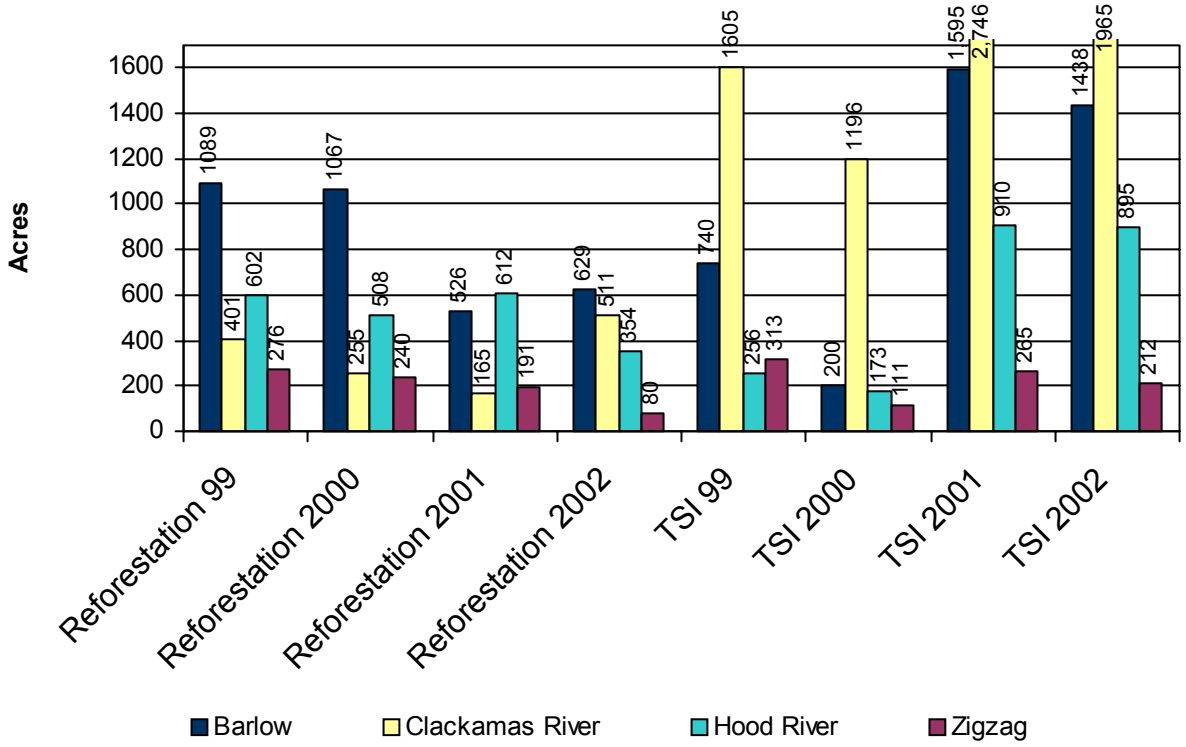


Figure 2-9:Reforestation and Timber Stand Improvement Accomplishments



Growth Enhancing Activities (Reforestation, Pre-Commercial Thinning, and Fertilization)

The bar graph displays the accomplishment of reforestation and timber stand improvement (TSI) by ranger district for fiscal years 1999 through 2002.

The forest accomplished 4,510 acres of pre-commercial thinning and 575 acres of KV funded fertilization in 2002. 422 acres of the pre-commercial thinning was funded through the Payments to the Counties program which supplemented forest funds for thinning. In 2001 and 2002, the Forest made great strides in reducing the backlog of acres in need of pre-commercial thinning, however, at the end of fiscal year 2002, 13,627 acres remain in need of thinning. Several years of continued funding are needed to complete the backlog. Fertilization funded by appropriated dollars is lower priority than thinning, and 8,500 acres are identified for treatment, but unlikely to be funded.

Pre-commercial thinning can greatly influence the future trajectory of the stand both in terms of species composition, and horizontal and vertical arrangement. Prescriptions generally call for retention of minor species and a 25% variance in spacing. This allows for greater species and structural complexity in the stand.

Reforestation continues on a downward trend which is directly related to the decreased level of regeneration harvests and the decreased level of timber harvest overall. 1,574 acres were reforested on the Forest in 2002. Of this, 1,249 acres were planting of harvest units, and 325 acres was reforestation of the Olallie Lakes and Powerline Fires on the Clackamas River Ranger District.

A diversity of species was planted with additional species diversity expected from natural regeneration of shade tolerant species such as Western hemlock. Species diversity increases resilience to host specific insects and disease, and other damaging agents within the stand.

The seven conifer species planted included Douglas-fir, ponderosa pine, lodgepole pine, western white pine, Engelmann spruce, noble fir, and western larch. All of the acres planted were with seedlings from known seed sources. The majority (78%) of acres planted were with seedlings whose origin comes from select trees with good phenotypic growth characteristics and better than average growth rates. The western white pine planted was from stock that is resistant to the white pine blister rust, thus enabling restoration of this species.

Native plants were planted at the Olallie Lakes fire along the shoreline and near campsites. Species included Alaska yellow cedar, huckleberry, fireweed, and native grasses. These were planted to aid in the restoration of the burned area. A 'cool blanket' trial was also installed in the burn area. Cool blankets are a sheet of perforated plastic, black on one side and white on the other, that are placed around the seedling and staked down to maintain soil moisture, heat or cool the soil temperature, and prevent vegetative competition. Visual monitoring showed that the cool blankets significantly improved the retention of soil moisture and improved tree growth.

The 5 Year Regeneration Period as Required by NFMA

Overall survival was poorer in FY02 than in previous years. The first year survival rate, all species combined, was 56%. The major species such as Douglas-fir and ponderosa pine, survived better, at 72% and 83% respectively. Other species, such as spruce and noble fir, had lower survival rates of 25% and 33% respectively. Third year survival was also very poor at 29%.

Bareroot and container seedlings both were satisfactory, but a number of the acres reforested in 2002 were replants on the more difficult sites on the forest. Competing vegetation, damage from pocket gophers, and the long, dry summer all contributed to seedling mortality. One district suspected that the rapid pace of the planting crew in a rocky unit, contributed to a high incidence of poor root placement and, thus, greater mortality. In addition, the lingering snow pack and high elevation planting sites, forced the planting to occur late in the season, followed by minimal to no precipitation. Shelf life of the stored seedlings was also longer than normal which tested the energy reserves of the seedlings. The number of acres that met prescribed stocking objectives with only one treatment was 52%. Depending on ingrowth from natural regeneration, supplemental planting may be needed to meet regeneration standards.

Excluding some eastside Douglas-fir and Noble fir, surviving seedlings are projected to perform satisfactorily, if pocket gopher populations are controlled. Gophers continue to cause significant mortality.

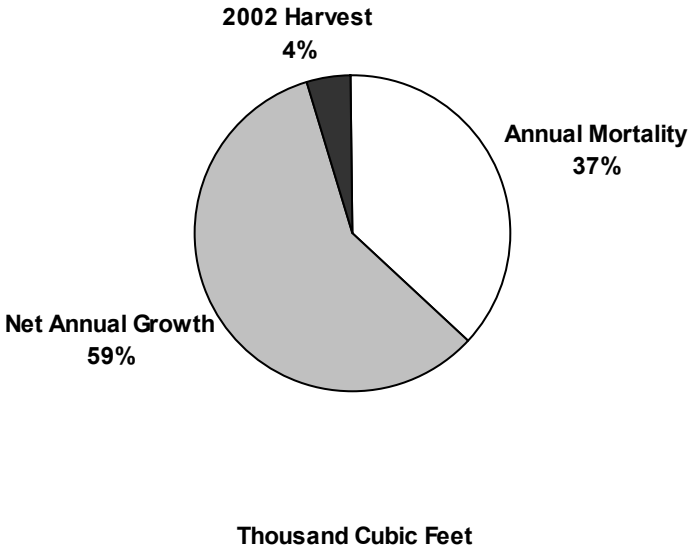
Units that were determined to be satisfactorily stocked at the time of the third year exam was 72%. This includes units with replanting and in-growth from natural regeneration. The 5 year regeneration requirement should be met on all units, although some of the harsher sites may need installation of cool blankets and will need continuing pocket gopher control.

Ecosytem Function -Forest Productivity

The R6 Current Vegetation Survey, along with forest GIS layers of land allocations, can be used to estimate the current standing inventory of the Mt. Hood National Forest and annual rates of growth and mortality. Tree growth rates can be used as estimates of productive capacity. Productivity includes storing energy from the sun, via photosynthesis, in carbon based biomass, and also includes secondary productivity via respiration. Tree mortality contributes to nutrient cycling and decomposition of organic matter. Some mortality can be viewed as a loss of economic product and industrial based approaches to forestry attempt to capture potential loss of mortality via commercial thinning. The following pie chart displays the net annual growth, annual mortality and harvest for 2002.

Overall annual growth is more than 13 times harvest and yearly mortality exceeds harvest by a factor of 8 to 1. On matrix lands only (outside of Riparian Reserves), growth is almost 3.7 times the rate of harvest. This indicates that timber harvest, by removing trees from the forest, is having a very small effect on net productivity. However, the lack of harvest may be contributing to increased mortality resulting in both positive and negative ecological benefits. It is recommended to explore this relationship and trend further in the next monitoring report. In general, tree growth exceeds harvest rates in Oregon by a wide margin.

Figure 2-10:Growth, Mortality and Harvest, Mt. Hood National Forest



Insect and Disease

Disturbances, either of natural or human origin impact all aspects of ecosystems at a landscape level. These impacts can include habitat stages, successional stages, structural differentiation, nutrient cycles, forage availability, water quality/quantity yields, successional pathways, wildlife variety and quantity, carbon balances, scenic variability, availability of products, and economic values of products. Disturbance from fire, timber harvest, and geologic events, such as debris flows, are addressed in other sections of this report. This section focuses primarily on disturbance related to forest insects and disease.

Overall, defoliating insects and diseases are affecting approximately 8,000 acres of the forest resulting in reduced growth rates and lowered resistance to climatic factors or other insects and disease. Of greater significance is the increase in mortality from bark beetles, mainly Mountain pine beetle in lodgepole pine. 15,000 acres have recent bark beetle activity, and approximately 30,000 trees have been killed. This is the highest amount of mortality on the forest within the last decade.

Of the defoliating insects and disease, larch casebearer activity has decreased in the last two years. However, the aerial survey is flown in July, and the ideal timing for larch casebearer surveys is in June which may affect the accuracy of the information. The larch casebearer is an introduced insect and consecutive years of defoliation can cause growth loss and contribute to mortality, however casebearer populations commonly do not reach outbreak proportions.

Figure 2-11:Acres Affected by Defoliating Insects or Diseases

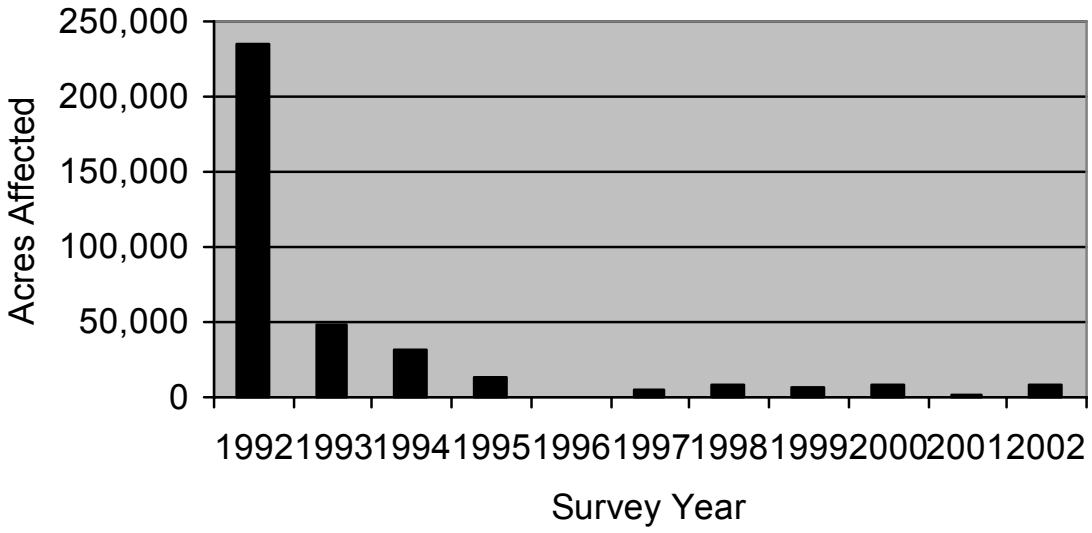
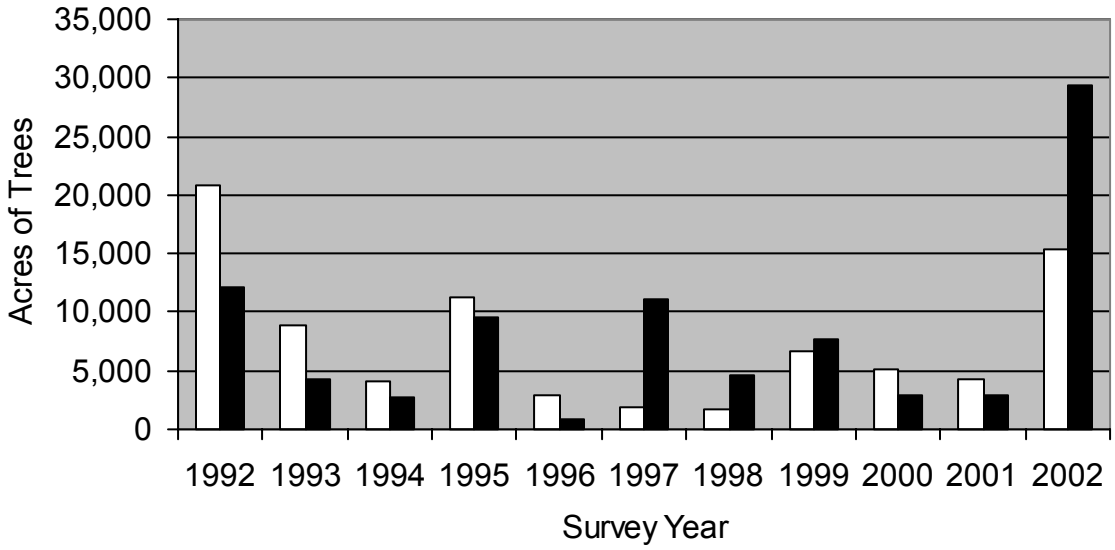


Figure 2-12: Acres Affected and Trees Killed on Federal Lands Within the Mt. Hood Reporting Area



The Balsam woolly adelgid is a nonnative species that has become widely established in North America where it is highly destructive to Pacific silver fir, subalpine fir, and grand fir. The aerial sketch map survey noted 3,346 acres of adelgid activity on the forest.

Lodgepole pine needle cast was noted on almost 4,000 acres, ranging in low to moderate intensity. Needle casts cause varying degrees of growth loss. If trees are infected repeatedly for a number of years, they may become weak and unthrifty. Needle casts seldom kill trees directly but, when severe, may predispose them to other agents. Young or small trees are more severely affected than larger, older trees.

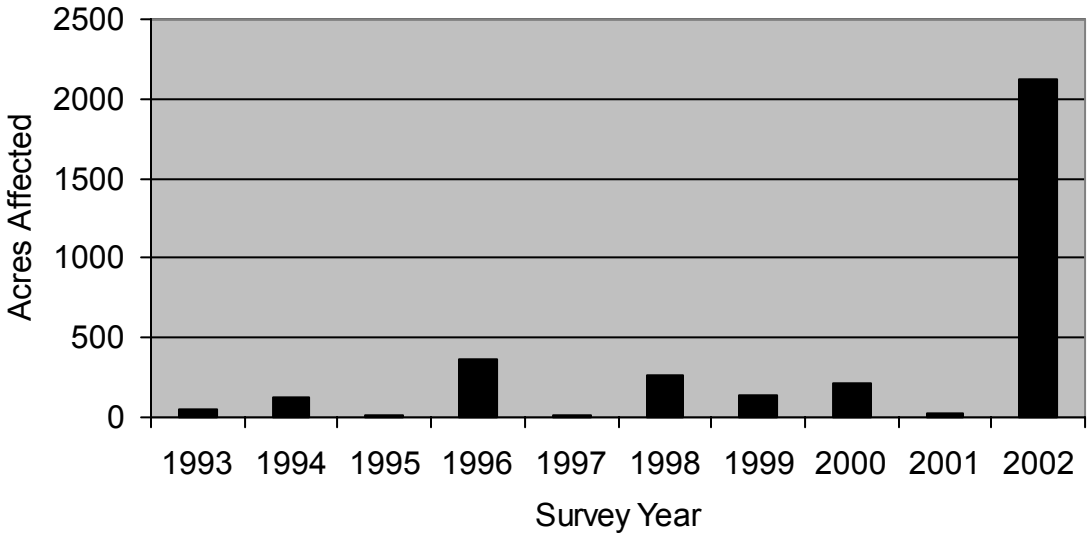
Levels of tree mortality from insects increased substantially in 2002 and are at the highest levels within the past decade. The 2001 monitoring report noted an upward trend and increasing activity by Mountain pine beetle. In 2002, over 11,000 acres were affected by Mountain pine beetle and approximately 27,000 trees killed, mainly lodgepole pine. Most of this occurred in the Olallie Lakes area and throughout the eastside of the forest. Large acreages of the southwest portion of Warm Springs, adjacent to Olallie Lakes, have mortality of lodgepole pine. Mountain pine beetle attacks trees under stress and is highly related to stand density, therefore overstocked stands are highly susceptible.

Overstocked stands with very low levels of mortality could be considered for density control to decrease the probability of further mountain pine beetle attack such as along the access road into Olallie Lakes. The standing mortality from the beetle killed trees is contributing to a high fire risk in affected areas.

Mortality from both the Douglas-fir beetle and fir engraver is similar to 2001 and appears to be at low, endemic levels.

Blister rust was not noted on the aerial survey, but is causing mortality in whitebark pine. Surveys are planned for 2003 to determine the extent.

Figure 2-13: Acres Affected by Agents Other than Mortality or Defoliating Classified Insects and Diseases



The aerial sketchmap survey also noted an increase in other agents affecting tree growth. Most notably there has been an increase in bear activity in the vicinity of Larch Mountain, Bull Run River, north of Brightwood, Eagle Creek, along the Clackamas River and throughout the west side of the forest and is likely due to increased bear populations.

Tree damage from high water/flooding was indicated on approximately 800 acres and is most likely affected with the Newton Creek debris flow and flooding that occurred along Highway 35 towards the Robin Hood camp-ground.

Recreation

Goal

Provide a broad range of year round, high quality developed and dispersed recreation opportunities in order to meet the diversity of demand that exists and continues to grow.

Landscape Structure

The Mt. Hood National Forest has begun to systematically survey and evaluate the health and long-term management of the vegetation in developed campgrounds. In the past, many trees identified with root and stem decay in the campgrounds have been removed to improve the safety for campers. In 2002, a broader approach to vegetation management was begun with an objective of long-term forest health and regeneration as well as hazard removal. The first campgrounds evaluated were Green Canyon and Indian Henry.

In August, 2001, a complex of fires burned approximately 124 acres in the Olallie Special Interest Area. The fires burned at varying intensities which resulted in a mosaic of lightly and heavily burned areas. The fire burned through Penninsula Campground but only destroyed one picnic table. The burned area rehabilitation included grass seeding, rehabilitation of fire lines, installation of waddles for erosion control, tree planting, and hazard tree felling along trails. The grass seeding, fire line rehab, and waddle installation were done during the fall of 2001. Tree planting was done in the fall of 2002 with a mixture of white fir, western larch, and western white pine. No commercial salvage logging was done in the National Forest portion of the burned area.

The lodgepole pine stands in Olallie Special Interest Area are also being affected by an infestation of mountain pine beetles.

Areas in Old Maid Flat Special Interest Area have become popular off-highway vehicle recreation areas. User-created trails are beginning to proliferate which damage the moss community on the forest floor. Unauthorized use by OHV's along the Barlow Road are also beginning to cause limited erosion and rutting along cutbanks. The Barlow Road is posted closed to OHV use.

There were no changes in the condition of roadless areas measured in 2002. There was no timber harvest in roadless areas.

Ecosystem Function

In September, 2002, the Bowl Fire burned approximately 329 acres immediately adjacent to the Clackamas River, a designated Wild and Scenic River. The fire burned on the south side of the river in a section of the corridor classified as "recreational." The fire's origin was an abandoned campfire along the Clackamas River trail. Neither the fire nor the suppression actions will effect the free-flowing character or the outstandingly remarkable values of the river. In the next few years, there will be an elevated level of fire-killed trees toppling into the river.

Social & Cultural Values

The Mt. Hood National Forest is exploring a new model for collaborative discussions with recreation stakeholders. Given the Forest's relatively large recreation demand and the importance of involving stakeholders, the Forest has developed a project to foster relationships, understanding and trust that would form the basis for addressing recreation conflicts, forging a common vision, and finding ways for stakeholders to work together on projects of common interest.

Through a partnership with the U.S. Institute for Environmental Conflict Resolution and the State of Oregon's Public Policy Dispute Resolution Program, a three-phase project was begun in 2002 with the ultimate goal of developing relationships and trust among key Mt. Hood area recreation stakeholders and engaging them in stewardship of the National Forest. The first phase involved the assessment of recreation stakeholders through 56 interviews of local governments, recreation businesses, user groups, rural and urban communities, conservation education organizations, and youth outreach organizations. Common themes that emerged from the assessment are:

- Quality recreation must be preserved.
- Varied economic interests related to recreation exist and need to be accommodated.
- Natural and cultural resources must be preserved.
- Urban interests impact the area and need to be involved.
- Recreation needs to be considered in a regional context.
- Defining stewardship and behavioral norms will be important in the future.

The Mount Hood National Forest provides a diverse range of developed recreation facilities. With the exception of Timberline Lodge, government owned facilities are generally at the lower end of the development scale. They are geared toward auto camping, roadside picnicking, interpretive waysides, and boat launching facilities. Privately managed recreation facilities on the Forest, such as the lodges at Lost and Olallie Lakes and the developed downhill ski operations offer a more highly developed and structured environment.

Changing demographics and lifestyles are having a major influence on recreation participation. A growing population, an older more financially secure traveler, changes in technology of recreation vehicles, including off-highway vehicles, new opportunities such as windsurfing, ethnic diversification, and the separation and segmentation of interests will all influence how, when, and where people recreate in the Forest.

There is a growing dicotomy in the amount of leisure time invested in recreation pursuits. Oregon's population, like the nation in general, is getting older. The number of individuals over the age of 50 is the largest growing segment of the population. As a group, this group is functioning younger than their chronological age, are healthier and more financially secure than their counterparts of past decades. They travel widely, stay at destinations longer, and account for a majority of all pleasure travelers. For other recreation user groups, recreation trends suggest that available leisure time is decreasing.

Increased urbanization may mean that some people will want a higher comfort level in recreation opportunities. Enjoying the outdoors, but staying at places like Timberline Lodge may become more popular. With the increase of recreational vehicles as a major form of camping, the need for septic/sanitary facilities to accommodate RV's is apparent.

The average family size is getting smaller, and single parent families are becoming more prevalent at recreation venues on the Forest. Getting together with others for group recreational activities is also becoming more important.

High-risk adventure activities (and extreme sports), such as whitewater rafting, windsurfing, rock climbing and hang-gliding, are already very popular. Mt. Hood has been scaled by hundreds of thousands of climbers, and is the most frequently climbed glaciated peak in North America. The desire for high-risk adventures is likely to increase primarily among the younger age groups.

Because of the proximity of the Mt. Hood National Forest to the metropolitan Portland area, primary visitation will continue to be local, short-duration visits (as envisioned in the Forest Plan). Consequently, the majority of developed site use is on weekends and holidays. Because their destination is so close to home, family units often arrive in more than one vehicle at staggered arrival times. Adequate parking at peak use periods will continue to be problematic. Deviation in use from site design is still incidental and not the norm (some picnic use of campsites, some overnight use of day-use areas).

Resource and social impacts from dispersed use of the Forest are greatest in the wildland/urban interface, particularly on the westside. Old Maid Flat, Wildcat, and Memaloose are areas of particular concern particularly from inappropriate target shooting and OHV use. As engineering solutions are employed to solve some of these problems, Recreation Opportunity Spectrum (ROS) designations may need to be modified. The OHV community is interested in longer riding opportunities, and the Forest is currently evaluating routes that would connect disjunct sections of motorized trails.

One of the significant dispersed recreation activities on the forest is whitewater rafting/kayaking on the Clackamas River. The activity includes both commercial and non-commercial use. Overall, there is an upward trend in rafting/kayaking use of the Clackamas River. Of note, use by females appears to be increasing as is use by disabled individuals. The highest use period is June, but even at its peak, neither social nor resource impact thresholds were exceeded in 2002.

One of the highest recreation uses on the Forest, as it is nationwide, is driving for pleasure. Use of both the Mt. Hood loop and the Clackamas River highway should continue to increase for the forseeable future unless there is a dramatic change in fuel availability or price. An analysis of the Clackamas River route as a National Scenic Byway will begin in 2003. Development of interpretive education facilities along this route will enhance driving benefits on the Forest.

Most of the cross-country skiing and snowplay is concentrated at such popular areas as White River, Trillium Basin, and around developed alpine ski areas. Other areas on the Forest are suitable for these activities but the lack of parking, services, signing and grooming has limited further development.

Trillium Lake has long been a popular nordic ski area. Snowmobile use is increasing in the area. Conflicts were not reported in 2002, but this area should be observed for changes in use patterns.

The Wilderness areas on the Mt. Hood National Forest are smaller than many other Northwest wildernesses, with visitors' trip duration being generally shorter. People seeking multi-day or week long wilderness treks usually seek larger, more remote wildernesses. The Mt. Hood and the popular destinations in the Salmon-Huckleberry and Hatfield Wilderness fill a regional niche for the tourists and out-of-town visitors that come to the Portland-metro area and visit city sights, waterfalls in the Columbia Gorge, and Timberline Lodge on Mt. Hood. If they go hiking, they generally head to a trail in one of these three wildernesses. Currently, nearly 85% of the use on all popular wilderness trails is day use.

The Forest Plan social standards are based on encounters with other groups along trails and in campsites and are as follows:

- Encounters with other groups shall be limited to no more than ten groups per day in semi-primitive areas, and no more than six groups per day in primitive areas, during 80% of the primary recreational use season.

- No more than two other campsites in semi-primitive areas and one other campsite in primitive areas shall be visible or continuously audible from any other site.

Most of the trails within the Salmon-Huckleberry and Hatfield Wilderness have very little use with the exception of the Salmon River, Eagle Creek and Wahtum Lake. A majority of the trails within the Mt. Hood Wilderness have high day use, especially on weekends. However, the trails that do not have high use tend to have very low use. In the Mt. Hood Wilderness, nearly all trails exceed the social standard on weekends, and a majority also exceed the standard on weekdays.

In responding to public outreach, visitors indicate that they were not expecting solitude at the high use areas discussed, and their experience was not adversely impacted by the encounters. They also said that they could find solitude (presumably in these low use areas) if that was the experience they were seeking.

There appears to be no problem in meeting social standards for overnight use at campsites in nearly all locations except for lakeshore sites on the best weekends. In these locations, due to the number and proximity of the campsites, there tends to be noise and at times, conflict between more noisy campers, and those seeking a quiet evening. The high amount of day use at the lakeshores adds to the problem. The proximity of many campsites to trails, water, and other campsites, as well as the size of bare ground and lack of ground vegetation in some campsites continue to be a problem.

Economic-Built Capital

Visitation and utilization data was recorded for concessionaire-managed campgrounds and day-use sites in 2002. Use data is not available for rustic campsites in the Fee Demo program (Northwest Forest Pass sites). The FEIS projected reaching capacity in Forest Service developed sites in 26 years. Projections of campground occupancy that were made in the early 1990's predicted that additional capacity would be needed during the first decade of the 21st century. Occupancy figures during 2002, as well as those for the past several years, suggest otherwise. Based on current and predicted use patterns and interest, it will take longer to reach capacity in existing developed campgrounds.

Table 2-19: 2002 Campground Concessionaire Information

Campground Complex	No. Campers	No. Sites Occupied	Percent Occupancy
Hwy 26	101,215	26,669	31
Clackamas River	40,416	10,785	19
Lost Lake	22,561	5,937	35
Olallie	14,782	3,890	33

Like similar older recreation complexes throughout the National Forest System, the campgrounds on the Mt. Hood fill a social and economic niche that many long-time visitors to the Forest appreciate. That user group, however, is not expanding as originally projected, and may be shrinking.

The distribution and configuration of facilities does not currently reflect customer preferences. Use is greatest at the Timothy Lake campgrounds, and extra capacity at this lake would probably be utilized especially on weekends. Use in the Clackamas River drainage, on the other hand, has declined. Even on peak weekends and on summer holidays, sites are available at these campgrounds. Reduced campground use in this area is probably attributable in part to changes in fishing regulations for the Clackamas River.

The Forest Plan envisioned that a developed site (campgrounds, developed day use, etc.) priority study would be completed, and that site closures or expansions would be predicated on the study. Sites which are little used or not economical to operate might be closed. A limited number of popular sites might be expanded to partially relieve overcrowding and excessive deterioration of resources and facilities. The study has not been completed, and the economic viability of developed sites has yet to be determined.

The implementation schedule for developed site construction and rehabilitation in the Forest Plan is behind schedule. On the other hand, the increasing application of Granger-Thye fee offset (available because of the concession operation of 48 developed sites forest-wide), is accelerating the heavy maintenance of capital improvements in the developed sites.

With a few exceptions, the Mt. Hood National Forest did not collect use data in dispersed recreation settings in 2002. The Forest also does not routinely survey public demand or preferences. During 2003, the Forest is participating in the National Visitor Use Monitoring project which will provide statistically reliable information at the Forest level for dispersed uses.

During 2002, there were 3500 commercial whitewater users which was an increase from 2001. Non-commercial users are supposed to register their use, however compliance with this system is low, and use figures are unreliable and not reported here. Users are asking for more developed facilities (particularly toilets) at river access points. Space for parking, loading, and unloading, and working on equipment has been outgrown along the most used portions of the river. The addition of boat launching facilities would help minimize bank erosion at high use sites as river use continues to increase.

Use data for the Mt. Hood Wilderness for the years 1998 through 2001 follows:

Year	Total Use
1998	33,045
1999	29,745
2000	30,678
2001	35,338

While use of the Wilderness increased greatly during the 1980's and early 1990's, use figures for the past years do not show a significant upward trend as predicted in the Forest Plan.

Use in the Salmon-Huckleberry Wilderness during 2001 was approximately 3400 visits. Data for 2002 is not available.

Areas on the Forest that may be experiencing OHV impacts include La Dee Flat, Memaloose, Old Maid Flat, McCubbins Gulch, and Barlow Road. No visitor use counts or surveys were conducted in 2002. Also, no resource surveys were conducted specifically targeted at off-highway vehicle (OHV) activities or impacts.

Use of the Forest's five alpine ski areas is variable and highly weather dependent. The only ski area that has shown a consistent upward trend in use is Timberline. None of the other areas, however, are showing an overall decline in use. Increases in demand for downhill skiing will be met through expansion of existing ski areas rather than the development of new ski areas. Expansion along the Hwy 26 corridor is complicated, however, by regional planning constraints on traffic.

The Mt. Hood National Forest has been focusing on improving accessibility for those with disabilities at Timberline Lodge, one of the two National Historic Landmark buildings within the National Forest System. Construction of a new public entry elevator to the Lodge was completed in December of 2002. In addition, the Forest, in cooperation with the Special Use Permit Holder (RLK Inc.) who operates the Lodge, and the State Historic Preservation Office, began designing additional accessibility projects for the Lodge including:

- Modifying four different types of guest rooms to make them fully accessible
- Installing mechanical lifts and ramps to provide access to areas of the Lodge
- Designing the change of use of a current storage room into an accessible conference/meeting/banquet room.

Chapter 3
Financial Review

Chapter 3
Financial Review

The purpose of this monitoring item is to track funding levels necessary to achieve the outputs predicted in the Forest Plan. The following display compares expenditures proposed in the 1990 Forest Plan with actual expenditures for fiscal year 2002 (October 1, 2001 to September 30, 2002). All figures are rounded to the nearest thousand dollars.

The total budget predicted for full Forest Plan Implementation was $65,275,000; actual funds expended in FY 2002 was $23,223,700. Multiple combinations of funding categories have occurred during the last few years, which makes tracking specific program areas difficult. However, general trends in major resource areas are evident. Because budget allocations may vary considerably, predicting long term sustainability in any one area is difficult to do. The following table identifies the major expenditure groups and does not reflect total cost incurred on the forest.

Each year, Congressional budgets move the forest towards the many desired future conditions identified in the Forest Plan. The annual program is an incremental step toward implementation of the goals and objectives set forth in the Plan. Outputs and activities in individual years will vary due to changing conditions and Congressional budget appropriations.

Figures 3-1 and 3-2 show a significant change as related to the total forest budget and workforce (Full Time Equivalent = FTE) since 1990.

All resource areas are experiencing a funding shortfall from those projected in the Mt. Hood Forest Plan. Unit costs are being scrutinized annually to keep costs as low as practical and to provide flexibility for prioritizing and accomplishing as many projects as possible.

The heaviest programs impacted by budgetary shortfalls are in the areas of timber and associated engineering programs. In those cases in which a budget shortfall is a material factor causing us to more slowly meet Forest Plan objectives, it is so noted in the narratives for the specific program.

Table 3-1: Budget Levels Predicted/Actual (Partial List)

Activities	*Forest Plan Predicted (thousands/yr) 1990	** Actual Expenditures (thousands)							
		FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02
Fire									
• Brush Disposal	3,056	995	758	632	426	547	346	402	228
• Fire Fighting Fund	2,118	1,119	2,145	2,520	2,187	2,173	2,227	2,535	2,949
Engineering									
• Timber Roads	2,709	244	292	518	586	1,015	930		
• Facilities Maintenance	478	271	222	230	264	375	357		
• Recreation Roads	1,381	103	53	103	104				
• General Purpose Roads	118	575	56	151	16				
• Recreation Facilities	1,751	424	293	499	599	152	419		
• Trail Construction	1,279	606	253	534	346	383	174	698	484
• Road Maintenance	4,079	1,874	1,030	1,139	965	943	747	2,270	1,795
• Rec & Eng. Facilities								1,042	1,201
Timber									
Salvage Sale Funds									737
• KV Funds		5,918	6,647	4,696	2,501	2,950	4,346	3,827	1,268
Forestland Vegetation								1,241	709
• Genetic Tree Improvement	9,602	4,362	4,566	4,126	2,925	2,890	1,820		
• Reforestation									
• Timber Stand Improvement	2,792	2,610	1,969	2,331	1,855	1,481	1,170		
Timber Sale Management	5,270	1,222	2,279	2,465	3,798	2,909	2,210	2,071	3,660
• Sale Administration									
• Sale Preparation									
• Silvicultural Exams									
Administration									
• General Administration	3,318	2,114	489	1,276	1,479	1,095	898		
Recreation/Lands									
• Land Acquisition	50	521	7	128	23	8	0		

Activities	*Forest Plan Predicted (thousands/yr) 1990	** Actual Expenditures (thousands)							
		FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02
• Cultural Resources	459	70	55	78	90	83	59		
• Land Line Location	10	0	0	0			0		
• Recreation	5,924	2,036	2,045	1,692	2,021	1,640	1,983	1,865	2,111
Fish/Wildlife/Range/Soil/ Water									
• Fish-Anadramous	986	768	644	491	557	584	667	1,412	
• Fish-Inland	365	130	76	92	141	161	110		
• Wildlife	809	202	224	256		302	237		
• Threatened, Endangered Species	642	242	224	154		188	155		
• Range Betterment	4	3	4	1		1		1	1
• Soil Inventory	112	152	60	30		128	69	120	
• Range Vegetation Management	73	14	11	18	23	27	31		
• Soil/Water Administration	1,726	534	266	289	296	271	108		
• Ecosystem Management		1,671	1,806	999	888	439	846	1,242	1,077
• Fish/Wildlife/Soil/Water									1,657

** Not adjusted for inflation.*

*** Additional costs are incurred in a variety of areas including Forest Health, Highway Administration, Quarters Maintenance, Agricultural Research, etc. Total expenditure was 23.2 million.*

Recommendations

Continue to scrutinize unit costs, staffing levels and charge-as-worked given declining budgets since 1990.

Figure 3-1: Mt. Hood National Forest Budget Trends

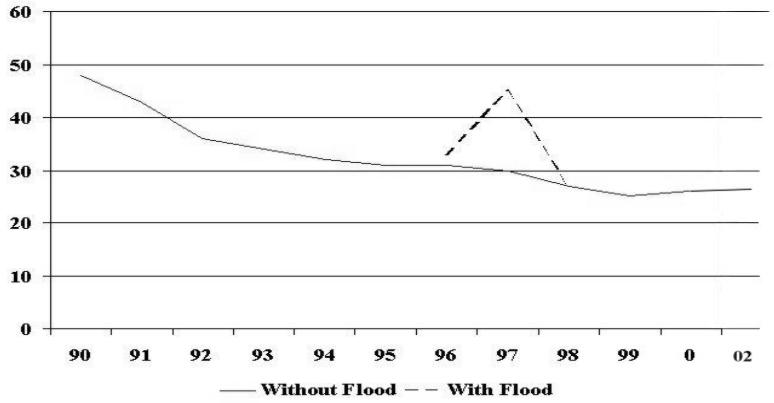
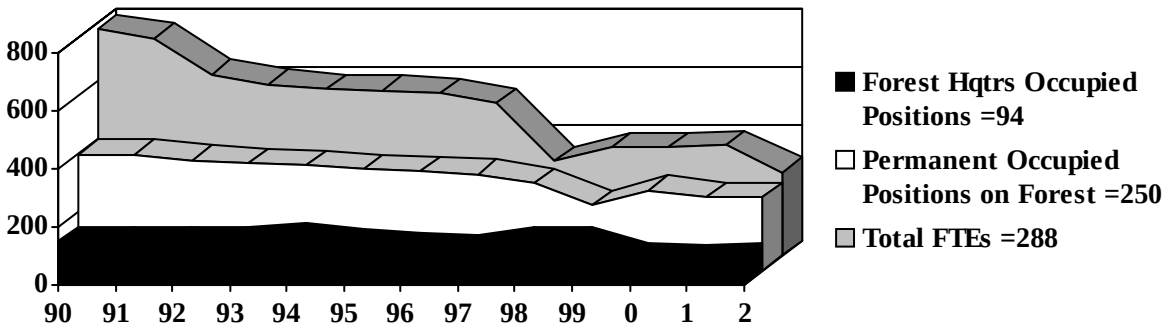


Figure 3-2: Mt. Hood National Forest FTE/Position Usage



Chapter 4
Forest Plan Amendments/ Interpretation Process

Chapter 4

Forest Plan Amendments/ Interpretation Process

As we continue to implement the Forest Plan as amended by the Northwest Forest Plan, it is apparent that amendments and clarification of direction is continually needed if we are to meet the expectation and desires of the public.

New information identified through various monitoring programs will continue to be evaluated. The need to change the Mt. Hood Land and Resource Management Plan will be reviewed in accordance with the National Forest Management Act regulations and the Northwest Forest Plan Standards and Guidelines.

Amendments

An important aspect of keeping our Plan an up-to-date living document is the preparation of amendments. Based on analysis of objectives, standards, monitoring and constantly changing conditions, the Forest Plan will need to be amended from time to time. Some of these amendments may involve significant changes and will require an Environmental Impact Statement to be completed. Other changes, however, will require only minor adjustments and an Environmental Assessment may be adequate.

As of September 30, 2002, twelve amendments have been made to the Forest Plan. A thirteenth amendment had been proposed, but the implementing decision was recalled during the appeal process and has not yet been reissued. Five reflect changes made during Wild and Scenic River planning, one concerning noxious weed management, one adjusting a Research Natural Area Boundary, one responding to Elk Habitat Enhancement needs, one dealing with standards and guidelines relating to management of Habitat for Late Successional and Old Growth Related Species within the Range of the Northern Spotted Owl, one that expanded Mt. Hood Meadows ski area permit boundary, one Congressional Act that modified activities within the Bull Run watershed, one that designates Timberline Lodge and its immediate environs (approximately 5 acres) as a Historical Special Interest Area – A-4. Number thirteen would have modified Standards, Guidelines and Management actions related to the use and management of the Mt. Hood, Salmon-Huckleberry, and Hatfield Wildernesses.

The thirteen amendments are:

1. *Big Bend Mountain Research Natural Area* boundary change (within the Bull Run Watershed). 10/3/91

2. *Clackamas Wild and Scenic River EA and Management Plan* – delineates final river boundary and removes all National Forest land within the river corridor from "regulated" timber harvest. 4/19/93

3. *Salmon Wild and Scenic River EA and Management Plan* – delineates final river boundary and eliminates "regulated" timber harvest within the corridor. 3/10/93

4. *Lemiti Elk Habitat Enhancement Project* – exchanges an existing Roaded Recreational Management Area at Lemiti Creek with an adjacent Deer and Elk Summer Range Management Area. 5/17/93

5. *Roaring National Wild and Scenic River EA and Management Plan* – delineates final river boundary and modifies management direction within the corridor relating to recreational developments, timber harvest and commercial livestock grazing. 9/13/93

6. *Upper Sandy National Wild and Scenic River EA and Management Plan* – delineates final river boundary and eliminates "regulated" harvest within the corridor. It provides replacement management direction for the new A-1 allocation. 2/24/94

7. *White River National Wild and Scenic River Management Plan* – delineates final river boundary which included the adjustment of the river corridor termini to include White River Falls. It also modified management direction in relation to recreational use, timber harvest, and road construction among other site specific management activities. 11/3/94

8. *Record of Decision for Amendments to Forest Service and Bureau of Land Management planning documents within the range of the Northern Spotted Owl* – this decision amends current land and resource management plans with additional allocations and standards and guidelines. 5/13/94

9. *Environmental Assessment for Management of Noxious Weeds, Mt. Hood National Forest* – this amendment clarified noxious weed management objectives by adding missing statements pertaining to noxious weed management under Goals, Desired Future Condition and Resource Summary sections of the Mt. Hood Forest Plan. 12/8/93

10. *The Environmental Impact Statement for the new long term conceptual master plan for Mt. Hood Meadows Ski Area* expanded the ski area permit boundary by 96 acres to include an area which was being used by the ski area. It changed the land allocation for this area from a Wildlife/Visual classification to Winter Recreation classification. It also changed the Northwest Forest Plan allocation from Matrix to Administratively withdrawn. 1/24/97

11. *The Oregon Resource Conservation Act of 1996 changed the allocation for the Bull Run Area from Administratively withdrawn to Congressionally withdrawn.* It prohibited harvesting of trees for timber management within the Bull Run drainage and prohibited the authorization of salvage sales.

12. *The Timberline Lodge Master Development Plan Amendment* adopted the Historic Building Preservation plan to provide the long-term management strategy for Timberline Lodge as a National Historic Landmark. The amendment also designated Timberline Lodge and immediate environs as a (Historic) Special Interest Area (A-4 Land Allocation). 11/4/98

13. This amendment made revisions to the *Wilderness Recreation Spectrum allocations and Forest Plan standards* dealing with "Limits" as related to Limits of Acceptable Change process. Standards relating to visitor use, restoration of impacted sites and public involvement were adjusted. Some standards were tightened and some were modified to be more realistically achievable. 12/11/2000
    Note: This decision was recalled based on information identified during the appeal process. A new decision has not yet been issued and the amendment has not been implemented.

Monitoring has disclosed significant disparity between our amended 1994 Forest Plan projections and existing Forest conditions that would currently warrant a revision at this time. We will continue to make nonsignificant amendments to our Forest Plan as needed as we look forward to a full Forest Plan revision. The Mt. Hood National Forest is currently scheduled to begin a Forest Plan revision in 2008 with preparation of a Draft Environmental Impact Statement due in 2011.

Chapter 5
Ongoing Planning Actions

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Ongoing Planning Actions

The Mt. Hood Forest Plan as well as the Northwest Forest Plan implementation process is now well underway. As we move further into the implementation phase, we do our best to meet the intent of the Plans. In addition to site-specific project analysis, several additional planning and monitoring actions are continually taking place.

Northwest Forest Plan

Introduction

Implementation of the Northwest Forest Plan, also titled the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl, began in 1994.

There are four primary components of this plan that the Mt. Hood NF is involved in:

- Watershed Analysis,
- Watershed Restoration,
- Implementation Monitoring, and
- Northwest Economic Adjustment Initiative

Extensive energy has been focused on the following areas and is summarized in the following paragraphs.

Watershed Analysis

Watershed analysis is an intermediate analysis between land management planning and project planning. It provides analytical information about ecosystem functions, structures, and flows in the watershed, including past and current conditions and trends. The result will be a scientifically based understanding of ecological interactions occurring within a watershed as they relate to specific social issues.

Watershed analysis is purely an analysis step and does not involve NEPA (National Environmental Policy Act) decisions. Given the desired future conditions, goals and objectives, management area boundaries, and standards and guidelines, which come from the Forest Plan and the Northwest Forest Plan, watershed analysis is a tool to help identify and prioritize Forest Plan implementation actions.

As of October 2000, nearly 100% of the Forest was covered by a watershed analysis. We are now developing a schedule which will identify which Forest watersheds are in need of a revised analysis due to changed management priorities, change in natural conditions, or inherent risk factors not reviewed in the first watershed analysis efforts of a decade ago.

Implementation Monitoring

A crucial component of the Northwest Forest Plan is monitoring implementation at a variety of scales. At the request of the Regional Ecosystem Office, an interagency regional review team was formed and they developed a process to review projects or analysis located within the area covered by the Northwest Forest Plan.

The core of the reviews is an extensive questionnaire which was to be filled out for the project or watersheds selected.

Analysis of the findings indicate that overall, at the Regional scale, the Forest Service and Bureau of Land Management (BLM) have a high level of compliance with the standards and guidelines and no major changes in management direction are warranted at this time.

In addition, other project specific monitoring trips are carried out by individual districts. These reviews consider several aspects including management and condition of roads, landings, skid trails, slash treatment, adequacy of riparian buffers and silvicultural prescription implementation.

Northwest Economic Adjustment Initiative

Role and Activities in Community Development

The USFS Economic Action Program (EAP) is a group of Forest Service, State and Private programs listed in the congressional budget under one heading. EAP consists of four program components, as well as a variety of special projects funded by Congress every year.

The Mt. Hood National Forest is committed to being partners with our neighbors in a vision of long term sustainable community development and responsible management where economic, social, and ecological progress go hand-in-hand. The Mt. Hood National Forest assists communities through partnerships, agreements and alliances. It allows an increased capacity to long term, sustainable economic health. The following is a menu of areas and programs the forest is involved in to promote long term, sustainable community development.

The Northwest Economic Adjustment Initiative, part of the Northwest Forest Plan, is aimed at helping rural communities and businesses dependent on natural resources become sustainable and self-sufficient. The Initiative brings the Forest Service together with eight other Federal agencies, as well as with State and local governments, for funding projects that are community priorities to help build long term economic and social community capacity. Specific programs include:

Rural Community Assistance

The Rural Community Assistance program on the Mt. Hood National Forest provides technical and financial assistance to communities that build long term, sustainable capacity to address social, economic and environmental challenges. Each community project is derived from a broader strategic plan that reflects their long term community development sustainability needs. In 2002 the Forest Service awarded four new grants to rural communities in the influence area of the Mt. Hood National Forest:

New Grants

City of Molalla Strategic Plan

This $20,000 grant will prepare a new 5-year strategic plan for the City of Molalla. The old plan focused on surviving the timber crisis and building capacity. It is now outdated and doesn't address current challenges facing the community. For example, the community has experienced considerable residential growth on the borders, and is dealing with transportation issues, coordination with schools, use of industrial lands, and downtown infrastructure needs. In other words, "quality of life" and economic development issues are the challenge. These might be considered desirable "problems" to have considering the recent past of 6-8 years ago, but they are still challenges that need a strategic approach and community involvement to resolve. Molalla is striving to be a sustainable, complete community.

Government Camp Downtown Development Revitalization

This $32,000 grant awarded to the Clackamas County Development Agency will complete final design and construction ready documents for new heated sidewalks, re-aligned parking, storm water system, connections and signage to trail plan, incorporate new landscaping, furniture and lighting in the Government Camp core area. "Cascadian" or rustic architectural elements will be incorporated into the project, which is consistent with the theme of the community. The sidewalks will be heated by boiler-heated water, but built for conversion to a geothermal system when available. The core area preliminary design has been an ongoing public process that is being finalized.

Government Camp is a hub for summer and winter recreation on Mt. Hood. The main business core does not have any sidewalks, lighting, street furniture, or landscaping on the 80-foot wide Loop Road. There is no separation between vehicles and pedestrians creating an unsafe situation. The retail core area lacks identity, as the road is very wide with little or no amenities, which inhibits new commercial development in the community.

Bull Run and Sandy Community Fire Planning and Education Project

This $40,600 grant award for the Bull Run and Sandy Community Fire Planning and Education Project is to develop a local community plan for wildfire response, improve district preparedness, and provide community education regarding fire prevention and risk reduction. Funds for this grant were made available through the Forest Service National Fire Plan and the Department of the Interior and Related Agencies Appropriation Act 2002, P.L. 107-63.

Pine Hollow Wildland Interface, Fuels Reduction, Fire Prevention and Community Education Project – Phase I.

This $10,000 grant award for the Wildland Interface, Fuels Reduction, Fire Prevention and Community Education Phase 1 project will be used to educate the community and fire department volunteers on fuels reduction and fire prevention as well as identifying areas needing fuels reduction while utilizing assistance from the State Fire Marshals Office and other county-wide resources. Funds for this grant have been made available through the Forest Service National Fire Plan and the Department of the Interior and Related Agencies Appropriation Act 2002, P.L. 107-63.

Ongoing Grants

The following existing grants continue to be monitored and administered:

Mt. Hood Towne Hall Restoration and Design Plan

This $40,000 grant to Hood River County will prepare a final design and engineering plans for restoration of the Mt. Hood Towne Hall. The Mt. Hood Towne Hall was originally a two-room school house built in 1914. It is currently owned by Hood River County and operated by a volunteer Board of Directors, and functions as a community center. An architectural and engineering report was completed in 1999 through an RCA grant; this project would prepare the final design and plans that would be used to acquire funding for the restoration work. Work identified in the preliminary report included renovation of the upper level, creation of a new main level accessible entrance and restrooms, and reconstruction of the lower level floor and plumbing.

Government Camp Pedestrian Overpass

This $32,000 grant awarded to Clackamas County Development Agency develops a preliminary and final structural design package for a pedestrian overpass across Highway 26 in Government Camp, Oregon. The structure is a parallel to, but separated from, the existing vehicle overpass that connects the Government Camp core area on the north side of Highway 26 to the south side of Highway 26. The south side contains Multorpor Ski Area, a future 250-unit single family subdivision; a connecting trail system to the Mt. Hood National Forest; and the private/public future sports facility venture that contains community meeting space, fitness, skate-boarding, basketball, tennis and other sports facilities. The approaches on the existing overpass are too steep, thereby restricting sight distance for pedestrian use. People on the south side of Highway 26 drive the 1/3 mile into Government Camp for services instead of walking, biking or skiing. As a result, economic development is restricted.

Bear Creek Trail Engineering and Design Project

A $60,000 grant was awarded to the City of Molalla in 1998 to complete:

- wetland delineation and biological identifications;
- wetlands mitigation planning;
- engineering and design of trailhead parking, ADA accessible trail, and signage; and
- a fund-raising strategies for construction.

This project is being accomplished in conjunction with a mill site conversion project.

Technical Assistance

The Mt. Hood National Forest also provides technical assistance to rural communities.

Forest Staff provides information, support and/or educational training opportunities that assist communities to build long-term economic capacity. In 2002, the Mt. Hood National Forest provided technical assistance to South Wasco County and the City of Maupin by continuing field surveying for a road design, and site surveys to produce topographic maps.

Wyden Amendment Projects

Section 334 of the USDI and Related Appropriation Act for fiscal year 1998, commonly and locally referred to as the Wyden Amendment, provides the Forest Service the authority to enter into collaborative agreements with other state and local partners to accomplish high priority restoration, protection, and enhancement work on public or private lands. The passage of the Wyden amendment has greatly broadened the agency's authority to not only utilize its resources anywhere within the ecosystem, but also as important, it has greatly increased our ability to establish and maintain financially based cooperative arrangements (substantive partnerships) with state, local, and tribal entities. Although the projects focus on ecological restoration, the benefits extend into the local communities and help increase community capacity.

Partnerships

Partnerships are an integral part of management of the Mt Hood National Forest and are as varied as the work they accomplish.

Some partnerships simply help us get the work done; others are involved in major collaborative and stewardship roles, becoming advocates helping to implement our natural resource agenda at the local level. Partnerships reconnect people with natural resources as they enable participants to get involved, make a difference, and learn more about their environment and their national forests.

While partnerships are not new, the Mt Hood Forest's emphasis on them and the desire to move towards partnerships that help build collaborative external relationships and embrace local communities continued to be an area of emphasis for Fiscal Year (FY) 02.

The following is but a brief sampling of people partnerships that occurred during the last year. **Partners are shown in bold text**. ***Those long termed partnerships that have spanned a decade or more are shown in bold italics.***

The Senior, Youth and Volunteer and Hosted Program opportunities resulted in:

- Accomplishing 20,400 hours of work
- Valued at over $230,000 in FY 02

Although accounting for only a portion of the work accomplished by partnerships, these Senior, Youth, Volunteer and Hosted Programs included:

Senior Community Service Employment Program *(SCSEP) Ten* low-income seniors provided work for the forest, earning extra income while they gained job-training skills. Four seniors were successful in transitioning into private sector employment during FY02.

Two Forest Service operated ***Youth Conservation Corps (YCC)*** non-residential crews employed 20 eastside youth as a result of the Forest pooling resources with:

- **Hood River County Juvenile Department**
- ***Oregon Youth Conservation Corps***
- ***Mid Columbia Council of Governments***
- **Region 9 Educational Service District**
- ***Wasco County Commission on Children and Families***
- **Northwest Service Academy/AmeriCorps**
- **Trust Management Services.**

These partners contributed eighty percent of the funding needed for the YCC program. During the eight-week summer program, the youth accomplished needed work for the forest, developed skills, earned money, and in many cases gained high school credit or a post high school education award. Recruitment information was available in both English and Spanish. The Mt Hood Forest has been proud to make it a priority to provide opportunity for youth through a YCC program for all but six years since the passage of the YCC legislation in 1974.

Hosted Programs are those manpower, job training and development programs run by other organizations that we "host" on the forest by providing a worksite. Included are hosted arrangements with organizations and local government agencies such as:

- ***Clackamas County Education, Training and Business Services***
- **Hood River County Community Corrections**
- ***MacLaren School***
- ***Mid Columbia Council of Governments***
- ***Multnomah County Department of Juvenile and Adult Community Corrections***
- **Northwest Service Academy/AmeriCorps**
- **Portland State University**
- **Reynolds School District, Multnomah Youth Cooperative**

- ***Wasco County Sheriff and Juvenile Department***

As a result of these hosted programs, forest roads and trails have been brushed, riparian fencing built, facilities maintained, invasive weeds removed, and "as built" drawings have been developed for historic buildings.

The 'Teachers in the Woods" Program with Portland State University provided work experience for 15 science teachers from the Portland area. Working for eight weeks, the teachers were involved with stream restoration, wildlife surveys and other projects that will give them practical experience to share in the classroom.

Volunteers include both individuals and organized groups.

Individual volunteers contributed their time and effort to full-time positions, such as:

- **Timberline Lodge Interpretative Specialists**
- **Clackamas Lake Guard Station Visitor Information Specialists**
- **Laurance Lake Area Host**
- **Hickman Butte Fire Lookout**
- **Winter Snow Trails Specialists**
- **Breitenbush Wilderness guards**

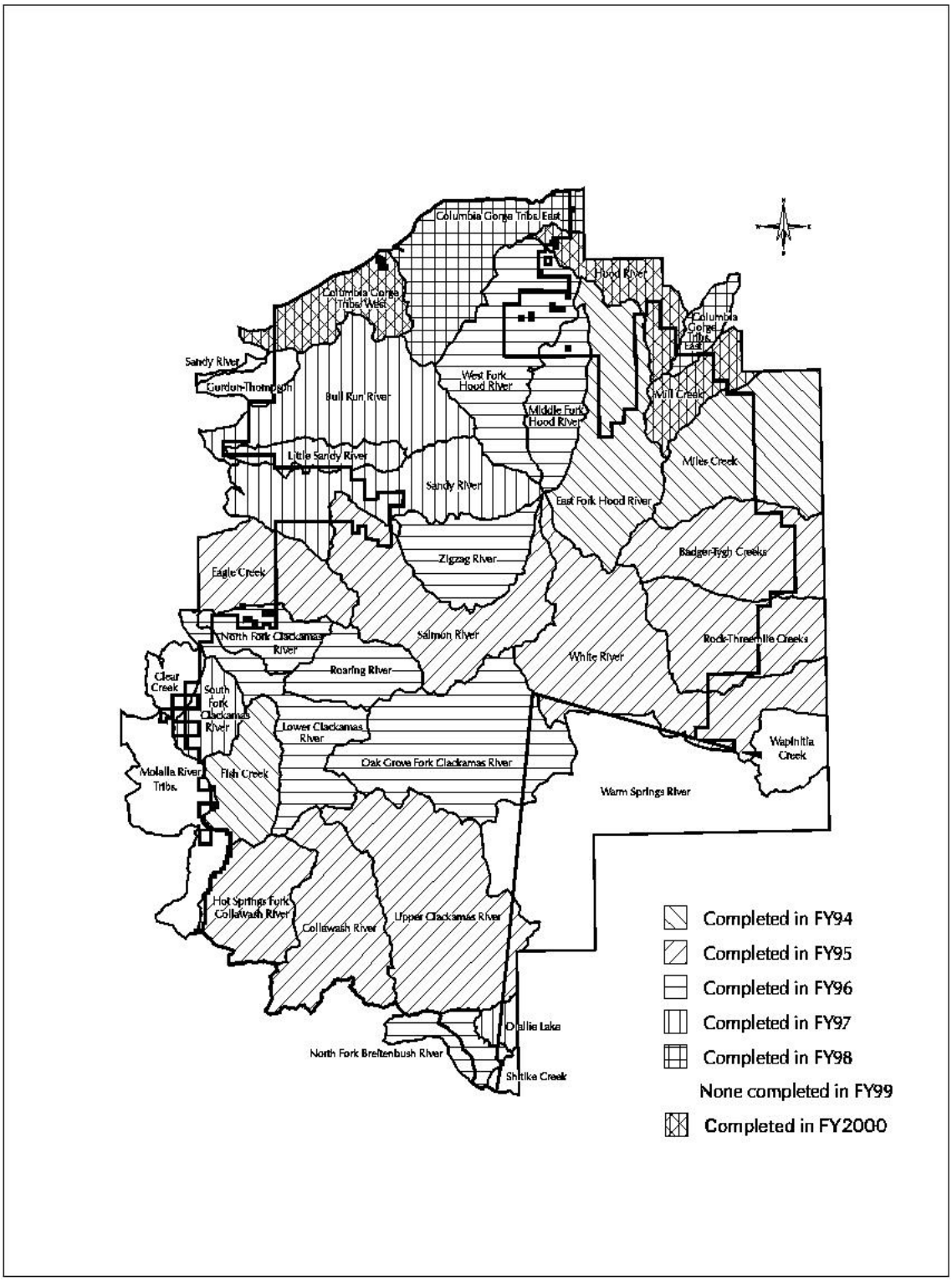
Others participated in one-time events or a specific project, such as:

- **Fishing Clinics**
- **SOLV- Stop Oregon Litter and Vandalism**
- **Songbird Celebrations**
- **Geologic Surveys**
- **Trail Maintenance Work Days**
- **Fish and Wildlife Surveys and Habitat Improvement Projects**

For the second year, in our agreement with the **Mazamas**, 30 wilderness stewards assisted district staff with public contact in the Mt. Hood Wilderness. By hiking and monitoring the trails, the Mazamas were a valuable resource for Leave No Trace and wilderness ethic contacts.

Nine volunteer organizations accounted for 52% of the volunteer hours contributed on the forest last year. As the Mt Hood continues to downsize, more emphasis is placed on organized volunteer groups and other arrangements where partners take an active role in recruiting, training and supervising the work.

Map 5-1. Mt. Hood National Forest Watershed Analyses Completed



Appendix A
List of Preparers

Appendix A

List of Preparers

Wrightson, Jim - *Fire*

Shively, Dan - *Fish*

Blank, Myron - Land Management *Planning*

Cartwright, Linda - *Range*

Hamilton, Malcolm - *Recreation*

DeRoo, Tom - *Geologic/Mineral Resources*

Dryden, Marge - *Heritage Resources*

Dyck, Alan - *Wildlife*

Dodd, John - *Soil*

Gerstkemper, Jack - *Transportation*

Hakanson, Shelley - *Partnerships*

Hickman, Tracii - *Fisheries*

Holder, Barb - *Financial*

Holmberg, Lance - *Noxious Weeds*

Lankford, Nancy - *Silviculture*

Nugent, Susan - *Botany*

Rice, Jeanne - *Ecology*

Rice, Jim - *Timber*

Sachet, Glen - *Partnerships/Rural Community Assistance*

Stein, Marty - *Noxious Weeds*

Steinblums, Ivars - *Water/Flood*

York, Shelly - *Desktop Publishing*