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Monitoring and Evaluation Report FY 2001

Mt. Hood National Forest
Land and Resource Management Plan

Monitoring Report

Fiscal Year 2001

Mt. Hood National Forest
Land and Resource Management Plan

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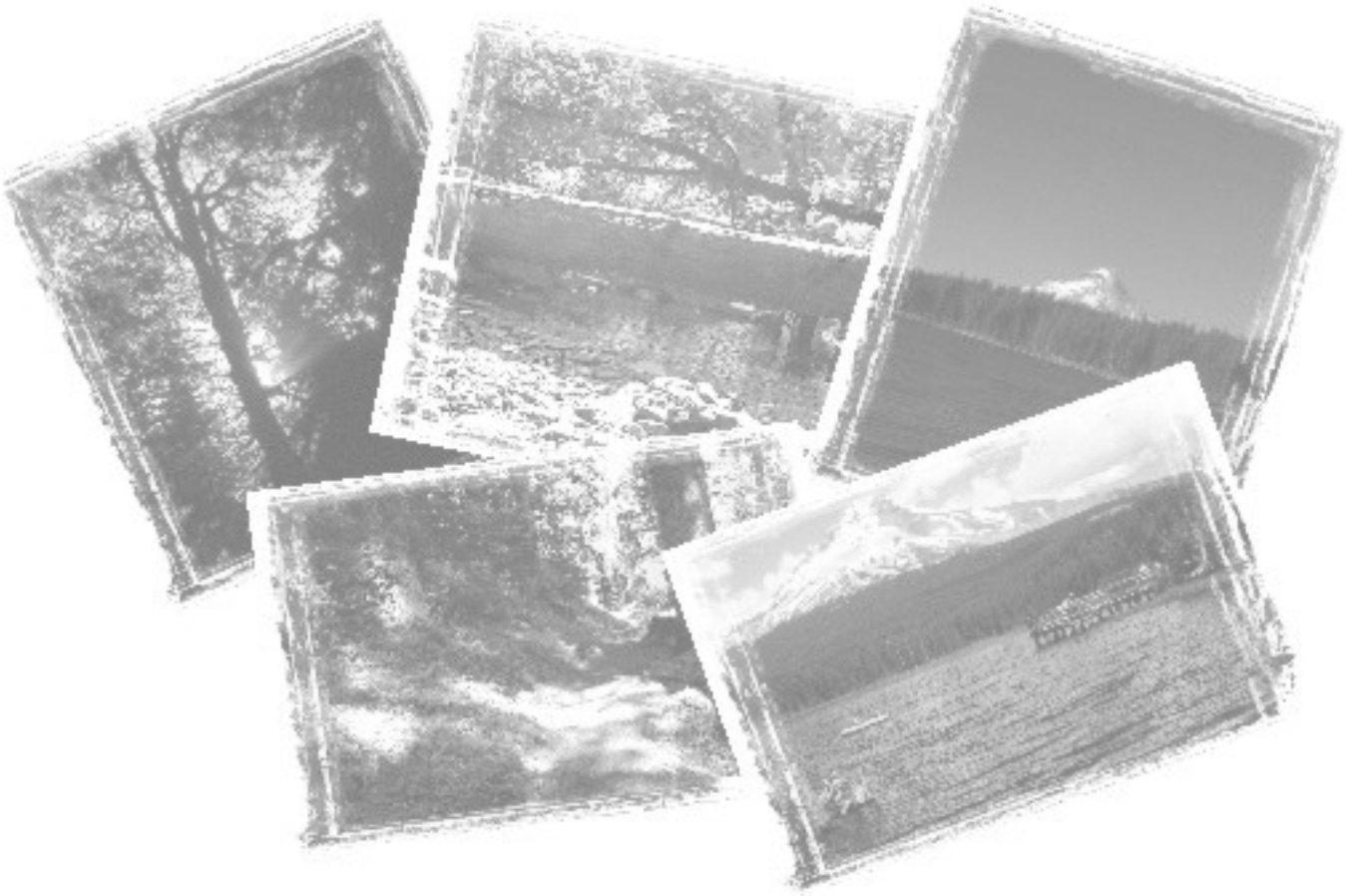


Summary

The matrix found in Table S-1 offers a comparison of key resource monitoring items and program accomplishments for fiscal years 91 through 2001. This comparison chart identifies trends in resource conditions and program outputs. Some conclusions can be drawn at this time. There are indications that Forest Plan adjustments are needed in some cases. Adjustments in management practices are taking place in response to information learned through our monitoring efforts. These include a reliance on concessionaires for campground management, development of a prescribed natural fire policy for Wilderness areas and a focus on using designated skid trails to protect soil resources.

Projections of accomplishment that are not consistent with the original Forest Plan include Allowable Sale Quantity and Total Sale Program Quantity, Road Construction and Reconstruction and Trail Construction and Reconstruction. This is due to lower budgets and significantly lower timber outputs as well as additional requirements outlined in the Northwest Forest Plan.

Monitoring will continue in order to assess management activities and draw meaningful conclusions. A more detailed examination of Key Resource Areas can be found in Chapter 2 of this document.

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 in 2009.

Summary of Key Resource Conditions

Air Quality

The management activities that affect air quality by the Mt. Hood National Forest remained in compliance throughout the monitoring period (10/2000 to 9/2001). 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 of 1,563 acres were treated during the course of the period with a total of 17,325 tons consumed. No intrusions into smoke sensitive areas occurred as a result of Forest management activities. Visibility in the Mt. Hood Wilderness Class I Area was not significantly impaired as a result of management activities. All burning operations were properly recorded and submitted to Salem Smoke Management for approval and recording purposes.

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. Monitoring occurs in cooperation with the Continuous Vegetation Survey (CVS) program; lichen plots are collocated with CVS plots such that in addition to lichen data, a wide range of forest composition and structure attributes are monitored as well. Lichen plots are expected to be revisited on a four-year cycle.

Methodologies are adapted from and fully interfaceable with the EPA/FS National Forest Health Monitoring Program.

Analysis is continuing and results will be published in future reports.

Noxious Weeds

A total of 530 acres of noxious weeds treated on the Forest in 2001. 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 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 houndstongue, knapweeds and common toadflax.

Fisheries

Overall numbers of anadromous fish and Bull trout on the Forest are low. Available habitat on the Forest continues to be underutilized. For example, over 25 miles of known steelhead spawning streams were monitored on the east side of the Forest. Surveyors found an average of two redds per mile. Spawning survey results were higher on the Salmon River, a tributary to the Sandy River. Chinook redds averaged about nine per mile. Overall, those are extremely low numbers when compared to the capacity of the surveyed streams.

The comprehensive smolt-trapping project on the Clackamas River highlights the importance of a variety of quality habitats for anadromous fish. The Forest Service and Bureau of Land Management manage 71% of the Clackamas River watershed. Smolt trapping has helped define the relative distribution of fish in the basin. Although most federal land is above a system of three dams, about half of all steelhead smolts and forty percent of coho smolts are from tributaries on federal lands. Habitat use is differentiated by species. Coho salmon prefer the low gradient of Big Bottom, Clear Creek and Deep. Steelhead are found throughout all tributaries, even those with much steeper gradients such as Fish Creek.

As Forest budgets continue to decrease, it will be important to develop partnerships with other resource agencies, watershed councils, and private companies in order to identify watershed concerns both on-Forest and off-Forest and to seek collaborative solutions to improve watershed health and function.

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 non-forest species.

Timber, Silviculture

Prescriptions to treat forest health concerns and provide wood products have been implemented over the last several years. Commercial thinning and selection cuts made up the majority of the Forest program. However, there are several areas of concern regarding current and potential future forest health issues. 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.

8.8 million board beet (MMBF) was offered for sale in FY01, however only 1.54 MMBF was sold and awarded. This is far below the Northwest Forest Plan PSQ of 64 MMBF. This low level of volume offered was due to litigation issues against the Northwest Forest Plan that tied up completion of NEPA, offering sales, and awarding contracts. Volume harvested was also much lower than previous years due to a low economic market for timber products.

Wildlife

Emphasis on the Forest has shifted from monitoring to survey efforts for species presence to include Northwest Forest Plan Survey and Monitoring species. Nine projects were surveyed for mollusk by the Forest Survey Crew. A total of 22 populations of mollusk representing 3 species were located on the project areas.

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.

The small populations of bald eagle and peregrine falcon appear to be stable. Very little monitoring efforts have been completed 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.

Fire Management

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 consolidate and update the forest's vegetation/ fuel 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 risk of large stand-replacing fires escaping the Badger Creek Wilderness continues to be a threat due to current fuel conditions. A combination of management ignited fire inside the Badger Creek Wilderness and mechanical treatment outside the wilderness area will be needed to reduce the existing and future, fuel hazard so that prescribed natural fire can be successful inside the Wilderness boundary. Recreation, Lands and Fire Management are working on completing the Badger Creek Wilderness Fire Management Plan.

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. Outyear funding for prescribed fire projects with natural fuels will potentially increase our ability to treat up to 5,000 acres per year. However, if implemented, this increase could affect ambient air quality standards in small communities adjacent to the forest, the Mt. Hood Wilderness and potentially the Portland metro area.

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.

Water Resources

With continued implementation of Best Management Practices (BMP's), watershed restoration, and the Northwest and Mt. Hood N.F. Plans, water quality and watershed conditions are expected to be maintained and in some areas show an improving trend. Water monitoring stations for water temperature and turbidity have been installed at various locations on the forest, but a number of years of data is required in order to begin assessing trends.

For some of the streams that have been identified as water quality limited by the Oregon Department of Environmental Quality, Water Quality Restoration Plans are being developed to describe planned restoration measures and management requirements that over time will restore water quality for the listed parameters (for example, sediment or water temperature).

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 (USFS gaging station) by December 2002. The water monitoring stations will continuously monitor turbidity and flow depth.

Summer water temperatures are monitored by a network of water temperature monitoring stations across the forest. The data will be used to study long term trends in summer water temperatures and monitor recovery in streams currently identified as water quality limited for water temperature.

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.

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.

Preliminary results continue to show that soil biology is rebounding on skid trails and roads where subsoiling was used to alleviate compaction damage.

Recreation

Recreation opportunities and condition of recreation facilities such as trails and camping facilities have declined over time due to reduced budgets. They will likely decline further if recreation budgets continue to decline. In an effort to continue to respond to recreational needs, changes in how we provide recreation opportunities will occur. The use of a concession operation of our campgrounds is one example. Moving toward additional privatization, use of reservations and increased fees are other future possibilities.

Travel and Access Management

We are continuing to move towards open road densities as identified in the Forest Plan. During the planning process, opportunities to reduce road densities are being identified. However, there is not enough funding available to implement the total reduction planned. Many of these roads identified for decommissioning will close naturally. If funding becomes available for decommissioning, the implementation rate would increase. In FY01, no additional roads were closed and 4 miles of road were decommissioned.

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

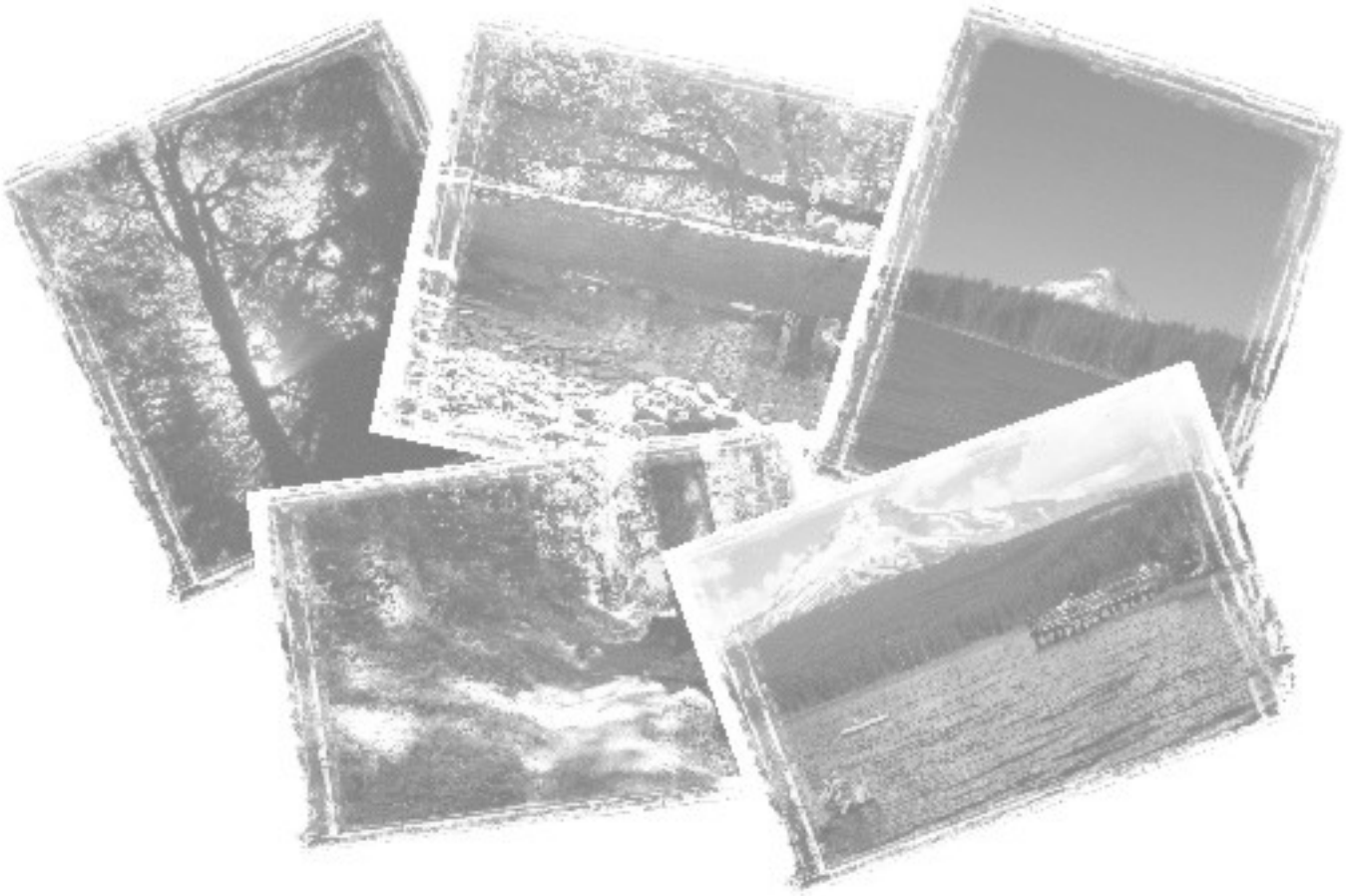
Element	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	Recommendation/ Comments
Fire Management												
Human caused fires	61	49	42	55	29	43	27	32	45	40	54	Continue monitoring, management direction achieved.
Natural occurring	29	30	3	11	19	2	9	38	22	1	24	
Total fires suppressed	90	79	45	66	48	45	36	70	67	41	78	
Air Quality												
Acres treated by prescribed fire	1,516	3,559	2,727	2,809	1,962	2,448	1,082	1,643	2,161	2,258	1,563	Continue monitoring, management direction achieved.
Intrusions into Class I areas	0	0	0	0	0	0	0	0	0	0	0	
Soil Resources												
Activity areas monitored	21	15	8	0	8	2	10	8	13	8	4	Restrict subsoiling to areas that exceed 15% damage standard.
% of areas not meeting soil productivity S&Gs	25	33	36	-	0	0	70	25	8	0	0	
Soil improvement acres	198	244	301	42	70	55	11	0	0	0	0	
Range Management												
Permitted AUMs	7,288	3,927	3,607	3,954	1,848	1,548	1,548	1,548	1,407	4,279	1,986	
% of allotments receiving reviews	100	100	-	-	-	100	100	100	100	100	100	Revise AMPs as scheduled. Continue monitoring.
% sites meeting utilization S&Gs	33	42	62	51	70	88	91	94	92	94	91	
Heritage Resources												
Evaluations/eligible			0	1	5/0	1/0	0	2/0	6/3	0	10/5	
# of condition reviews of existing sites	52	56	0	29	7	32	73	50+	50+	50	74	
Nominations to National Register	1	0	0	0	0	0	0	1	0	0	0	Complete process for those that are started
# of CCC maintenance projects	44	41	8	72	15	31	47	70	56	45	45	

Element	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	Recom-mendation/ Comments
Geologic Resources												
Created openings on mapped earthflows	2	13	19	0	7	19	7	0	3	11	8	Continue monitoring.
Created openings on mapped landslides	0	3	16	0	3	2	0	0	1	0	0	
Openings not meeting S&Gs size limits	1	0	0	0	0	0	0	0	3	2	2	
Mineral Resources												
Mineral material used by other agencies (cy)	86,000	187,500	23,000	5,000	82,000	191,850	25,500	216,700	76,200	85,000	63,500	Complete develop-ment plans for common variety sources.
Mineral material used by MTH (cy)	110,000	78,400	4,800	9,000	12,550	13,300	151,800	52,900	56,800	20,375	17,270	
% of projects inspected for compli-ance	100	100	100	100	100	100	100	100	100	100	100	
Mineral material sold to public (cy)	915	900	910	900	1,400	1,600	865	1,160	350	319	248	
% of major projects with operating plans	39	100	100	100	100	100	100	100	100	100	100	
Fish Resources												
Acres of lakes inven-toried/imprvd	30/0	1,342/ 302	3,635/3	1,935/5	707/9	90/0	0/0	54/0	54/0	51/0	-	Continue surveys.
Miles of streams inventoried/imprvd	217	214/35	373/26	365/26	367/15	125/ 29.5	99/39.1	45/19	49/0	43.6	-	Continue surveys.
Chinook salmon redd counts – WF Hood River	25	0	-	-	0	19	40	17	1	-	-	Continue monitoring.
Lakes surveyed	30	31	17	16	4	4	0	1	1	4	-	Continue surveys.
Riparian surveys											-	
% meeting pool S&Gs	0	0.7	7	.1	1	3.8	11.3	13.6	12.0	0	-	Continue monitoring.
% meeting LWD S&Gs	29	22	23	16	.4	0	3.2	2.1	9.8	0	-	Continue monitoring.
% habitat structures meeting S&Gs	-	99	90	-	64	79	91	-	-	-	-	Continue monitoring.
Water Resources												
Best Management Practices imple-mented?	Yes	Yes	Inconcl	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Continue implementa-tion of Best Manage-ment Prac-tices Evaluation Process. Continue monitoring and develop a consis-tent cumula-tive effects analysis.

Element	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	Recommendation/ Comments
Projects meeting % ARP S&Gs	-	86	87	-	-	100	100	100	100	100	100	
Transportation/Roads												
Miles constructed/ Forest Plan projection	10/ 16.6	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	Adjust Forest Plan.
Miles reconstructed/ Forest Plan projection	24.2/ 91.5	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	Adjust Forest Plan.
Road miles obliterated		41.0	47.5	47.4	29.4	38.9	84.2	27	89	18	4	
Road maintenance meeting S&Gs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	yes	Yes	Yes	
Wildlife Resources												
Peregrine Falcon nest sites		0	2	0	1	1	0	2	2	2	2	Complete implementation plan including site specific habitat mgmt. Areas and mgmt. Direction.
% projects meeting Bald Eagle S&Gs		100	100	100	100	100	100	100	100	100	100	Continue surveying, complete mgmt. Plan.
% projects meeting primary cavity nester S&Gs	Inconcl	Inconcl	39	Inconcl	90+	50	71	65	100	100	100	Continue monitoring and surveying.
% summer range S&Gs met	100		100	-	100	NA	100	100	100	100	100	Continue monitoring.
Pine-oak habitat S&Gs met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Continue monitoring.
Timber Resources												
% timber offered of Forest Plan Total Sale Program Quantity	28	15	20	13	19	30	34.4	31	22	0	4	Initiate Forest Plan adjustment to match NFP.
% timber offered of Forest Plan Allowable Sale Quantity	32	17	23	14	22	34	39	35	25	0	4.7	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	
Silviculture acres treated (harvest methods)	8,046	5,190	3,722	1,637	2,030	1,685	1,948	3,344	3,044	3,245	808	Continue monitoring.
Silviculture activities (Ac.) (planting, fertilizer, etc.)	11,104	10,191	8,954	7,193	12,361	9,852	6,172	7,589	5,282	3,750	7,010	Continue monitoring.
Regeneration meets S&Gs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	97% meets S&Gs	98%	98%	Yes	Continue monitoring.

Element	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	Recom-mendation/ Comments
Scenic Resources												
Projects monitored		23	2	3	1	1	3	5	2	0	0	Continue monitoring of selected projects.
Recreation Resources												
Miles trail con-structed/projections	1.6/6.6	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	Continue monitoring.
Miles trail recon-structed/projections	14.9/ 30.5	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		Continue monitoring.
Wilderness issues of concern – overuse, nonconforming uses							Prepare Wldrnss Mgmt Plan					Continue monitoring.
W&SR Plans com-pleted/remaining	0/5	2/3	4/1	All complet	All complet	All complet	All	All	All	All	All	Completed.
W&SR suitability stud-ies completed	0	0	0	0	0	0	0	0	0	0	0	Defer due to budget constraints.
Financial Review												
Full Plan implement budget/actual expense	65.3 MM 44.4 MM$	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	

Chapter 1
Introduction



Chapter 1
Introduction

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 eleventh 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 in key resource areas.

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 years 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.

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.

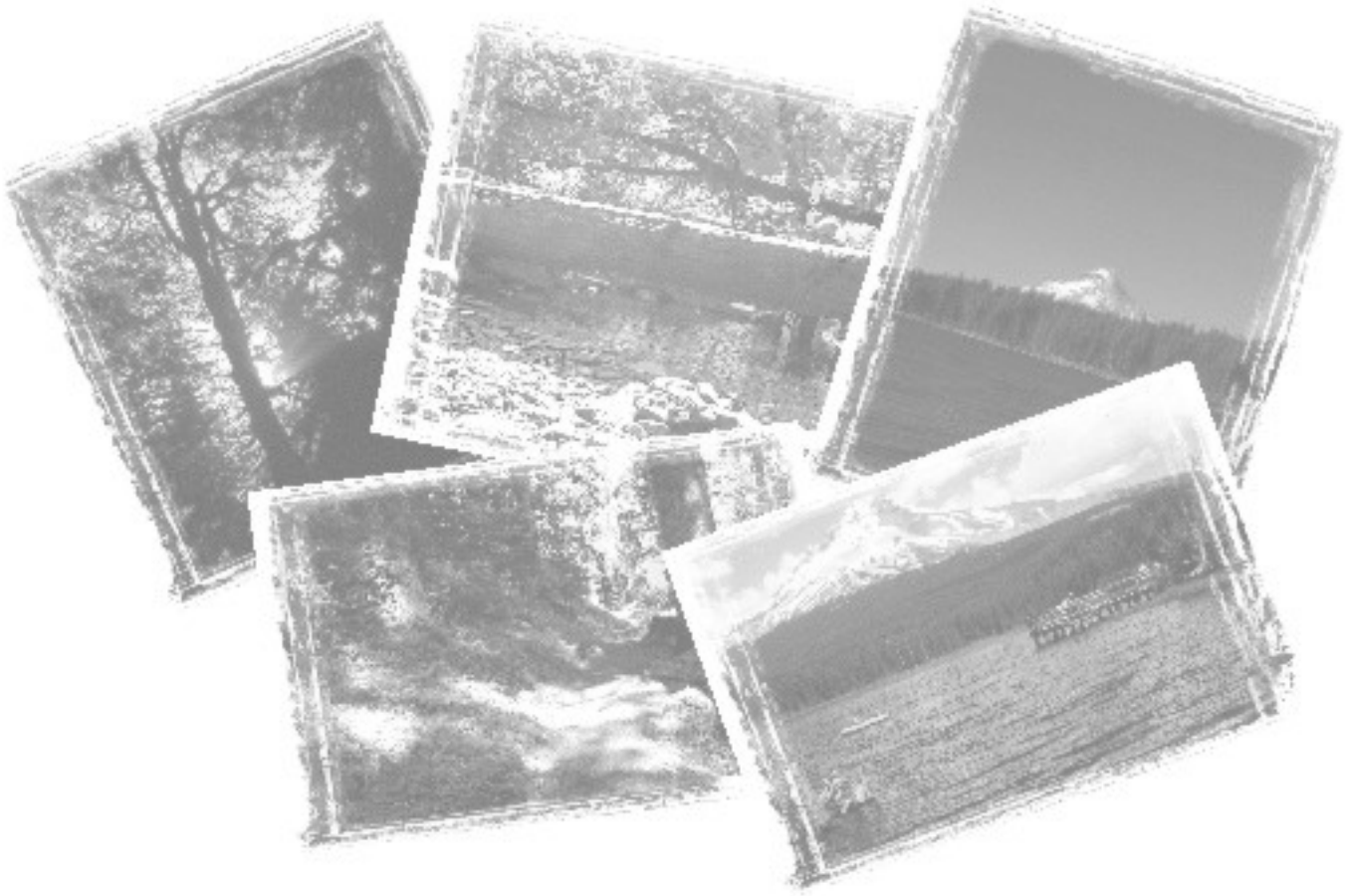
Chapter 5 – Ongoing Planning Actions

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 five 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 for revision of the Mt. Hood Forest Plan is 2009.

Chapter 2
Accomplishments/ Results/ Recommendations



Chapter 2
Accomplishments/Results/ Recommendations

Monitoring Element: 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 2001 Fire Season

Snowpack and water year precipitation amounts remained well below normal. The water precipitation was 60% of normal. The Mt. Hood Snotel site at 5,400 feet had 18.2 inches of water equivalent in the snowpack. The Palmer Drought Index indicated severe to extreme drought in both the Coast Range and the Cascades. The 1,000 hr fuel moisture was below average at 25%, which is typical of early July. These conditions aided the increase in two early May fires moving them out of our typical Size Class A fires for that time of year, and into Size Class B normal. In August a lightening storm moved through the southern portion of the Forest igniting 20 fires in the Olallie Lake area of the Forest and on portions of the Confederated Tribes of Warm Springs land.

Many of these fires escaped initial attack and eventually grew together into two large fires: Powerline, which was on Forest Service jurisdiction at 242 acres; and Dark Lake at 1,982 acres, of which 124 was on Forest Service jurisdiction and 1,858 on Warm Springs lands. A Type 2 Incident Management Team managed both incidents as the Olallie Complex under unified command with the Mt. Hood National Forest and the Confederated Tribes of Warm Springs.

A total of 78 fires were reported in 2001: 24 lightening and 54 human-caused fires. Reported burned acres totaled 2,043. No industrial operations fires occurred in 2001. While the Forest had many of its forest resources committed to the Forest's large Olallie fire, we were still very successful in supporting the National firefighting effort, dispatching 274 overhead positions, 29 crews, and 16 engines to other Regional and National fire assignments. These numbers include the Regional Office and the Columbia River Gorge National Scenic Area resources, whom we have dispatch responsibility for. Cooperative relations with other agencies continued to be well coordinated. Other fire management program activities (e.g. Prevention and Detection) were accomplished within expectations.

Monitoring Activities and Evaluation

The Forest Plan originally identified three fire protection and two fuel treatment objectives to be monitored and evaluated in determination of fire management's capability to attain other land and resource management objectives. The monitoring element which tracks Fire Management Effectiveness Index was dropped this year as a reporting item as it is no longer being used for monitoring purposes. For each objective, information is collected annually. Information for objectives and associated questions one and two below are to be analyzed and results reported every five years. Information relating to questions three and four are to be reported annually. The four fire management objectives and their current status are:

1. *Are the number of human-caused wildfires within levels considered in the Plan?*

   Unit of measure, number of wildfires by cause and by type of people.

Table 2-1: Fire Causes and Type of People, 1990-2001

Causes	No.	Percent	Type of People	No.	Percent
Equipment Use	14	2.7	Owner	2	.3
Smoking	115	22.6	Permittees	5	1
Campfire	266	52.3	Contractor	7	1.3
Debris Burning	9	1.7	Public Employee	10	1.9
Railroad	0	0.0	Local Permanent	0	0
Arson	29	5.7	Seasonal	4	.8
Children	3	.60	Transient	20	4
Unknown	72	14.4	Other	56	11
			Recreation Visitor	404	79.7
Total	**508**	**100**	**Total**	**508**	**100**

2. *Are the number of, size of, and intensity of wildfires within levels considered in the plan?*

   Unit of measure, number of wildfires by size and intensity.

Table 2-2: Summary of Wildfires - Acres Burned by Size Class 1990-2001

Size Class (Acres)	Number Fires	Acres Burned by Fire Intensity Level						Total Acres
		1	2	3	4	5	6	
E (+200)	1	0	0	0	242.50	0	0	242.50
D (100-200)	8	0	250.0	837.0	176.0	0	0	1,263.0
C (10-99)B	7	26.0	51.1	88.0	0	20.0	0	185.1
B (.26-9)	122	42.9	53.5	12.3	6.8	5.7	3.0	124.2
A (<.25)	633	65.5	4.7	1.4	.1	0	0	71.7
Total*	**771**	**147.4**	**362.3**	**939.7**	**564.9**	**25.7**	**3.0**	**2,043**

*Includes both lightning and human-caused wildfires.

Results

The threshold of concern for items #1 and #2 above is, "no more than 20% departure from the expected number per decade." It was anticipated that the human-caused occurrence would average 559 fires/decade and 56/year. Presently, the forest is averaging 46/year. Additionally, the Forest Plan estimated an average annual acreage burned by wildfire to be 408 acres/year. For the past twelve years the forest has averaged 186 acres/year. These numbers are well below the threshold of concern.

3. *Are desired residue (fuel) profiles being met?*

   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. See Air Quality Monitoring Element for acres treated and tons of fuel consumed.

4. *Treat natural fuels on estimated 800 acres annually (a projected average for first decade of the Plan).*

   For the current reporting period, 416 acres were treated. This is less than was originally planned.

Recommendations

Fire and fuels management direction is being achieved and current program effort should:

- Continue to reduce activity fuel residues through a variety of treatment methods.
- Continue to plan for and treat hazardous fuels to better mitigate identified forest health issues, with an emphasis on protection of communities, structures and municipal watersheds as directed by the National Fire Plan.
- 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.
- Now that the Mt. Hood is funded at 95% of our Most Efficient Level (MEL) based on the National Fire Management Analysis System (NFMAS), emphasize development of the fire suppression and prescribed burning skills of the workforce.
- Continue to focus prevention and presuppression efforts on reducing campfire and smoking caused fires.
- Continue to place some emphasis on prevention of industrial operation caused fires.

Since the vast majority of our campfire incidences occur near water-oriented campsites, our prevention and presuppression forces will continue to focus their efforts there.

Monitoring Element: Air Quality

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. Management activities will also be managed to ensure that no deviations to the State Smoke Management Plan occur.

Accomplishment

The management activities that affect air quality by the Mt. Hood National Forest remained in compliance throughout the monitoring period (10/00 to 9/2001). 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 of 1,563 acres were treated during the course of the period with a total of 17,325 tons consumed. No intrusions into smoke sensitive areas occurred as a result of Forest management activities. Visibility in the Mt. Hood Wilderness Class I Area was not significantly impaired as a result of management activities. All burning operations were properly recorded and submitted to Salem Smoke Management for approval and recording purposes.

Table 2-3: Prescribed Burning - FY 2001

Burn Type	Acres Treated by Area				Total
	Hood River	Barlow	Clackamas River	Zigzag	
Broadcast	0	0	0	0	0
Piles	67	917	163	0	1,147
Underburn	0	400	16	0	416
Total Acres	67	1,317	179	0	1,563
Tons Consumed	**1,220**	**15,197**	**908**	**0**	**17,325**

Summary

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 future years, if the increased emphasis on fuel treatment and prescribed fire continues, this trend may reverse and need to be addressed from an air quality perspective.

Lichen Biomonitoring

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 Oregon and Washington. The focus of the work is on assessment of air pollution effects to forests through biomonitoring, specifically by monitoring lichen distribution and abundance (especially species sensitive to acid rain or enhanced by eutrophication) and analyzing pollutant concentrations in lichen tissue. Monitoring occurs in cooperation with the Continuous Vegetation Survey (CVS) program; lichen plots are co-located with CVS plots so that changes in lichen communities related to forest composition and structure may be differentiated from air pollution effects. Lichen plots are monitored on a four-year cycle, once every ten years. Methodologies are adapted from, and fully inter-faceable with, the EPA/FS National Forest Health Monitoring Program.

Between 1994 and 1997, 146 CVS plots (100% of the total target number) were installed. An additional 51 plots were monitored in the Mt. Hood Wilderness during a pilot study in 1993. In 1999, the primary accomplishment was the establishment of a web-site from which lichen monitoring data, estimates of acid rain (kg/ha/yr sulfur and nitrogen compounds), and pollution scores based on lichen communities may be obtained. The url for this website is http:Hwww.fs.fed.us/r6/aq/lichen. Users may design their own queries to get data from the Mt. Hood, Siuslaw, Willamette, Deschutes, Gifford Pinchot, Umpqua, Winema, Wallowa-Whitman National Forests and the Columbia River Gorge National Scenic Area. Data from all forests is fully interfaceable. Users may map distribution of sensitive species, and find out where sulfur, nitrogen, lead and other pollutants are elevated. In addition to detailed forest maps, a series of interchangeable base maps are provided that can be used to interpret species distribution. Base maps include sulfur

and nitrogen deposition, precipitation, vegetation zones, temperature, and elevations.

Much of the Mt. Hood National Forest experiences relatively little air pollution. Specifically, deposition of acidic sulfur and nitrogen compounds and accumulation of nitrogen and sulfur in lichens throughout the south half of the Mt. Hood NF are within background levels observed at clean sites throughout the Region. However, incipient impairment of air quality has been detected in the north half of the Forest, particularly along the western, northern and eastern boundaries. Five most sensitive lichens: *Nephroma bellum, N. resupinatum, Pseudocyphellaria anthraspis, P. anomola, and P. crocata* are very sparse or absent in expected habitats in the northwest part of the Forest, particularly in the Bull Run watershed, and other sites in the Columbia Gorge and Zigzag Ranger Districts. Nine sites in these Districts were at the threshold for maximum tolerable levels of sulfur and nitrogen pollution for normal growth of the region's most sensitive lichens. If air quality continues to deteriorate, declines in biodiversity and abundance of sensitive species and their ecological functions, can be expected.

Lead may be the criteria pollutant of greatest concern on the Mt. Hood National Forest. Of the 191 sites where lead and other metal concentrations in lichen tissue were measured, 3 5 (20%) had elevated lead levels. Most of these sites were in the northern half of the forest. Approximately half of the elevated sites were in the Mt. Hood Wilderness, the Mt. Jefferson Wilderness, the Columbia Wilderness, or the Bull Run Watershed. In a clean area, only 2.5% of plots would be expected to have elevated tissue readings. On the Willamette National Forest, for example, lead levels were elevated at only 4.5% of plots, including sites near major roads.

Lichen tissue concentrations of other toxic metals (Cd, Cr, Ni and Zn) were elevated at fewer sites (< 5%), a rate comparable to other national forests in the Region. Again, most of the sites with high values were in the north half or along boundaries of the Forest. Elevated pollutant concentrations at Old Maid Flats, Highway 26 near Tollgate Campground, the parking lot at Timberline lodge and in the Zigzag River Basin, are most likely attributable to local pollution from vehicles and power generators. Although pollution from roads and campgrounds is localized, high vehicle traffic does bring air pollution to Wilderness boundaries and into areas, such as Old Maid Flats, of special botanical interest.

Local traffic or human activity does not explain elevated pollutant concentrations and sparsity of sensitive lichens at other sites. Most of the pollution reaching the Mt. Hood National Forest originates in the Portland metropolitan area, the Columbia River Gorge and northeast of the Forest. Pollutants come from mobile sources, small and large urban/industrial point sources, dust, and agriculture. A recent amendment to the Columbia River Gorge National Scenic Area Plan by the Colombia River Gorge Commission to protect and enhance air quality in the Scenic Area may ultimately benefit air resources on the Mt. Hood National Forest. For more detailed information about lichen biomonitoring, contact Linda Geiser at the Siuslaw National Forest Headquarters, P0 Box 1149, Corvallis, OR 97330 or at Lgeiser@fs.fed.us.

Recommendations

- A strategy should be developed for airing concerns about air quality impacts to forest health.
- Continue lichen monitoring and coordination with EPA.
- Continue on-site monitoring of suspended particulate emissions created as a result of prescribed fire activities.
- Forest managers should support and participate in bi-state efforts to continue monitoring and help to develop and implement a strategy to protect air quality in the Scenic Area and the Mt. Hood National Forest.

Monitoring Element: Soil Resources

Goal

The primary goal of soil management is to maintain or enhance soil productivity while conducting forest management activities. Standards in the Forest Plan address the physical and biological aspects of soil productivity. Standards, specific to maintaining physical soil quality properties, require that no more than 15% of an activity area is to be in a degraded condition from the *combined* impacts of compaction, displacement, or severe burning.

Organic carbon is an important energy source for the microbiological component of the soil ecosystem. Organic matter as large wood on the forest floor or smaller woody material, including the litter layer, are important sources of organic carbon. Maintenance of carbon cycling through conservation of large wood material is addressed through the standard identified for wildlife habitat needs. The results of monitoring for large wood is presented in the wildlife section.

Accomplishments

Clackamas River Ranger District

Four timber sale units on the Clackamas River Ranger District were monitored for post harvest soil conditions in fall 2001. Units were chosen from a list of timber sales yarded or closed between July 2000 and July 2001. Silvicultural prescriptions, harvest methods, and slash treatments varied (see Table 2-5). All units were shelterwood harvests, with the understory harvested and oldest trees retained as a shelterwood or seed tree cover. Three units were harvested by ground based methods using either conventional machinery such as rubber tired skidders and crawler tractors, or processor/harvester machinery. Skidding for the ground based units occurred during a designated season between July and October. Slash was treated on the ground based units by piling the debris with a small trackhoe with a grapple attachment, and by prescribed fire on the cable unit. All are generally considered to have no previous harvest entries, although small portions of the units may have been high-graded or had some salvage cutting prior to the current entry.

Table 2-4: Units Monitored for Post-Harvest Soil Conditions

Sale Name	Unit Number	Silvicultural Rx	Harvest Method	Machine Fuel Treatment	Previous Entries
Bars ATV*	2	HSH	Tractor	Grapple pile	0
Bars ATV	7	HSH	Tractor	Grapple pile	0
Bazooka	39	HSH	Cable	Prescribed fire	0
Lemiti**	1	HSH	Processor, Tractor	Grapple pile	0

* Only the tractor portion of the unit ws monitored. Key: HSH = shelterwood harvest
** Only a 20-acre portion of the unit was sampled.

Data collected from this monitoring effort quantified the cumulative impacts from all entries. The Bars ATV units were monitored in 2000 after harvesting and prior to slash piling. Monitoring occurred again in the fall of 2001 after slash had been piled to determine the extent of detrimental soil impacts that had occurred as a result of slash piling operations.

The sampling method used on units harvested with ground based equipment was that described in the Mt. Hood National Forest Soil Monitoring Plan, April 1981; however, the sampling interval was adjusted from 10 links (6.6 feet) to 5 feet. The method requires sampling surface and subsurface soil characteristics at regular intervals along a located transect line to determine if the soil has been detrimentally affected at that point, and if so, to identify the type of impact that has occurred there (Parcell, J. and M. McArthur, 1991). A final tally of the number of sample points where detrimental soil impacts were detected divided by the total number of points sampled results in a percentage of the sample that has been adversely affected.

Due to topographic constraints, layout of sampling transects on the cable yarded unit was modified. Two long transects were randomly located lengthwise in the unit and parallel to the contour. The terminal end of one was located approximately two-thirds of the distance into the unit while the other was about one-third of the distance.

Detrimental soil conditions including excessive compaction, displacement (the removal of topsoil), and bare surface soil (removal of litter layer) were monitored on the Bars ATV and Lemiti units. Bare soil conditions and burn intensity resulting from the use of prescribed fire were monitored at the Bazooka unit. Only the most significant impact was tallied when multiple impacts were encountered at a single sample point.

Not all compaction was considered detrimental (15% increase of naturally occurring bulk density; U.S. Forest Service [USFS], 1996). A significant portion of the compaction detected was classified as moderate, identified when compaction was apparent from the shovel probe; platy structure was readily observed, but peds were friable and fell apart rather easily when squeezed between the fingers. This condition was not judged to be characteristic of detrimental compaction. If the tally of moderate compaction were to be counted as a detrimental soil condition, the total tally of detrimental soil conditions in the units monitored would increase somewhat.

Table 2-5: Detrimental Soil Conditions within the Monitored Units

Sale Name	Unit Number	Unit Acres	Percent Detrimental Soil Impacts
Bars ATV	2	2	6
Bars ATV	7	12	6
Bazooka	39	23	3
Lemiti	1	20*	4

*The actual unit size is greater than 80 acres. A representative 20-acre portion of the unit was monitored.

Soil types underlying the Bars ATV units had very gravelly to cobbly horizons within 12 inches of the surface, while the dominant soil type underlying the Lemiti unit consisted of a deep gravelly, fine sandy loam. Coarse fragments in the Bars units often impeded shovel probes and made below-surface soil structure observations difficult to evaluate. Therefore, some degree of error in the data may be present because of the rocky soil types.

Results indicate that less than 7% of the area exhibited detrimental soil conditions in any of the units monitored (see Table 2-5). Thus, the extent of detrimental soil conditions within any unit was well below 15% cumulative; the maximum allowable threshold defined by standards and guidelines (S&Gs) contained within the MHNF Land and Resource Management Plan ([LRMP] USFS 1990).

In the fall of 2000, detrimental soil impacts in Bars ATV units 2 and 7 were <1% and 2% respectively (Reinwald 2000). An increase of approximately 4 to 5 percent can be directly attributed to piling operations. It is estimated that between 10 and 20% of the bare soil tally on the Lemiti unit and about 5% on the Bars unit was due to burn piles.

The detrimental soil impacts of bare soil and displacement accounted for approximately 3% of the area in Bazooka unit 39, and were attributed to yarding activities, not fire.

Recommendations

Monitoring results in 1998, 1999, 2000 and 2001, as compared to previous years, continues to suggest that progress is being made toward reducing the number of harvest units where soil damage exceeds the standard. This trend is likely due to three main factors. First, sale administrators and operators are working well together and are both aware of the need to minimize soil damage. Second, advances in equipment technology reduces the compaction impacts. And third, district sale areas (especially on the east side) are currently operating on soil types that are fairly resistant and resilient. Monitoring to determine cumulative effects should continue in order to find out whether this trend will continue. Existing conditions monitoring and documentation needs to continue also in order to provide a sound basis for cumulative effects estimation in National Environmental Policy Act (NEPA) documents. Units monitored for existing conditions should also continue to be tracked and monitored as harvest, fuel treatment, and rehabilitation (if needed) occur in order to verify estimates made in NEPA documents.

Monitoring Element: Range Management

Goal

Within the constraints imposed by basic plant and soil needs, provide forage for utilization by wildlife and permitted domestic livestock.

Existing Program

There were three range allotments grazed (out of a total of 6) on the Mt. Hood NF in 2001. Two grazing permits were canceled in 1993 resulting in one vacant allotment. Two permits on two separate allotments were granted non-use for permittee convenience. Two other permits on two completely separate allotments were rested for drought conditions. This resulted in two allotments receiving total rest for the entire grazing season and approximately half the permitted livestock on two other allotments. Permitted livestock use for the season totaled 1,986 AUM's (1,504 Head Months) out of a total of 5,052 AUM's (3,827 Head Months) allowable for the Forest. New fences were constructed or maintained in various key areas to gain better livestock control and ensure attainment of Forest Plan Standards and Guides.

Evaluation/Monitoring - Long Term and Short Term

Long Term - Vegetation/Trend

Studies to monitor existing condition and long-term trend in vegetation are in place on all allotments. Plots are visited once every 5 years to record plant species diversity, percent bare soil, plant vigor and other factors which allow us to determine the range condition (excellent, good, fair, poor, very poor) and the vegetative trend (upward, static, downward) as compared to the "Potential Natural Community/Desired Future Condition". These measurements, along with other observed vegetative changes occurring across the landscape (such as wildfire, flood, noxious weed infestation) are considered in determining whether or not we are achieving Forest Plan Objectives.

Results show that of the 171,634 acres having range vegetation management objectives, 68% (117,251 ac) are meeting Forest Plan objectives, 36% (61,384 ac) are moving toward Forest Plan objectives, and 7% (11,899 ac) are of undetermined status, with <1% (400 ac) not meeting or moving toward Forest Plan objectives.

For riparian areas (19,300 ac), 31% (6,000 ac) are meeting Forest Plan objectives, 40% (7,700 ac) are moving toward Forest Plan objectives, 30% (5,400 ac) are of undetermined status, and 1% (200 ac) are not meeting or moving toward Forest Plan objectives. (See table for summary) There were no long term monitoring plots read this fiscal year.

Short Term - Utilization Studies

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. Out of the thirty-four established monitoring sites, which are visited annually, twenty-five are located within riparian areas. Of those sites, 88% (22) met Forest Plan Standards and Guidelines. The remaining nine sites are located within the uplands, and 100% (9 sites) were in compliance with the Forest Plan.

Table 2-6: Total Acres with Range Vegetation Management Objectives (Includes Riparian Acres)

Range Allotment Monitoring			
	Verified	**Estimated**	**Total**
Acres with Range Vegetative Management Objectives			171,634
Acres Monitored in Current FY			41,930
Acres Meeting Forest Plan Objectives	18,530	92,721	
Acres Moving Toward Forest Plan Objectives	19,500	34,184	
Acres Not Meeting/Moving to Forest Plan Objectives	100	100	
Acres of Undetermined Status			6,499
Riparian Area Within Allotments			
	Verified	**Estimated**	**Total**
Riparian Acres			19,300
Riparian Acres Monitored in Current FY			3,800
Riparian Acres Meeting Forest Plan Objectives	1,000	5,000	
Riparian Acres Moving Toward Forest Plan Objectives	2,700	5,000	
Riparian Acres Not Meeting/Moving Toward Forest Plan Objectives	100	100	
Riparian Acres of Undetermined Status			5,400

Recommendations

Continue revisions to allotment management plans as scheduled. Maintain coordination with Fish/Watershed and Soils specialists. Use the Proper Functioning Condition Protocol (PFC) within riparian areas on range allotments.

Monitoring the trend in vegetation and its direction in change over time, can take upwards of 10 or more years to detect in some ecosystems. At the present time the direction in trend for all our Long Term Trend studies indicate a “static” condition. The current monitoring protocol utilized is a Region 6 accepted methodology for monitoring Long Term Trend in vegetation and will continue to be used where livestock grazing occurs and is permitted on this forest.

The current Short Term monitoring method of utilizing wire cages placed in "key areas" will continue to be used at least for the 2002 field season. This method is important in monitoring utilization levels in relation to compliance with the Mt. Hood Forest Plan Standards and Guidelines. Next field season (2003) the method of measuring "stubble-height" remaining after grazing will be studied to see if this is a more practical way of measuring utilization. The stubble-height method is utilized on the National Forests in Eastern Oregon and Washington, and is an acceptable methodology in Region 6.

Monitoring Element: Noxious Weeds

Goal

Control 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, the Mt. Hood Forest Land and Resource Management Plan and applicable State and Federal laws and regulations.

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 2001, 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 2-7: Acres of Noxious Weed Treatment and Surveys

Method	Acres Treated by Method
Chemical	275
Manual	190
Mechanical	60
Biological	5
Fire	0
Total	530

Monitoring Questions

- *Are known untreated weed sites continuing to spread?*

  Yes. Of greatest concern is hawkweed. Satellite populations have been detected up to 10 miles from the one main population on Zigzag Ranger District. Giant knotweed (*Polygonum cuspidatum*) populations in the Sandy, Zigzag and Clackamas River drainges are also increasing.

- *Are new infestations occurring?*

  Yes. New populations of knotweed and hawkweed have been detected during FY 2001.

- *Are biological control agents controlling the spread of noxious weeds?*

  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.

- *Are mitigation measures to reduce the risk of noxious weed establishment being implemented for all ground disturbing activities?*

  Most, but not all, ground disturbing activities have mitigation measures implemented to reduce the risk of noxious weed infestation.

- *Do herbicide treatments for noxious weeds follow standards and guidelines set in the FEIS for Managing Competing and Unwanted Vegetation?*

  Yes.

Results

Chemical control methods were used to treat high priority hound's-tongue and tansy ragwort site 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.

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 Foret 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.

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 move 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 method available to the Forest.

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.

Monitoring Element: 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.

- ***Are American Indian rights being protected on National Forest lands and are projects with activities or areas of concern to Indians being coordinated with appropriate Tribal representatives?***

  The Confederated Tribes of the Warm Springs Reservations (CTWS) are included in all scoping efforts. The Barlow District Ranger is the Tribal contact for the Forest. He meets on a regular basis with the CTWS 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 the CTWS, signed in July 1997, regarding the management of huckleberry habitat on the Forest, continues to be very successful.

Hood River/Barlow

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:

- A briefing of upcoming projects with the Tribal Archaeologist and Culture and Heritage Committee.

- Field trip to visit sites on the Barlow Ranger District with the Culture and Heritage Committee.

- 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.

- ***Are significant (National Register eligible) historic buildings and structures being maintained, stabilized, and repaired according to historic preservation standards?***

  - **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 following projects were approved, after consultation with the State Historic Preservation Officer in 2001:

Table 2-8: Approved Projects at Timberline Lodge

Project	Date to SHPO	Finding
Oak Flooring	Not Necessary	Within Timberline Lodge Agreement
Swimming Pool Access Lift	11/27/00	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Waste Receptacles	01/12/01	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Area Rug Replacement	02/09/01	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Electric Door Openers	03/05/01	Within Timberline Lodge Agreement. No Adverse Effect.
Guestroom Door Repair	03/12/01	Within Timberline Lodge Agreement. No Adverse Effect.
Temporary Fuel Tanks	Not Necessary	Within 1995 Memo of Agreement. Appendix A.
Swimming Pool Drain Line	Not Necessary	Within 1995 Memo of Agreement. Appendix A.
Firewood Storage	05/16/01	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Price Wing Ground Floor Corridor	06/18/01	Within Timberline Lodge Agreement. No Adverse Effect. Stipulation III.C.3.b.
Underground Storage Tanks	Not Necessary	Within Timberline Lodge Agreement. Stipulation III.C.4.a.

- **Cloud Cap Inn and 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 2002. The following projects were approved, after consultation with the State Historic Preservation Officer in 2001:

  - Restoration work continued on the Cloud Cap Inn on the Hood River District using volunteers from the Passport in Time program. No Adverse Effect determination was made.
  - Restoration work on Tilly Jane Guard Station was completed through use of Passport in Time volunteers as well as by contract. The toilet was replaced, the footings under the woodshed were replaced and the woodshed addition was reconstructed to provide a concrete floor, more space for wood storage and to improve access into the new toilet area. Liz Carter from the State Historic Preservation Office visited the site this year.

- Restoration planning was begun on the Legionnaire's A-Frame. A contract was let to WBGS Architecture & Planning to develop a plan to guide future rehabilitation of the A-Frame Ski Hut. Liz Carter from the State Historic Preservation Office visited the site this year.

- **Bagby Guard Station (National Register of Historic Places)**
  The following project was approved, after consultation with the State Historic Preservation Officer in 2001:

  - With guidance from Forest Service employees, volunteers removed the old shingles and installed new cedar shake roof on the guard station. The storage shed will be reroofed in 2002.

- **Ollalie Guard Station (National Register of Historic Places)**
  The following project was approved, after applying the criteria established in the Depression-Era Management Plan (VI.A.):

  - Remove current linoleum overlay and in-kind 1x4 wood flooring installed. This project was approved, but not completed in 2001.

- **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.):

  - Lead paint assessment completed by Forest Service personnel.
  - Lead removal project and repainting project planning was initiated with Timberlake Job Corps students at the Zigzag Ranger Station compound in Clackamas County. Work began in October 2001 (Fiscal Year 2002).

- **Clackamas Lake Ranger Station (National Register of Historic Places)**
  In 2001, a fire destroyed one of the historic buildings. There has been a total loss to the Honeymoon Cabin (Assistant Rangers Cabin). The Friends of Clackamas Lake Ranger Station have proposed to reconstruct the cabin on the same location. In partnership between the Forest Service and the "Friends", we initiated the design work for the replica cabin as well as funding for the project.

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 reported in the Summary Report below. There is a discrepancy between the "Number" of projects and "Project Effect" because not all projects were reviewed for their effect on the historic buildings. 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".

Table 2-9: CCC Historic Structure Report Forms and Summary Report

			Project Effect		
	Type of Project	**Number**	**NE**	**NAE**	**AE**
1.	Minor repairs/routine maintenance	45	0	1 *This was replacement of kitchen floor at Olallie GS*	
2.	Replace wall or roof materials, in-kind	2 *CLRS #1015 & ZZRS #2104*			
3.	Replace wall or roof materials, not-in-kind	0			
4.	Repair or replace windows or doors, in-kind	0			
5.	Replace windows or doors with new features different in size, design or operation.	2	0	2 *TLL: guest room door and electric doors*	
6.	Repair or replace secondary structural features; e.g. porches, gutters & downspouts, chimneys, in-kind	1 *replace gutters carpenter shop #2104*			
7.	Install insulation materials, storm windows or doors	0			
8.	Repaint or refinish interior surfaces	0			
9.	Repaint exterior surfaces	1 *ZZRS #2008*			
10.	Refurbish areas previously altered; e.g., kitchens or bathrooms; replace non-historic flooring or floor covering	3	1 *TLL: Oak Flooring*	2 *TLL: Area Rug, Waste Recep.*	
11.	Repair/replace mechanical, electrical, plumbing systems	4 *TLL: temp fuel tank, fuel tank, pool drain line*		1 *TLL: pool access lift*	
12.	Alteration to building (describe)	1		1 *TJGS: Replace toilet and replace foundation woodshed*	
13.	Addition to building	1		1 *TLL: add wood storage on dock*	
14.	Removal of building	0		0	

			Project Effect		
	Type of Project	**Number**	**NE**	**NAE**	**AE**
15.	Other (describe) An accidental structure fire at Clackamas Lake Ranger Station resulted in the loss of the Assistant Ranger's dwelling. Cause of the fire was determined to be a malfunctioning utility line.	1			1

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." Therefore, decisions need to be made soon, in consultation with the State Historic Preservation Office, so that appropriate repairs, maintenance and stabilization are performed on the buildings that will be retained.

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.

- ***Are significant (National Register eligible) sites being nominated 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 ten sites in fiscal year 2001. Five sites were determined to be eligible for inclusion on the National Register of Historic Places and five sites were determined to be ineligible for inclusion.

- ***Are cultural resource sites being interpreted for the public?***

  Three avenues are typically used to initiate public involvement in cultural resources: interpretation, education and volunteerism. Our long-standing interpretive programs at Timberline Lodge are 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 three Passport in Time Projects, and two non-Passport in Time group volunteer projects in 2001.

Interpretation/Education Projects

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

- 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.

- The East Zone Archaeologist presented a program about archaeology to sixty children at Corbett School in Multnomah County.

- Archaeologists performed two on-site tours of an historic gravesite to approximately 50 individuals.

- Grade school tour of Barlow Road sites (50 kids).

- The Summit House site was visited by a grade school class while the archaeologist was there performing other work. It turned out to be a great "teachable moment" that he and the teachers took advantage of.

- The Oregonian newspaper gave us a front-pge article on the Summit Meadows Passport in Time volunteer project. Summit Meadows was the site of a work camp for men who constructed Timberline Lodge.

- KATU-TV also did a story on the Summit Meadows project.

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 perform subsurface testing of a Works Progress Administration Site at Summit Meadows in Clackamas County.

- Volunteers helped re-roof Bagby Guard Station. This guard station was constructed in 1913 and is on the National Register of Historic Places in Clackamas County.

- Passport in Time volunteers helped perform historic rehabilitation at Tilly Jane Guard Station and at Cloud Cap Inn in Hood River County.

- Passport in Time volunteers helped perform subsurface testing at the Borrow Site in Wasco County.

- ***Are cultural resource sites being "condition" checked and maintained on a regular basis?***

  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. Approxi-

mately 74 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 FY01.

- ***Are cumulative effects of forest project activities on cultural resources being tracked and studied?***

  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 FY01.

Recommendations

- 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 data bases such as Infra and GIS.

- Evaluate 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 by the district archaeologist, and, if necessary, consultation with the State Historic Preservation Office. 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 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.

Monitoring Element: Geologic Resources

Goal

The goal for the geology program is to prevent reactivation of landslides.

There were eight timber harvest units in FY01 on land mapped as medium or high risk earthflows. All were commercial thins. About 1/3 of the smaller trees were removed to promote more vigorous growth in the remaining trees. The sizes of the largest two units were 23 and 21 acres. Total acreage for the eight units was 74 acres. The canopy closure in all eight units was reduced below 70%. It is estimated that recovery to 70% crown closure will occur in approximately 10 years. All of these units were 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.

Two commercial thin timber harvest units occurred on mapped landslides other than B8 land in FY01. Total acreage for the two units was 15 acres. These units were field reviewed by a slope stability specialist before harvest. No roads were constructed on mapped landslides other than earthflows.

There were no major debris flows on Mt. Hood during FY01, probably because that 12-month period was an unusually dry year for the Northwest. 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

- Continued measurements during FY02 at established earthflow monitoring stations 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 2002 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.

Monitoring Element: Mineral Resources

Goal

The goal is to facilitate the exploration and development of energy and mineral resources while maintaining compatibility with other resource values.

There were no commercial leasable or locatable mineral development activities on the Mt. Hood National Forest in FY01. Locatable mineral activities were limited to minor sampling and exploration on the Forest. Six Notice-of-Intents were submitted to the Forest. In all cases the planned activity was limited to mineral exploration. There were 20 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 1 major project where 63,500 cubic yards of mineral materials were used by another government agency. There were 12 major projects where a total of 17,270 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 FY01 there were 18 operating plans completed for current and future projects. Two small quarries were closed and restored.

There were 23 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 3,300 cubic yards.

There were 633 smaller projects where salable mineral materials were used by the public. These projects removed a total of 248 cubic yards. These projects produced an insignificant level of surface disturbance and therefore did not require an operating plan.

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.

Recommendations

- For next year, additional efforts should be focused on completing more development plans for our primary common variety mineral material sources. In addition, 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.

Monitoring Element: Fisheries Resources

Goal

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

The continued decline in numbers, listing and proposed listing of stocks of fish that inhabit the Mt. Hood National Forest are indicators of the overall weak condition of anadromous wild fish in the Pacific Northwest. As habitat managers, Forest personnel continue to protect and restore valuable riparian areas.

Anadromous fish have a complex life history, which includes freshwater, migration and saltwater phases. Salmon production numbers continue to be monitored in the Clackamas and Sandy River basins through juvenile, outmigrating smolt traps. Smolt trapping is a critical component of monitoring the status of juvenile anadromous fish. Redd surveys (gravel egg nests for salmon) in index reaches allow comparisons of rates of return of spawning adults.

Stream habitat restoration is critical to recovery of threatened and endangered stocks of salmon and to improve watershed health. The effectiveness of stream habitat restoration projects is determined through monitoring. Habitat monitoring may be as simple as photo points, or as complicated as using biofilm collecting tiles in streams to calculate stream productivity.

Surveys of aquatic mollusks, as required under the Northwest Forest Plan, began in 1998. Surveys are conducted for two species on the Mt. Hood National Forest. Monitoring for presence allows for protection of the species, if needed, and is also used to determine relative abundance of a particular species.

Spawning and Redd Count Information in Index Stream Reaches

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 Oregon Department of Fish and Wildlife wild winter steelhead surveys conducted off-Forest.

In addition, for the first time in a decade, winter steelhead spawning surveys were conducted in five streams in the Hood River watershed. Results are shown in the following table.

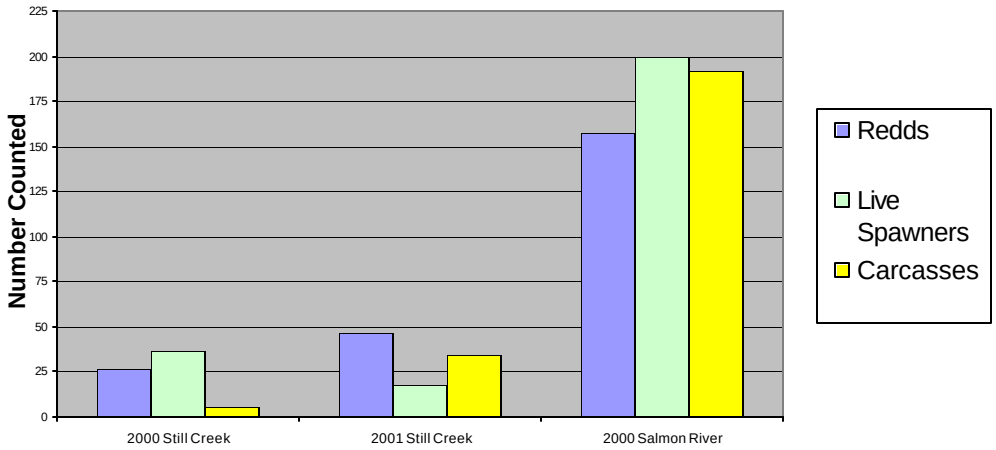
Table 2-10: Winter Steelhead Spawning Surveys on the Eastside of the Forest

Stream Name	Total Miles of Stream Surveyed	Number of Steelhead Redds	Number of Adults (carcass or live)
Fifteenmile Creek	8.1	16	6
Ramsey Creek	7.5	6	4
Eightmile Creek	4.5	3	0
Fivemile Creek	0.2	00	0
Middle Fork Fivemile Creek	0.8	0	0
Tributaries to Middle Fork Hood River and West Fork Hood River	5.46	21	4

Adult Steelhead/Chinook Spawning Surveys (Zigzag Ranger District)

A standardized method to monitor 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 2-1 displays the results. 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 and 2001 were not enumerated because of high flows in both of those years. Year 2000 information is included for comparison.

Figure 2-1: Chinook Spawning Index Reach Monitoring, Upper Sandy Basin



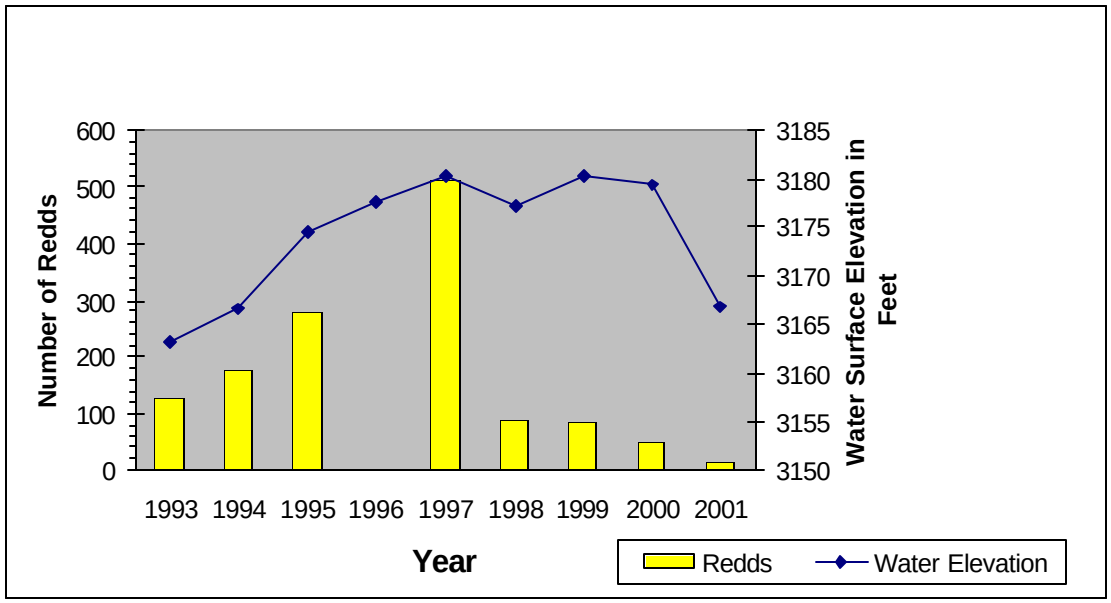
Bull Run Lake Cutthroat Trout Monitoring (Zigzag Ranger District)

In 2001, 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. Because cutthroat trout are the only fish in the lake, this population is pure and is not subject to hydridization with other fish.

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 were the lowest since monitoring began in 1998 (see figure below).

Results from surveyed reaches show densities twice as high in Hood River reaches as in the Fifteenmile Creek watershed (5.07 redds/mile compared to 2.90 redds/mile). Historical low water levels may have reduced access to higher elevation, interior streams in the Fifteenmile watershed.

Figure 2-2: Bull Run Cutthroat Trout Redd Monitoring



Monitoring of Aquatic Habitat Restoration Projects

Upper Clackamas River Side Channels (Clackamas River Ranger District)

The Wild and Scenic Clackamas River Plan has a management goal of restoring riparian habitats altered by the river-adjacent road. Fill from road construction was dumped in existing side channels. After the flood of 1996 an opportunity was identified to re-establish the connection of side channels to the mainstem Clackamas River channel.

Inlets and outlets were created at historic side channels by removing road surface and fill and inserting large, fish friendly culverts. Historic side channels were rebuilt, revegetated and large wood was added to the off channel habitat.

Since their reconstruction biologists have monitored movements into and out of an artificial side-channel. 308 chinook and 455 coho are estimated to have emigrated as smolts from the side-channel in the spring of 2001. Size and condition of smolts emigrating from the side-channel did not differ significantly from smolts wandering into the channel from the mainstem.

Salmon Carcass Enrichment (Forest Headquarters)

A major initiative to increase stream productivity with surplus salmon carcasses began in the Sandy and Clackamas River in 2001. The level of stream nutrients (primarily nitrogen and phosphorus) in Pacific Northwest aquatic systems have been linked to the abundance of salmon carcasses. Stream nutrients are the foundation of stream productivity. It is believed stream systems with historically large salmon runs are now far below their capacity to produce juvenile and sea-migrating smolts.

In the fall of 2001 a trial run distributing salmon carcasses was completed. A total of 21 tons of surplus hatchery coho were added to tributaries in the Clackamas River and 16 tons in the Sandy River.

An objective of the project is to evaluate monitoring techniques. The carcass enrichment project is monitored through baseline water chemistry, periphyton, aquatic macroinvertebrates, and retention of carcasses in the watershed. To evaluate the productivity of four control subbasins the growth of biofilms on clay tiles was measured. Fish Creek was found to grow biofilms at several times the rate of Big Bottom and the Oak Grove Fork in the early fall. North Fork Clackamas suffered scouring flows prior to sampling. Over the course of several weeks Fish Creek biofilm productivity declined to levels comparable with the other basins. Big Bottom productivity alone increased over that time.

Table 2-11: Results of 2001 C-3 Mollusk Surveys

	Number of Sites Surveyed	Number of Sites with Lyogyrus	Number of Sites with Juga oreobasis
Hood River	9	2	0
Clackamas River	16	4	0
Zigzag	1	0	0
Barlow	36	0	0

Aquatic Invertebrate Population Surveys, Including C-3 Species

The 1994 Northwest Forest Plan identified many species of plants and animals requiring special survey techniques to detect their presence. The species are commonly called "C-3" species, referring to the name of the table where they are listed in the Northwest Forest Plan. The fisheries program is responsible for the survey of two aquatic mollusks – the Columbia dusky snail (*Lyogyrus n. sp.1*) and the Basalt Juga (*Juga Oreobasis n.sp. 2*). The results of surveys in 2001 for C-3 species are displayed in Table 2-5.

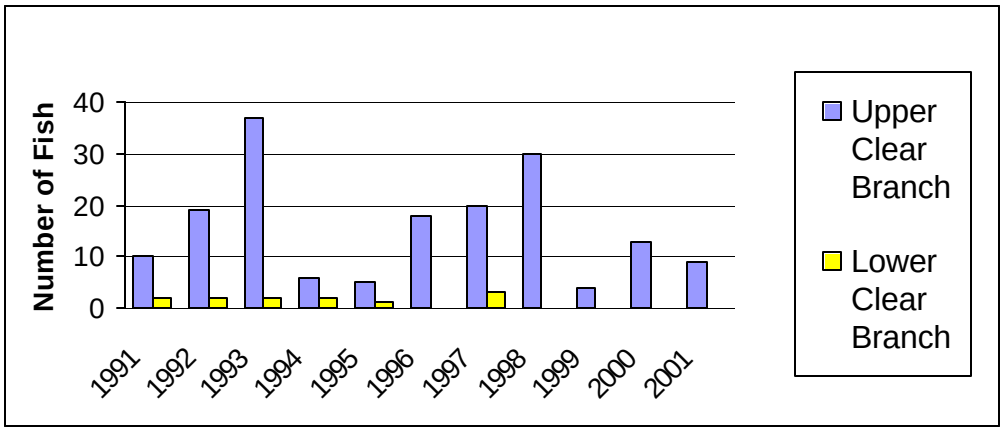
When a C-3 species is found, a project may be modified to protect the species. Generally the standards and guidelines of the Northwest Forest Plan provide adequate restrictions, but additional measures may be taken to insure protection of water quality and habitat.

Fish Population Surveys and Information

Hood River Bull Trout Working Group (Hood River Ranger District)

Bull trout in the Hood River basin are listed as a threatened species under the Endangered Species Act. 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. Biologists are using snorkeling to develop a standard protocol for estimating juvenile densities. Day snorkeling is specifically conducted in Clear Branch Creek to get an annual count of upstream adult migrants into their spawning reaches. The results of the annual counts are displayed in the following figure. It is the fourth consecutive year no adults have been found below the Clear Branch dam.

Figure 2-3: Adult Bull Trout Index Reach Monitoring



Redd surveys are repeated annually in low gradient, non-glacial streams to establish spawning index rates. For the first time redds could be identified in Clear Branch in 2001 (probably because of low water conditions). Eleven redds were found above the dam, and none below.

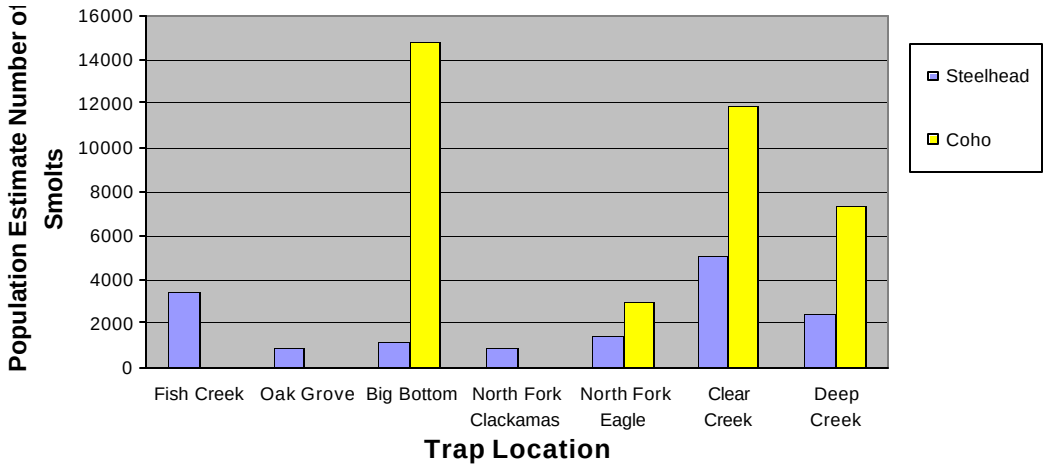
Since the inception of the monitoring program, bull trout distribution has expanded from Clear Branch and the Hood River mainstem to include Pinnacle Creek, Coe Branch/Compass Creek, Eliot Branch and Bear Creek. Population trends continue to be stable but very low.

Clackamas River Fisheries Restoration (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 2001, 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 six rotary smolt traps at locations throughout the Clackamas River basin. Four are on the Forest and two are operated off the Forest. All fish caught are enumerated, and population estimates are completed for Pacific salmon and steelhead. Figure 2-4 displays the results of the 2001 trapping season.

Figure 2-4: Clackamas River Fish Traps Year 2001

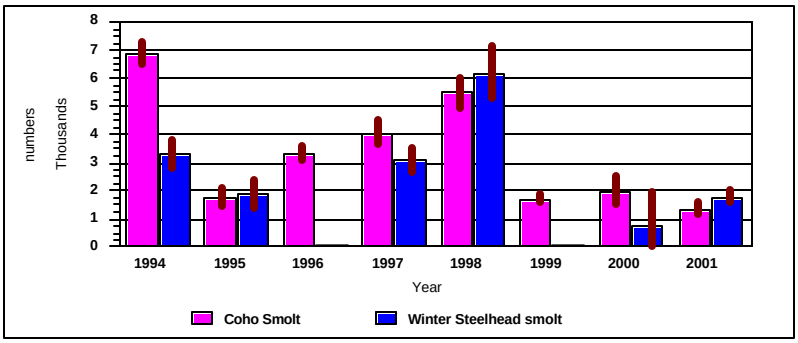


Upper Sandy River Basin Smolt trapping (Zigzag Ranger District)

In 2001, the Zigzag Ranger District intensified monitoring of smolt production in the Upper Sandy River Basin with the addition of a second rotary screw trap on Lost Creek. In conjunction with the Still Creek trap, the additional data set will provide increased accuracy for monitoring recovery of Upper Sandy River Basin stocks of threatened steelhead trout and coho salmon.

Population estimates for coho and steelhead at the Still Creek trap for 1994-2001 were completed in 2002 and are presented in the figure below. This data will also be incorporated into the Ecosystem Diagnostic Treatment (EDT Method) for modeling productivity in the Sandy Basin. The figure below shows population estimates and 95% confidence intervals for coho and steelhead at the Still Creek Trap, 1994-2001. 1994-1998 are estimates for smolts only, 1999-2001 are estimates of smolt and presmolts.

Figure 2-5: Coho and Steelhead Smolt Production, Still Creek



Conclusions

As shown in the previous graphs and writeups, overall numbers of anadromous fish and Bull trout are low. Available habitat on the Forest continues to be underutilized. For example, over 25 miles of known steelhead spawning streams were monitored on the east side of the Forest. Surveyors found an average of two redds per mile. Spawning survey results were higher on the Salmon River, a tributary to the Sandy River. Chinook redds averaged about nine per mile. Overall, those are extremely low numbers when compared to the capacity of the surveyed streams.

The comprehensive smolt-trapping project on the Clackamas River highlights the importance of a variety of quality habitats for anadromous fish. The Forest Service and Bureau of Land Management manage 71% of the Clackamas River watershed. Smolt trapping has helped define the relative distribution of fish in the basin. Although most federal land is above a system of three dams, about half of all steelhead smolts and forty percent of coho smolts are from tributaries on federal lands. Habitat use is differentiated by species. Coho salmon prefer the low gradient of Big Bottom, Clear Creek and Deep. Steelhead are found throughout all tributaries, even those with much steeper gradients such as Fish Creek.

The Columbia dusky snail (*Lyogyrus n. sp.1*) and the Basalt Juga (*Juga Oreobasis n.sp. 2*) are the two C-3 aquatic snails surveyed for on the Mt. Hood National Forest. On Districts with a more extensive survey program it appears the Columbia dusky snail may be more common than initially believed, and the other species, Basalt Juga, may be more rare, or even not present, than initially believed.

Recommendations

- Continue monitoring aquatic C-3 species to determine if listing as C-3 is warranted.

- The fisheries program on the Mt. Hood National Forest monitors basic ecology of stream systems, effectiveness of restoration programs and fish population trends. It is critical to understand the freshwater portion of the anadromous fish life cycle as recovery plans are written for species listed under the Endangered Species Act. Continued monitoring of basic biology, such as spawning rates, and distribution and population trends of juvenile fish, are important components of understanding their life cycles.

- The Salmon Carcass project is in the start-up phase. Careful project design, including monitoring, is the key for determining the success of the project.

- Monitoring often is one of the first work items dropped when budgets are reduced and workload is heavy. The fisheries program recognizes the importance of the monitoring program, and continues to keep it as a work item.

Monitoring Element: 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 State of Oregon. Water quality Best Management Practices (BMPs) and related Forest Plan Standards have been developed to achieve compliance with the Clean Water Act and state water quality regulations. The objective is to meet Federal Designated Management Agency obligations and responsibilities (under the Clean Water Act) with respect to non-point source pollution control.

Forestwide Monitoring Activities

Forestwide, water-related monitoring activities are summarized in the following pages.

Bull Run Monitoring Activities

Bull Run Watershed monitoring has been developed over the years to provide an assessment of water quality protection. Federal standards, which have been developed to comply with PL 95-200, known as the Bull Run Management Act, were designed to characterize the very high quality of waters from the Bull Run watershed and are considerably higher standards than stream standards applied elsewhere, i.e. Oregon Administrative Rules for streams.

Key Station monitoring, which provides baseline water quality and quantity information at the four principal streams which flow into the reservoirs and at Headworks, is being completed by the City of Portland Water Bureau. Current water quality and quantity at the Key Stations are compared as necessary to historical standards by Portland Water Bureau staff.

Forest Service monitoring activities within the Bull Run Watershed focused on monitoring the effects of specific projects on water quality. For water year 2001, monitoring projects were implemented for the Bull Run Road Decommissioning Project. The results of this monitoring are described later in this document.

Forestwide Monitoring

Forestwide, two broad categories of water resource monitoring were carried out during the past year:

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.

Implementation monitoring includes office and field reviews of projects for:

- Selection of site-specific BMPs;
- Translation of BMP intent and content into project contract provisions or administrative control language; and
- Implementation of BMPs in the field as specified in the NEPA document and other administrative direction.

Implementation monitoring for timber harvest and road construction activities also includes regular inspections made by timber sale administrators and/or engineering representatives.

Effectiveness Monitoring is undertaken to assess whether applied BMPs and Forest Plan Standards are effective in maintaining water quality. Monitoring techniques, sampling design, and monitoring frequency are varied. Examples of effectiveness monitoring include:

- Observing the effectiveness of BMPs designed to prevent/minimize the off-site movement of sediment and debris from an activity area into a stream channel; and
- Observing the effectiveness of waterbar spacing and construction for preventing erosion off a skid trail.

Implementation Monitoring

Best Management Practices (BMPs)

BMPs are those practices used to achieve compliance with State water quality standards and protect the beneficial uses of water. Two kinds of BMP monitoring typically occur, implementation and effectiveness. The former is the determination of whether or not specified BMPs were implemented as prescribed, and the latter determines whether the prescribed BMP was effective at preventing or minimizing the undesirable impacts it was intended to mitigate. Implementation monitoring can occur anytime after activities are completed. Effectiveness monitoring on the other hand should occur only after at lease one wet season has passed since the completion of harvest activities.

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 2001. In several instances, monitoring was accomplished during site visits intended for purposes other than monitoring. Additional BMP implementation monitoring is routinely carried out by timber sale administrators and/or engineering representatives.

Barlow Ranger District

Ten timber sale units were monitored on the Barlow Ranger District using the Best Management Practices Evaluation Process (BMPEP). The monitored units were from three different timber sales (Table 2-12). The LP Salvage timber sale originated from the

East Fivemile environmental assessment (EA), and the Diablo and Wildfire timber sales originated from the Diablo EA. All units were logged with ground-based equipment. Four different BMP's were monitored in any unit where they applied. The skid tail BMP was common to all units.

Skid trails were monitored for compaction, erosion, rutting, and ripping as well as width and percent of unit involved. 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 10 units evaluated, riparian reserves were monitored on 5 units, skid trails were monitored on 10, landings were monitored on 7, and temporary roads were monitored on four units. A total of 26 BMPs were monitored on the 10 units.

All skid trails in the monitored units appear to have been ripped as planned. Two skid trails in Wildfire #2 have had vehicles drive on them, re-compacting the soil. No damage to riparian areas was noted. The riparian areas have been distinctly marked on the ground and are the proper width.

Some roads are yet to be closed. The EA states they will be closed 5 years after the sale closes and others have been left open for use in a planned future timber sale. The existing road in L.P. Salvage was used for the timber sale, then ripped and mulched with chipped slash, which was an improvement to the resource. The BMP monitoring there showed positive post sale results. Landings were ripped, but some landing slash was left in piles and ripping had been done around the piles (Wildfire sale).

Table 2-12: Specified Timber Sale Units and BMPs Monitored in 2001

EA	Timber Sale	Unit No.	BMP			
			ST	RR	Temp. Rd.	Landings
Diablo	Diablo	6	X	X	X	X
Diablo	Diablo	7	X		X	X
Diablo	Diablo	5	X	X		
Diablo	Diablo	1	X		X	
Diablo	Diablo	10	X			X
E 5-mile	LP Salvage	1	X	X	X	X
E 5-mile	LP Salvage	2	X	X		X
Diablo	Wildfire	4	X			
Diablo	Wildfire	2	X	X		X
Diablo	Wildfire	3	X			X

Key: RR = riparian reserve Syst.Rds. = system roads Lndg = landings STs = skid trails

Table 2-13: Results of Monitoring Timber Sale BMPs

Implementation Status	ST	RR	Temp Rds.	Landings	Total
BMP Implemented as Planned	9	5	4	7	25
BMP Implemented but not effective	1				1

Key: RR = Riparian Reserve Temp Rds. = Temporary roads Lndg = landings STs = skidtrails

Of the 26 BMPs monitored, 25 (96 %) were implemented as planned (see Table 2-13). One BMP was implemented, but not effective. As described above, skid trails in Wildfire Unit 2 were ripped, but re-compacted after vehicles continued to drive on them. If the skid trails are ripped again in the future, measures should be taken to prevent vehicles from driving on them.

Clackamas River Ranger District

Six timber sale units were monitored in 2001 using the Best Management Practices Evaluation (BMPEP) process (see Table 2-14). The units represented four different timber sales originating from four different EAs. Two of the units monitored were commercially thinned, and four were shelterwood. Of the thinning units, all were logged using cable-yarding systems, as were one of the shelterwood units and a portion of a second one. Two of the other shelterwood units and a portion of a third were logged using ground-based machinery.

Six different BMPs were specified to monitor; up to four were monitored in any one unit. In some instances, only one BMP was monitored for a single unit. All of the BMPs monitored were associated with riparian reserve widths, ground based skidding, landings, roads, and prescribed fire. The most common BMPs monitored pertained to skid trails and landings in units that were ground-based logged.

Of the 6 units monitored, riparian reserve widths were monitored on 2, skid trails were monitored on 3, landings were monitored on 3, a temporary road and road crossing was monitored on 1, and prescribed fire was monitored on 1. A total of 11 BMPs were monitored on the 6 units.

Monitoring revealed that 7 (64%) out of the 11 BMPs evaluated were implemented as planned (see Table 2-15). Four (36%) of the BMPs were implemented with a minor deviation from the original plan, but there was no undue or further resource damage as a result. For this report, a minor deviation is defined as an alteration to what was originally planned. **Even though a particular BMP may have been implemented using a method different than what was originally planned, the practice still resulted in the protection of the intended resource**. For example, rather than applying straw mulch to areas where soil had been exposed by an activity, slash was applied instead. In this case, the intent to minimize surface erosion by prescribing a particular BMP was provided, even though it was implemented differently than planned.

Table 2-14: Specified Timber Sale Units and BMPs Monitored in 2001

EA	Timber Sale	Unit No.	BMP					
			RR	ST	Lndgs	Temp. Rd	Xing	Rx Fire
Bars	Bars ATV	2		X	X			
Bars	Bars ATV	7		X	X			
Bazooka	Bazooka	39						X
Winslow	Jag ATV	1	X					
Winslow	Jag ATV	6	X					
Lemiti	Lemiti	1		X	X	X	X	

Key: RR = riparian reserve STs = skidtrails Lndg = landings Temp Rds = temporary road Xing = stream crossing Rx Fire = prescribed fire

Table 2-15: Results of Monitoring Timber Sale BMPS

Implementation Status	BMP						
	RR	ST	Lndg	Temp. Rd	Xing	Rx Fire	Total
BMP Implemented as Planned	2		2	1	1	1	7
BMP Implemented with Minor Deviation		3	1				4
BMP Not Implemented as Planned							

Key: RR = riparian reserve Temp Rd = temporary road STs = skidtrails Xing = stream crossing Lndg = landings Rx Fire = prescribed fire

Cumulative Watershed Effects Analyses

During 2001 no new watershed cumulative effects analyses for timber sales were completed using the Aggregate Recovery Percentage (ARP) methodology. Work continued on existing projects that have already had cumulative effects analysis completed.

Effectiveness Monitoring

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 (Table 2-16) 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 (Table 2-17). 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.

Table 2-16: DEQ Interim Spawning and Incubation Criteria (12.8 degrees C.) Application for Hood Basin

Hood Basin Stream Segments	Dates for Anadromous & Resident Species	Dates for Tributaries w/ only Resident Species
Mainstem Hood River to Powerdale Dam	9/15 - 2/15	1/01 - 7/15
Mainstem Hood R. u/s Powerdale Dam to confluence w/ Middle F. & East F.	9/01 - 7/15	1/01 - 7/15
Middle Fork Hood River	All Year	1/01 - 8/31
West Fork Hood River	All Year	1/01 - 8/31
East Fork Hood River d/s of confluence w/ Emil Creek	9/15 - 7/15	1/01 - 7/15
East Fork Hood River u/s of confluence w/ Emil Creek	9/15 - 8/31	1/01 - 8/31
Neal and Whiskey Creeks	9/15 - 7/15	1/01 - 7/15

Table 2-17: DEQ Interim Spawning-Fry Emergence Criteria (12.8 degrees C.) Application for Other Basins, Mt. Hood National Forest

Basin	Dates for Spawning-Fry Emergence
Clackamas River	9-15 - 6-30
Deschutes River and East Side Tributaries	10-1 - 6-30
Mile Creeks.	10-1 - 6-30
Sandy River	9-15 - 6-30

Barlow Ranger District

The year 2001 was an unusually dry year with unseasonable high air temperatures in May and August. The snow pack was 50 % of normal, as reported by the National Weather Service. Most of the water temperature monitoring sites were in Wasco County, which was eligible for relief funds due to the severe drought conditions.

Thirty-five sites were monitored on 14 streams on the Barlow Ranger District, of which 21 were in the White River Watershed and 14 in the Miles Creeks Watershed. The monitoring period was from May 15 through the end of October. Almost all streams (see Table 2-18) recorded maximum 7-day average temperatures slightly to up to 4 degrees C. higher than in the previous year. Most stream temperatures peaked and reached their yearly daily maximum temperature the week of August 15th, which is up to 2 weeks later than most years. This may be affected by lower than normal water levels as well as higher air temperatures. Most streams had lower than normal flows at the time of installing the water temperature data loggers (mid May to June 1). Eightmile Creek appeared to have the lowest streamflows in the Miles Creek drainage, and Clear Creek the lowest streamflows in the White River drainage.

Three different streams had monitoring sites that were dry by the first part of August. These were Gate Creek at the forest boundary, Rock Creek head, (both in the White River drainage) and Cedar Creek head (Miles Creek Drainage). The Gate Creek and Cedar Creek sites were dry on August 7. The Rock Creek site is at the 3960-foot elevation, and typically has very low flow in mid-August to early September and was also dry in 1998.

Table 2-18: Results of Water Temperature Monitoring on the Barlow Ranger District

Temperature Monitoring Site	7-Day Moving Average of Maximum Daily Temperature Degrees C		Daily Maximum for Year 2001
Miles Creeks	**2000**	**2001**	
Ramsey creek (old NF boundary)	14.0	14.6	15.07
Eightmile Creek (Forest Boundary)	14.7	15.3	15.92
Eightmile Head	9.3	11.8	12.28
Fifteenmile Creek (Forest Boundary)	16.7	17.6	18.08
Fifteenmile Head	8.6	10.7	10.99
Fivemile Creek (Forest Boundary)	No data	18.1	18.77
White River	**2000**	**2001**	
Rock Creek (Forest Boundary)	18.6	22.6	22.98
Rock Creek (top of Rocky Burn)	11.0	Went dry	
Gate Creek (forest boundary)	18.3	Went dry	
Badger Creek (forest boundary)	20.0	21.1	21.37
Badger Creek (below Badger Lake Dam)	20.0	20.4	21.86
Badge Creek (below Gumjuwac Creek)	12.0	15.7	16.67
Badger Creek (below Pine Creek)	13.5	15.5	16.32
Camas Creek (2 miles downstream of Camas Prairie)	15.2	14.8	16.76
Threemile Creek (Headwaters)	10.5	11.4	11.79
Threemile Creek (forest boundary)	16.6	16.7	17.19
Threemile Creek (Stockton Quarry)	11.5	12.2	12.6
Tygh Creek (forest boundary)	14.4	15.7	16.17

Mile Creeks

Streams monitored in the Miles Creek Watershed were Fivemile, Eightmile, Fifteenmile, Ramsey, Fret, and Cedar Creeks. The only temperature monitoring sites in the Miles Creek Watershed that recorded water temperatures that exceeded the State 7-day average maximum temperature standard of 17.8 degrees C. (Celsius) was Fivemile (18.1 degrees C.) at the Forest boundary. In 2000, Ramsey Creek at the new Forest boundary also exceeded the state standard, but this site wasn't monitored in 2001. 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. Currently there is a restoration project aimed at restoring riparian vegetation is being implemented for a distance of three miles above the monitoring site. Continued

monitoring will identify what changes occur in the water temperature in the future.

At Upper Ramsey Creek (old Forest boundary site), the 7-day average maximum was 14.6 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 15.3 degrees C. and 17.6 degrees C. respectfully, with the headwater site having much cooler water temperatures of 11.8 degrees C. and 10.7 degrees C.

White River

Two streams in the White River watershed at the Forest boundary exceeded the State standard with temperatures greater than 17.8 degrees C. for the 7-day average maximum water temperature: Rock Creek with 22.6 degrees C. and Badger Creek with 21.1 degrees C. Gate Creek at the Forest boundary exceeded state standards in 2000 18.3 degrees C., but went dry during the summer of 2001 and no data was recorded.

The Gate Creek and Rock Creek sites are located in the area burned by the Rocky Burn Fire of 1973**.** The Rock Creek site has not met standards in 8 years, probably due to low elevation (2300 ft.) and it's location in the area burned by the Rocky Burn Fire of 1973. Water temperature in Rock Creek has decreased since 1998 until this year.

Although riparian vegetation is recovering after the fire, these streams still have effects from past timber harvest and grazing that affected riparian shading. Gate Creek has a stream diversion above the monitoring site, which reduces stream flows and results in increased water temperatures. The Rock Creek site at the top of the Rocky Burn went dry in 2001, but in 2000 there was adequate water flow for monitoring, and the 7-day average maximum water temperature was 11.0 degrees C, well below the State standard. This site has met state standards since 1997 if there was flowing water.

As usual, Camas Creek on Camas Prairie had the highest readings on the Barlow District. In 2001 the 7-day average maximum reached 29.1 degrees C. Usually water temperatures are higher than air temperatures due to the natural conditions. 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 (14.8 degrees C).

The site below Badger Lake has not met standards for the 4 years it has been monitored. Water comes off the top of Badger Lake, and runs over the concrete spillway about 500 ft. above the site. The next site on Badger Creek is about 2 miles downstream and below the confluence of Gumjuwac Creek. It has always met the standard. There are 4 more sites downstream, (after the confluence of Pine Creek, above and below the Highland Ditch weir, and at Bonney Crossing) before the Forest boundary. These four sites meet the standard.

From Badger Lake to the Forest boundary it is a distance of approximately 17 miles with an elevation drop of 2500 ft. Various small seeps and perennial streams flow in, in the upper reaches but not many below the Badger Creek Wilderness boundary. The Badger Creek forest boundary monitoring site is the extreme east side of the District and at the lowest elevation, (1700 ft). The pine/oak eco-class system does not support dense vegetation and the area is somewhat open. It has also not met the 17.8 State standard maximum 7 days average max

temperature standard for 4 out of the last 5 years that is has been monitored.

Other streams monitored in the White River Watershed which all meet standards were Clear, Jordan, Threemile (at three sites), and Tygh Creeks.

Clackamas Ranger District

Upper Clackamas Basin Temperature Monitoring

Year-round temperature monitoring sites were maintained in six sub-watersheds of the Upper Clackamas in 2001; Fish Creek, Oak Grove Fork, the Big Bottom reach of the Upper Clackamas, North Fork Clackamas, and the Collawash. The measured temperatures in these streams were evaluated relative to the DEQ standard of 17.8 degree C. and the 12.8 degrees C. standard between the dates of September 15 and June 30, identified in the literature as being optimum for spawning and rearing.

All temperatures were recorded using an Onset brand Optic Stowaway datalogger. Temperatures were recorded once per hour.

Temperature records from the Fish Creek year-round site were discontinuous because of a failed temperature monitor. Two months are missing, but it is believed that the maximum temperature was captured before the monitor failed. One or more days exceeding the DEQ standard of 17.8 degrees C. may have been missed, based on temperature trends observed in other streams. Periods for which data exist, as well as number of days each threshold was exceeded are summarized in Table 2-19. The 17.8 degree C. standard was exceeded at least once in Fish Creek, Collawash, and North Fork Clackamas (3 miles downstream from Forest boundary). The 12.8 degree C. standard was exceeded between the dates of September 15 and June 30 at least once in all streams except Big Bottom.

Fish Creek has been listed as a water quality limited stream for water temperature by the Oregon Department of Environmental Quality. Based on the Restoration EA for Fish Creek completed in 1998, in an effort to reduce water temperatures riparian areas lacking adequate shading have been replanted and young plantations have been thinned to accelerate tree growth.

Table 2-19: Results of Water Temperature Monitoring on the Clackamas River Ranger District

Site	Dates	Maximum recorded rolling 7 day degree C. average	Number of Days over 12.8 rolling 7 day degree C. average
Fish Creek*	1/1-8/18, 11/1-12/31	19.5	26
Oak Grove	1/1-12/31	16.7	28
Big Bottom	1/1-12/31	13.0	0
NF Clack**	1/1-12/31	18.0	32
Collawash	1/1-12/31	18.7	25
Roaring R	1/1-12/31	15.7	7

* Missing significant portions of the summer

**Station located about 3 miles downstream of National Forest boundary

Hood River Ranger District

Twenty-two sites on 18 streams were monitored for water temperatures with continously-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: West Fork Hood River, East Fork Hood River (2 sites), Lake Branch (2 sites), Iron Creek, McGee Creek (2 sites), 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, Tony Creek, Mill Creek and W.Fk. Neal Creek.

General findings are summarized below:

Only one of the twenty-two sites exceeded the 17.8º C and the 12.8º C standards for the 7-day average maximum (see Table 2-20 below). This site is on Eliot Branch and is possibly related to low water from water withdrawal for irrigation purposes. Only the Iron Creek site met the 10º C standard, which doesn't have a known bull trout population. Creeks that contain bull trout and exceeded the 10º C standard were Eliot Creek, Coe Creek, Bear Creek, and upper Clear Branch. The highest 7-day maximum average temperatures for Bear Creek and Upper Clear Branch were 10.4º C and 10.1º C respectively, which are very close to the standard. Coe Creek and Eliot Creek had 7-day maximum average temperatures of 18.2º C and 12.8º C respectively.

As described in the previous paragraph, high stream temperatures in Eliot Creek may be related to water diversion coupled with the extremely low streamflows in 2001. It is interesting to note that a general trend of warmer stream temperatures was observed in Eliot Creek post November 1999 debris torrent. One possible explanation is that the debris torrent removed trees that provided shade as well as widened response reaches through sediment deposition, thus exposing them to increased solar radiation.

Overall, the temperature regimes within the FS lands 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.

Table 2-20: Results of Water Temperature Monitoring on the Hood River Ranger District

Stream Name	Highest 7-day Max Ave for the Season (ºC)	Times Exceeding 12.8º C 7-day Max Ave (Spawning Season)	Days Exceeding 10º C Maximum Daily Temp
Bear Creek	10.8	0	25
Clear Branch	10.9	0	61
Coe Branch	12.8	0	72
Doe Creek	12.3	0	51
Dog River	13.5	0	52
East Fork Hood River	17.1	0	113
East Fork Hood River	15.8	0	108
Eliot Branch	18.2	1	106
NF Iron Creek	9.6	0	0
Lake Branch	17.4	0	49
Lake Branch	15.9	0	231
Meadows Creek	12.1	0	75
McGee Creek	12.9	0	73
McGee Creek	11.7	0	38
NF Mill Creek	14.6	0	97
WF Neal Creek	13.7	0	77
Red Hill Creek	12.5	0	14
Robinhood Creek	16.9	0	114
Robinhood Creek	13.9	0	62
Tilly Jane Creek	10.6	0	18
Tony Creek	11.6	0	34
WF Hood River	13.8	0	101

Zigzag Ranger District

Baseline water temperature data was collected at 13 sites on the Zigzag Ranger District and is summarized in Table 2-21.

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 upstream of the Little Sandy confluence met the State 17.8 degrees C. Standard for the 7 day average maximum stream temperature for rearing habitat.

Table 2-21: Summary of Stream Temperature Monitoring Results - Zigzag Ranger District

Site	Monitoring Period	Maximum 7 Day Moving Average Of Maximum Daily Temperature ^{0}C	Date of Maximum Temperature
Bull Run River (above reservoirs)	June 1 - Oct. 1	15.3	August 12
Fir Creek	June 1 - Oct. 1	13.8	August 13
North Fork	June 1 - Oct. 1	13.1	August 10
South Fork	June 1 - Oct. 1	15.5	August 12
Upper Little Sandy	July 1 – Oct. 15	15.5	August 12
Middle Little Sandy	July 1 – Oct. 15	Data logger vandalized	
Lower Little Sandy (USGS gaging station)	July 1 – Oct. 15	18.5	August 10
Bull Run River upstream of Little Sandy	July 1 – Oct. 15	18.9	August 8
Upper Eagle Creek	June 21 – Oct. 1	Data logger lost	
Lower Eagle Creek	July 1 – Oct.23	16.8	August 8
Still Creek @ 20 road	June 1 – Sept 21	16.7	August 28
Mud Creek below Trillium Lake	July 7-Nov 9	12.8	August 13
Salmon River at Forest Boundary	July 7-Nov 9	16.3	August 12
Linney Creek at confluence with Salmon River	July 7-Nov 9	10.4	August 13
Zigzag River at Forest Boundary	July 7-Nov 9	14.2	August 12

Recommendation

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.

Continuous Water Monitoring Stations

Clackamas Ranger District

Eagle Creek

An automated water monitoring station was installed in December 2001 upstream of the U.S. Fish and Wildlife Service fish hatchery. Turbidity, water temperature, pH, conductivity, and flow depth are continuously monitored at 15minute intervals. Water quality monitoring data from this site will be analyzed and included in next year's monitoring report.

Clackamas River (Carter Bridge)

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.

An equipment defect related to pH measurements resulted in inaccurate data being collected up until March 2001, when the equipment manufacturer corrected the problem. As a result, this year's monitoring summary (Table 2-22, below) only includes monthly average water quality data from March 1, 2001 through December 2001.

Average turbidity at this monitoring site is relatively low throughout the year, with average values of less than 1 nephelometric turbidity unit (ntu) from June through October, 2001. 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. The peak water temperature reached about 63.7 degrees F. on August 15, 2001, a value which is below the State standard for salmonid rearing in the summer months. The average water temperature during August was 57.0 degrees F.

Table 2-22: 2001 Clackamas River (Carter Bridge) Monthly Water Quality Parameter Averages

Month	2001 Water Quality Parameters (monthly averages), Carter Bridge, Clackamas River			
	Turbidity (NTU)	Water Temperature (Degrees F.)	pH	Conductivity microS/cm
March	4.5	42.4	7.69	49.6
April	2.2	43.9	7.73	46.3
May	2.7	49.7	7.70	45.9
June	0.7	53.0	7.82	58.9
July	0.5	56.9	7.90	66.8
August	0.5	57.0	7.96	70.7
September	0.8	52.9	7.89	71.6
October	0.9	53.5	7.87	67.6
November	6.5	44.7	7.50	50.6
December	9.8	40.7	7.42	43.6

Zigzag Ranger District

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 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 due to a problem 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 logged to the data logger at each site every ½ hour. The data has been telemetered daily to the Zigzag Ranger Station via cell phone modem since September 2001.

Table 2-23: Monthly Average Turbidity Alder Creek Sites

Year	Month	Average Turbidity Alder Creek (NTU's)	Average Turbidity East Fork Alder Creek (NTU's)
2000	Sept.		1.6
	Oct.		1.6
	Nov.		1.0
	Dec.		0.8
2001	Jan.		0.7
	Feb.		0.7
	Mar.		0.9
	Apr.		0.8
	May		0.8
	Jun.		0
	Jul.		0.3
	Aug.	0.2	1.0
	Sep.	0.2	0.3
	Oct.	0.4	0.6
	Nov.	0.7	1.9
	Dec.	2.2	3.1
2002	Jan.	0.3	0[a]
	Feb.	0.2	0
	Mar.	0.2	0
	Apr.	3.9	0.6
	May	2.9	0.1
	Jun	1.2	0.1

a. The zero reading is due to turbidimeter problems where the turbidimeter would read air bubbles as turbid water and return that the turbidimeter was malfunctioning.

Table 2-24: Frequency Distribution Turbidity Data Alder Creek Sites

Turbidity Level (NTU's)	Cumulative Percentage of Data Points at or Below – Alder Creek	Cumulative Percentage of Data Points at or Below – East Fork Alder Creek
0.1	43.0%	37.3
0.5	74.0%	48.4
1.0	77.8%	80.2
2.0	92.1%	94.9
3.0	93.8%	96.4
4.0	96.2%	97.2
5.0	97.0%	97.6

Table 2-24 details the cumulative percentage of data points in each dataset at or below a set turbidity level.

Even though monthly average turbidities can be above 2.0 NTU's (note December 2001) over 90% of the data points are less 2.0 NTU's and 97% are less than 5.0 NTU's.

Figure 2-6 details stream stage and associated turbidity for the period of January 17, 2002 through June 6, 2002. This chart illustrates that turbidity levels generally stay below 0.5 NTU's and that turbidity levels above 0.5 NTU's are associated with increased stream flow from storms or snowmelt. The higher turbidities in Alder Creek after April 11, 2002 are assumed to be associated with a turbidimeter in need of calibration.

Figure 2-6:Daily Average Turbidity January 17 - June 6, 2002

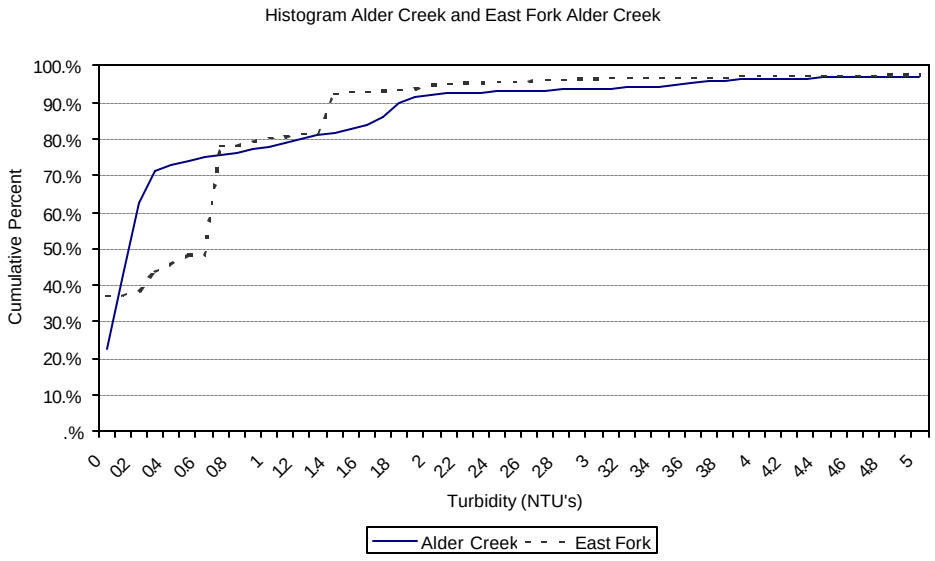


Figure 2-7:Turbidity April 9 through April 16, 2002

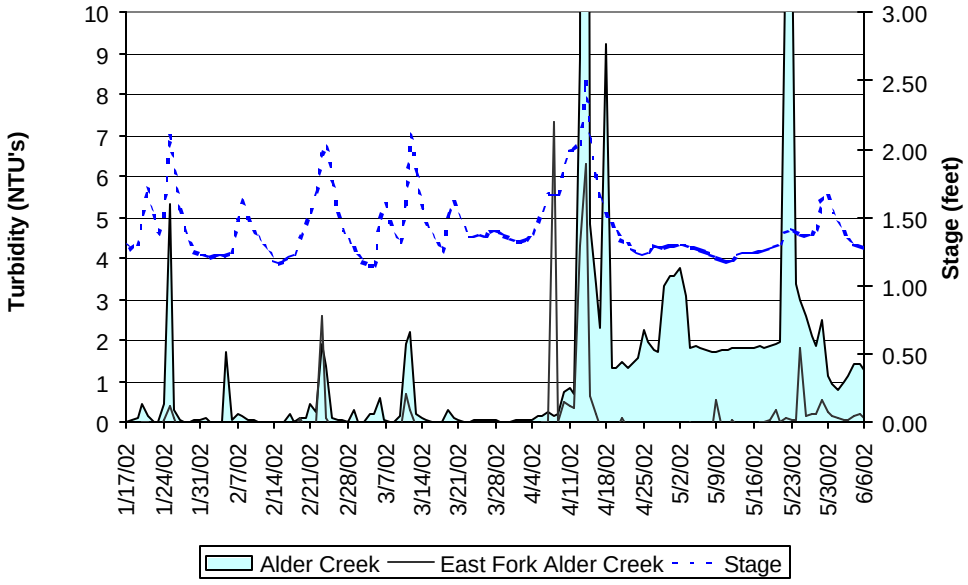


Figure 2-7 details Alder Creeks and the East Fork of Alder Creeks response to the highest stream flow of the winter of 2001/2002 associated with warm rain and rapid snowmelt. This figure illustrates rapidly rising turbidity levels, associated with the rapidly rising stream flow on April 13th and 14^{th,} that drop of gradually on April 14th. Alder Creek peaks at 125 NTU's (the maximum range of the turbidmeter) and the East Fork of Alder Creek peaks at 33 NTU's. During this same time period, the Bull Run River peaked at 78 NTU's, indicating the range of turbidity at the Alder Creek sites are associated with natural processes within the watershed and not management activities.

For the upcoming water year it is planned to post the telemetered data from the Alder Creek sites at a site where it would be available to the Bureau of Land Management and the City of Sandy.

Long Term Monitoring of Road Decommissioning on the Clackamas River Ranger District Summary Report, Fall 2001

In the fall of 2001, Todd Reinwald, soils consultant, revisited 27 photo points on 11 different road obliteration projects implemented from 1993 to 1996 on the Clackamas River Ranger District of the Mount Hood National Forest. The monitoring project had originally been set up in 1997 to observe how conditions changed over time on select obliterated road surfaces, and to ascertain the effectiveness of the various methods that were implemented. Photo points were chosen to represent sites where an assortment of restoration methods had been tried. The original objectives were to revisit the photo points every 5 years.

Conditions monitored in 2001 were the same as those observed in 1997. The comparative differences provide the basis for concluding how and why conditions have changed, and to what effect the various methods influence current conditions. Conditions relating to erosion control and re-vegetation methods were the primary focus. Other factors observed included the conditions of reconstructed channel segments, presence and abundance of noxious weeds, and the effectiveness of constructed access barriers. The recommendations were made by the consultant and are shown in italic font. Mt. Hood National Forest staff will evaluate the feasibility of implementing the various recommendations.

Effective Ground Cover and Vegetative Status

Species present were generally the same, but their abundance and size often changed markedly since 1997. In some cases, vegetative recovery was remarkable and complete in terms of the amount of protective cover provided and the heartiness of the plant community (see Big Creek photo point #1). Native vegetation had reoccupied the site for some time, growth was vigorous, chlorosis was absent, the soil was moist just below the surface, and seedlings were densely stocked. Revegetation was successful where:

- Mid- or late seral stands adjacent to the road segment contributed seed to the site and provided shade that influenced soil moisture retention and soil temperatures.

- Rock content in the obliterated matrix was low to moderate.

Recommendation

At riparian sites or where some measure of shade is provided, efforts to revegetate need not be too rigorous. The amount of time, cost, and energy expended should be commensurate with the potential for native vegetation such as alder to invade the site.

In other cases, vegetative cover was nearly wholly lacking, and what once supported a fair cover of grass in 1997 has since become nearly barren (see photo point #2, azimuth 218° on former road 7030-150). Soil was exposed to the elements, native species had not reoccupied the site, seeded grass had declined to nearly nothing, straw mulch was mostly decomposed, and invasive species and noxious weeds were lacking. Surface erosion from bare patches was occurring in the form of sheet erosion and raindrop splatter. Scant vegetative recovery occurred on sites with:

- Nutrient poor subsurface soil materials, which are predominantly pyroclastic rock types extremely low in organic content, high in iron and magnesium, and lack good soil structure.

- Lack of shade, where project area was adjacent to young forest patches or clear cut plantations, especially on a southern aspect. This results in elevated soil temperatures at the surface and increased soil moisture evaporation. Soils appeared extremely dry compared to adjacent undisturbed areas, or areas disturbed but with functioning ground cover.

- High proportion of rock, either natural or from road aggregate not adequately mixed with dirt matrix during obliteration. The sites have settled, and the surface is hard and nearly impervious, hindering re-establishment of native vegetation.

- Fertilize to improve upon the nutrient poor status of bare areas. Plant more trees and reseed and fertilize segments that are accessible. Increase the amount of seed, fertilizer, and mulch typically applied. Alternative or additional amendments that stimulate microbial activity could prove helpful. Where maintenance seeding and fertilizing is difficult due to lack of access, consider planting a greater number of trees, especially alder. Use fertilizer packets in holes at the time of planting.

Straw Mulch Applications

After 5 or 6 years it had decomposed almost completely on every site. Evidence of widespread and significant surface erosion was generally absent, indicating that the straw had functioned as an effective ground cover until native species reoccupied the site.

Grass Seed Applications

Grass generated from seed mixes out performed single species applications and was longer lasting. The annual rye grass was not as long-lived. Native species, on the other hand, were somewhat hindered by grass from seed mixes and faired better where a single grass species had been seeded.

Recommendation

Seed single species in riparian and shaded sites. As the grass diminishes, native vegetation could be expected to eventually dominate the site. On dry, open sites a mix might be best, so that a longer lasting grass cover would be provided until fast-growing planted trees such as alder could dominate.

Volunteer Native Species

Riparian areas: In general, very well stocked with a favorable cover of native vegetation; sedges, rushes, various mosses, riparian forbs and grasses, willow, salmonberry and dense alder.

Non-riparian areas: As in 1997, the primary species were annual forbs. The dominant species most frequently encountered included pearly everlasting, bearded and western fescue, Columbia brome, long-stolon sedge, trailing blackberry, fireweed, various lupines, and oxeye daisy. Shaded sites had the greatest degree and variety of species. Western fescue and Columbia brome increased since 1997. Both were not widespread before, but have since begun to dominate the ground cover in many places, especially the western fescue.

Conifers were well stocked where an adjacent stand of trees provided a seed source and shade. The most common conifer volunteer was western hemlock (generally 3 to 4 feet in height), and alder. Not observed in 1997 was rhododendron, where most individuals appeared to be 2 and 3 years old and exhibited good vigor.

Planted Stock

The health and vigor of conifers was variable, with estimated survival around 40 to 60%. On the more open and exposed sites, trees appeared to be chlorotic and stressed, those on shaded sites exhibited better vigor. Leader growth was less than in nearby plantations.

Cuttings

Since 1997, survival rates were estimated to be better than 60%. Willow cuttings had grown to 5 feet tall, while cottonwood grew to as much as 9 feet. Both displayed excellent vigor and growth, and were undoubtedly contributing to riparian cover and bank stability.

Noxious Species

Where species had been present prior to obliteration, they continued to be present and thrive afterwards. On some sites noxious species have increased their extent and abundance, while on others their status remains unchanged. In 1997 St. Johnswort was not significant, but by 2001 it had expanded its range to all but a few project sites. Thistle had expanded its range on several segments; it only had a few more small populations or merely another dozen or so individuals per unit area. Tansy ragwort appeared slightly more abundant. Scotch broom was only observed on the former 5400-160 road site, and had been present prior to obliteration. At many of the riparian locations the abundance of noxious species has declined, probably due to competition from dense, overshadowing stands of alder.

Erosion Control Blankets (ECB)

The ECBs had decomposed nearly completely, but remnants could be discerned. The plastic netting was still partially intact. The string netting of the biodegradable types was nearly unrecognizable. Matrix fibers were highly degraded. Straw fiber had decomposed completely, and the remains of coconut fibers, were nearly unrecognizable.

While ECBs were quite effective at minimizing surface erosion, they may have hindered the capability of native vegetation to re-occupy a site. Since 1997, the density, growth, vigor, and diversity of native vegetation on sites that did not have ECBs were greater.

Recommendation

Straw mulch and seed, applied in sufficient quantities, seem better suited in non-riparian areas.

Reconstructed Channel Segments and Constructed Drainage Features

Since 1997, the re-establishment of native vegetation was the most striking change. Young dense thickets of alder and other riparian species had been established. Generally, the channels were becoming better defined, had recruited coarse substrate, and were developing micro-scale bank and floodplain features.

On some sites, conditions since 1997 could be viewed as worsening, attributable to the amount of fill material left on-site in the path of eventual, forceful high flows. Gullies or bank undercutting observed in 1997 were appreciably more pronounced in 2001, a sign of ongoing accelerated erosion. This would not be expected to cease until the remaining fill has been eroded entirely away.

Recommendation

Remove all fill from the drainage way during initial reconstruction project.

Channel Liners

ECBs that were installed as bank protection have decomposed nearly entirely, and no longer were functioning to stabilize bank conditions. Native riparian vegetation had returned to replace the ECBs, so they did not seem to have hindered the re-colonization of native vegetation.

Recommendation

Do not install ECBs in riparian areas if banks are rocky; cuttings are better suited.

The heavy coir channel liners were still very much intact, with some minor damage and tears to the netting. The coir mats were continuing to function, and had become integrated into the developing channel. (See photo point #1 on the former 4210 road). The mats had not been entirely successful at preventing channel erosion where installed to protect an amount of fill material that had been left in place.

Recommendation

Use channel liners only when site is not too rocky, most of the fill has been removed, and large structures are incorporated into the bank on top of the coir netting. Also good in excavated swales.

High Water Fords

In 1997 it was noted that water had overtopped two high-water fords, and at each a considerable amount of erosion had occurred. The protective armor that had been installed had failed. At both of these sites, the gully erosion had worsened considerably since 1997. It is estimated that the remaining fill material will be completely removed within the next 5 to 10 years, and all that will remain will be a raw, exposed channel with an exposed metal culvert lying in the bottom.

Recommendation

Do not install high-water fords without significant armoring. Completely seal the fill material from any overflowing water.

Buried French Drains

As in 1997, the buried French drains were functioning well.

Sediment Catchments

The catch basin was functioning well. Sediment had been collected but water had not overtopped the structure.

Obliterated Road Surfaces

Recontoured and Outsloped Surfaces

The material on out sloped surfaces tended to be drier and somewhat more susceptible to evaporation and the loss of soil moisture than recontoured surfaces. Yet recontoured surfaces were in places a bit too compacted, and even though they seemingly retained more soil moisture, their density was less than ideal for the promotion of root growth. Therefore, the reoccupation of sites by native vegetation had been in places slow to develop in both cases.

Rill and gully erosion observed in 1997 at several out sloped sites has ceased, and could be attributed to the establishment of native vegetation and settling of the loose surface material.

At a small slope failure on a recontoured surface, erosion has continued to occur, generating sediment at the site and transporting it to an ephemeral stream channel nearby. Flow from the seep continues to cause gully and rill erosion. Planted alder and cedar, and native vegetation were beginning to have a stabilizing effect.

Munched Surfaces

Seedling growth, especially alder, was not as great, and the presence of native vegetation sparse in comparison to other surfaces, due to the surfacing aggregate not being sufficiently mixed with fine soil material. The loosened material settled and the surface became hardened.

Recommendation

Remove and pile elsewhere as much aggregate surfacing as is practical prior to obliterating the road.

Entry Barriers

Only one barrier of the 11 monitored had been breached. Planted trees and volunteer natives were starting to act as screening.

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 its association with the smolt trap used to assess salmonid escapement from Still Creek.

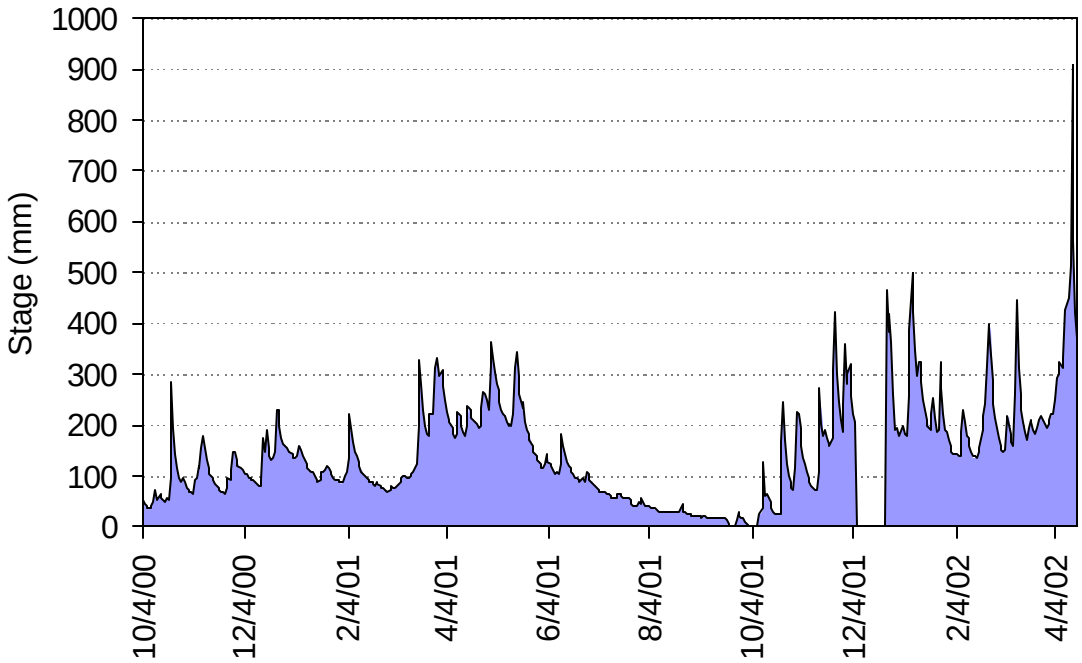
In order to address the monitoring question/ data gap an Aqua Rod was installed in Still Creek where Still Creek intersects the 20 road.

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.

Figure 2-8 details stream stage in Still Creek from October 4, 2000 through April 17, 2002.

This figure illustrates a number of stream stage peaks in the winter from rain and rain-on-snow events and a gradual drop off in summer stream stage associated with the springs and wetlands in the upper portion of the Still Creek watershed.

Figure 2-8:Stream Stage Still Creek



Bull Run Road Decommissioning Water Quality Monitoring

Stream sampling above and below road crossings at Nanny Creek on the 1027 road has been implemented in order to evaluate water quality effects associated with road decommissioning of a large stream crossing on turbidity. A comparison of the turbidity data above and below the project area before, during, and after 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 stream flow were used. Turbidity is measured in NTU's (nephelometric 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.

For the analysis the Wilcoxen Paired Sample Signed Rank Test was used to assess differences between the above and below treatment sites. The Wilcoxen Paired Sample Signed Rank Test is a non-parametric test used to determine the statistical significance of the difference in the medians of two sample populations. The data from the probes would occasionally register small negative values so the data was adjusted to reflect a baseline clear water quality in Nanny Creek of 0.2 NTU's (this valued was determined based on samples with a HACH model 2100P turbidimeter).

Culvert excavation and removal was completed from August 1 through August 8, 2000. Differences between the above and below project sites during project implementation were analyzed in last years report. This year's analysis focuses on the differences between the above and below sites in the post project period from October 1, 2000 through February 27, 2002.

After February 27, 2002, and also currently, the instrumentation at the site is not operational due to an extreme snow load at the site, which crushed the shelter housing the equipment.

Figures 2-9 and 2-10 illustrate the daily average turbidities for the above and below sites respectively. These charts detail the elevated turbidity associated with storm events (as detailed by the stage line). The below project site has periods where the turbidimeter is reading at the maximum range (approximately 130 NTU's) for extended periods of time. It is assumed that this is due to bedload moving in the stream and burying the turbidimeter. This was evidenced by the change in stream stage during October 2000 storm event where there was approximately 150mm of bedload deposited near the aquarod site used to measure stream stage (Figure 6). Figure 7 illustrates bedload starting to cover the intake for the turbidimeter at the lower Nanny Creek site.

Figure 2-9:Daily Average Turbidity Nanny Creek Below Project

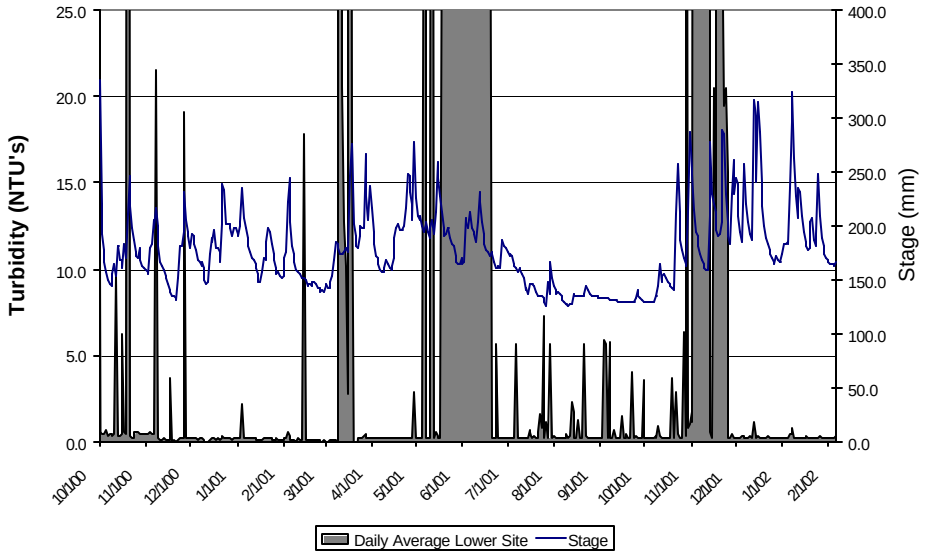


Figure 2-10:Daily Average Turbidity Nanny Creek Above Project

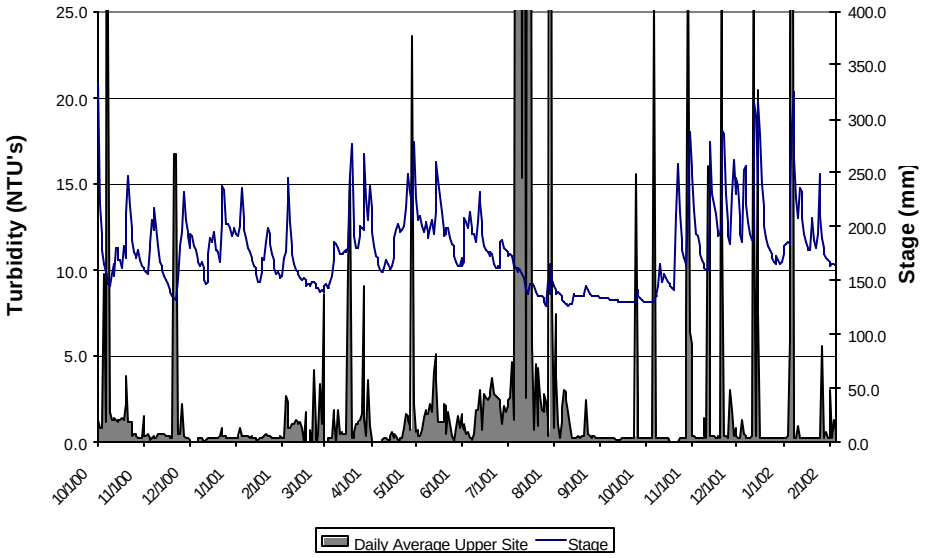


Figure 2-11:Stream Stage Nanny Creek October 2001

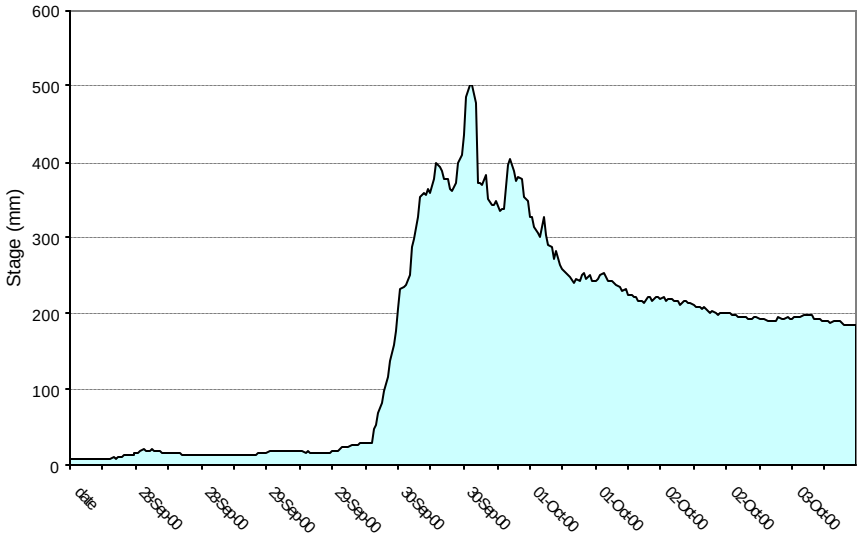


Figure 2-12:Bedload Deposition Nanny Creek

Table 2-25 and Figure 2-13 detail the frequency distribution of turbidity at the above and below project sites for the period from October 1, 2000 to February 27, 2002. Based on the data presented, the lower site has more data points below 1 NTU (86.5% versus 74.3%) while the upper site has more data points below 5 NTU's (95.1% versus 88.0%). The reason for these differences may be due to the calibration of the turbidimeters for the difference at 1 NTU and the change at 2 NTU's and above 2 NTU's may reflect actual conditions in Nanny Creek.

The Wilcoxen Paired Sample Signed Rank Test will be used to assess differences between the above and below treatment sites.

Table 2-25: Frequency Distribution of Turbidity Data at Nanny Creek Sites

Turbidity Level (NTU's)	Cumulative Percentage of Data Points at or Below – Below Project Site	Cumulative Percentage of Data Points at or Below – Above Project Site
0.2	44.7	24.1
0.5	84.7	65.9
1.0	86.5	74.3
2.0	87.2	87.6
3.0	87.6	92.5
4.0	87.9	94.5
5.0	88.0	95.1

Figure 2-13:Frequency Distribution Nanny Creek Sites

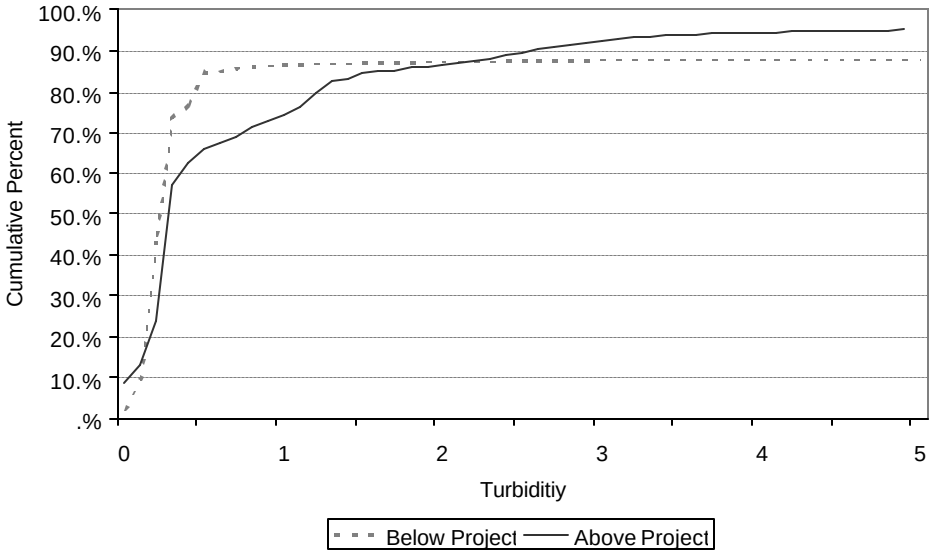


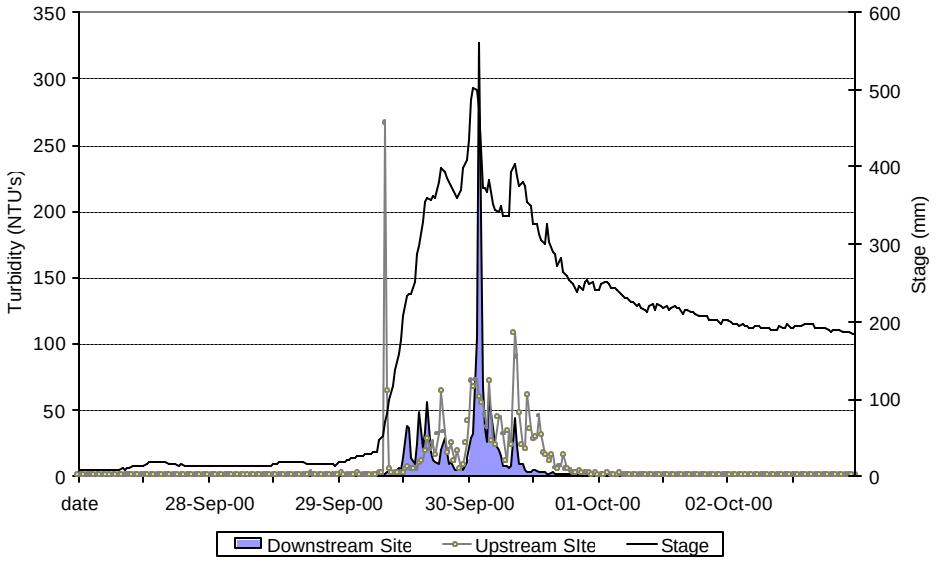
Table 2-26: Wilcoxen Paired Sample Signed Rank Test Results

Comparison Period	Results	Significance Level
Daily Minimums (Oct. 1, 2000 to Feb. 27, 2002)	Upper Site 0.1 NTU higher	80%
Daily Averages (Oct. 1, 2000 to Feb. 27, 2002)	Upper Site 0.45 NTU higher	95%
Daily Maximums (Oct. 1, 2000 to Feb. 27, 2002)	Upper Site 1.0 NTU higher	95%
Oct 2000 Storm	Upper Site 0.8 NTU higher	99%
March 2001 Storm	Lower Site 8.2 NTU higher	99%
Oct 2001 Storm	No difference	

The Wilcoxen Paired Sample Signed Rank Test was used to compare daily minimums, daily averages, daily maximums, and all data points from three separate storm events.

With the exception of the March 2002 storm, the Wilcoxen Paired Sample Signed Rank Test indicated higher turbidities at the upper site. As evidenced by the frequency distribution, Figures 2-9, 2-10 and 2-11, even though the peak turbidity during storm events is higher at the lower site, the lower site has a much higher cumulative percentage (Figure 2-8) of turbidity values below 1.0 NTU (86% versus 74%), Table 2-25, and this would appear to explain the results of the Wilcoxen Paired Sample Signed Rank Test.

Figure 2-14: October 2000 Storm Event



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). The feasibility of continuing monitoring at the Nanny Creek project will be evaluated during the summer of 2002, considering the results of monitoring completed to date, the safety of accessing the site during the winter, and available funding for reconstruction/repair. If a decision is made to continue the monitoring, the shelter and equipment will be re-installed during the summer of 2002, to monitor the fall and winter storm season of 2002/2003.

Recommendations

Best Management Practices

- Continue implementation of theBest 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 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 and begin working on a Water Quality Restoration Plan if needed.

Timberline Ski Area Water Quality Monitoring

The monitoring program should continue over the coming year to observe any temporal changes in water quality that may be attributable to salt application on the Palmer Snowfield, and to refine the salt loading model for the Palmer Snowfield and streams draining from the area. Forest Service oversight should continue to ensure that monitoring is in full compliance with the requirements of the permit issued by the Oregon Department of Environmental Quality. The Golder and Associates report for monitoring during 2001 was not available for inclusion in this year's Forest Plan monitoring report.

Monitoring Element: Transportation/ Roads

Goals

The construction and maintenance of roads will minimize environmental damage and meet resource and Forest visitor needs. Provide safe and efficient access for those who use the transportation system and manage the forest.

Monitoring Activities

Road Construction and Reconstruction

In 2001, 0.0 miles of local road were constructed for timber support on the Forest. There were 3.4 miles of road reconstruction. Most of this reconstruction is repair of damage resulting from the 1999 and 2000 flood events. The annual Forest Plan outputs for the first decade were 16.6 miles of new construction, 17.5 miles per year of collector reconstruction and 74.0 miles per year of local road reconstruction. During past years, these outputs have been reduced. The reduction in miles of road constructed or reconstructed can be attributed to one of the following:

- A major reduction in budgets for Capital Investment Road Program which effects reconstruction of arterial and collector reconstruction.

- A reduction of timber harvest from Forest Plan outputs which has a direct effect on local construction and reconstruction.

- More use of helicopter logging eliminates need for new road construction.

- Construction of temporary roads to harvest timber and then obliterating them after project completion.

These trends, which will continue, aid in keeping long term erosion of sediment at a minimum and will not increase the road system. The flood repairs completed this year will also reduce long term sediment erosion.

Evaluation

This item was monitored adequately. However, the change in the projected Forest Plan outputs for miles of miles of road construction and reconstruction should be reviewed and changed to reflect the change in timber harvest, reduced budgets, and policy decisions which will likely result in additional road closures.

Road Closures/Road Decommissioning/ Stormproofing

Currently, 511 miles of system roads are in the maintenance level 1 (closed road) category. These roads are closed to vehicular traffic but drainage facilities are maintained. Since the implementation of the Forest Plan, approximately 295 miles have been closed. Approximately 462 miles have been decommissioned and removed from the transportation system. In FY 2001, approximately 4 miles of road were decommissioned.

The decisions for these actions were made through the district planning process to meet specific resource needs and to meet the Forest Plan standards and guidelines.

Road closures and road decommissionings have a direct effect on open road density. Forest Plan standards and guidelines identify maximum levels of open road densities for each management area. Most districts do planning on a few areas annually, while other districts have analyzed the entire district as a whole to determine which roads should be closed or decommissioned. These analyses are updated as new planning efforts occur. Currently, the amount of roads identified for closure or decommissioning has exceeded the Forest's funding available for implementation.

Closed

Roads identified for closure are closed to traffic, but will remain on the road system. These roads have an identified need (generally within seven years). Roads needed for future timber harvest activities or fire protection efforts would fall into this category.

Decommissioned

Roads identified for decommissioning have no identified future need (generally within ten years) or are at a high risk for resource damage.

Stormproofing

A program of stormproofing roads was begun in FY01 on 20 miles of high clearance road in the Clackamas River Drainage. A stormproofed road may be open to traffic, but the ride is uncomfortable and requires a 4x4 high clearance vehicle.

Stormproofing consists primarily of installing driveable waterbars that intercept water in the ditch and roadway and divert it off the road in a safe, stable location. The waterbars are located to intercept water from any cross drains or live stream culverts that fail due to plugging. The primary objectives of stormproofing are to reduce the risk of road failure and to reduce road maintennce costs. A secondary objective is to discourage (but not prohibit) traffic on stormproofed roads. Stormproofing can be accomplished for 5% to 10% of the cost of decommissioning a road.

Evaluation

This item was monitored adequately. During the planning process opportunities to reduce road densities are being identified, but there is not enough funding available to implement this reduction. This may result in not meeting the goals set forth in the Forest Plan standards and guides. During the next year we will continue to develop the Infra/Travel Routes application, which will help determine current Forest road densities. This will be used in conjunction with the Roads Analysis process to identify areas to emphasize in closing and decommissioning roads.

Road Management

The Forest has been implementing the 1999 Mt. Hood Access and Travel Management Plan (ATM). Due to reduced road budgets, resource protection, management needs and policy direction, it was necessary to downsize the forest transportation system. The ATM Plan suggests reductions in road maintenance levels to a minimum system that will still meet the anticipated public needs while trying to stay within the road maintenance budget. Following is a table showing road maintenance levels and vehicle access type before and after the ATM Plan by district.

Table 2-27: Road Maintenance Levels

	Maintenance Levels/Access Type					
	1 - Closed		2 - High Clearance		3-5 - Passenger Car	
District	Before	After	Before	After	Before	After
Clackamas	646	886	451	427	513	243
Barlow/Hood River	595	450	692	548	397	254
Zigzag	39	97	68	122	100**	113
Bull Run*	30	116	174	190	139	0
Forest Total	**1,310**	**1,549**	**1,385**	**1,287**	**1,149**	**610**

**The road system in the Bull Run watershed is closed to all public traffic.*
***District boundaries changed while the ATM was being developed. Bear Springs Ranger District miles were divided up between the districts listed above.*

The road system within the Bull Run watershed is maintained to accommodate the City of Portland to maintain the City's water supply and for Forest Service Administration. The road system before and after the ATM does not change public access to the Bull Run watershed. The following discussion of effects on public access will not include the Bull Run road system.

The table shows a considerable decrease in the number of miles available for passenger car traffic (40% decrease) as well as a decrease in the number of miles available for high clearance vehicles. However, most of the road mileage listed under Maintenance Level 1 will not be physically blocked but will be allowed to close naturally, i.e. brush in, not log out. If funding becomes available to close these roads, the implementation rate would increase.

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.

Road Maintenance

In 2001 there were 686 miles of road classified in maintenance levels 3-5 (maintained for passenger car use). Approximately 493 miles were maintained to standard. There were 1,268 miles of road classified as maintenance level 2 (maintained for high clearance vehicles). Approximately 640 miles were maintained to standard. Roads maintained to standard are defined as roads that meet the intended maintenance standard. These may be roads that meet the intended standard with little or no work, or roads that are planned to be moved into a lower maintenance category. The Forest Plan projected 1,222 miles of maintenance on levels 3-5 (passenger car use) and 1,678 miles of maintenance on level 2 (high clearance vehicles). These projections were not met this year. The reasons are:

- The Forest is in the process of phasing in the ATM plan which reduces level 3-5 miles.

- Inadequate funding in the form of appropriated funds and lack of timber sales contribute heavily to not maintaining the road system to standard.

Recommendations

- Revise Forest Plan outputs for road construction and reconstruction to reflect reduced budgets and reduced timber ASQ.
- Continue implementation of the Forest Access and Travel Management (ATM) Plan. A Forest Roads Analysis will be completed in January 2003. This Roads Analysis will refine the 1999 ATM plan by evaluating the economic and environmental impacts of the mainline road system on the forest.
- Develop a GIS/INFRA/Travel Routes analysis to determine current forest-wide road densities for management areas over the entire forest.
- The stormproofing program will be continued on 30-50 miles of road in FY02, primarily in the Bull Run Watershed.

Monitoring Elements: 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 licens, bryophytes (mosses and liverworts), fungi, mammals, amphibians, and mollusks.

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 nesting and established winter communal roost areas.

Results

One former nest site was monitored in 2001. The site was found to be occupied. This site has not been occupied for several years. No communal roosts have been located on the Forest but an individual roost site was identified. This site is currently protected.

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).

Results

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 2001, two spotted owl activity centers were monitored to protocol for spotted owl activity. No owls were detected at one site and one historic activity center was confirmed on the other. There will be little opportunity to increase the monitoring effort for the current year. In 2001, there was approximately 100 acres of late successional reserve (LSR) precommercial thinning to improve habitat for spotted owls.

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.

Results

Monitoring for peregrine nesting in 2001 was confined to the two known nest sites. One of the two sites was successful. There were two young fledged from the successful site. One of the peregrine sites has been gated and fenced to protect the site from disturbance. A management plan was completed for one site and is in draft form on the other. Ledge enhancement was performed at one site.

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 (6,400 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 1,270 acres of subalpine fir plant associations. Therefore, we lack the minimum criteria to identify lynx habitat and develop a lynx analysis unit. However, over the past several years there have been about 13 unconfirmed lynx sightings across the Forest. Any lynx occurrences are probably transient individuals.

Results

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 extripated from Oregon. If lynx are present on the forest their numbers are limited. Surveys for lynx were completed in 2001 and results are still pending.

Sensitive Wildlife Species

Red-legged Frog

The red-legged frog was removed from the Regional Forester's Sensitive Species List in FY 2001. No species specific surveys for red-legged frog were conducted in 2001. The Wetland Wildlife Watch surveys indicated they found red-legged frogs and egg masses in the Bull Run reservoir in 2001. The population trend for this species across the Forest is unknown although it appears to be a regular breeder across much of the landscape.

Harlequin Duck

No surveys for harlequin duck were conducted in 2001. Based on previous surveys this species occurs in several location across the Forest. Nesting has been recorded in past years. Habitat enhancement in 2001 included placing logs in Clear Branch Creek.

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 2001 season. Volunteers with Wetland Wildlife Watch and Portland Audubon Society and Forest Service employees were used to maximize the effort. There were 9 adults and 2 colts observed. There is an increasing visitor use in and around the Little Crater Meadow that appears to be affecting the use of the meadow by cranes. There were no cranes observed in this meadow in 2001.

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 bat was removed from the Regional Forester's Sensitive Species List in FY 2001. No surveys were conducted for this species in 2001. The distribution and population trend across the forest is unknown.

Wolverine

An aerial survey for wolverine tracks was conducted in 2001 and no individuals were observed.

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 2001. Up to 6 birds were observed from April 2 to the end of April. Nest platforms have been installed on Upper and Lower Bullrun Reservoirs but no nesting has occurred at this time.

Snags and Down Woody Material

The Northwest Forest Plan provided standards for snags and down and woody material in Late Successional Reserves, corridors, and wilderness areas. 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 the guideline for down and woody material. The standards and guidelines for meeting the 100% population potential for some species such as white-headed woodpecker and black-backed woodpecker probably is not adequate to meet the actual needs of these species. Monitoring of these snags only occurs in relation to KV projects.

Summer and Winter Range

Deer and elk habitat is typically characterized as summer or winter range depending on the season of use. Additionally, biologist have recognized thermal cover as being important in conserving energy for big game during cold temperatures.

There is no standardized method of monitoring summer or winter range on the forest. Some monitoring occurs in conjunction with KV plans and project areas. In the absence of systematic monitoring, biologist were queried regarding their professional assessment of the status of big game habitat on the districts.

With a reduction in regeneration harvest on the Forest and the suppression of fire, the dense nature of the habitats in the western cascades will produce less and less forage 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. It is inevitable that populations of deer and elk will decline unless some method of creating or maintaining openings for these species is implemented. The following are the professional assessment of the current deer and elk situation.

Barlow Ranger District

Summer range forage has been decreasing for the last five years because of reduced regeneration harvest. Winter range is stable to increasing with the increased use of underburning methods. Deer populations are stable to increasing. Elk populations are stable.

Clackamas Ranger District

Winter and summer range have maintained constant. Populations appear to be stable. Video technology has been used to monitor KV forage projects and permanent openings to determine effectiveness.

Hood River Ranger District

The trend on Hood River is toward more cover and less forage in both summer and winter range. The populations of deer and elk appear stable.

Zigzag Ranger District

There is very little timber harvest on the Zigzag Ranger District as a result of management of the Bull Run Watershed Management Unit.

Therefore the amount of cover is increasing and forage is decreasing. In the district biologist opinion the populations of deer and elk are stable on the district.

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

Habitat Management Areas

All habitat management areas were dissolved as per the Northwest Forest Plan except those identified as connectivity between watersheds. The monitoring of these corridors has not been established.

Snag Density

Biologist have indicated that we are meeting the standards and guidelines for snags on timber harvest units but that progress still needs to be made in retaining down and dead material.

Table 2-28: Wildlife Resources

Elements	FY 98
Peregrine Falcon Nest Sites	2
% Projects Meeting Bald Eagle S&Gs	100%
No. of Known Spotted Owl Sites Monitored	2
% Projects Meeting Primary Cavity Nester S&Gs	100%
Projects Wintering Marten and Pileated Woodpecker Areas Meeting S& Gs	100%
% Summer Range S&Gs Met	100%
Pine Oak Habitat S&Gs Met	Yes

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.

Northwest Forest Plan - Survey and Manage Species

Mollusk Species

The following Survey and Manage (C-3) terrestrial mollusk species are suspected to fall within the range of the Mt. Hood Naitonal Forest: *Deroceras helperium, Hemphillia malonei, Hemphillia gladulosa, Hemphillia burringtoni, Hempillia pantheris, Prophysaon coeruliem, prophysaon dubium, Pristiloma arcticum crateris, Cryptomasitx devia, Cryptomasitix hendersoni, Monadenia fidelis minor,* and *Megomphix hemphilli.* After the conclusion of the 2000 field season, the 2001 Record of Decision and Standards and Guidelines was released. This new ROD removed *Prophysaon dubium* and *Prohysaon coeruleim* from the survey and manage list. The Malone Jumping slug, *Hemphillia malonei*, has been removed from the survey and manage list in 2002.

The Forest Survey Crew surveyed 583 acres on the Forest during the summer and fall of 2001. Two timber sales, one prescribed burn, and six recreation projects were surveyed on the Forest. Table 2-29 shows the total number of Survey and Manage mollusk species that were found in the 2001 field season.

Table 2-29: Survey and Manage Mollusk Species Found on Mt. Hood National Forest, 2001

Survey and Manage Species	Total Number Found in 2001
Monadenia fidelis minor	6
Megomphix hemphilli	1
Hemphillia malonei	15
Total	22

Larch Mountain Salamander

Efforts to survey projects for Larch mountain salamander were undertaken in FY 2001. Several Larch mountain salamanders were discovered during the strategic surveys at CVS plots but no Larch mountain salamanders were found during project surveys. The protocol for this species requires use of many prsonnel 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 ONH 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 found during any of the surveys. The Forest Survey Crew surveyed very few acres on the Forest during the summer and fall of 2001. Survey areas were small and combined with the mollusk and salamander surveys. There were no RTV nests or potential nests found in 2001 by the Forest Survey Crew.

2001 Current Vegetation Survey

The Current Vegetation Survey (CVS) consists of 450 permanent research plots located throughout the range of the Northwest Forest Plan area. The objectives of the Survey and manage CVS Grid Survey are to generate an unbiased sample of the survey and manage species across the region to determine each species' association with late-successional and old-growth forest and their relative occurrence in reserves. The survey documents species location using a presence/not found technique, and a minimum of environmental/biological information.

The Mt. Hood survey crew conducted mollusk surveys, both aquatic and terrestrial, and amphibian surveys on 28 plots within the Mt. Hood National Forest boundary. Plots were visited twice with one visit occurring in the spring and the other in the fall. Ten out of the 28 plots had survey and manage species located within the plots. Two of these ten plots had Larch Mountain Salamander (the plots were located at Larch Mountain).

Threatened, Endangered and Sensitive (TES) Plants

The Regional Forester's Sensitive List for plants has not been revised since 1999. The List includes 34 plant species that are documented from or are suspected to occur on the Mt. Hood National Forest. As in the past two years, emphasis has been placed on plants found in non-forested habitat types such as meadows, grasslands, balds and clifs be monitored. Three of these species were highlighted, Watson's lomatium (*Lomatium watsonii*), violet Suksdorfia (*Suksdorfia violacea*), cold water corydalis (*Corydalis aquae-gelide*) and black lily (*Fritillaria camschatcensis*).

Results

Cooperative management of violet Suksdorfia with a local rock climbing association continued through FY 2001. 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 to be stable.

Noxious weed encroachment continues to be a problem at the one known site of Watson's lomatium on the Forest. In FY 2001, knapweed plants were manually pulled to reduce competition with the lomatium and limit the amount of weed seed produced. This is a continuing effort. In addition, lomatium seed was collected for storage at the Center for Plant Conservation at Berry Botanic Garden.

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.

Cold water corydalis (*Corydalis aquae-gelidae*) 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.

Monitoring questions identified in the Mt. Hood Land and Resource Plan:

- *Have sensitive plant inventories been conducted for all ground-disturbing activities?* **Yes**

- *Have implemented mitigation measures been effective in maintaining the integrity of sensitive plant sites?***Yes**

- *Are Threatened, Endangered and Sensitive plant standards and guidelines being implemented?* **Yes**

Recommendations

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

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

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

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

Monitoring Element: Timber Resources

Goal

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

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.

Harvest Activities

Timber Sold and Harvested

Our 1990 Forest Plan identified a total timber sale program quantity (TSPQ) of 215 million board feet (MMBF) that could be sold on average per year over the decade. An allowable sale quantity (ASQ) of 189 million board feet per year was also identified in the plan. The Northwest Forest Plan identifies a Probable Sale Quantity (PSQ) for the Mt. Hood NF of around 67 million board feet per year, with the Fiscal Year 1997 targeted as the full implementation year where that goal would be met from then on. The 67 MMBF is "volume offered for sale", not volume harvested (this amount varies from year to year depending on market conditions).

In 1995 the PSQ level of 67 MMBF was adjusted downward to 64 MMBF. This adjustment was made to reflect the need to protect 100-acre buffers around owl activity centers. **64 MMBF is the current PSQ for FY01.**

The following statistics show timber program details for FY 2001.

- 8.8 million board feet was **offered** for sale in FY 01, however only 1.54 million board feet was sold and awarded. This low level of volme offered was due to litigation issues against the Northwest Forest Plan that tied up completion of NEPA, offering sales, and awarding contracts.

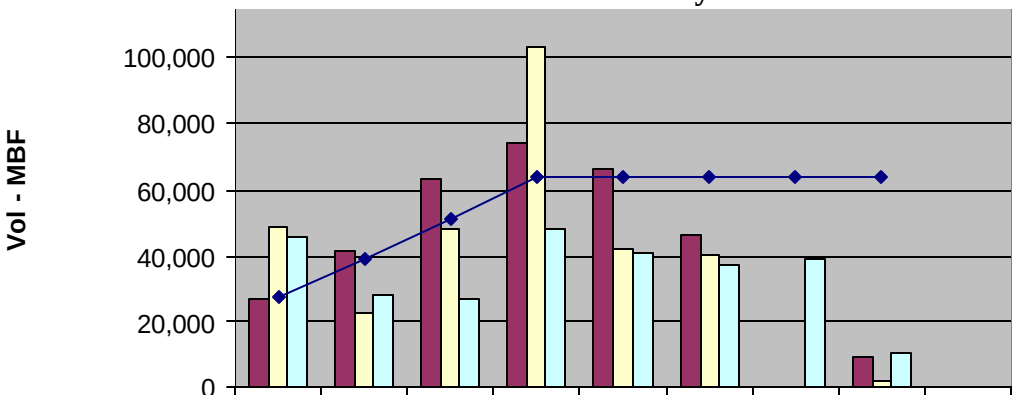
- Volume harvested was also much lower than previous years due to a low economic market for timber products.

Table 2-30: Timber Volume Sold/Harvested - FY 01

Timber Volume Sold and Harvested		
	MMBF	**CCF**
Volume Offered	8.8	13,467
Volume Sold and Awarded	1.54	2,952
Value (Total Sold Revenue)	41,340	
Volume Harvested	10.4	19,336
Acres Harvested	808	
Other Products Sold and Harvested		
Volume of Firewood Harvested	3,063 cords	3,306
Value	$30,063	33,060
# of Christmas Trees Harvested	4,107	4,883
Value	$20,963	24,993
# of Bough Permits	30	35
Value	$120,545	111,817
# of Bear Grass Permits	328	371
Value	$11,810	13,030

The actual volume sold over the decade will vary year to year because sales are returned due to bankruptcies, defaults, weather events, etc., harvesting will also vary year to year. The following figure shows the actual volume of timber offered for sale and harvested since the Northwest Forest Plan was implemented.

Figure 2-15: Mt. Hood National Forest Volume Summary



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

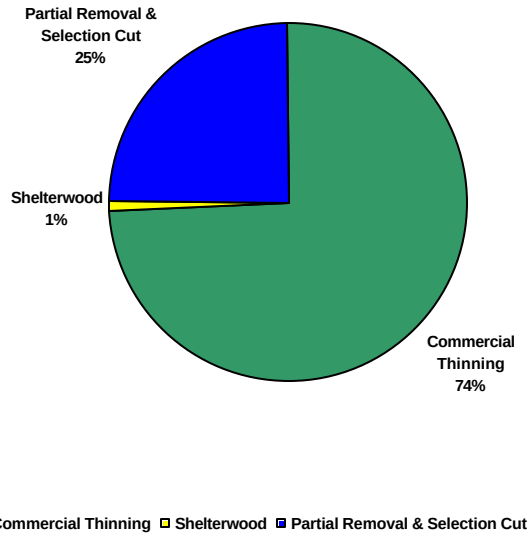
Harvest Methods

The following figure displays the types of harvest methods that were implemented during FY 01. Commercial thins accounted for the majority of the acres treated (74%), followed by selection cutting and partial removal (25%), shelterwood (1%).

Evaluation

In FY01 the emphasis was almost entirely on thinings and partial cuts with only 1% of regeneration harvest. There were 808 acres treated, which is substantially less than the 3,245 acres treated in FY00.

Figure 2-16: Silvicultural Harvest Methods (Acres Treated - 808)



Silvicultural Activities

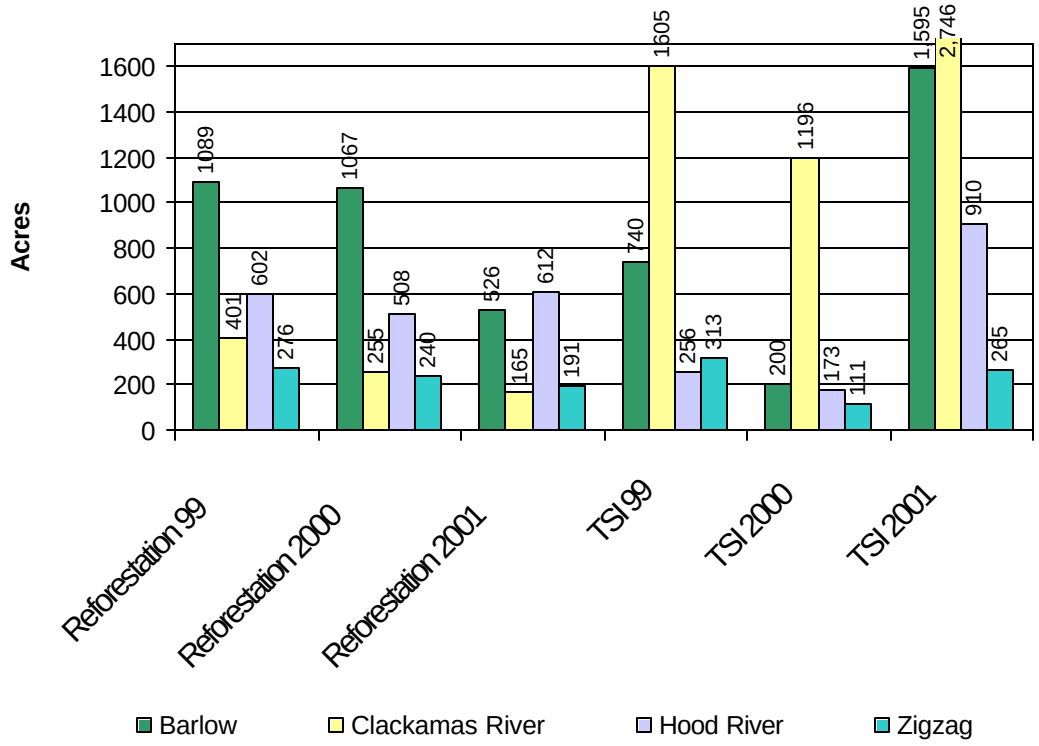
Silvicultural activities include planting, thinning, release, and fertilization of young stands.

Reforestation continues on a downward trend and the Mt. Hood National Forest reforested 1,494 acres in FY01, as compared to 2,070 acres in FY00. This downward trend in planting is directly related to the decreased level of regeneration harvests and decreased level of timber harvest overall.

Due to extra funding allocated late in the fiscal year, the Forest accomplished 5,516 acres of precommercial thinning, which has been more than previous years. The Forest has a backlog of approximately 16,000 acres in need of precommercial thinning due to lack of appropriated funding. This year's accomplishment was a good start in treating the backlog. However, several years of continued funding is needed to complete the backlog.

The following graph displays the accomplishment of both reforestation and timber stand improvement (TSI) by ranger district in fiscal years 1999, 2000, and 2001.

Figure 2-17: Reforestation and Timber Stand Improvement Accomplishments



Regeneration Activities

Planting

Approximately 517M seedlings were contract planted on 1,494 acres during the spring of 2001. The seedlings — including 9 conifer and 1 hardwood species — consisted of both bareroot (57%) and container (43%) stocktypes. The bareroot was produced by J. Herbert Stone, and the containers by Cal Forest and Microseed nurseries. Frozen storage was used on all seedlings. Snow plowing to access project areas was accomplished through the Forest Service.

The overall first year survival — as measured by staked tree surveys — was 82%, comparing favorably with the Forest's 5-year average of 76% (the 5-year range is 62-83%). All species performed satisfactorily except two bareroot Noble fir lots, which experienced heavy losses within weeks of being planted. The reason for the losses wasn't well defined. District storage, handling and outplant site conditions didn't appear to have been responsible.

The seedling performance results demonstrated that the species, root type and site match-ups were generally well prescribed. It also demonstrated that pre-plant seedling health — in terms of storage and handling — was managed properly. Further review of the post-lift/pre-pack seedling health examination process may be of future benefit in detecting problems such as we experienced with the Noble fir.

When possible and reasonable, the Forest will continue not to place all of its sowing needs at a single nursery, from a single seedlot or for a single stocktype. As with this year's Noble fir, this practice lowers the risk of having a complete failure for a given species or stocktype.

Seed Inventory Management

This year the Forest was able to collect 17 pounds of rust resistant western white pine seed from the Coyote seed production area on the Gifford Pinchot NF. At our current use [sowing] rate of 4.3 pounds annually, this will provide the Forest with a four years' worth of high quality seed.

Forest Health - Insect and Disease Activity

Overall, acres affected by defoliating insects and diseases are at a low for the last ten years. Defoliation by larch casebearer and larch needle cast have substantially decreased from 7,720 acres in year 2000, to 304 acres in 2001, and may reflect the ending of this cycle of activity. Similarly, defoliation from the Balsam woolly adelgid has decreased from 1,862 acres in year 2000 to 788 acres in 2001.

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, partially because of the successful introduction of natural enemies. Larch needle cast is a native organism that does not cause serious impacts on thrifty, dominant or codominant trees. However, larch needle cast, alone, or together with larch casebearer, may kill or further reduce the competitive abilities of low-vigor suppressed or intermediate larch. 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.

Levels of tree mortality from insects are slightly lower overall in 2001 than 2000, but shifts in type of insect mortality are occurring.

Mortality from the Douglas-fir beetle has decreased substantially from 2,571 acres in 2000, to 737 acres in 2001. The fir engraver, however, shows an increase from 133 acres to 365 acres.

Of significance is the increase in mortality from the Mountain pine beetle on lodgepole pine on the Barlow Ranger District, and to a lesser extent, Mountain pine beetle mortality on ponderosa pine. Acres of mortality detected in 2001 was 1,527 acres, as compared to 169 acres in 2000, and may well be reflective of an upward trend or increasing activity by Mountain pine beetle.

Mountain pine beetle attacks trees under stress and is highly related to stand density, therefore overstocked stands are highly susceptible. Field monitoring and aerial survey monitoring should continue, especially on the east side of the Forest and within the Olallie Lakes area. Density control of overstocked stands should be considered to decrease the probability of Mountain pine beetle attack in the upcoming years.

Figure 2-18:Acres Affected by Defoliating Insects or Diseases

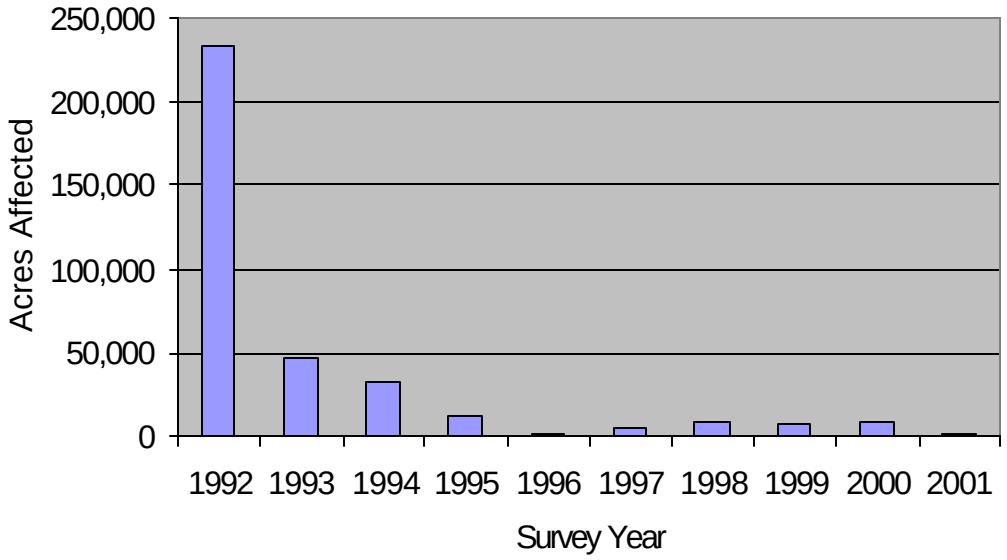


Figure 2-19: Acres Affected and Trees Killed on Federal Lands Within the Mt. Hood Reporting Area

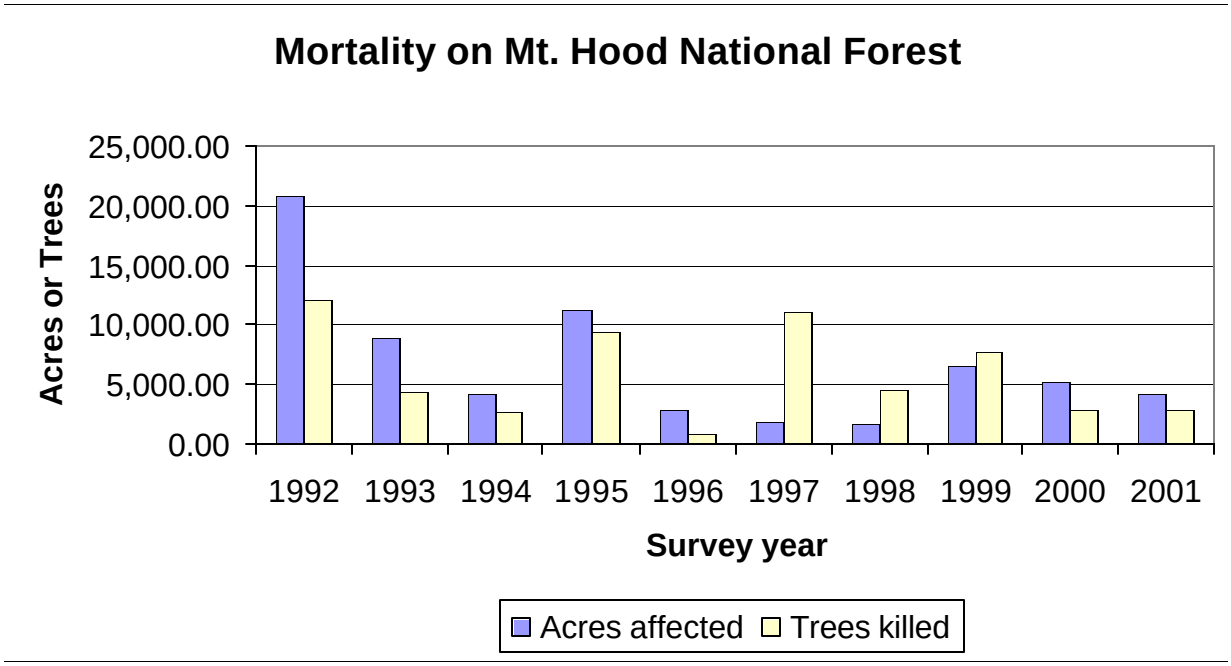
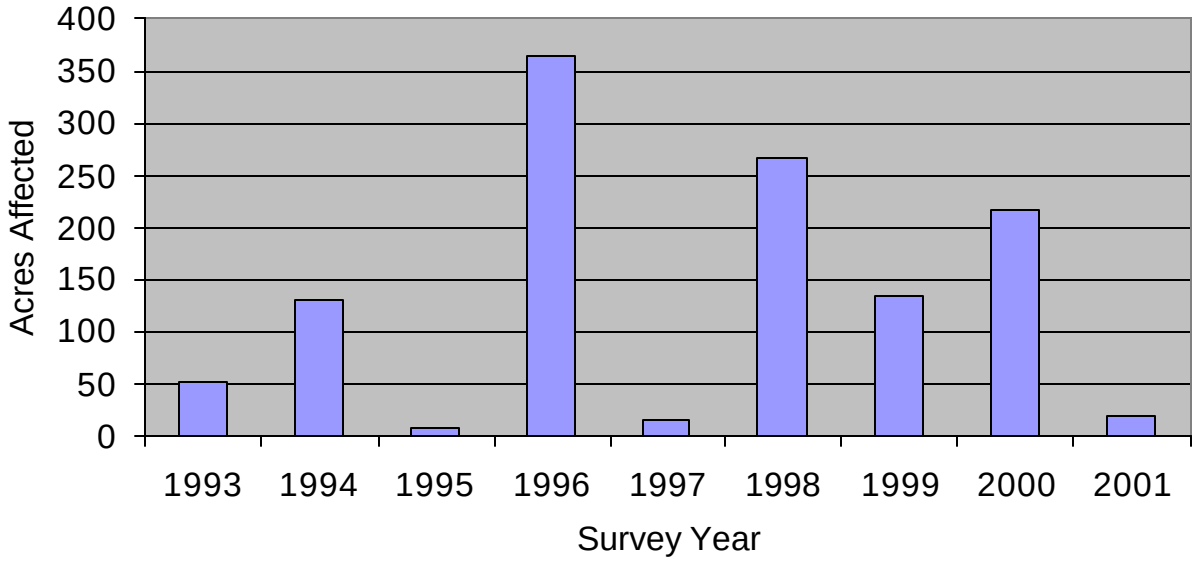


Figure 2-20: Acres Affected by Agents Other Than Mortality or Defoliating Classified Insects and Diseases



Evaluation

Overall, acres affected by defoliating insects and diseases are at a low for the last ten years. Defoliation by larch casebearer and larch needle cast have substantially decreased from 7,720 acres in year 2000 to 304 acres in 2001, and may reflect the ending of this cycle of activity. Similarly, defoliation from the Balsam woolly adelgid has decreased from 1,862 acres in year 2000 to 788 acres in 2001.

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Model Assumptions

Timber yields in our Forest Plan were generated from lands that are considered suitable for timber harvest. Land allocations are generally described as:

- No regulated harvest lands ("A" lands);
- Regulated harvest with partial yield ("B" lands);
- Regulated harvest with full yield ("C" lands);
- Bull Run Watershed Planning Unit ("D" lands);

Within these four categories are the 45 management areas the Forest is divided into. Part of our monitoring effort is to monitor the amount of acres harvested within each of these management areas, or major categories of areas. The results are shown below in terms of percent of harvested acres that lie within management area categories.

Table 2-31: 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

* FY94 data is not available.
A = No regulated harvest (salvage).
B = Regulated harvest with partial yield.
C = Regulated harvest with full yield.
D = Bull Run Watershed Planning Unit.

Of the total acres harvested in FY 01, the following displays the percentage split between Northwest Forest Plan land allocations:

Administratively Withdrawn	1.3%
Late Successional Reserves	.2%
Riparian Reserve	14.6%
Matrix	83.9%
Total	100.0%

Table 2-32: Acres Harvested by Forest Plan Management Area in FY92-FY2001 (Data not available in FY94)

Management Area		Acres Harvested by FY								
		92	93	95	96	97	98	99	00	01
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
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	
B8	Earthflow Area	57	104	125	347	119	191	106	238	74
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
B12	Back Country Lakes					3				
C1	Timber Emphasis Area	2,723	1,896	744	510	1,064	2,104	1,762	2,257	574
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

Evaluation

This comparison allows the manager to see where harvesting has occurred according to the Mt. Hood Forest Plan land allocations. As displayed in the previous table, more than two-thirds of the total harvest occurred on C-1 Timber Emphasis lands, with most of the remaining harvest occurred on "B" lands.

Recommendations

- Spatially display, forestwide, a vegetation map identifying overly dense stands with forest health concerns. Complete an in-depth analysis and prioritization of these stands.

- Continue to pursue funding for those items that are needed to restore and maintain forest health. These include:

    - Timber stand improvement dollars for precommercial thinning of overly dense, young stands.

    - Sale planning and preparation funds for commercial thinning of overly dense stands, and funds to thin stands of small diameter that do not make an economical timber sale.

    - Noxious weed abatement funding.

- Continue to aerially monitor insect activity on the forest and augment with on the ground observations. Focus on the east side of the forest and Olallie Lakes area, specifically for Mountain pine beetle activity and stand conditions conducive to attack.

- Continue current reforestation practices, including animal damage control, to meet 5 year regeneration and minimum stocking laws.

- Pursue accelerating the Ecological Unit Inventory. Funding has been requested for FY2001 to complete the larger scale Land Type Association mapping. These funds have been requested to accelerate Land Type mapping to a rate that will complete inventory of the forest in 5 years. Consolidate and coordinate with other inventory needs where possible.

Monitoring Element: Recreation Resources

Goal

The Forest will strive to 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.

Monitoring Items

Trails

The Forest has approximately 800 miles of recreation trails. Of the non-motorized trails, 363 miles are in Wilderness. An additional 200 miles of trails are created for winter recreations from existing roads and trails.

Table 2-33: Trail by Design Standard

Trail Type	Total	ADA	Hiking	Horse	Bike	Water Craft	ATV	Motor-cycle
Miles	811.7	4.1	313.4	386.1	57.6	0	7.9	42.6

Table 2-34: FY 2001 Status

Trails	Types	Forest-Wide	Zigzag	Barlow	Hood River	Clackamas
Trails Maintained	To Standard	533	164	140	141	88
	Not to Standard	463	183	40	116	124

Off-road vehicle use has rapidly increased on the Forest. Observation information from personnel has indicated that this growth in usage has accelerated in the last three-year period. Resource damage has occurred on the Forest due to inappropriate use. The lack of Forest designated trails and a Comprehensive Trail Travel Management Plan has not provided assistance to systematically mitigate up and coming issues.

Northwest Fee Demonstration Project - 2001 Season

The Fee Demonstration Project is Congressionally directed to help provide funds that will be used to improve our trail system. The Forest is continuing to collect parking fees at selected trailheads and rustic campsites as part of the Northwest Forest Pass. Eighty percent of the fees collected are returned to the forest to fund improvement activities at the sites.

Table 2-35: Fees Collected

	Daily Passes	Annual Passes	Gross Revenue	Estimate of Visitors
GI Joes - PDX	1,589	2,650	$79,552	69,956
Mt. Hood Info Center	3,491	2,526	$81,570	74,608
REI	500	1,725	$54,250	41,400
Total	5,580	6,901	$215,372	185,964

Major accomplishments for Northwest Forest Pass Project for the year are as follows:

- Miles of trail maintained: 175
  Average cost/mile: $200
- Number of miles of trail constructed or reconstructed: .5
  Average cost/mile: $1,750
- Number of bridges constructed: 0
- Number of bridges reconstructed: 10
- Number of toilets reconstructed: 0
- Number of new toilets installed: 3
- Compliance with NW Forest Pass: 60%

Congressionally Appropriated Funds

With trail maintenance budgets less than ½ of the level that is needed to maintain our trail system to the prescribed standard level and funding for construction and reconstruction at less than 1/4 of the level that is needed to reconstruct a deteriorated system or build new opportunities for our increasing public, additional miles of trail will deteriorate to a level that requires reconstruction to bring them up to a safe and acceptable level.

If current trends of reduced maintenance and reconstruction continue, we may close some trails and restrict the type of use on others. Also, fewer new facilities will be constructed because more of the limited capital investment dollars will be needed to reconstruct trails that were not properly maintained. Currently, there are a limited amount of trails available for barrier-free, bicycle and off-road vehicle users. These systems will feel the greatest impacts from lack of new facility construction.

Wilderness

There are six Wilderness areas on the Forest covering approximately 186,000 acres. Wilderness management emphasizes not only the preservation of the areas primitive characteristics, but also the restoration of areas that have lost their primitive character through overuse.

The use in Wilderness areas is not evenly distributed. Many historic, traditionally visited areas receive high use, while others receive only limited use. Due to topography and use patterns, stream and lakeside areas typically receive the heaviest use.

A mandatory, non-regulatory use permit system is being used in the Wilderness Areas. The purpose is to obtain more accurate information on use levels and patterns, and to educate users on Wilderness ethics and values. In the 2001 season, the top entry points for Mt. Hood Wilderness were:

- Burnt Lake North
- Burnt Lake South
- Muddy Fork Top Spur
- PCT Timberline
- Ramona Falls North
- Famona Falls South
- Timberline Cooper Spur Cloud Cap
- Timberline McNeil Point
- Vista Ridge

An in-depth study of wilderness values will occur in 2003 and 2004.

Search and Rescue

Below is a summary of Search and Rescue missions on the Zigzag Ranger District in FY 2001 (10/01/00 - 9/30/01). These do not include incidents within permit areas where permittee responded and did NOT notify the Sheriff's Office. Nor do they include any incidents that Hoodland Fire Department responded to on National Forest lands and did not notify the Forest Service.

Table 2-36: Summary of Search and Rescue Missions on the Zigzag Ranger District in FY 2001 (10/01/00 - 9/30/01)

Date	Incident
10/08/00	Stranded hiker, McIntyre Ridge Trail, Wilderness incident/no mechanized entry
10/10/00	Lost muchroom pickers, Wind Creek drainage, non-Wilderness incident
10/15/00	Lost muchroom picker, Top Spur trailhead, non-Wilderness incident
11/25/00	Overdue climbers, southside route, Wilderness incident/no mechanized entry
12/23/00	Overdue climbers, southside route, Wilderness incident, no mechanized entry
3/23/01	Injured climber, Hogsback, Wilderness incident/no mechanized entry
4/19/01	Suicide, Old Mail Flat, non-Wilderness incident
4/22/01	Suicide, Old Maid Flat, non-Wilderness incident
5/13/01	Overdue climbers, Leuthold's Coulier, Wilderness incident/no mechanized entry
5/25/01	Overdue 4-wheeler, Wildcat, non-Wilderness incident
6/19/01	Missing person, Timothy Lake, non-Wilderness incident
6/19/01	Injured climber, southside route, Wilderness incident/no mechanized entry
7/01/01	Injured climber, Hogsback, Wilderness incident/no mechanized entry
7/14/01	Ill hiker, Salmon River Trail, non-Wilderness incident
8/27/01	Injured climber, White River Glacier, non-Wilderness incident

Developed and Dispersed Recreation

Use Data for Dispersed Recreation is not collected on this forest. A National Visitor Use Monitoring survey is scheduled for FY 2003. Preliminary results from forests sampled nationally through this process indicate a prior systematic over-estimation of the dispersed recreation activities. In FY1999, 600,000 visits were estimated for the Mt. Hood National Forests for Dispersed Recreation.

Data for Developed Recreation is from Concessionaires and is more reliable. The Mt. Hood National Forest is literally the backyard of the Portland/Vancouver metro area and the Willamette Valley. The Forest has a wide variety of sites totaling over 150 developed sites on the Forest. These developed sites account for almost one-third of the Regional inventory and capacity of for developed recreation. Backlog rehabilitation and reconstruction associated with these sites are a major concern.

A concessionaire is currently operating all campgrounds on a fee basis. The concessionaire is also operating day use site associated with fee campgrounds and a fee is charged. On the average, each visitor produces about $4 in gross revenue.

Table 2-37: Concessionaire Area Summary - 2001 Season

	Highway 26	Clackamas River	Total
Visitors	**133,886**	**35,679**	**169,595**
Camping	111,060	32,297	143,387
Day	22,826	3,382	26,208
Revenue	**505,486**	**159,897**	**665,383**
Camping	428,920	142,124	571,044
Parking	33,067	1,012	34,079
Other	43,499	16,761	60,260

Winter Recreation

The Forest has a number of developed winter facilities that are operated under special use permits.

Table 2-38: Downhill Ski Facilities

Downhill Ski Facilities	FY 00-01		FY 01-02	
	Skier	Non-Skier	Skier	Non-Skier
Timberline Ski	268,149	1,000,000	259,473	1,000,000
Mt. Hood Meadows	342,913	3,000	402,718	3,000
Multorpor Ski Bowl	107,911	250,000	182,307	250,000
Government Camp	6,689	11,227	7,473	20,472
Cooper Ridge	4,000	1,009	10,102	1,100
Total	729,662	1,265,236	862,073	1,274,572

Sno-Park Permits

The system of winter parking permits maintained by Oregon Department of Transportation is used to pay for plowing of parking areas for winter recreation. Research has shown that permits purchased in the Portland Metro area will be persons that have a high probability of visiting the Mt. Hood National Forest sometime during the winter. The table represents the Northern Region of Oregon Department of Motor Vehicles that includes the Portland Metropolitan Area and communities east on Highway 26 to Mt. Hood. These permits represent about 1.3 million visitors recreating in winter sports on the Mt. Hood Forest during the 2000-2001 winter.

Table 2-39: Sno-Park Permits

Sno-Park Visitors		Annual	3-Day	1-Day	Total
2002	#	897,797	33,261	349,684	1,280,743
	$	$1,346,696	$58,207	$349,684	$1,929,429
2001	#	694,580	36,724	266,638	997,942
	$	$1,041,870	$64,267	$399,957	$1,506,094
2000	#	401,520	16,144	146,600	564,264
	$	$602,280	$28,252	$220,170	$850,792

Data provided by Oregon DMV – Financial Section *-Prorating for Estimate is from prior year relationship

Winter Trails

There are about 200 miles of trail managed for cross-country skiing and snow machine use.

Recommendations

- Amend Forest Plan use expectations/quality of experience anticipated to reflect current decline in budget levels.

- Complete the trail portion of the Travel and Access Management Plan.

- Continue to emphasize trail rehabilitation and maintenance. Develop a Forest Trail Management Plan to help insure effective utilizing of our resources with respect to our users needs.

- Explore alternative ways to finance trail work. Continue participation in the Recreation Fee Pilot Project which will allow the forest to retain at least 80% of parking fees collected at selected trailheads. Encourage partnership arrangements to help accomplish needed work.

- Adjust Forest Plan projections to reflect current budget limitations during Forest Plan revision process.

- Explore opportunities for adding to concessionaire operations a limited number of dispersed sites that need management action to prevent resource damage.

- Continue wilderness permit system and data collection. Complete the Limits of Acceptable Change (LAC) planning process on the Bull of the Woods Wilderness to validate carrying capacities, and recommend new Wilderness resource opportunity spectrum classes and associated Standards and Guidelines. Continue the LAC planning process for the Badger Wilderness. Amend Forest Plan to reflect changes needed.

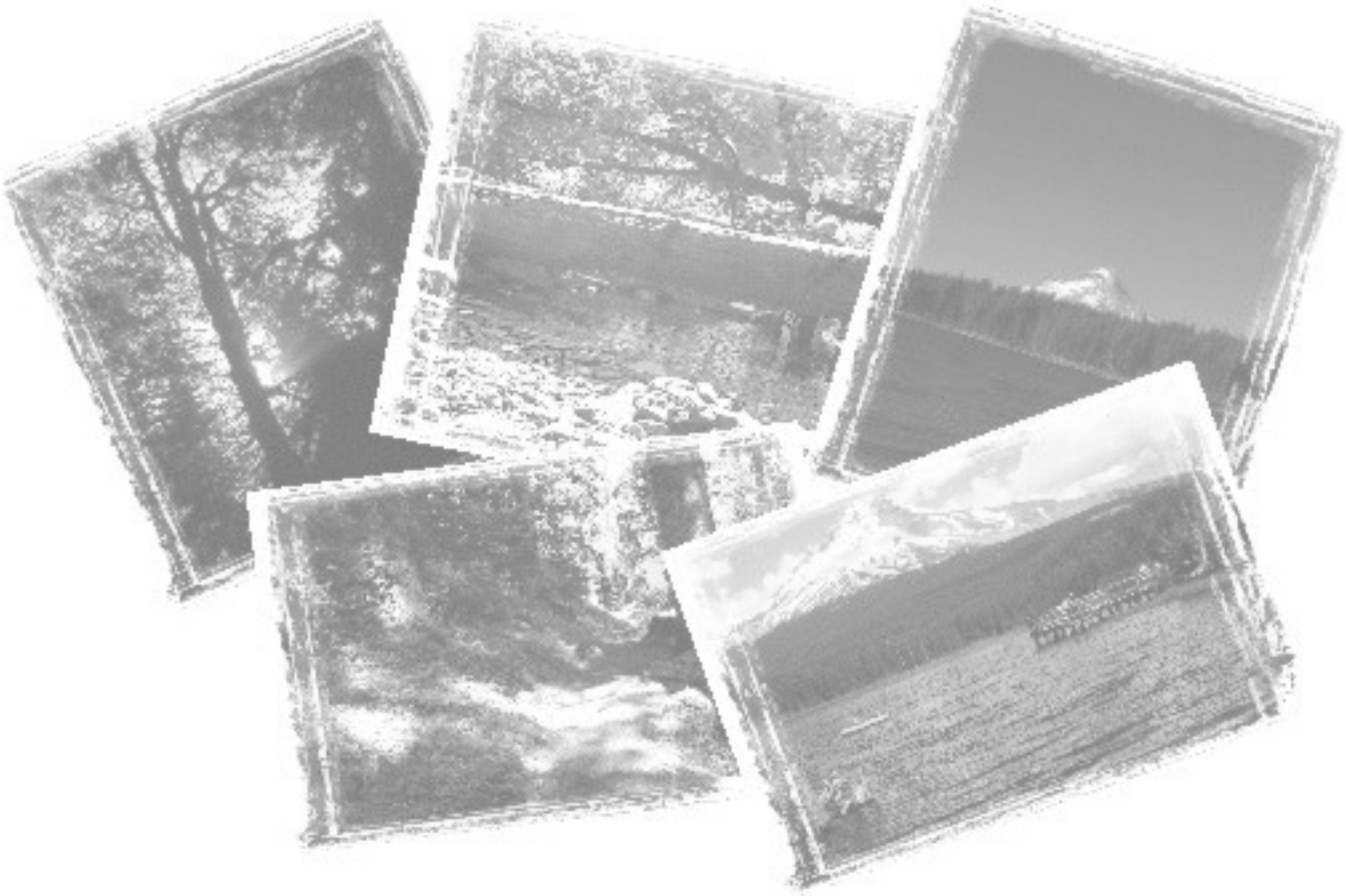
- Complete the Prescribed Natural Fire (PNF) planning process for the Badger Wilderness.

- Suitability studies on the 10 identified eligible rivers for the Wild and Scenic River program have been postponed indefinitely.

- Complete the Meaningful Measure database to provide a means of allocating and prioritizing recreation funds.

- Complete condition surveys on all recreation facilities over the next five years to provide a more accurate estimate of annual maintenance, deferred maintenance and capital investments.

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 2001 (October 1, 2000 to September 30, 2001). 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 2001 was $25,556,000. 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 3-21 and 3-22 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. However, 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/ yar) 1990	** Actual Expenditures (thousands)						
		FY95	FY96	FY97	FY98	FY99	FY00	FY01
Fire								
• Brush Disposal	3,056	995	758	632	426	547	346	402
• Fire Fighting Fund	2,118	1,119	2,145	2,520	2,187	2,173	2,227	2,535
Engineering								
• Timber Roads	2,709	244	292	518	586	1,015	930	
• 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	698
• Trail Construction	1,279	606	253	534	346	383	174	2,270
• Road Maintenance	4,079	1,874	1,030	1,139	965	943	747	1,042
• Facilities Maintenance	478	271	222	230	264	375	357	
Timber								
Salvage Sale Funds								
• KV Funds		5,918	6,647	4,696	2,501	2,950	4,346	3,827
Forestland Vegetation								
• Genetic Tree Improvement	9,602	4,362	4,566	4,126	2,925	2,890	1,820	1,241
• Reforestation								
• Timber Stand Improvement	2,792	2,610	1,969	2,331	1,855	1,481	1,170	
Timber Sale Management								
• Sale Administration	5,270	1,222	2,279	2,465	3,798	2,909	2,210	2,071
• 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	
• Cultural Resources	459	70	55	78	90	83	59	
• Land Line Location	10	0	0	0			0	
• Trial Maintenance /Recreation	5,924	2,036	2,045	1,692	2,021	1,640	1,983	1,865

Activities	*Forest Plan Predicted (thousands/ yar) 1990	** Actual Expenditures (thousands)						
		FY95	FY96	FY97	FY98	FY99	FY00	FY01
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
• 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

** 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 24.7 million.*

Recommendations

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

Accountability

In 1997 the Forest Service embarked on a huge effort to increase the agency's accountability in financial management. A new financial system was started in FY 98 called Foundation Financial Information System (FFIS).

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

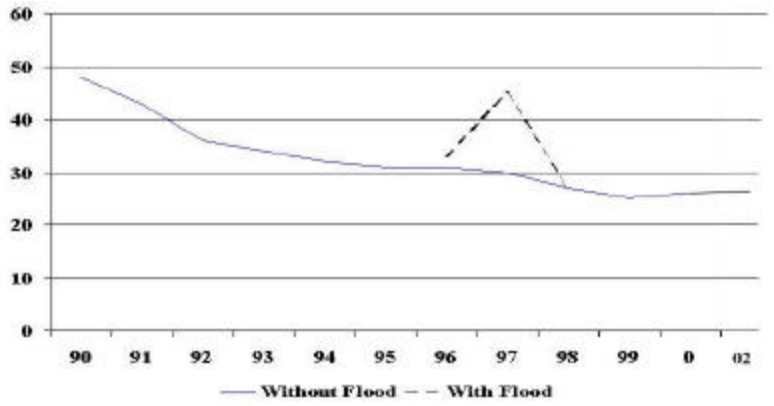
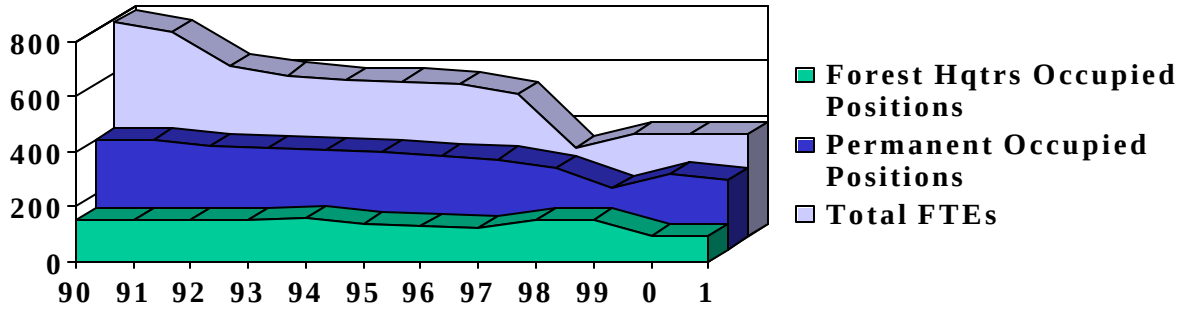
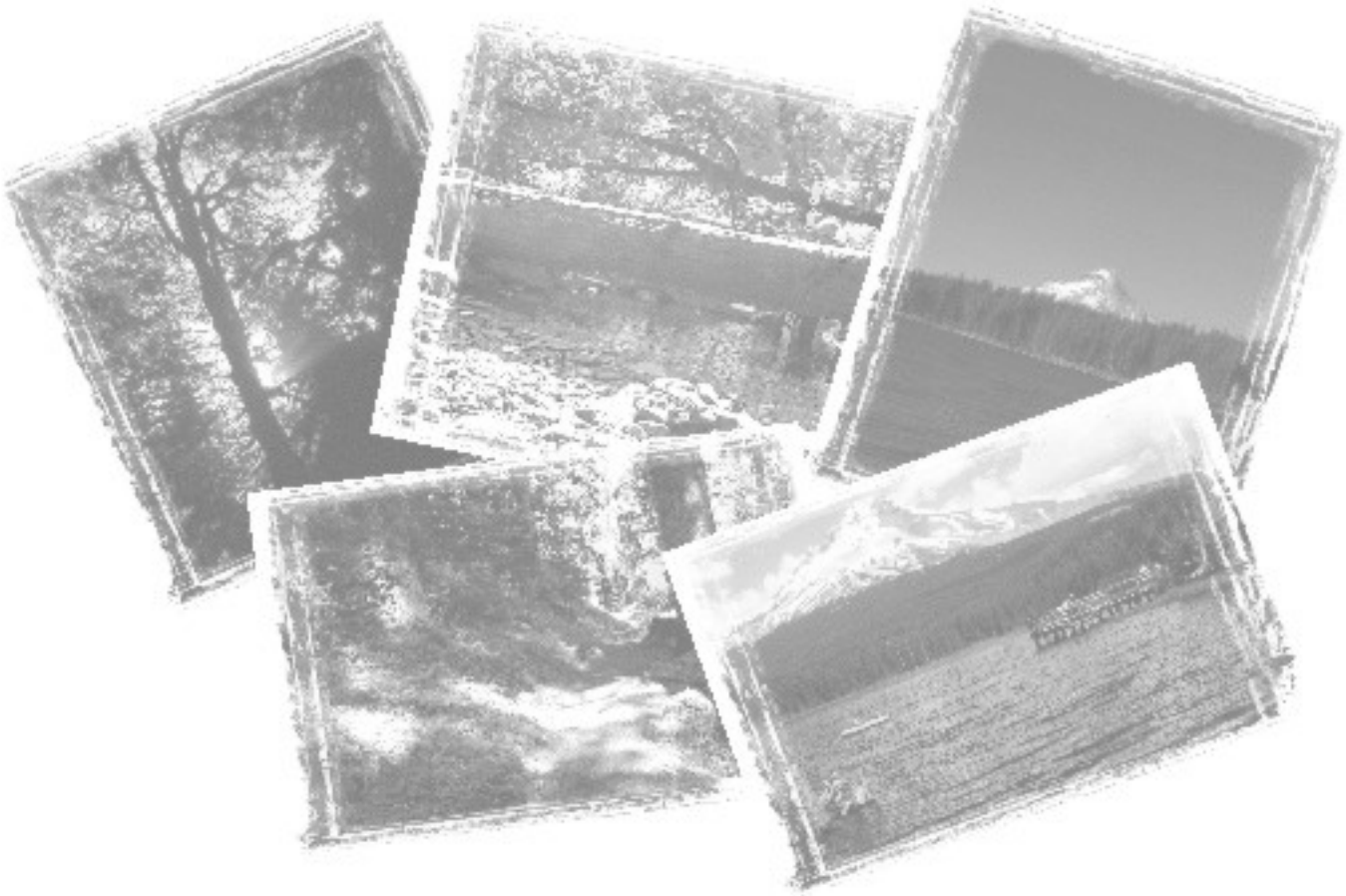


Figure 3-2: Mt. Hood National Forest FTE/Position Usage



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 the monitoring program will continue to be evaluated. The need to change the Forest 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, 2001, thirteen amendments have been made to the Forest Plan. 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, and one that 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.

Monitoring has disclosed significant disparity between our amended Forest Plan projections and Forest conditions that would currently warrant a revision at this time. We will continue to make nonsignificant amendments to our Forest Plan as needed and expect to begin a Forest Plan Revision when the planning regulations, which are currently being revised, are finalized. The current schedule for revision is 2009.

Chapter 5
Ongoing Planning Actions

Chapter 5
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.

Information gained during watershed analysis may show that a Forest Plan amendment is necessary. When this is the case, and the Forest Supervisor decides to proceed with a plan amendment, the watershed analysis may be used to support the NEPA analysis for the amendment.

The watershed analysis will normally provide information regarding existing conditions, issues, and management concerns useful during project NEPA analysis and may help in addressing the cumulative effects of multiple activities within a watershed. When this is the case, the watershed analysis may be incorporated by reference into the project NEPA document and will become part of the project record.

As of October 2000, nearly 100% of the Forest was covered by a watershed analysis. See map at end of this chapter. 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.

Monitoring teams were interagency, interdisciplinary, intergovernmental and most included members of the public from the Provincial Advisory Committees. Monitoring in a public interagency environment provides an objective, open forum for the participating members to discuss adaptive management opportunities. The discourse that takes place throughout the various monitoring trips results in increased trust among team members and an appreciation for the skills and knowledge of Forest Service and BLM employees who design and administer a variety of projects.

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. Some specific short-term actions to improve on-the-ground conditions may be identified.

Northwest Economic Adjustment Initiative

Role and Activities in Community Development

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

The Northwest Economic Adjustment Initiative, part of the Northwest Forest Plan, is aimed at providing economic stability to northwest communities with ties to the timber industry. 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 economic and social community capacity. Specific programs include:

Rural Community Assistance

The Rural Community Assistance program on the Mt. Hood National Forest is a combination of providing technical assistance and grants to communities. In 2001 the Forest Service awarded three new grants to rural communities in the influence area of the Mt. Hood National Forest:

New Grants

- Molalla Portable Bleachers

  This $9,000 grant awarded to the City of Molalla to purchase three portable bleachers to provide seating for recreational and community events, such as the Childrens Summer in the Park program, BMX championships and softball tournaments. Each bleacher seats 70 people, and allows increased utilization of public facilities. Increased participation at events builds community capacity and improves community livability. Molalla is growing with new subdivisions on the outskirts of the city limits. The City is looking for opportunities to bring new residents to community events, thereby increasing their capacity.

- 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.

Ongoing Grants

The following existing grants continue to be monitored and administered:

- Government Camp Geothermal Heating District Feasibility Study

  $22,500 was granted to Clackamas County Development Agency to review a variety of alternatives for removing, storing and disposing snow in Government Camp. Geothermal capabilities will be one alternative studied. The most efficient and effective method will be studied and determined as well. The community will benefit by providing better snow removal, safe and clear walkways, and better circulation and parking in order to be attractive for private investment in the community of Government Camp.

- Odell Downtown Revitalization Plan and Stormwater Study

  $35,000 was granted to the Mid-Columbia Economic Development District in 1998 to develop a downtown revitalization plan and stormwater drainage plan for the unincorporated community of Odell, Oregon. The community will define its vision and include the work elements required to improve the physical and economic components of Odell's downtown. The project will encourage local partnerships, strengthen community bonds, develop local capacity and identify critical resources, which will foster long-term civic pride and stewardship. The stormwater drainage facilities plan will provide engineering and funding alternatives that the community will use to seek financing for final design

and construction of stormwater infrastructure.

- Bear Creek Trail Engineering and Design Project

  A $60,000 grant was awarded to the City of Molalla in 1998 to complete: (1) wetland delineation and biological identifications; (2) wetlands mitigation planning; (3) engineering and design of trailhead parking, ADA accessible trail, and signage; and (4) 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 which involves Forest Staff providing information, support and/or educational training opportunities that assist communities to build economic capacity. In 2001, 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 aurthority 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. This year the Mt. Hood implemented one new project and continued work on an existing project:

Watershed Restoration and Enhancement Agreement

Documentation

Project Name: Green Point Creek Restoration Monitoring

Agency: USDA, Forest Service

Unit (District/Area or Forest/District): Hood River Ranger District, Mt. Hood National Forest

Description of Project: Monitoring the effectiveness of a large scale restoration effort involving placement of large wood, via helicopter, into a 2.6 mile reach of Green Point Creek in the year 2000. Monitoring elements included photo points, stream channel cross sections, pebble counts, and spawning gravel surveys.

Describe Extent of Collaboration: Farmers Irrigation District, Hood River Watershed Group, Oregon Department of Fish and Wildlife, Confederated Tribes of the Warm Springs Reservation of Oregon, numerous other local landowners. The project has been funded with a variety of grants, material donations, and labor (in-kind) donations. The project was unique in the Hood River valley in terms of the number of partners, totaling over 15 including the Forest Service.

Benefits to NFS/BLM Systems and Management Objectives: Improving anadromous fish habitat below the National Forest is a benefit to the Forest Service because improved watershed conditions should lead to increases in steelhead numbers and population health. More steelhead overall will eventually translate to more steelhead ascending into stream segments within the Mt. Hood National Forest.

Benefits to Collaborators: Benefits to the partners are similar to those described above. All the partners are committed to improving the health of the Hood River watershed, including all fish stocks that reside within the watershed. Farmers Irrigation District benefits because the restoration work is considered mitigation for water withdrawals upstream. Monitoring the success of this work will enable them to use this proejct as a showcase for stream restoration and aid their ongoing watershed restoration program by improving funding opportunities and attracting more partners.

Total Projects Costs: $22,000
Agency Costs: $8,000
Cost to Collaborators: $14,000

Documentation

Project Name: Riverkeeper Project, Resort at the Mountain Golf Course Site

Agency: USDA, Forest Service

Unit (District/Area or Forest/District): Zigzag Ranger District, Mt. Hood National Forest

Description of Project: The Riverkeeper project goal is to promote stewardship of watersheds by actively involving private landowners in the restoration of fish, wildlife and plant habitats. The Resort at the Mountain landowner entered into a Challenge Cost Share Agreement in 1998 with USFS, USFWS and ODFW (STEP). The goal of the project is to improve conditions in Wee Burn Creek, a tributary to the Salmon River.

Project objectives include:

- Reconnection of anadromous passage into Wee Burn Creek,
- Increase habitat diversity for coho, steelhead and cutthroat trout,
- Re-establish a meandering stream channel currently flowing in a ditch,
- Decrease site generated sediment by stabilizing stream banks, and
- Reestablish riparian vegetation (where practicable).

Since 1996, hundreds of volunteer hours and resource specialist time have been spent on-site planning and implementing projects to attain project objectives. Most of the project work has been completed at the site with only small adjustments and continued riparian planting remaining. A brief summary of completed projects include: reconstruction and connection of Wee Burn Creek to the Salmon River, construction of five off-channel rearing ponds, creation of five wetland complexes, ¾ mile of bank stabilization, replacement of several hundred feet of pipe with meandering stream channel and associated flood plains, planting of 100's of conifer seedlings, willow and cottonwood cuttings and other riparian plants. In 1998, coho adults were observed in Wee Burn Creek for the first time since 1939 (when the barrier was placed). Numerous salmonid fry and pre-smolts have been documented in the newly created rearing ponds. The Resort at the Mountain site is frequently used as a demonstration site to encourage local landowners to instigate similar programs.

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) 01.

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.***

Traditional Human Resource Programs, more aptly called Senior, Youth and Volunteer opportunities resulted in:

- 1,100 different people,
- Accomplishing 21 person years of work, and
- Valued at almost one half of a million dollars in FY01.

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). Eleven low-income seniors provided work for the forest, earning extra income while they gained job-training skills. Three seniors were successful in transitioning into private sector employment during FY01.

Two Forest Service operated ***Youth Conservation Corps (YCC)*** non-residential crews employed 15 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**
- ***Mac Laren School***
- ***Mid Columbia Council of Governments***
- ***Multnomah County Department of Juvenile and Adult Community Corrections***
- **Northwest Service Academy/AmeriCorps**
- **Oregon National Guard Youth Challenge Program**
- **Portland State University**
- **Reynolds School District, Multnomah Youth Cooperative**
- **University of Oregon School of Architecture**
- ***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.

Volunteers include both individuals and organized groups.

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

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

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

- **Fishing Clinics**
- **Songbird Celebrations**
- **Geologic Surveys**
- **Trail Maintenance Work Days**
- **PIT (Passport in Time) Archeological Survey Projects**
- **Fish and Wildlife Surveys and Habitat Improvement Projects**

In an agreement with the **Mazamas** this year, 29 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.

Ten volunteer organizations accounted for 45% 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.

Enhanced Recreation Opportunities

Playing a significant role in trail maintenance on the forest, are organized groups who provided volunteers such as:

- **Backcountry Horsemen of Oregon**
- **Marion County Posse**
- ***Mazamas***
- ***Mt Hood Snowmobile Club***
- **Mt Scott Motorcycle Club**
- ***Oregon Equestrian Trails***
- **Oregon Muleskinners**
- ***Oregon Nordic, both Portland and The Dalles Chapters***
- **Pacific Crest Trail Association, Mount Hood Chapter**
- **The Mountain Shop**

Other sponsored volunteer groups helped to maintain and restore recreation sites. They included:

- ***Izaak Walton League, Washington County Chapter***

- ***Oregon Equestrian Trails***
- ***Oregon State Federation of Garden Clubs***
- ***Sierra Club***
- ***youth organizations such as Boy and Girl Scout troops***

The Friends of Timberline and *Friends of Silcox Hut* continued their strong stewardship roles in support of these unique, historic facilities.

The **Friends of** the historic **Clackamas Lake Guard Station** helped with the annual "Spring Cleaning" of the site as well as are working to develop a source of funds for future improvements.

The Friends of Bagby contributed 3,000 hours operating Bagby Hot Springs, a historic site on the south end of the forest. This partnership enables the public to enjoy a unique, quality recreational opportunity that may not otherwise be available.

Winter sport enthusiasts reaped the benefits of several partnerships involved in grooming of snow trails. The ***Mt Hood Snowmobile Club,*** in cooperation with the ***Oregon Department of Transportation,*** utilizes a portion of the snowmobile licensing fees to groom a wide array of snowmobile trails in the Frog Lake and Skyline Road area. Additionally, a local volunteer groomed cross country ski trails in the Trillium Lake Basin. Donations from the community, local organizations and retailers as well as the folks that use the trail system covered the cost of the equipment rental.

Hurricane Racing provided technical expertise and labor to assist in the development of a mountain bike trail system on the eastside of the forest.

Partial funding for the construction of a toilet at the Timothy Lake area was provided by **Portland General Electric**.

Wilderness Stewardship

In support of the selected alternative developed in the revised Protection Plan for the Mt Hood, Hatfield, and Salmon Huckleberry Wildernesses, Wilderness Co-Stewardship agreements emphasizing education, monitoring and restoration were developed with several organizations including the ***Mazamas***, ***Crag Rats***, **Mt Hood Community College**, and ***Oregon Equestrian Trails***. As a result, 13 volunteer wilderness stewards, both equestrians and hikers, served as onsite stewards, primarily at the more heavily visited wilderness sites, as well as provided off site Leave No Trace (LNT) education. Education programs were provided at Cloud Cap, a popular wilderness entrance point, focusing on wilderness ethics and LNT. These programs reached an estimated 6,000 people.

Portland Unit of Mountain Rescue members volunteered to help provide wilderness education as well as climbing safety information during the spring climbing season on the popular Southside route.

Funding and technical expertise were provided by the ***Mazamas*** to enhance the content and increase the frequency of climbing condition information for the South Side route, Mt Hood's most popular and least technical route which is also located within the Mt Hood Wilderness. The climbing condition information includes an emphasis on safety, reducing human impacts on the resource, and promoting LNT messages.

An agreement was developed to transition the Mountain Locater Unit (MLU) Program from the ***Mountain Signal Memorial Fund*** to the collaborative team of the Forest Service and ***Clackamas County Sheriff***. The MLU program has proven valuable in reducing the impacts of search and rescues, which primarily occur on the climbing routes within the Mt Hood Wilderness.

Conservation Education, Information And Outreach Activities

Other partnerships on the forest, implemented through a variety of agreements, helped us accomplish information, education and outreach activities.

The *Mt Hood Information Center*, a partnership with the *Mt Hood Area Chamber of Commerce*, is in its twelth year of providing "seamless" customer service. In CY 2000, this jointly staffed "one stop" information center was visited by over 160,000 customers and was one of three regional visitor information centers supported by Clackamas County Tourism Development Council who administers the locally collected "room tax" dollars.

The **Estacada Chamber of Commerce** and the Clackamas River Ranger District operated the **Clackamas River Information Center** based at the district office.

As a partner in ***Fire Prevention Cooperatives*** and local events, the Mt Hood reached well over 40,000 folks with key messages. Events ranged from the Pacific Northwest Sportsmen Show to county fairs and local festivals such as the Sandy Mountain Festival, The Dufur Threshing Bee, and the Estacada Timber Festival.

Teachers, scout leaders and others have borrowed traveling programs, slide shows, displays and video tapes from the Environmental Education Resource Center, a library of educational programs and resource materials housed at Forest Headquarters and designed to share the wonders of the natural world with kids of all ages. Over 1,000 students were served by this program in FY 01. In addition, employees across the forest participated in a wide range of local school programs focused on natural resource management.

The Mt Hood National Forest, Wolftree, Inc and the Bureau of Land Management (BLM) teamed up in 1993 to develop Cascade Streamwatch, a conservation education program which dovetails with school curriculum serving urban youth as well as those from the surrounding communities. "Scientists for a day…. Stewards for Life" sums up Cascade Streamwatch programs that served close to 3000 students in FY 00. It's estimated that another 8,000 visitors to Wildwood Park benefited from the environmental education facilities developed for Cascade Streamwatch as part of their use of Wildwood Park. Mt Hood natural resource professionals assisted in teaching onsite field sessions in another Wolftree school program, Highland Ecology, an ecological exploration of forest organisms.

National Fishing week events including ***Junior Fishing Clinics*** have been expanded to be held throughout the spring to provide opportunities for young people to get "hooked" on the environment. More than just fishing, these events give young people hands on experience and increase public awareness of the fishery resource through a variety of environmental education activities including aquatic plant and insect identification, fly tying, a salmon tent and a costume parade. These events were held at various locations throughout the forest in cooperation with ***Oregon Department of Fish and Wildlife*** and community partners includ-

ing ***Timberlake Job Corps Center***, **Oregon State Police**, ***Boy and Girl Scouts*** and ***fisheries groups*** as well as ***local merchants*** who generously donate prizes. The Hood River Ranger District extended outreach by publicizing their Fishing Clinic in both English and Spanish and distributing bilingual fliers to the local public schools in the Hood River Valley.

Since it's inception six years ago, more than four thousand participants benefited from Songbird Celebrations. Held on both the east and west side of the forest, these events involved more than 20 community partners and exposed participants to the global plight of migratory birds as well as shared steps that individuals can take to make a difference to songbirds in our local communities and daily lives.

In cooperation with the community program, "Families in the Park," the Hood River Ranger District, The High Desert museum and many local nursery businesses presented Getting Wild with Wildlife, featuring music, interactive learning stations including the Salmon tent and bird box building as well as advice on growing native plants.

In addition to providing environmental education in weeklong sessions to 4th graders in Hood River County, **Cascade Alliance** volunteers taught "Forest Secrets" at Sherwood Campground and along the Tamanawas Falls Trail.

Resource Assistants from the ***Student Conservation Association*** and volunteers staffed the information and **Interpretive Program at Timberline Lodge**, a National Historic Site. Their lodge tours, nature walks and the information counter served over 50,000 visitors who hailed from the local area as well as from around the country and around the world.

Campfire programs, nature walks, "Junior Ranger Programs", and other conservation education activities took place in key campgrounds throughout the forest.

Community experts judged the 35 entries in the **6th annual Hood River Ranger District Native Wildflower Photo Contest**. Local merchants generously donated prizes for the winners. The photo contest, along with Wildflower Hikes for the public and volunteer and community service projects removing invasive weeds highlighted the importance of native plants in the ecosystem. A Challenge Cost Share with the **Native Plant Society of Oregon** focused on sensitive plant**s** was also developed.

Salmon Watch, a partnership with Oregon Trout, provided opportunities for school-aged students to learn about the life cycle of the Salmon, using the stream as the classroom.

The Mt Hood National Forest partnered with the ***Bureau of Land Management, Oregon Trout,*** **the** ***Audubon Society, Multnomah County Parks*** and ***Portland General Electric*** to host the eighteenth annual ***Salmon Festival,*** which celebrates the return of the Fall Chinook Salmon on their annual migration up the Sandy River. In addition to guided Salmon viewing walks, a wide variety of festival events were offered which emphasize the importance of healthy riparian habitat for the continued survival of this species.

Restoration

The **Clackamas River Basin Fisheries Working Group**, comprised of biologists from the **US Fish and Wildlife Service**, ***Oregon Department of Fish and Wildlife***, ***Portland General Electric***, the **National Marine Fisheries Service**, the **Bureau of Land Management**, and both the **Pacific Northwest Research Station** and the Mt Hood National Forest have been working together since 1992, developing and implementing an action plan that results in setting common priorities and directing limited funding and resources towards collectively identified restoration needs.

The Mt Hood National Forest has been a major catalyst in the **Riverkeeper** program that promotes the best stewardship of the Upper Sandy River Basin through coordination of federal, state, county and private restoration efforts. An anadramous fish-bearing tributary of the Wild and Scenic Salmon River is being restored through the efforts of:

- **the Resort at the Mountain,**
- **Trout Unlimited**
- **the Mazamas**
- **the Northwest Service Academy/ AmeriCorps**
- **US Fish and Wildlife Service**
- **Oregon Department of Fish and Wildlife, and**
- **a variety of individual volunteers.**

In addition, working together to improve habitat through channel restoration, reshaping a pond, removing noxious weeds and revegetating with native plants, as well as implementing a monitoring program along another segment of the Salmon River, are:

- **Wolftree, Inc**
- **Clackamas County Soil and Water District**
- **Arrah Wanna Homeowner's Association, and**
- **US Fish and Wildlife Service.**

Fish and Wildlife Habitat Improvement projects occurred as a result of the efforts of a variety of individual volunteers as well as those from the **Oregon Hunter's Association** and ***Trout Unlimited***. Long termed habitat restoration projects continue on the eastside with the support of the ***Rocky Mountain Elk Foundation*** and the ***Ruffed Grouse Society.***

On the westside, a group of hearty volunteers, including students from **Reynolds, David Douglas** and **Central Catholic** schools, learned about the salmon life cycle first hand by enriching the nutrient capabilities of a short section of a local stream by placing hatchery spent Coho carcasses in a stream during several wet, cold fall days.

Volunteers with ***SOLV (Stop Oregon Litter and Vandalism)*** as well as those involved in the ***Mt Hood Public Lands Cleanup Day*** and ***Cascade Geographic Society*** have been instrumental in sponsoring annual litter cleanups for more than a decade. Their efforts along with those of the **Oregon National Guard,** who has removed abandoned vehicles as a training exercise, have helped the forest reduce the impacts of careless or unlawful visitors.

Both the **Multonmah County Juvenile Community Corrections Service Project** and the **Salmon Corps** assisted in dispersed campsite cleanup and restoration.

The ***Catlin Gable School,*** in it's eleventh year of a long termed partnership with the Barlow Ranger District, has helped plan and implement various watershed restoration and protection projects in the Rock Creek drainage including stream restoration, seeding, and fencing. Additionally each year various classes from Catlin Gable take on additional projects as part of their commitment to community service.

Pete's Pile Climbing Association is helping to minimize the impacts of local climbers on a rock climbing area that includes habitat for a sensitive plant species.

Monitoring

Long termed partners involved in monitoring activities include:

Northwest Ecological Research Institute (NERI) who has partnered with the Mt Hood since 1987 to recruit, train and supervise *Wetland Wildlife* volunteers who monitor wildlife activities at specific wetland sites across the forest.

Hawkwatch International, a non profit organization established in 1986, conducted their annual fall surveys to observe and band migrating raptors at Bonney Butte on the eastside of the forest. The collected data provides invaluable information about raptor population trends. In addition, an interpretative sign has been erected at the base of the Butte. Over 200 people visited the Butte, observed the birds and gleaned from the expertise of HawkWatch volunteers. Others supporting this partnership include:

- **Portland Audubon Society**
- **Oregon Department of Fish and Wildlife**
- **Boise Cascade Corporation**
- **National Fish and Wildlife Foundation**
- **Coffee People, and**
- **Leupold and Stevens**

Teachers in the Woods, a bevy of teachers who dedicate their summers and gained training in natural resource management while they helped collect data for needed monitoring work, completed it's seventh field season. This collaborative effort between ***Portland State University***, the ***National Science Foundation*** and several national forests is extended to the classroom during the school year as the teachers integrate their newly developed field skills into the classroom curriculum.

Funding for fisheries monitoring work, both Cutthroat spawning surveys and structure monitoring, at Bull Run Lake was provided by the ***City of Portland Water Bureau.***

The Oregon Archeological Society has been an ongoing partner in projects which inventory and catalog cultural resource sites.

A national partnership with **Cornell Labs**, called **Birds in Recreational Landscapes** has been implemented at the local level and involved local "citizen science" volunteers who gained valuable training and monitored a variety of sample points collecting data on the effects of recreation on forest nesting bird species.

List of Partners

While partnerships are not new, the Mt Hood National Forest's emphasis on them and the desire to move towards partnerships that build collaborative external relationships and embrace local communities was again an area of emphasis in FY 01.

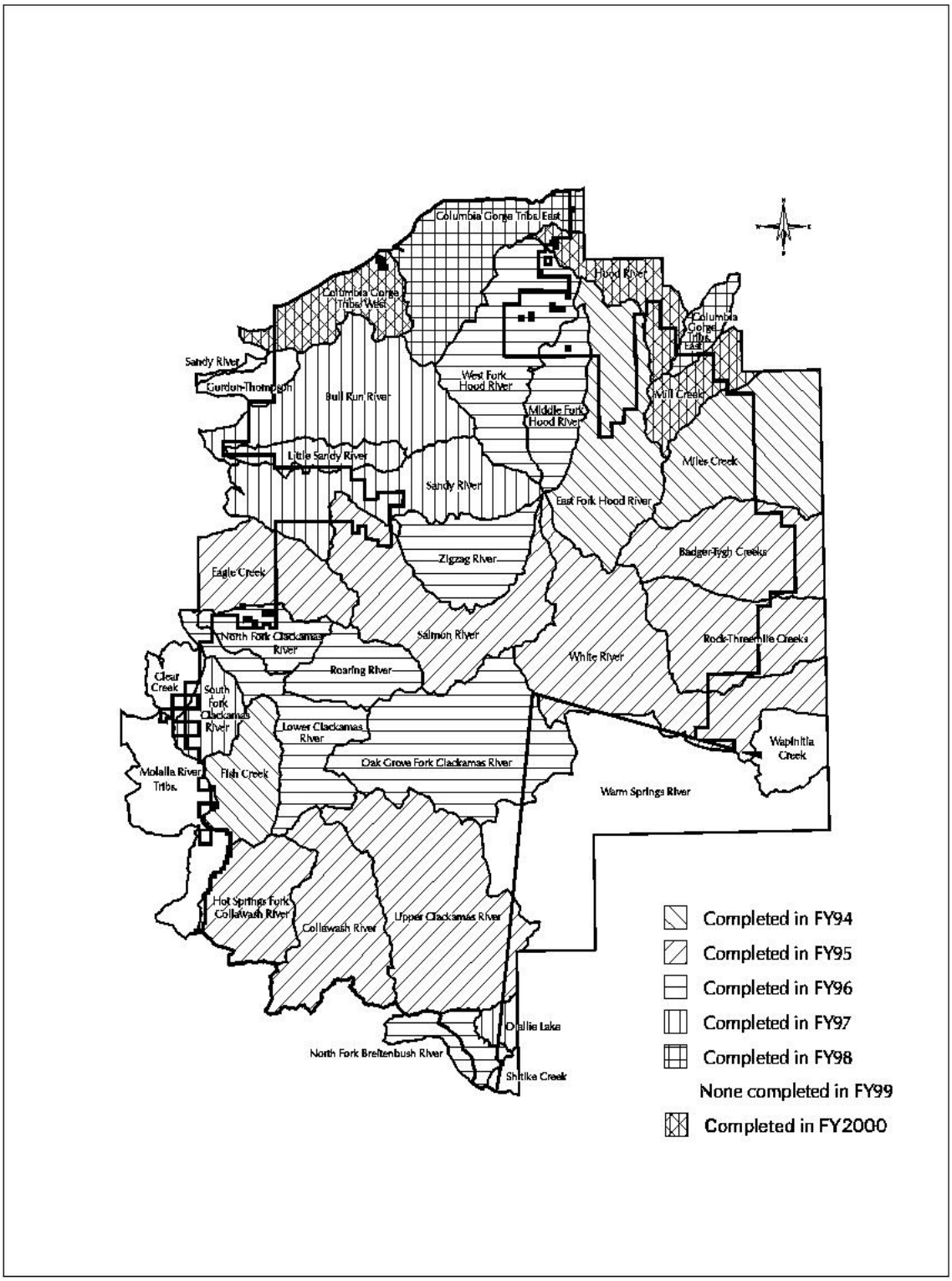
The following is a brief list of the partnerships that occurred during FY 01 on the Mt Hood National Forest, Pacific Northwest region. In addition to the organizations and entities listed below are the hundreds of individual partners and volunteers, which would result in a list that is too lengthy to include here.

Those long termed partnerships that have spanned a decade or more are listed in italics.

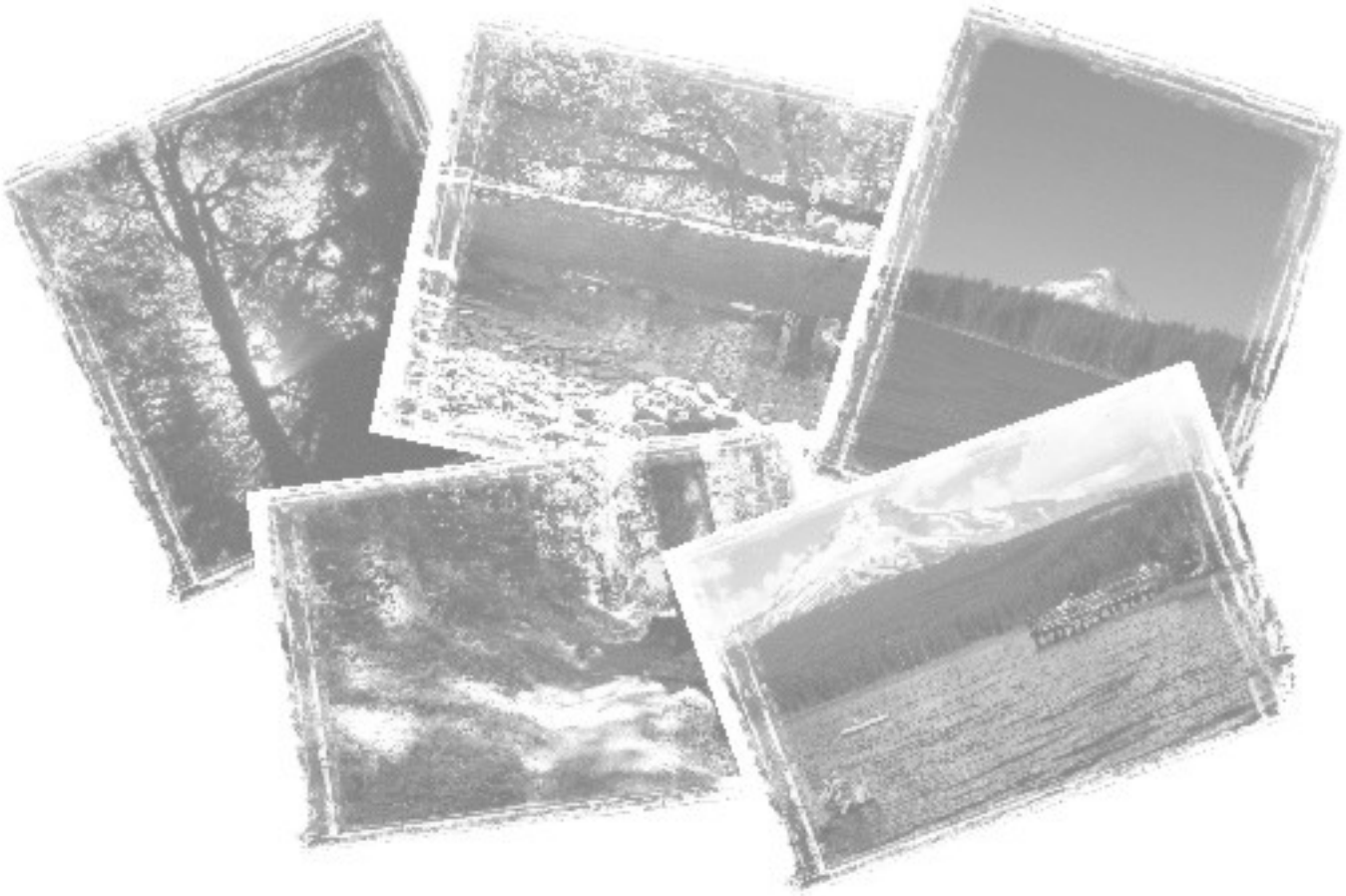
Arrah Wanna Homeowner's Association
Backcountry Horsemen of Oregon
Birds of a Feather
Boise Cascade Corporation
Boring Fire District
Boy Scouts of America, Pacific Northwest Council Troops
Bureau of Land Management
Canby Fire District
Cascade Alliance
Cascade Geographic Society
Catlin Gable School
Central Catholic High School
City of Gresham, Parks Division
City of Portland
Clackamas County Education, Training and Business Services
Clackamas County Fire District #1
Clackamas County Fire Prevention Co-op
Clackamas County Sheriff
Clackamas County Soil and Water District
Clackamas County Tourism Development Council
Coffee People
Colton Fire District
Columbia Gorge Power Sledders
Columbia River Council of Girl Scouts
Corbett Fire District
Corbett High School
Cornell Labs /Birds in Recreational Landscape
Crag Rats
David Douglas High School
Estacada Chamber of Commerce
Estacada Fire District
Friends of Bagby Hotsprings
Friends of Clackamas Lake Guard Station
Friends of Silcox Hut
Friends of Timberline
Gladstone Fire Department
Gresham Fire District
Hawkwatch International
Hood River County Community Corrections
Hood River County Juvenile Department
Hoodland Fire District
Hoyt Arboretum
Hurricane Racing
Izaak Walton League, Washington County Chapter
KGW
Lake Oswego Fire Department
Leupold and Stevens
Local merchants in our stakeholder communities
MacLaren School
Marion County Posse
Mazamas
Mid Columbia Council of Governments
Middle Fork (Hood River) Irrigation District
*Molalla Fire Distric*t
Mountain Shop
Mountain Signal Memorial Fund
Mountain Quail Business Services
*Mt Hood Area Chamber of Commerc*e
Mt Hood Community College
Mt Hood Fire Prevention Association
Mt Hood Ski Bowl
Mt Hood Snowmobile Club
Mt Hood Village

Mt Scott Motorcycle Club
Multnomah County Department of Juvenile and Adult Community Justice
Multnomah County Parks
National Fish and Wildlife Foundation
National Marine Fisheries Service
National Science Foundation
Native Plant Society of Oregon
Nature's Northwest
Northwest Ecological Research Institute (NERI)/Wetland Wildlife Watch
Northwest Service Academy/ AMERICORPS
NW Association of Fire Trainers
Oregon Archeological Society
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon Department of Transportation
Oregon Episcopal School
Oregon Equestrian Trails
Oregon Hunter's Association
Oregon Muleskinners
Oregon National Guard
Oregon National Guard Youth Challenge Program
Oregon Nordic, both Portland and The Dalles Chapters
Oregon State Federation of Garden Clubs
Oregon State Police
Oregon Trout
Oregon Youth Conservation Corp
Pacific Crest Trail Association, Mt Hood Chapter
Parkdale Fire Department
Parkdale School
Pete's Pile Climbing Association
Portland Audubon Society
Portland Fire District
Portland General Electric
Portland State University
Portland Unit of Mountain Rescue
Region 9 Education Service District
REI
Resort at the Mountain
Reynolds High School
Reynolds School District, Multomah County Youth Cooperative
RLK & Company
Rocky Mountain Elk Foundation
Ruffed Grouse Society
Sandy Area Chamber of Commerce
Sandy Fire District
Sandy High School
Sierra Club
SOLV (Stop Oregon Litter and Vandalism)
St. Mary's School, The Dalles
State Fire Marshall Office
Student Conservation Association
The Dalles High School
Timberlake Job Corps Center
Trout Unlimited
Trust Management Services
Tualatin Valley Fire and Rescue
University of Oregon School of Architecture
US Fish and Wildlife Service
Wasco County Commission on Children and Families
Wasco County Sheriff and Juvenile Department
Welches School
Wildlife Society of Oregon
Willamette Industries
Wolftree, Inc
Women in Trees
World Forestry Center
youth organizations

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



Appendix A
List of Preparers



Appendix A

List of Preparers

Batten, Rob - *Fire*

Bergamini, Bob - *Fish*

Blank, Myron - *Planning*

Cartwright, Linda - *Range*

Cushing, Ken - *Recreation*

DeRoo, Tom - *Geologic/Mineral Resources*

Dryden, Marge - *Heritage Resources*

Dyck, Alan - *Wildlife*

Dodd, John - *Soil*

Gerstkemper, Jack - *Transportation*

Hickman, Tracii - *Fisheries*

Holder, Barb - *Financial*

Lankford, Nancy - *Timber*

Sachet, Glen - *Partnerships/Rural Community Assistance*

Stein, Marty - *Noxious Weeds*

Steinblums, Ivars - *Water/Flood*

York, Shelly - *Desktop Publishing*