United States Department of Agriculture

Forest Service

Pacific Northwest Region

Monitoring and Evaluation Report

FY 2000

Mt. Hood National Forest

Land and Resource Management Plan

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Front cover photos identified from top to bottom:

Hiking trail to Ramona Falls; wooded area of Mt. Hood National Forest on Zigzag Ranger District; Clear Branch Creek Watershed Restoration; Reroofing cabin at Bagby Hotsprings; Olallie Fire Complex; The Upper Sandy Guard Station; Ramona Falls.

Monitoring Report
Fiscal Year 2000

Mt. Hood National Forest
Land and Resource Management Plan

September 2001

This document is available online at www.fs.fed.us/r6/mthood

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Summary

The matrix found in Table 1 offers a comparison of key resource monitoring items and program accomplishments for fiscal years 91 through 2000. 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.

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 (10/99 to 9/2000). 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 2,258 acres were treated during the course of the period with a total of 23,214 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

Noxious weed treatment occurred on 469 acres in 2000. Since treated acres represent only a small percentage of total infested acres on the Forest, funding is directed at high priority sites and species. As in past years, the number of acres needing treatment exceeds the funding available. The species currently known from the Forest with the greatest potential for spread and degradation of habitat are considered to be orange and yellow hawkweed and giant knotweed. Hawkweed infestations, while still relatively small at an estimated 10 acres, increased 100 percent from the 1999 estimate of 5 acres. These sites have been mechanically treated but without more aggressive action it is likely that eradication will not be possible in the future. Giant knotweed also appears to be rapidly colonizing lower elevation riparian habitats. Additional inventory is needed to determine its extent on the Forest and an appropriate management response developed.

Fisheries

Instream habitat and riparian conditions continue to improve with the implementation the Northwest Forest Plan's Aquatic Conservation Strategy (ACS), and watershed restoration programs. The numbers of threatened and proposed fish returning to streams on the Mt. Hood National Forest has shown an increase in the past year, although the available habitat on the Forest continues to be underutilized. The listing and proposed listing of stocks of fish that inhabit the Forest are indicators of the overall weak condition of anadromous fish runs in the Pacific Northwest.

Stream and riparian restoration is critical to recovery of threatened and endangered stocks of salmonids. Restoration of habitat is important so when fish are present survival will be maximized. Watershed restoration, in conjunction with monitoring of restoration projects, help land managers to focus limited funding resources to areas of greatest effectiveness. Many restoration projects were monitored for their effectiveness. Most of these projects are meeting objectives.

Surveys to evaluate fish passage problems will identify where passage barriers exist to anadromous and resident fish species on the Forest. Once these areas are identified they will be prioritized so funding can be secured to improve passage for all life stages of fish species.

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 appear to be stable. Species that occur in nonforested habitat, such as grasslands, balds and cliffs continue to be the most vulnerable to impacts from noxious weed encroachment, off-road vehicles, and recreational rock climbing. Monitoring and habitat restoration efforts in FY 2000 focused on three such species. These efforts will continue in FY 2001 as funding allows.

Timber, Silviculture

Prescriptions to treat forest health concerns have been implemented over the last several years. Selection cuts, shelterwoods, and commercial thinnings make 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.

No timber was offered for sale in FY00. This was due to a circuit court ruling in August 1999 which prohibited the advertisement of timber sales in the region until field surveys of several plant and animal species were completed.

In FY00, the timber volume offered was less than the revised Northwest Forest Plan target by 64.0 MMBF, which is the probable sale quantity. The Forest failed to meet the NFP target because of a Circuit Court ruling which prohibited the advertisement of timber sales in Region 6 and the northern part of Region 5. The ruling, which occurred in early August 1999, required field surveys of several plant and animal species which had not previously been done. The Forest would have achieved its target had it not been for the court-imposed injunction. The injunction remained in force until February 11, 2001.

Wildlife

Emphasis on the Forest has shifted from monitoring to survey efforts for species presence to include Northwest Forest Plan Survey and Monitoring species. Thirty-eight projects were surveyed for mollusk. A total of 339 populations of mollusk, representing 5 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. There is an ongoing effort to do lynx surveys to determine presence. Additional surveys will be added above the regional target to make further efforts to assess if lynx occur on the Forest.

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. 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 trends water clarity over time, permanent monitoring stations have been installed on the Clackamas River (Carter Bridge below Fish Creek) and Alder Creek (Forest boundary). Both of these watersheds serve as municipal water supplies. Continuous turbidity monitoring stations will also be installed in Eagle Creek (Fish hatchery) in August 2001, and in Fish Creek in the Clackamas River by July 2002. The water monitoring stations will continuously monitor turbidity and flow depth, and provide easy data access via telephone.

Trends in summer water temperatures are monitored by a network of seasonal 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 three years suggest that progress is being made in regard to 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 FY00, no additional roads were closed and 18 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	Recommendation/ Comments
Fire Management											
Human caused fires	61	49	42	55	29	43	27	32	45	40	Continue monitoring, management direction achieved.
Natural occurring	29	30	3	11	19	2	9	38	22	1	
Total fires suppressed	90	79	45	66	48	45	36	70	67	41	
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	Continue monitoring, management direction achieved.
Intrusions into Class I areas	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	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	
Soil improvement acres	198	244	301	42	70	55	11	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	
% of allotments receiving reviews	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	
Heritage Resources											
Evaluations/eligible			0	1	5/0	1/0	0	2/0	6/3	0	
# of condition reviews of existing sites	52	56	0	29	7	32	73	50+	50+	50	
Nominations to National Register	1	0	0	0	0	0	0	1	0	0	Complete process for those that are started
# of CCC maintenance projects	44	41	8	72	15	31	47	70	56	45	
Geologic Resources											
Created openings on mapped earthflows	2	13	19	0	7	19	7	0	3	11	Continue monitoring.
Created openings on mapped landslides	0	3	16	0	3	2	0	0	1	0	
Openings not meeting S&Gs size limits	1	0	0	0	0	0	0	0	3	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	Complete development 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	
% of projects inspected for compliance	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	
% of major projects with operating plans	39	100	100	100	100	100	100	100	100	100	
Fish Resources											
Acres of lakes inventoried/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 implemented?	Yes	Yes	Inconcl	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Continue implementation of Best Management Practices Evaluation Process. Continue monitoring and develop a consistent cumulative effects analysis.
Projects meeting % ARP S&Gs	-	86	87	-	-	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	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	Adjust Forest Plan.
Road miles obliterated		41.0	47.5	47.4	29.4	38.9	84.2	27	89	18	
Road maintenance meeting S&Gs?	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	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	Continue surveying, complete mgmt. Plan.
% projects meeting primary cavity nester S&Gs	Inconcl	Inconcl	39	Inconcl	90+	50	71	65	100	100	Continue monitoring and surveying.
% summer range S&Gs met	100		100	-	100	NA	100	100	100	100	Continue monitoring.
Pine-oak habitat S&Gs met?	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	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	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	
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	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	Continue monitoring.
Regeneration meets S&Gs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	97% meets S&Gs	98%	98%	Continue monitoring.
Scenic Resources											
Projects monitored		23	2	3	1	1	3	5	2	0	Continue monitoring of selected projects.
Recreation Resources											
Miles trail constructed/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	Continue monitoring.
Miles trail reconstructed/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 completed/remaining	0/5	2/3	4/1	All complet	All complet	All complet	All	All	All	All	Completed.
W&SR suitability studies completed	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 $	65.3MM / 39/5MM $	65.3M M 24.7M M	

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 tenth 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 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. The overall objective of monitoring is to ensure that the commitments we made in the Forest Plan are being correctly applied and are achieving the desired results.

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 some information with respect to Forest Plan implementation may be reported now, continued monitoring allows meaningful evaluation and conclusions 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 four 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 wildfire. Fire programs are to be implemented consistent with Forest Plan Standards and Guidelines, Management Prescriptions, and the Pacific Northwest Plan.

The 2000 Fire Season

The 2000 fire season was represented by below average rainfall conditions throughout the Pacific Northwest area. Fire danger throughout the season was more severe than average, with high fire danger recorded in August and September on Forest. Though conditions across the Pacific Northwest were as severe as other parts of the west where record numbers of fires and acres burned were experienced, the lack of lightning activity locally spared the Pacific Northwest and the Mt. Hood National Forest from greater losses. A total of 41 fires were reported in 2000: 1 lightning and 40 human-caused fires. Reported acreage burned totaled 9 acres. No industrial operations fires occurred in 2000. The Forest was very successful in supporting the National firefighting effort, sending large numbers of overhead and crews out of the Pacific Northwest Region on fire assignments. 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 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. For each objective, information is collected annually. Information for objectives one through three are to be analyzed and results reported every five years. Objectives four and five are to be reported annually. The five 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, 1990-2000

Causes	No.	Percent	Type of People	No.	Percent
Equipment Use	13	2.9	Owner	2	.4
Smoking	108	23.8	Permittees	5	1.1
Campfire	241	53.1	Contractor	7	1.5
Debris Burning	9	2.0	Public Employee	9	2.0
Railroad	0	0.0	Local Permanent	0	0
Arson	20	4.4	Seasonal	4	.9
Children	2	.4	Transient	20	4.4
Unknown	61	13.4	Other	43	9.5
			Recreation Visitor	364	80.2
Total	**454**	**100**	**Total**	**454**	**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 1990-2000

Size Class (Acres)	Number Fires	Acres Burned by Fire Intensity Level						Total Acres
		1	2	3	4	5	6	
D (100-200)	7	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)	102	42.9	53.5	12.3	6.8	5.7	3.0	124.2
A (<.25)	577	65.5	4.7	1.4	.1	0	0	71.7
Total*	**693**	**134.6**	**359.3**	**938.7**	**182.9**	**25.7**	**3.0**	**1,644.2**

**Includes both lightning and human-caused wildfires.*

3. ***Is the Fire Management Effectiveness Index (FMEI) within levels expected in the Plan?***

   Unit of measure, Fire Management Effectiveness Index. The equation for determining the FMEI is to total presuppression (FFFP), suppression (FFFF), and net value change (NVC) cost and divide the total by the number of acres protected.

Table 2-3: Fire Management Effectiveness Index

Year	FFFP $	FFFF $	NVC $	Total	Acres	FMEI
1990	1,312,000	134,000	86,000	1,532,000	1,068,000	1.43
1991	1,359,000	4,963,000	692,000	7,014,000	1,068,000	6.57
1992	1,620,000	1,078,000	164,000	2,862,000	*1,034,000	2.77
1993	1,814,000	872,000	3,000	2,689,000	1,034,000	2.60
1994	1,839,000	1,038,000	313,000	3,190,000	1,034,000	3.09
1995	1,911,000	66,000	52,000	2,029,000	1,034,000	1.96
1996	2,162,000	24,000	28,000	2,214,000	1,034,000	2.14
1997	2,583,000	135,000	23,000	2,741,000	1,034,000	2.65
1998	2,072,000	105,100	40,000	2,217,000	1,034,000	2.14
1999	1,895,000	127,000	28,000	2,050,000	1,034,000	1.98
2000	1,901,000	21,700	6,000	1,928,700	1,034,000	1.87
Average	1,861,000					2.65

**Reduction in total acres due to the creation of the Columbia River Gorge National Scenic Area and land being transferred to the Scenic Area for management.*

Results

The threshold of concern for items #I 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 41/year. Additionally, the Forest Plan estimated an average annual acreage burned by wildfire to be 408 acres/year. For the past eleven years the forest has averaged 150 acres/year. These numbers are well below the threshold of concern.

The Fire Management Effectiveness Index (#3) represents a measure of the combination of mitigation efforts which encompass fuel treatments, fire prevention programs, and cost effective suppression programs. It is being measured against a historical level of forest activities and fire suppression efforts. The Plan's estimate for the FMEI for the first decade is 2.873. Item #3 has a threshold of concern of "no more than 40% departure from expected number per

decade." For the past eleven years, the forest annual average of 2.65 is slightly lower than estimated in the Plan.

4. ***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 1O% 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.

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

   For the current reporting period, 1100 acres were treated. This is less than was originally planned due a moratorium placed on all prescribed burning on federal lands in May as a result of the investigation of the prescribed fire which escaped and burned into Las Alamos, New Mexico.

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 100% 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 emphasize prevention of industrial operation caused fires.
- Continue to focus prevention and presuppression efforts on reducing campfire and smoking caused fires.
- Complete a new Fire Management Plan for the Mt. Hood so the new Federal Wildland Fire Policy can be fully implemented.

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 (10/99 to 9/2000). 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 2,258 acres were treated during the course of the period with a total of 23,214 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 2-4: Prescribed Burning - FY 2000

Burn Type	Acres Treated by Area				Total
	Hood River	Barlow	Clackamas River	Zigzag	
Broadcast	0	0	0	0	0
Piles	75	962	121	0	1,158
Underburn	0	1,100	0	0	1,100
Total Acres	75	0	121	0	2,258
Tons Consumed	**1,125**	**21,484**	**605**	**0**	**23,214**

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

As in previous years, two needs guided the direction for soil monitoring in 2000. First, the need to continue to monitor those areas that have been harvested so that cumulative effects can be documented. Second, the need to document monitoring done on planning areas and specific stands proposed for some level of timber harvest activity so that effects can be better predicted. Results from monitoring reflect this direction - cumulative effects and existing condition.

Eight harvest units were monitored for detrimental soil impacts from ground based logging systems and fuel treatments. All were within the standard, with seven of the eight under 5%. Five of the eight monitored units had previous harvest activity as summarized in Table 2-5.

Table 2-5: Measured Detrimental Impacts by Silvicultural Treatment and Logging System

Silvicultural Treatment	Logging System	Fuel Treatment	Previous Entries	Percent Soil Impacts
Thinning	Tractor	Landing Pile	1	6
Thinning	Tractor	Landing Pile	1	3
Thinning	Tractor	Landing Pile	1	2
Thinning	Tractor	Landing Pile	1	3
Thinning	Tractor	Landing Pile	1	1
Shelterwood	Tractor	Landing Pile	0	1
Shelterwood	Tractor	Yet to Occur	0	1
Shelterwood	Tractor	Yet to Occur	0	2

Two planning areas were evaluated to determine existing soil damage within stands proposed for silvicultural treatment to determine cumulative impacts to soil quality. A total of five stands within the planning areas were monitored. Table 2-6 summarizes the results:

Table 2-6: Measured Detrimental Impacts by Silvicultural Treatment and Logging System

Planning Area	Previous Entries	Existing % Damage
Clear	1	1
Clear	1	5
Mill Creek	1	6
Mill Creek	1	1
Mill Creek	1	4

These planning areas do exhibit existing damage caused by temporary roads and old skid trails, and will be taken into consideration as planning continues.

The Forest continues to apply restoration treatments, typically subsoiling, to activity areas where regeneration or shelterwood silvicultural prescriptions occur.

Recommendations

Monitoring results in 1998, 1999, and 2000 as compared to previous years continues to suggest that progress is being made with regard to 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 four range allotments grazed (out of a total of 6) on the Mt. Hood NF in 2000. Two grazing permits were canceled in 1993 resulting in one vacant allotment. Three permits on three separate allotments were granted non-use for permittee convenience. This resulted in one allotment receiving total rest for the entire grazing season and half the permitted livestock on two other allotments. Permitted livestock use for the season totaled 4,279 AUM's (3,242 Head Months) out of a total of 5,146 AUM’s (3,898 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 172,584 acres having range vegetation management objectives, 51% (87,764 ac) are meeting Forest Plan objectives, 34% (58,509 ac) are moving toward Forest Plan objectives, and 15% (25,813 ac) are of undetermined status, with 1% (1,721 ac) not meeting or moving toward Forest Plan objectives. For riparian areas (19,300 ac), 47% (9,071 ac) are meeting Forest Plan objectives, 25% (4,825 ac) are moving toward Forest Plan objectives, 20% (3,860 ac) are of undetermined status, and 8% (1,544 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, 92% (23) 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 2-7: Total Acres with Range Vegetation Management Objectives (Includes Riparian Acres)

Range Allotment Monitoring			
	Verified	**Estimated**	**Total**
Acres with Range Vegetative Management Objectives			172,584
Acres Monitored in Current FY			132,833
Acres Meeting Forest Plan Objectives	18,530	60,163	
Acres Moving Toward Forest Plan Objectives	19,500	34,184	
Acres Not Meeting/Moving to Forest Plan Objectives	0	177	
Acres of Undetermined Status			39,533
Riparian Area Within Allotments			
	Verified	**Estimated**	**Total**
Riparian Acres			19,300
Riparian Acres Monitored in Current FY			15,440
Riparian Acres Meeting Forest Plan Objectives	3,500	5,571	
Riparian Acres Moving Toward Forest Plan Objectives	2,700	2,125	
Riparian Acres Not Meeting/ Moving Toward Forest Plan Objectives	300	1,200	
Riparian Acres of Undetermined Status			3,860

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 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.

FY 2000 efforts were focused on the control of knapweed species (Centaurea spp.) west of the Cascade Crest, tansy ragwort (Senecio jacobaea) east of the Crest, hound's-tongie (Cynoglossum officinale), common toadflax (linaria vulgare) and non-native hawkweeds (Hieracium aurantiacum, H. pratense).

Table 2-8: Acres of Noxious Weed Treatment

Acres Treated by Method					
Chemical	**Manual**	**Mechanical**	**Biological**	**Fire**	**Total**
267	166	30	10	0	473

Monitoring Questions

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

  Yes. Spotted, diffuse and meadow knapweeds and hound's-tongue east of the Cascade Crest, giant knotweed in the Sandy, Clackamas and Zigzag River watersheds and non-native hawkweeds in the vicinity of Lolo Pass.

- ***Are new infestations occurring?***

  Yes. New populations of giant knotweed and hawkweed have been detected in the past year.

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

  Some widely distributed species that have more than one biological control agent established have seen some control. These include tansy ragwort and Scot's broom west of the Crest. No biological controls have been approved for hound's-tongue, hawkweed, giant knotweed or common toadflax.

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

  When mitigations are recommended, there is a good attempt to implement them, however ground disturbing activities have occurred where no weed risk analysis or mitigations to reduce the risk of infestation are completed.

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

  Yes. County and State applicators completed all forms and abided by standards and guidelines stated in the FEIS.

Results

Chemical control methods were used to treat high priority hound's-tongue and knapweed sites on Barlow Ranger District as well as high priority knapweed sites on Zigzag and Clackamas River Ranger Districts. These treatments have been effective in reducing the number of plants, however, plants germinating from seed already in the soil will necessitate treatment in future years until this seed bank is exhausted.

Surveys for non-native hawkweeds in the vicinity of Lolo Pass found satellite populations in the Trillium Lake and Old Maid Flat Area. The Mt. Hood population is one of two currently known from Oregon and is a priority for treatment. To reduce the potential for wind-born seed spreading to other areas, manual treatments were made where plant density was the greatest. Weed eaters and a mower were used to cut the flowerheads and reduce seed production. While cutting may reduce the risk of new populations establishing by seed, these species also propagate vegetatively from underground stems. It appears that repeated cutting may actually increase plant densities where it is already established. The estimated acreage of hawkweed on the Forest has increased from 5 acres in 1999 to 10 acres in 2000.

All rock pit and gravel storage areas on Hood River and Barlow Ranger Districts were inventoried for noxious weeds and management recommendations made.

A survey for giant knotweed populations in the Sandy River was completed in cooperation with the Sandy River Watershed Council, METRO and The Nature Conservancy. A number of small, previously unknown populations were detected.

Recommendations

- The hawkweed infestation on Zigzag Ranger District is a high priority for treatment. With only one other population known in the State, not controlling the Mt. Hood population could have future implications for the entire area. Mechanical treatment should be viewed as a stop-gap measure for the short-term. It is likely that chemical methods will be the only means of controlling and eventually eradicating the population. Work needs to begin on the completion of an environmental analysis that includes herbicide use as a treatment method.

- Giant knotweed appears to be spreading rapidly within the Sandy, Zigzag and Clackamas systems. The spread of this riparian weed could adversely affect species dependent on riparian habitats, including fish. Greater effort is needed to complete a survey of known populations on the Forest and apply treatment.

- 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.

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 on going, 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.

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

  The Timberline Lodge Historic Building Preservation Plan (HBPP) was completed in FY98. This plan will "provide managers credible alternatives for routine maintenance, rehabilitation, restoration, and replacement of historic fabric throughout the building." Implementation occurred when the Programmatic Agreement for the HBPP was signed in FY99. The HBPP was incorporated in an Environmental Assessment prepared for the Timberline Lodge Master Development Plan Amendment and Forest Plan Amendment #12. The Master Development Plan will allow future upgrading of Timberline Lodge while the Forest Plan Amendment designates Timberline Lodge and its immediate environs as a Special Interest Area (A-4 Land Allocation) within the existing Winter Recreation Area (A-11) Land Allocation. The Decision Notice was also signed in FY99. A design review team began meeting in FY99 regarding the proposed demolition of the current pool and non-historic dormer, and replacing these non-historic features with an expanded facility which will include an exercise/sauna/lounge underneath the new pool deck. A food service will be added on the pool deck. A barrier free lift is also proposed to be added inside the lodge to access these new facilities. The project, and others were under review in FY2000.

  Restoration work continued on the Cloud Cap Inn on the Hood River District by volunteers from the Crag Rats organization. The Hood River Ranger District archaeologist developed a draft management plan for the Cloud Camp-Tilly Jane National Historic District. The forest continues to coordinate this with the Oregon State Historic Preservation Office.

The majority 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 most 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.

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.

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

			Project Effect		
	Type of Project	**Number**	**No Effect**	**No Adverse Effect**	**Adverse Effect**
1.	**Minor repairs/routine maintenance** This number(45) is a projected figure based on the number of historic buildings and the assumption that there is an average on one maintenance activity that is excluded from SHPO review done for each structure per year. This could include repair of a faucet, touching up chipped paint, renailing trim boards etc.	45	0	1 This was replacement of light fixtures at TLL report 00-09-04	

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

			Project Effect		
	Type of Project	**Number**	**No Effect**	**No Adverse Effect**	**Adverse Effect**
2.	Replace wall or roof materials, in-kind	0	1 This was replace-ment of exterior siding batten at TLL report 00-09-19		
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.	0			
6.	Repair or replace secondary structural features; e.g. porches, gutters & downspouts, chim-neys, in-kind	0	1 This was repair of steps at TLL report 00-09-18	1 This was repair of flagstone steps at TLL report 00-09-16	
7.	Install insulation materials, storm windows or doors	0			
8.	Repaint or refinish interior sur-faces		2 This was repair of floors at TLL reports 00-09-17and 00-09-02		

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

			Project Effect		
	Type of Project	**Number**	**No Effect**	**No Adverse Effect**	**Adverse Effect**
9.	Repaint exterior surfaces	1 This was repaint-ing of Olallie Lake GS report 00-03-09			
10.	Refurbish areas previously altered; e.g., kitchens or bath-rooms; replace non-historic flooring or floor covering	0			
11.	Repair/replace mechanical, electrical, plumbing systems	0			
12.	Alteration to building (describe)	0			
13.	Addition to building	0			
14.	Removal of building	0		1 This was replace-ment of toilet at Cloud Cap Sad-dle camp report 00-06-14	
15.	Other (describe)	0			

- ***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. The Timberline Trail had a Draft Nomination prepared in 1989. The work on this nomination should be completed.

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

  On Memorial Day Weekend, volunteers from the Oregon Archaeological Society assisted on an archaeological project. Learning first hand the value and purpose of cultural resource site protection, the volunteers were taught shovel probe excavation skills and artifact analysis techniques. An evening slide presentation was given on the sites geological history, the cultural history of the area, and of the results of the site testing done in 1998 (a Passport in Time Project). In addition, during the weekend, a walking interpretive tour was given of a significant historical site located nearby.

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

- ***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. Approximately 50 archaeological sites were monitored, which is about 5% of the Forest's known sites. 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 FY00.

- ***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 FY00.

Recommendations

- Evaluate remaining Depression Era and other 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-monitoring schedule to increase the number of sites monitored each year, with emphasis on sites that have not been visited in over ten years.
- Proceed with converting site records into electronic databases such as Infra and GIS.

Monitoring Element: Geologic Resources

Goal

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

There were eleven timber harvest units in FY00 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 42 and 26 acres. The canopy closure in all eleven 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 for created openings were designed for silvicultural practices of shelterwood regeneration cutting at the final harvest, clearcutting, seed tree cutting, or group selection harvest methods. Two short temporary roads totaling 0.2 miles length were constructed on B8 (earthflow) land.

One commercial thin timber harvest unit occurred on mapped landslides other than B8 land in FY00. This unit was field reviewed by a slope stability specialist before harvest. No roads were constructed on mapped landslides other than earthflows.

On 11-29-99 a storm induced debris flow swept down Eliot Branch on the north side of Mt. Hood, destroying two Forest Service bridges and reminding all observers of one of the geologic hazards associated with large active volcanoes. The debris flow removed public access to the Laurance Lake area for about six months, until a temporary crossing was constructed. Events similar to this debris flow occur approximately every three years in one of the stream channels that drain Mt. Hood, threatening public safety and transportation routes.

Recommendations

- Continued measurements during FY01 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 2001 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.

- Continue the review of the risk classification system for earthflows.

- Continue 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 FY00. Locatable mineral activities were limited to minor sampling and exploration on the Forest. Twelve Notice-of-Intents were submitted to the Forest. In all cases the planned activity was limited to mineral exploration. There were 21 inquiries from the public regarding laws and guidelines covering locatable minerals on National Forest managed lands. The Forest responded to 100% of these inquiries.

Most of the minerals activity on the Forest was with salable (common variety) mineral resources. These resources were managed using the Mt. Hood National Forest Rock Resource Plan as a guide. There were 4 major projects where 85,000 cubic yards of mineral materials were used by another government agency. There were 10 major projects where a total of 17,850 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 FY00 there were 12 operating plans completed for current and future projects. Two small quarries were closed and restored.

There were 18 smaller projects (less than 500 cubic yards each) where salable mineral materials were used by the Mt. Hood National Forest. No operating plan was required for these projects. These projects removed a total of 2,523 cubic yards.

There were 516 smaller projects where salable mineral materials were used by the public. These projects removed a total of 319 cubic yards. These projects produced an insignificant level of surface disturbance and therefore did not require an operating plan. Many of our sources are being depleted of the easily accessible loose material by the continuing demand for "landscape rock" by the public.

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. 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

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

Our geographic information system (GIS) stream layer indicates that there are 6,400 miles of streams on the National Forest. Approximately 1,600 miles are inhabited by fish. There are also over 100 lakes with fish. Mt. Hood National Forest waters support 24 fish species, including salmon, steelhead and trout. Fish resources on the Forest are an important contributor to local and regional recreational, commercial and tribal fisheries.

The waters of the Mt. Hood National Forest provide important habitat for native populations of resident and anadromous fish species. Three unique species occur on the Mt. Hood National Forest. They are: Columbia River bull trout found only in the Middle Fork of the Hood River watershed, Middle Columbia River steelhead, found in Fifteenmile Creek are the eastern most run of indigenous winter steelhead in the Columbia Basin, and Clackamas River late run coho thought to be the last remaining wild run of coho salmon in the Columbia River. Table 2-10 displays the five salmon and trout species presently listed or proposed for listing under the federal Endangered Species Act.

Table 2-10: Status of Threatened or Endangered Fish on Mt. Hood National Forest in 2000

Species	Evolutionary Significant Unit (ESU)	Districts	Status
Bull Trout	Columbia River ESU Distinct Population Segment	Hood River RD	**Listed Threatened** 5/98
Chinook Salmon	Lower Columbia River ESU	Hood River RD Zigzag RD	**Listed Threatened** 3/99
	Upper Willamette River ESU	Clackamas River RD	**Listed Threatened** 3/99
Coho Salmon	Lower Columbia River/SW Washington ESU	Clackamas River RD Zigzag RD	**Candidate** for federal listing 7/95

Table 2-10: Status of Threatened or Endangered Fish on Mt. Hood National Forest in 2000

Steel-head	Lower Columbia River ESU	Barlow RD Clackamas River RD Hood River RD Zigzag RD	**Listed Threatened** 3/98
	Middle Columbia River ESU	Barlow RD	**Listed Threatened** 3/99
Coastal Cut-throat Trout	Southwest WA/Columbia River ESU	Barlow RD Clackamas RD Hood River RD Zigzag RD	**Proposed Listing** 4/99

Spawning and Redd Counts

Spawning and redd surveys for steelhead, salmon and bull trout were completed in 28 streams totaling 44 miles. Surveys are usually completed along predetermined index reaches that are surveyed yearly to show spawning trends and fish distribution. Some surveys were done with partners, including the Oregon Department of Fish and Wildlife (ODFW) and the Confederated Tribes of Warm Springs Reservation. Key findings include:

Middle Columbia River Steelhead

Spawning surveys have historically been done to various degrees in the major tributaries of the Mile Creeks basin both on and off-forest since 1985. Over 21 miles of spawning surveys were completed in Fifteenmile, Eightmile, Ramsey, Fivemile, and Middle Fork Fivemile creeks during FY 2000. A total of 76 steelhead redds were counted, with 57 redds found on-Forest and 19 off-Forest. The majority of redds were found in Ramsey and Fifteenmile creeks. All documented steelhead redds were associated with off-channel habitat, edge habitat, or pool-tail areas.

The data collected in these surveys was the most complete and thorough of recent past. The 2000 run was one of the largest returns recorded on-Forest in the Fifteenmile Creek Watershed during the past decade. The increase in redd numbers reflect a similar trend seen in ODFW data from private stream reaches of the Miles Creeks basin and indicate a strong spawning run in 2000.

Table 2-11: Stream Surveys

Stream	# Reaches Surveyed	Miles Surveyed	# Redds	# Redds /Mile
Fivemile Creek	1	0.2	0	0.0
MF Fivemile Creek	1	0.8	0	0.0
Eightmile Creek	2	4.5	1	0.2
Ramsey Creek	3	7.5	46	6.1
Fifteenmile Creek	5	8.6	29	3.3
Totals	**12**	**21.6**	**76**	**3.5**

Lower Columbia River Chinook

In 2000, the Zigzag Ranger District initiated a protocol for standardizing adult spawning and redd counts on streams of the Upper Sandy River Basin. Protocols were established, methods standardized, and crews were trained in the spring of 2000. Fourteen miles were surveyed on the Salmon River and six miles of Still Creek during both winter steelhead and spring chinook spawning seasons. Redd locations were layered onto digital images of the streams to identify spawner distribution and stream sections important for spawning. At this time, survey information has not been summarized.

In the future, surveys will be expanded to additional streams of the upper basin. Use of the spawning survey data coupled with adult counts at the Marmot Dam, 11 miles downstream, should give a clear idea of critical spawning habitats and spawning distribution in the streams of the Upper Sandy River Basin.

Columbia River Bull Trout

Bull trout surveys have been conducted annually on index reaches of the Middle Fork of the Hood River and its tributaries since the early 1990's. The surveys document the distribution of spawning and rearing bull trout, and are also used to detect population trends. Index reaches for annual bull trout surveys include upper Clear Branch, lower Clear Branch, and Pinnacle Creek.

In FY 2000, eight additional tributaries were surveyed to locate potential new spawning/rearing areas: Bear Creek, Eliot Branch, Lake Branch, Tony Creek, Middle Fork of the Hood River, and Compass Creek. Methodologies used to complete the surveys included day snorkeling for adult census, as well as night snorkeling for juvenile census. We know that bull trout are more completely censused at night, adults included. Day snorkeling is continued only as a way to compare trends to earlier years. We are also working on a way to index day counts with the more accurate night time totals, as day snorkeling can cover much more stream area than nighttime surveys with the same amount of effort.

Night snorkel surveys conducted in upper Clear Branch Creek enumerated 30 adult and 213 juvenile bull trout. In 1999, the same area had 57 adults and 301 juveniles censused.

A juvenile bull trout was observed in Bear Creek during early October night surveys. This is the first documented sighting of bull trout noted within Bear Creek, following the 2 redds found last year.

Table 2-12: Index Reach Monitoring (Day Snorkel) for Adult Bull Trout 1991-2000

Year	Upper Clear Branch	Lower Clear Branch	Pinnacle Creek
1991	>10 (partial survey)	2	not surveyed
1992	19	2	not surveyed
1993	37	2	not surveyed
1994	6	2	not surveyed
1995	5	1	1
1996	18	0	0
1997	20	3	1
1998	30	0	1
1999	4	0	1
2000	13	0	not surveyed

Surveys for bull trout redds were completed in lower Clear Branch and Bear Creek in year 2000. The surveys were conducted late September and early October. No redds were found in these creeks. Plans to do further redd surveys were not completed due to a debris flow and resultant damage from Newton Creek in the East Fork Hood River watershed in early October of 2000.

Coastal Cutthroat Trout

Spawning surveys for coastal cutthroat trout in tributaries and shoals of Bull Run Lake continued into its eighth year. The surveys have been ongoing since 1993 (the year after a severe summer drought and lake elevations dramatically dropped). Under the Bull Run Lake Special Use and Lake Level Management Plan, the Portland Water Bureau may drawdown the lake level up to 26 feet.

Biologists are studying the impacts of lake drawdowns on annual fish productivity, recruitment, and survival. The information gathered during the surveys will be used to assess impacts to spawning success, overwintering and rearing habitats, and access to shoal waters and tributary streams.

The number of cutthroat trout redds has varied from 48 to 512 since 1993. In 2000, two miles of stream was surveyed on six tributaries. A total of 48 redds were found. This count is the lowest since surveys were initiated. The total tributary redd count in 2000 was only 56% of 1999 total tributary redd counts. The shoal spawner count in 2000 was also the lowest since 1993.

There are many environmental factors affecting cutthroat populations. One factor appears to be lake elevation. Post-spawning stream surveys conducted in July-August showed 27% of redds constructed in 2000 to be at risk from low summer streamflows. The amount of large organic debris available as cover, rearing habitat and a host to cutthroat food sources decreases dramatically as the lake elevation is lowered. Lake elevations have increased during spawning season since 1993 and passage to tributaries has also improved, compared to the 1992 drawdown.

Non-Native Fish Surveys

In FY 2000, Clackamas River Ranger District began a study to examine the impacts of non-native fish (brook trout, kokanee, rainbow) on native cutthroat trout populations in the Timothy Lake watershed. Brook trout were tracked using radio telemetry to collect information to determine distribution, life history characteristics, spawning locations, and interactions with native fish.

Preliminary results confirmed brook trout and kokanee spawning sites on Timothy Lake tributaries Dinger Creek, Cooper Creek, Crater Creek, and the Oak Grove Fork of the Clackamas River.

Stream Surveys

The Forest-wide stream survey inventory program completed surveys on 43.6 miles in 2000. Large wood and pool frequencies were compared against Land and Resource Management Plan (LRMP) standards. None of the stream reaches surveyed met the large wood or pool standard. LRMP standards do not appear to reflect the range of natural conditions for streams within unmanaged lands of the Mt. Hood National Forest.

Figure 2-1: Pools per mile for Streams Surveyed in 2000

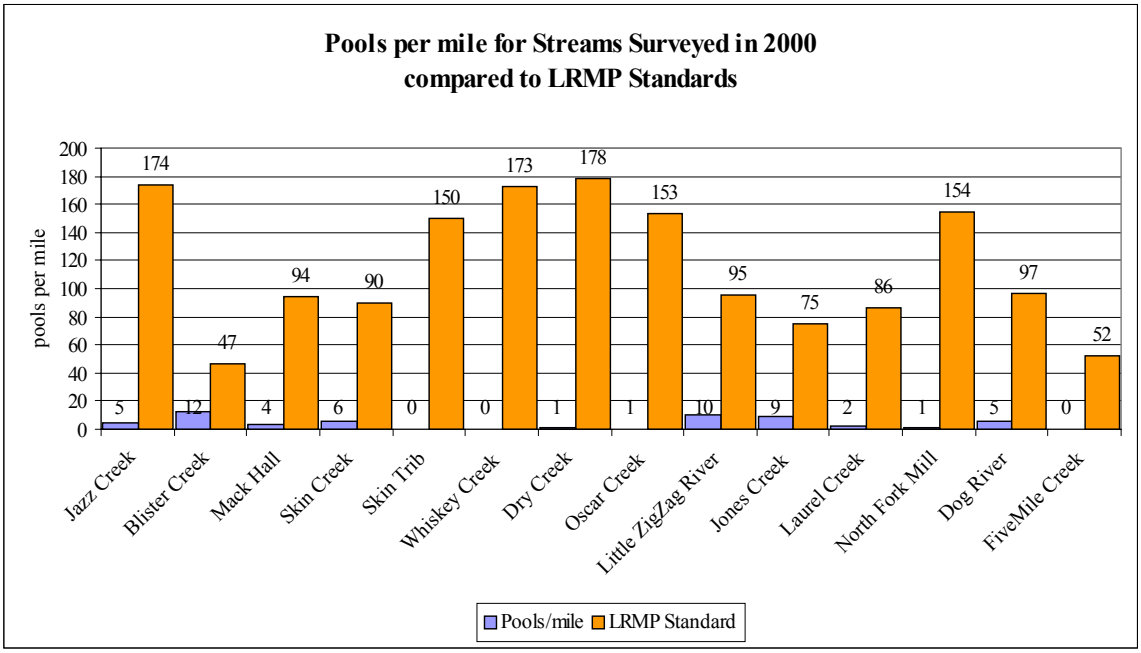
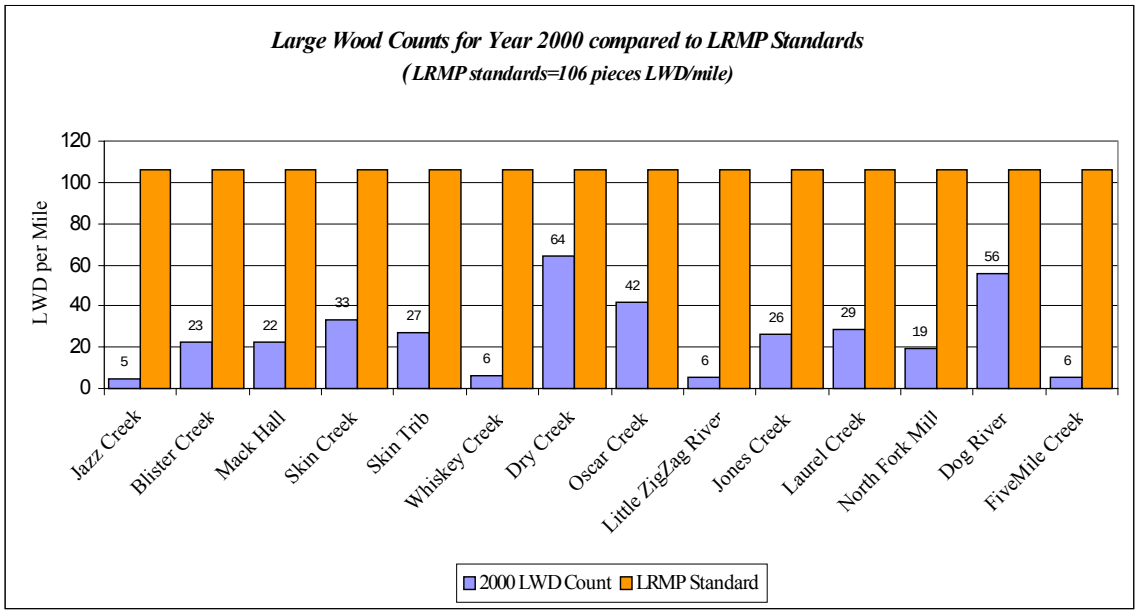


Figure 2-2: Large Wood Counts for Year 2000



Hood River Eliot Branch Survey

A survey to monitor stream recovery following a November 1999 debris flow event was conducted on the Eliot Branch of the Middle Fork of the Hood River. Longitudinal profile, cross sections, and snorkel surveys were completed on approximately one mile of stream. The debris flow initiated from glacial origins, significantly impacted this creek by completely destroying an irrigation diversion structure, redistributing the substrate, ripping out 2 bridges, and removing most of the biological life within this stream. Deposition of bedload at the mouth caused the stream to flow subsurface, preventing recolonization by fish during the summer of 2000. No fish were observed during the 2000 survey, but some macroinvertebrates (very low density) have moved back into the system. The profile of the stream continues to evolve, including resurfacing of the stream at the mouth in October of 2000.

Barlow Total Maximum Daily Limits (TMDL) for Sediment

In FY 2000, the Barlow Ranger District served as a member on the Miles Creeks Technical Advisory Committee to coordinate with the Oregon Department of Environmental Quality (ODEQ) in the development of in-stream sediment targets for the sediment Total Maximum Daily Limits (TMDL) within the Miles Creeks Watershed. The ODEQ is required to develop TMDLs under the Federal Clean Water Act for water bodies that do not meet state water quality standards.

The Barlow Ranger District conducted a total of 32 pebble count surveys in eight different streams within the Miles Creeks Watershed (both on-Forest and off-Forest) to establish an exisiting condition of the sediment loads found within the watershed. ODEQ and the advisory committee will continue in 2001 to gather in-stream sediment data for developing the targets for in-stream sediment TMDLs.

Lake Surveys

Lake surveys were completed at four lakes on the Mt. Hood National Forest during 2000. The lakes surveyed were Horseshoe (15.5 acres), Round (9.6 acres), View (7.8 acres) and Timber (18.4 acres). All the lakes were located on the Clackamas River Ranger District. Water quality, biological and recreational levels were within acceptable levels for all lakes surveyed.

Timothy Lake Opossum Shrimp Survey

Timothy Lake is a 1,388 acre reservoir within the Clackamas River watershed. The lake was night surveyed on September 20 for *Mysis* shrimp using plankton net tows. Opossum shrimp, *Mysis relicta,* were introduced into Timothy Lake, and 10 other Oregon water bodies, in 1965, 1966 and 1967 by the Oregon State Game Commission to improve fish production. A total of 178,000 opossum shrimp were introduced.

The objective of the survey was to sample Timothy Lake and determine a presence of *M. relicta,* or at least present evidence of the likelihood of their failure to become established. No individuals of *Mysis relicta* were found. This survey concurs with an earlier report that found the original introductions of *M. relicta* into Timothy Lake failed (Weatherbee 1990). It is unknown why they failed to establish in Timothy Lake.

Smolt Production Monitoring

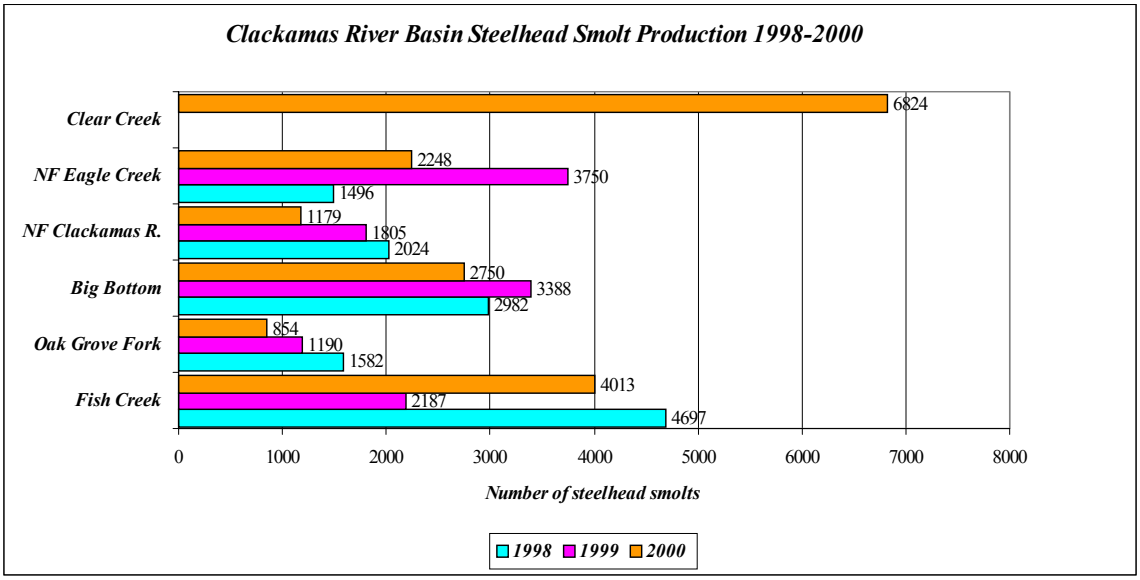
Clackamas River Basin

Smolt traps operated on six streams within the Clackamas River Basin in 2000. This is a continuing effort started in 1994 by the Clackamas River Fisheries Working Group (CRFWG) composed of biologists from Mt. Hood NF, PNW Research Station, ODFW, BLM, PGE, and USFWS. The group has developed information needs and an action plan for the management of salmonids in the upper Clackamas watershed. The traps provide a means for enumerating annual smolt production to evaluate recovery of basin stocks, variations in life history characteristics of different species, and success of restoration efforts.

The rotary screw traps operated on Fish Creek, Oak Grove Fork, Big Bottom, and at three off-Forest sites at North Fork Clackamas River, North Fork Eagle Creek, and Clear Creek.

Steelhead smolt population estimates were obtained for Fish Creek, the Oak Grove Fork, Big Bottom, North Fork Clackamas, North Fork Eagle, and Clear Creek.

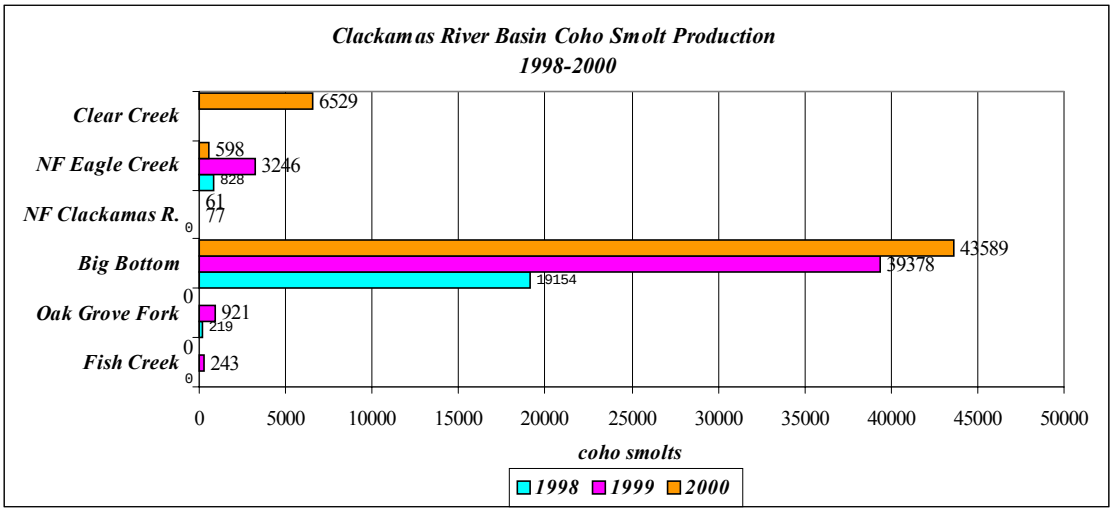
Figure 2-3: Clackamas River Basin Steelhead Smolt Production 1998-2000



Estimated production went up at Fish Creek, but decreased at the Oak Grove Fork, Big Bottom, North Fork Clackamas, and North Fork Eagle Creek. Steelhead smolt production in the upper Clackamas as a whole, as gauged by the North Fork Dam index, decreased from 23,660 to 14,195. This is despite an increase in adult returns primarily responsible for each of the brood years.

Coho smolt population estimates were obtained for Big Bottom, North Fork Clackamas, North Fork Eagle Creek, and Clear Creek in 2000. The Big Bottom estimated coho production was 43,589, the highest estimate ever generated for this site since trapping began in 1994.

Figure 2-4: Clackamas River Basin Coho Smolt Production 1998-2000

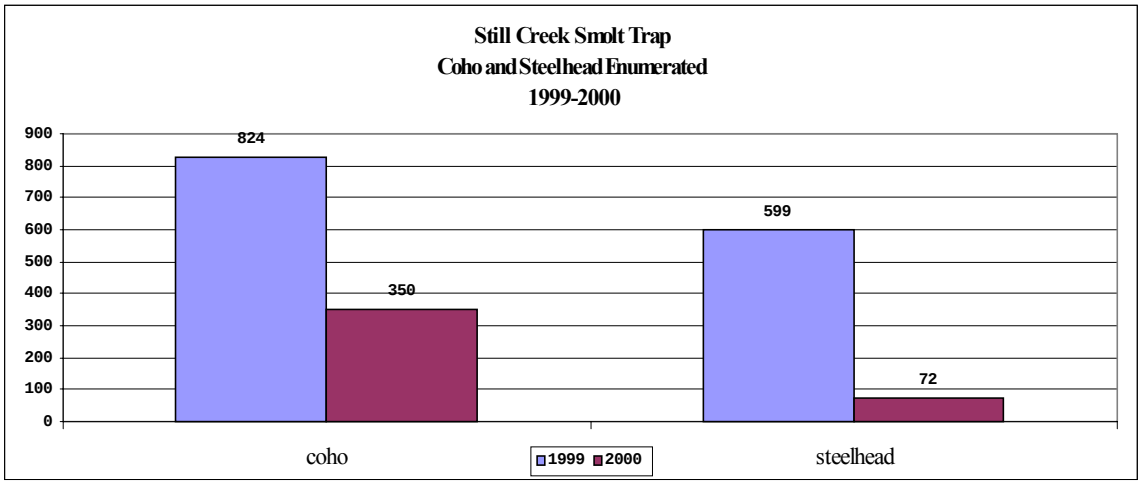


In five of the six years when population estimates were possible, the estimate for the subwatershed above the Big Bottom trap has approached or exceeded 20,000 coho smolts. Coho smolt production was similar to previous estimates in North Fork Clackamas and decreased in North Fork Eagle Creek. This was the first year a coho smolt estimate could be generated for Clear Creek. An estimated 6,529 coho smolts were produced.

Sandy River Basin

A smolt trap has been operating on Still Creek since 1992. It is the only operating smolt trap within the Sandy River Basin, and it provides a means for enumerating annual smolt production to evaluate recovery of basin stocks and success of restoration efforts. In 2000, numbers of steelhead smolts enumerated totaled only 11% of 1999 totals and numbers of coho smolts enumerated totaled only 42% of 1999 coho smolt totals.

Figure 2-5:Still Creek Smolt Trap, Coho and Steelhead Enumerated 1999-2000



Lower numbers of steelhead smolts in 2000 may be related to the 1996 floods as the 2000 emigrating smolts are offspring of the 0+ fry class present in the stream during the floods of 1996.

Marmot dam, located approximately 11 miles downstream of the smolt trap on the mainstem of the Sandy River, is planned for decommissioning by Portland General Electric in 2004. The Still Creek trap will be an essential tool to monitor impacts of dam removal on escapement and distribution of anadromous fish. It is the goal of the Zigzag Ranger District to expand smolt trap operations to other tributaries in the future. In doing this, we hope to gain valuable information on fish use and production of these tributaries to the upper Sandy Basin.

Stream Habitat Restoration Effectiveness Monitoring

Stream habitat restoration continues to be a major program of work for the fisheries program. Table 2-13 lists the monitoring completed of different stream habitat restoration projects in 2000 across the Mt. Hood National Forest.

Table 2-13: Stream Habitat Pre- and Post-Project Monitoring

Project Name	Objective	Monitoring Objective	Monitoring Method	Results
Rock Creek	restore riparian and in stream complexity	post-project evaluation	photo points LWD survey	
East Fork Hood River	restore in stream habitat complexity	post-project debris flow event	photo points	some structure mobilization
Upper Clear Branch	improve in stream habitat complexity	post-project evaluation	habitat type project area, site map, reshoot photopoints, establish new photo points	
Greenpoint Creek	restore in stream habitat complexity	post-project evaluation	photo points, spawning gravel quality,	> spawning gravels, < fine sediment
Ramsey Creek	restore riparian and in stream complexity	post-project evaluation	photo points	
Fish Creek	restore in stream habitat complexity, side channels	post-flood channel changes	repeat 12 stream channel cross-section profiles, repeat photo points	no significant change since 1996
Happy Camp (Collawash River)	Restore riparian area	Pre/post-project evaluation	photo points	
Cheeney Creek	stabilize eroding streambanks, noxious weed control	pre-project bank erosion, post-project evaluation	photo points	
Clear Fork Sandy River	restore in stream habitat complexity, side channels	post-project in stream and riparian habitat, channel morphology	re-shoot 1994 photo points, establish new photo points	LWD movement out of reach, side channel abandonment

Aquatic Invertebrate and Mollusk Surveys

The Northwest Forest Plan identified aquatic mollusk species to survey and manage in the Record of Decision. Two species are present on the Mt. Hood National Forest, Columbia dusky snail *Lyogyrus n. sp 1.* and basalt juga *Juga oregobasis n. sp 2*.

Seventy-seven sites on the Forest were surveyed in accordance with standards written in the Northwest Forest Plan. These sites were within various proposed projects, such as hiking trail reconstruction, road maintenance, timber sales, and stream restoration projects. Standards specify that all perennial and intermittent waterbodies, especially springs and small tributaries, shall be surveyed. *Lyogyrus* were found at 24 sites, no *Juga* were found. Surveys completed in FY 2000 are summarized in Table 2-14.

Table 2-14: Aquatic Mollusk Survey and Manage Results

	Columbia dusky snail *Lyogyrus spp*		basalt juga *Juga oregobasis*	
Ranger District	**Number of Sites Surveyed**	**Number Found**	**Number of Sites Surveyed**	**Number Found**
Hood River	33	9	33	0
Barlow	14	3	14	0
Clackamas River	22	9	22	0
Zigzag	8	3	8	0

Fish Passage Through Road Crossings

The Regional Fish Passage Through Road Crossings Assessment continued into its second year in 2000. The goal of the survey effort is to assess every culvert on every fish-bearing stream on the Forest. This program is the first attempt to evaluate passage of fish at all life stages. In the past, culverts had been surveyed only for passage of adult fish.

Crossings to be surveyed were prioritized based on the following criteria:

- Survey all sites in anadromous fish-bearing streams.
- Focus on fish-bearing streams in key watersheds.
- Survey all sites in high priority resident fish-bearing streams.
- All perennial streams meeting one of the above criteria would be surveyed first, prior to surveying intermittent streams with the same criteria.

A pre-assessment site screening determines fish presence, which species and life history stages would require fish passage, and whether the culvert is within the gradient range required to pass fish. Once the culvert passes the initial screening, fisheries personnel collected information that includes culvert length, shape, size, and gradient, jump height and distance into the culvert, stream channel width and gradient, and miles of habitat blocked above the culvert.

All culverts were then rated as green (completely passable), red (impassable at some or all stream flows), or gray (need further information). A total of 248 culverts were assessed for fish passage on the Forest in 2000. Another 187 crossings were examined but not surveyed for various reasons such as the crossing being a bridge or cross drain, excessive stream gradient, roads were already obliterated, or no water or defined channel was present.

Results of the surveys indicate that 4% of the culverts surveyed are completely passable, 83% of the culverts surveyed did not meet criteria required to pass all life stages of fish, and 12.5% of the culverts required further information to assess. Table 2-15 displays the results across the Forest.

Table 2-15: Fish Passage Culvert Survey Results 2000

	Culvert Rating			
District	**Red**	**Grey**	**Green**	**District Total**
Barlow RD	17	5	4	26
Clackamas River RD	66	12	0	78
Hood River RD	68	7	2	77
Zigzag RD	56	7	4	67
Forest Grand Total	**207**	**31**	**10**	**248**

There are an estimated 150 culverts that remain to be surveyed on the Forest. The assessments will be completed in 2001.

Fish Passage Monitoring

Fish passage monitoring was conducted by Clackamas River Ranger District to evaluate salmonid use and migration through newly installed baffled, arch pipe culverts on Buckeye Creek, Tag Creek and Tar Creek. Fifteen cutthroat trout were captured at each site, and marked with a fin clip. Block nets were installed at the inlet and outlet, and then fish were monitored for movement. Results were positive. In three days between marking and recapture, fish successfully moved at two locations.

A pilot project to evaluate fish passage at the Stone Creek Hydroelectric Dam fish ladder on the Oak Grove Fork of the Clackamas River began in 2000. Fifteen cutthroat trout and two brook trout were fin clipped, released below the fish ladder, and monitored for their movement. The trap failed though, and no fish were recaptured. The trap is undergoing design modification, and the experiment will be repeated in 2001.

Conclusions

The 2000 run of Middle Columbia River steelhead was one of the largest returns recorded on Forest in the Fifteenmile Creek Watershed during the past decade. The increase in redd numbers reflect a similar trend seen in ODFW data from private stream reaches of the Miles Creeks basin and indicate a strong spawning run in 2000. The increase in spawner escapement is most likely due to the improvement of ocean conditions over the past two years. Restoration of habitat is important so when fish are present chances of survival are maximized. The stream habitat restoration efforts on-going in Ramsey Creek will be beneficial to this stock of steelhead.

Bull trout life history information and numbers continue to fluctuate. Survey areas were expanded in 2000 and a small number of bull trout were found in the new survey areas. Monitoring of the gravel restoration project in lower Clear Branch, below the Laurence Lake dam, and the habitat restoration of upper Clear Branch implemented in 2000 will continue to improve in stream conditions for bull trout.

The number of Lower Columbia River steelhead emigrants decreased in both the upper Clackamas River and Sandy River Basins despite an increase in adult returns the last two years. This may be attributed to the effects of the 1996 flood, as the smolts are offspring of the fry class present in the stream during the floods of 1996.

Coho smolt production within the Big Bottom segment of the Clackamas River was estimated to be the highest production ever generated for this site since trapping began in 1994. The increase in production may be attributed to increased escapement at North Fork Dam due to improved ocean conditions and favorable water conditions during smolt migrations within the upper Clackamas drainage in the last two years.

Stream surveys continue to demonstrate that few streams meet the LRMP pool or large wood standards.

The Fish Passage Through Road Crossing Assessment identified a significant number of culverts that impede fish passage for all or some life stages of anadromous and resident fish species. The majority of culvert passage problems impact resident fish species. Very few anadromous barriers remain on the Forest. It will be important to set priorities to upgrade culverts not meeting passage requirements.

Mollusk surveys indicate that *Lyogyrus spp.* may be more common than first believed, and *Juga oregobasis* may be more rare than first believed. Careful tracking of habitat when a species is found will help identify future high probability areas of occupation.

Recommendations

- Develop a priority list of culverts that need upgrading and investigate opportunities to secure funding for culvert replacement/improvement projects. Continue to evaluate culvert passage problems utilizing the Fish Passage Through Road Crossing Assessment protocol.

- Continue to monitor smolt production in the Sandy River and Clackamas River basins. The Still Creek trap will be an essential monitoring tool to assess impacts of the removal of Marmot Dam on escapement and distribution of anadromous fish. Information collected at these traps provide important information for management recommendations of the fish stocks in the basin.

- Develop a monitoring plan to assess the restoration of the Fish Creek watershed. This is a unique opportunity to evaluate the effectiveness of a large-scale watershed restoration program.

- Continue spawning surveys for cutthroat trout in Bull Run Lake. The surveys will help us better understand the relationship between lake elevations and cutthroat trout production. This information will provide a baseline for monitoring any mitigation such as spawning gravel enhancement, enacted due to lake drawdowns.

- Continue to evaluate methodologies for monitoring bull trout (i.e. timing of adult surveys). Bull trout life history is complex, highly variable and difficult to monitor.

- Watershed-wide programs are important for fish habitat and fish recovery. For example, surveys of bull trout in the Middle Fork of Hood River and spawning surveys for steelhead in the Miles Creeks basin, in conjunction with habitat restoration and monitoring of habitat restoration, help land managers to focus limited resources to areas of greatest effectiveness.

- During revision of the LRMP stream habitat standards (large wood and pool frequencies) should be re-evaluated based on over ten years of thorough and comprehensive stream surveys. The revision should reflect more the range of natural conditions of streams located within unimpacted drainages on the Forest.

- Continue to develop partnerships with other agencies, watershed councils, and private entities to identify watershed concerns both on-Forest and off-Forest and to seek collaborative solutions to improve watershed health and function.

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 nonpoint 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 to historical standards.

Forest Service monitoring activities within the Bull Run Watershed focused on monitoring the effects of specific projects on water quality. For water year 2000, monitoring projects were implemented for the Bull Run Road Decommissioning Project. A summary of 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. 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 2000. 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

During the summer of 2000 several units of the Owl Quarry and Con-1 timber sales were monitored for BMP implementation.

Two timber sale units were monitored in 2000 using the Best Management Practices Evaluation Program (BMPEP) process (see Table 1). The units represented two timber sales originating from two Environmental Assessments. All units were logged using ground-based equipment, except unit 4 in the Con-1 Timber Sale which was skyline logged.

Table 2-16: Specified Timber Sale Units and BMPs Monitored in 2000

EA	Timber Sale	Unit No.	RR	STs	Landing	System Roads
Con	Con-1	1		X		
Con	Con-1	3		X	X	
Con	Con-1	4	X	X		
Con	Con-1	10		X		
Owl Quarry	Owl Quarry	1	X	X		
Owl Quarry	Owl Quarry	2		X		
Owl Quarry	Owl Quarry	5		X		
Owl Quarry	Owl Quarry	Road 4421-190				X

Key:

RR = riparian reserve
Lndg = landings
Syst.Rds. = system roads
STs = skidtrails

Four different BMPs were monitored, with up to two being monitored in any one unit. In some instances, only one BMP was monitored for a single unit. All the BMPs monitored were associated with riparian reserves, skid trails, landings, and roads. The most common BMP monitored pertained to skid trails in units that were harvested using ground-based equipment.

Of the 5 units evaluated, riparian reserves were monitored on 2 units, skid trails were monitored on 5, landings were monitored on 1, a road was monitored on 1. A total of 9 BMPs were monitored on the 5 units.

Of the 11 BMPs monitored, 9 (82 %) were implemented as planned (see Table 2). Two (18 %) BMPs were implemented with a minor deviation from the original plan, but the resource damage was nominal. One of the BMPs that were implemented with a minor deviation from the original plan was the closure of the 4421-190 road alongside Unit 1 of the Owl Quarry timber sale. Vehicles are driving around the berm placed in an attempt to prevent use of the unsurfaced road during. Damage to the road surface is occurring during wet periods, but sediment doesn't appear to be entering intermittent streams. Additional restoration work is needed to more effectively close the road and prevent surface erosion on this road.

The second BMP that was implemented with a minor deviation was that at least one skid trail on the south side of Unit 1 in the Owl Quarry timber sale did not have adequate erosion control. Several hand-constructed water bars need to be constructed to prevent erosion on the portions of the skid trails running downhill.

Table 2-17: Results of Monitoring Timber Sale BMPs

	Implementation Status				
	RR	ST	Landing	Syst. Rds	Total
BMP Implemented as Planned	2	6	1		9
BMP Implemented with Minor Deviation		1		1	2

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

Clackamas River Ranger District

Thirteen timber sale units were monitored in 2000 using the Best Management Practices Evaluation Program (BMPEP) process (see Table 3). The units represented six timber sales originating from five Environmental Assessments. Seven of the units monitored were commercially thinned, five were shelterwoods, and one was a regeneration cut with 15% green tree retention. All units were logged using ground-based equipment, except a portion of one thinning unit (helicopter logged) and portions of three shelterwood units (skyline logged). More detailed information about this monitoring is on file at the Clackamas River Ranger District.

Table 2-18: Specified Timber Sale Units and BMPs Monitored in 2000

			BMP						
EA	**Timber Sale**	**Unit No.**	**RR**	**ST**	**Yrdg**	**Lndg**	**Syst. Rds**	**Temp. Rds**	**Xing**
Bars	Bars ATV	2		X	X				
Bars	Bars ATV	3		X	X				
Bars	Bars ATV	7		X					
Bazooka	Bazooka	14						X	
Bazooka	Bazooka	33		X					
Bonanza	Decoy II	12	X	X	X	X			
Bonanza	Decoy II	16	X		X	X			
Bronco	Bay Resell	174	X						
Buckaroo	Cowpoke II	16		X					
Buckaroo	Cowpoke II	35		X					
Buckaroo	Cowpoke II	123	X	X					
Buckaroo	Cowpoke II	135						X	
Lemiti	Lemiti	1	X				X	X	X

Key:

RR = riparian reserve
Rds = roads
Lndg = landings
Yrdg = yarding
Xing = road crossing
Syst.Rds. = system roads
Temp. Rds. = temporary roads
STs = skidtrails

Seven different BMPs were monitored, with up to four being monitored in any one unit. In some instances, only one BMP was monitored for a single unit. All the BMPs monitored were associated with riparian reserve widths, yarding and skidding specifications, landings, and roads. The most common BMP monitored pertained to skid trails in units that were harvested using ground-based equipment.

Of the 13 units, riparian reserve widths were monitored on 5 units, skid trails were monitored on 8, yarding suspension requirements were monitored on 4, landings were monitored on 2, roads (including temporary roads) were monitored on 3, and road crossings were monitored on 1. A total of 24 BMPs were monitored on the 13 units.

Of the 24 BMPs monitored, 20 (83%) were implemented as planned (see Table 4). One (4%) BMP was implemented with a minor deviation from the original plan, but the resource damage was nominal. There were 3 (13%) BMP's that were not implemented as planned, resulting in a **greater level** of resource protection than what was originally projected.

Table 2-19: Results of Monitoring Timber Sale BMPs

	BMP							
Implementation Status	**RR**	**ST**	**Yrdg**	**Lnd g**	**Syst. Rds**	**Temp Rds**	**Xing**	**Total**
BMP Implemented as Planned	4	8	2	2	1	2	1	20
BMP Implemented with Minor Deviation	1							1
BMP Not Implemented as Planned *			2			1		3

**greater resource protection achieved than originally planned*

Key:

RR = riparian reserve
Rds = roads
Lndg = landings
Yrdg = yarding
Xing = road crossing
Syst.Rds. = system roads
Temp. Rds. = temporary roads
STs = skidtrails

Cumulative Watershed Effects Analyses

During 2000 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. See previous years Forest Plan Monitoring Reports for a description of these projects.

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:

1. **64° F (17.8° C),** where salmonid fish rearing has been identified as a beneficial use

2. **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;

3. **50° F (10° C)** in waters that support Oregon Bull Trout.

The Oregon DEQ has developed an interim guide (Table 5a, see below) for the period of period of time the 12.8 degrees C. standard applies has been identified for the Hood Basin. The interim guide for when this standard applies to other basins is unpublished (Table 5b), and was obtained after water temperature data was analyzed. As a result, the 17.8 degrees C. standard for salmonid fish rearing will be used to determine compliance with State water temperature standards in the other watersheds on the Forest. Compliance with the 12.8 degree C. standard for spawning will be assessed for water temperature data collected in 2001.

Table 2-20: 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 2-21: 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

On the Barlow Ranger District, a total of 33 sites were monitored, 14 in the Miles and Mill Creek Watersheds, and 19 in the White River Watershed. Most streams reached their maximum annual temperature peak on July 31, 2000. Overall, in comparing the last three years, the water temperature for 2000 was warmer than 1999 but cooler than 1998. Table 2-22 below summarizes the results of this monitoring.

Mile Creeks: The only temperature monitoring site 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 Ramsey Creek at the new National Forest boundary. Temperatures here could be 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. The maximum 7-day average temperature at this site was 21.3 degrees C. 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 14.0 degrees C, well below the State 7-day average maximum temperature standard of 17.8 degrees C.

Eightmile and Fifteenmile Creeks did not exceed the 17.8 degrees C. standard at any site. The Forest boundary sites of these streams reached a 7-day average maximum temperature of 14.7 degrees C and 16.7 degrees C., respectfully, with the headwater sites having much cooler water temperatures of 9.3 degrees C. and 8.6 degrees C.

White River: Three 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 18.6 degrees C.; Gate Creek with 18.3 degrees C., and Badger Creek with 20.0 degrees C.

The Gate Creek and Rock Creek sites are located in the area burned by the Rocky Burn Fire of 1973. Although riparian vegetation is recovering after the fire, these streams also have effects of past timber harvest and grazing that affected riparian shading. Gate Creek has a stream diversion above the monitoring site, which reduces streamflows and results in increased water temperatures. The Rock Creek site at the top of the Rocky Burn had adequate water flow for monitoring this year, but in the past the site has been nearly dry by the end of August. The 7-day average maximum water temperature was 11.0 degrees C, well below the State standard.

The Badger Creek Forest boundary site is the lowest in elevation, 1700 ft, and in the pine/oak eco-class with sparse vegetation in the riparian area. Six sites are monitored in the Badger Creek Wilderness. The site below Badger Lake dam recorded temperatures up to 1 degree C. higher than in 1999, with a 7-day average maximum water temperature of 20.0 degrees C. The temperatures are no doubt influenced by the water flowing out of the dam's spillway which comes from the top of the lake about 500 ft. west The next site downstream on Badger Creek, after the confluence of Gumjuwac Creek, recorded a 7-day average maximum of 12.0 degrees C. and after the confluence of Pine Creek, 13.5 degrees C. Two more sites are monitored at an elevation of approximately 2600 ft, where water is diverted for irrigation. Both sites above and below the diversion met the State standard, as well as the last site in the Badger Creek Wilderness boundary at Bonney Crossing.

As usual, Camas Creek on Camas Prairie have the highest readings on the Barlow District—exceeding State standards almost all of the monitoring year. On July 24th the 7-day average maximum reached 31.4 degrees C. Usually water temperatures are higher than air temperatures due to the natural conditions. The meadow is flat, marshy, unshaded, with slow moving water, resulting in naturally elevated water temperatures. About 2 miles downstream, however, after the addition of springs, the stream cools and meets standards.

All other sites including Threemile Creek at headwaters and at the Stockton Quarry site at 2700 ft. elevation and Tygh Creek at the Forest boundary also met the standard of 17.8 degrees C. for the 7 day average maximum temperature.

Table 2-22: Results of Water Temperature Monitoring on the Barlow Ranger District

Temperature Monitoring Site	7 Day Moving Average Of Maximum Daily Temperature ^{0}C
Mile Creeks	
Ramsey Creek (new N.F. boundary)	21.3
Ramsey Creek (old N.F. boundary)	14.0
Eightmile Creek (Forest boundary)	14.7
Fifteenmile Creek (Forest boundary)	16.7
White River	
Rock Creek (Forest boundary)	18.6
Rock Creek (top of Rocky Burn)	11.0
Gate Creek (Forest boundary)	18.3
Badger Creek (Forest boundary)	20.0
Badger Creek (below Badger Lake Dam)	20.0
Badger Creek (below Gumjuwac Creek)	12.0
Badger Creek (below Pine Creek)	13.5
Camas Creek (on Camas Prairie)	31.4
Camas Creek (2 miles downstream of Camas Prairie)	11.9
Threemile Creek (headwaters)	10.5
Threemile Creek (Stockton Quarry)	11.5
Tygh Creek (Forest boundary)	13.6

Clackamas Ranger District

Two temperature monitoring programs were implemented by the Clackamas River Ranger District in 2000. The first program monitored summer temperatures at 16 sites within the Fish Creek watershed and its major tributaries as a part of the Fish Creek Watershed Restoration Monitoring Plan. Of particular concern was whether or not any site's 7 day average maximum temperature exceeds the State standard of 17.8 degrees C. The second program monitored temperatures year-round near the mouths of six sub-watersheds, 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 State standard of 17.8 degrees C. (7 day average maximum).

All temperatures were recorded using either an Onset brand Hobo data logger or Optic Stow-away datalogger. Temperatures were recorded once per hour during the summer months and anywhere from once per hour to once per 3.2 hours during the fall, winter and spring.

Fish Creek temperature monitoring was initiated June 23 and was concluded September 12. Table 7 shows the 7 day average maximum stream temperature at the monitoring sites. Third Creek exceeded this standard most often. Wash Creek contributed the most to increases in instream temperature as Fish Creek flowed to its confluence with the Clackamas River, based on daily averages.

Table 2-23: Results of Water Temperature Monitoring, Fish Creek

Temperature Monitoring Site	7 Day Moving Average Of Maximum Daily Temperature ^{0}C
Fish Creek above Calico Creek	11.7
Fish Creek above Wash Creek	17.2
Fish Creek below Wash Creek	14.9
Fish Creek at 5430 bridge	18.6
Fish Creek near mouth	20.1
Calico Creek	15.5
Fall Creek	18.6
Wash Creek above Pick Creek	19.2
Wash Creek at mouth	19.4
Music Creek	15.7
Wanderer's Creek	14.7
Third Creek	20.0
Second Creek	17.9
First Creek	15.5
Button Creek	18.0
Rimrock Creek	15.6

Temperature records from the Fish Creek and Collawash year-round sites were discontinuous because of the thermograph was out of the water during some low flow periods. Monitoring in the Roaring River was initiated in the Fall of 2000. The 7 day average maximum water temperatures are summarized in Table 8.

The 7 day average maximum stream temperature at the mouth of the North Fork of the Clackamas River reached 18.1 degrees C., just exceeding the 17.8 degrees C. standard for 8 days.

This monitoring station is approximately 3 miles downstream from the National Forest boundary. Additional water temperature monitoring will be conducted to determine whether water flowing out of the National Forest meets State water temperature standards.

Table 2-24: Results of Water Temperature Monitoring Clackamas River Ranger District

Site	Monitoring Period	7 Day Moving Average Of Maximum Daily Temperature ^{0}C
Fish Creek	1/1-3/8, 6/8-8/29, 10/23-12/31	19.4
Oak Grove	1/1-6/1, 6/8-8/30,9/11-12/31	16.0
Big Bottom	6/8-8/29, 11/6-12/31	14.2
NF Clack**	1/1-6/3, 6/8-8/29, 9/11-12/31	18.1
Collawash	6/9-7/6, 9/11-11/4, 11/12-12/31	*
Roaring R	11/6-12/31	*

**missing data for significant portions of the summer.*
*** station located about 3 miles downstream of National Forest boundary.*

With the exception of Fish Creek, the National Forest sites monitored did not exceed the State 17.8 degrees C. Standard for the 7 day average maximum stream temperature for rearing habitat. 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.

Zigzag Ranger District

Baseline water temperature data was collected at 12 sites on the Zig Zag Ranger District and is summarized in Table 2-25.

Table 2-25: Summary of Stream Temperature Monitoring Results Zigzag Ranger District

Site	Monitoring Period	7 Day Moving Average of Maximum Daily Temperature ^{0}C
Bull Run River (above reservoirs)	June 1 - Oct. 1	15.5
Fir Creek	June 1 - Oct. 1	13.4
North Fork	June 1 - Oct. 1	12.6
South Fork	June 1 - Oct. 1	15.9
Upper Little Sandy	July 24 – Oct. 1	16.2
Middle Little Sandy	July 24 – Oct. 1	17.6
Lower Little Sandy (USGS gaging station)	July 24 – Oct. 1	19.0
Lower Little Sandy @ confluence with Bull Run River	July 24 – Oct. 1	Datalogger vandalized
Bull Run River upstream of Little Sandy	July 24 – Oct. 1	Datalogger vandalized
Upper Eagle Creek	June 21 – Oct. 1	16.1
Lower Eagle Creek	July 21 – Oct.1	17.1
Still Creek @ 20 road	June 1 – Sept 21	16

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) met the State 17.8 degrees C. Standard for the 7 day average maximum stream temperature for rearing habitat.

Hood River Ranger District

Twenty three sites on 19 streams were monitored for water temperatures with continously-recording thermographs (Onset's Hobotemp and Tidbits) from spring to fall of 2000. Sites were chosen with the following criteria: potential for (or documented use) by bull trout, 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), Lake Branch, Iron Creek, McGee Creek (2), Red Hill Creek, Robinhood Creek(2), Meadows Creek, Tilly Jane Creek(2), Doe Creek, Dog River, Upper Clear Branch, Coe Branch, Eliot Branch, Bear Creek, Tony Creek, Mill Creek and W.Fk. Neal Creek. Equipment was lost at the Robinhood Creek sites due to flooding at the end of September. Data for the entire year was lost for these sites.

General findings are summarized below:

None of the twenty-two sites exceeded the 17.8 degree C. standard for the 7 day average maximum.

Seven of the sites exceeded the 12.8 degrees C standard, mainly during July and August when the least amount of salmonid spawning/incubation is likely occurring. These sites include: W. Fk. Hood River (8 days), Lake Branch (32 days), N. Fk. Mill Creek (22 days), Meadows Creek (7 days), West Fork Neal Creek (11 days), and East Fork of the Hood River sites (20 and 45 days). The majority exceeded by 1-3 degrees during July/August, and will continue to be monitored due to these concerns.

All but two sites exceed the 10 degrees C. standard. The two sites that met this criteria are Iron Creek and Lower Tilly Jane Creek, neither of which have known bull trout populations. Other creeks that contained bull trout but exceeded the 10 degrees C standard were Eliot Creek, Coe Creek, Bear Creek, and upper Clear Branch. Only 2 sites (Coe Creek and Eliot Creek) had temperatures above 11 degrees C. 7-day maximum average, thus were very close to meeting criteria.

Overall, the temperature regimes within the FS lands are adequate to sustain salmonid species. There are, though, 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.

Recommendation

Continue both baseline and project-related water temperature monitoring Forest-wide.

Continuous Water Monitoring Stations

Clackamas Ranger District

Eagle Creek

An automated turbidity monitoring station is currently scheduled to be installed in August 2001 upstream of the U.S. Fish and Wildlife Service fish hatchery.

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. An equipment defect related to pH measurements resulted in inaccurate data being collected up until March 2001, when the equipment manufacturer corrected the problem. Water quality data is available via telephone at various Mt. Hood National Forest and Clackamas County water provider offices.

Temperature, turbidity, and specific conductivity data from December 1999 through December 2000 was analyzed. Overall the water clarity throughout the year at the monitoring site was good. During non-storm periods turbidity is normally between 0.2 and 2.0 nephelometric turbidity unit's (ntu's). During stormy periods when the river rises instream turbidities can increase to at least 100 ntu's, such as during February 2000. The peak water temperature reached about 62.0 degrees F. in August 2000, which is below the State standard for salmonid rearing in the summer months.

A number of hypothesis tests and confidence intervals were run on the water quality data, with the following results:

- Relationship between turbidity and stream depth:

  A regression analysis was used to look at the relationship between stream depth and turbidity. The regression analysis indicated that there was no linear correlation when points were sampled randomly from the whole database. A moderate linear correlation was observed when points were sampled randomly from the 'rising limb' database subset (Figure 2-6). A strong linear correlation was found when points were randomly sampled from within individual storm events on the rising limb database subset (Figure 2-7).

Figure 2-6: Turbidity Based on Depth

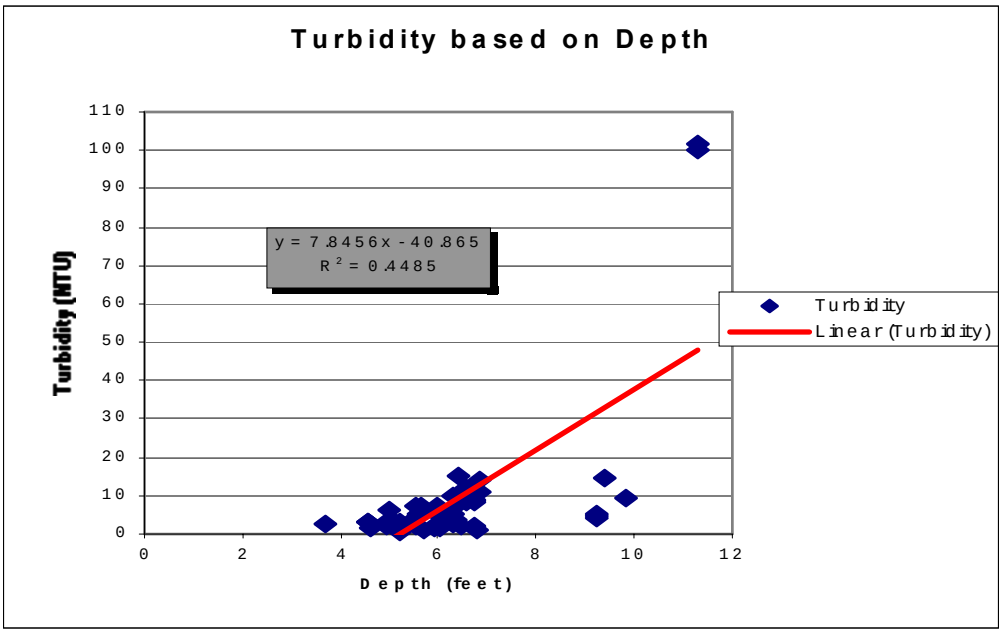
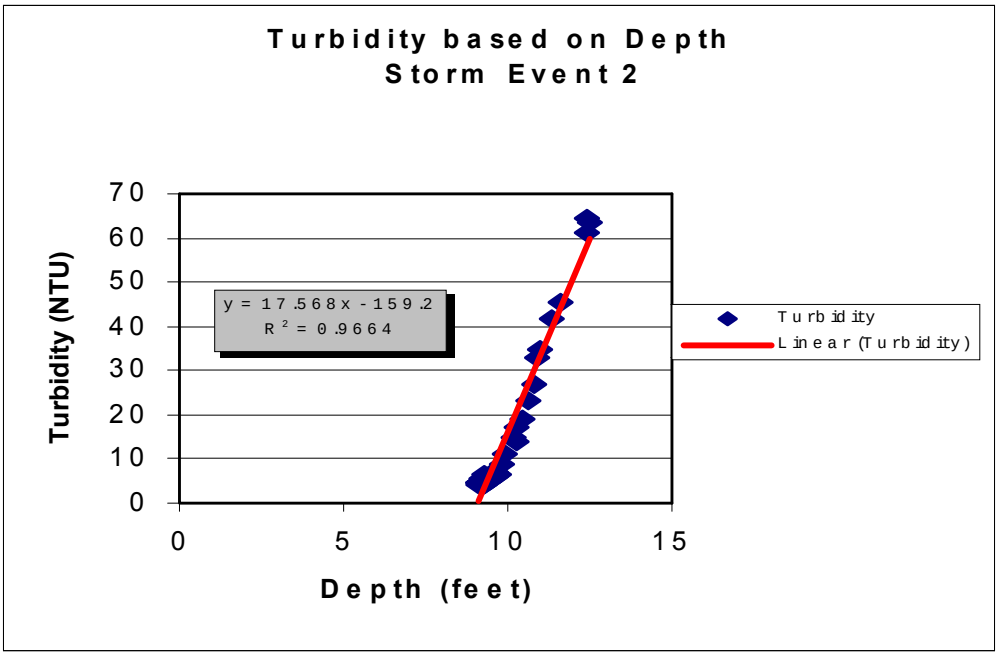
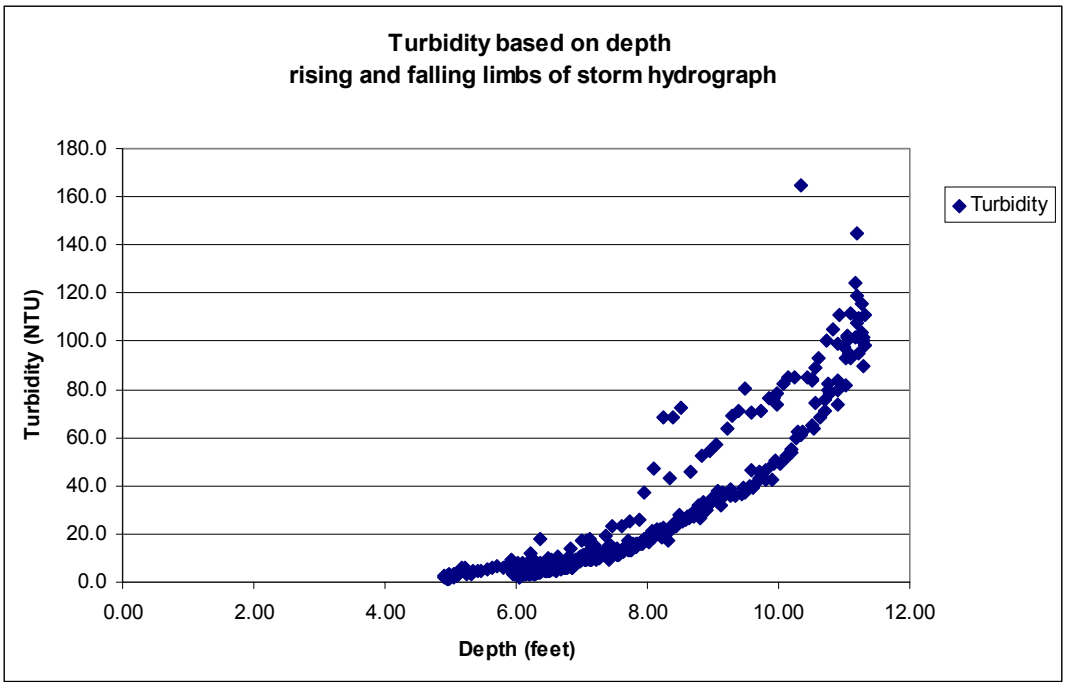


Figure 2-7: Turbidity Based on Depth Storm Event 2



The matched pairs hypothesis test looked at the relationship between turbidity on the rising and falling limbs of the hydrograph for individual storm events, and concluded that the mean turbidity on the rising limb is greater than the mean turbidity on the falling limb, where the rising and falling hydrograph turbidities are paired by water depth. As waters rise during storm events, turbidities increase as newly exposed sediments are dislodged and transported to the streams. As a storm ends and water depths decrease, turbidities are generally lower than at similar depths earlier in the storm, because the majority of newly available sediment has already been transported downstream. Figure 2-8 shows the progression of turbidities on the rising limb of the hydrograph (upper curve) as being greater at specific depths than those on the falling limb of the hydrograph (lower curve). The greater number of points on the lower curve indicates that the water depth receded at a slower pace than it rose.

Figure 2-8: Turbidity Based on Depth Rising and Falling Limbs of Storm Hydrograph



- Relationship between specific conductivity and streamflow:

  The differences of means hypothesis test looked at the seasonal variation in specific conductivity, a measurement used to indicate the concentration of total dissolved ions in water. At _ = .05 there was sufficient evidence to support the claim that the average specific conductivity in the wet months (November through May) is lower than the average specific conductivity in the dry months (July through October) (Figure 2-8). In the wet months of the year the amount of ions are diluted by the large volume of water in the river. In the summer months, ground water supplies a greater proportion of the stream volume, and the soil is a primary source of ions. River water volumes in the summer are lower than in the winter, and the concentration of ions is consequently higher.

- Water Temperature:

  The average monthly water temperatures are shown below:

1999:	December:	42.2^{o} F
2000:	January:	39.1^{o}
	February:	40.4^{o}
	March:	41.4^{o}
	April:	43.9^{o}
	June:	51.4^{o}
	July:	55.7^{o}
	August:	55.4^{o}
	September:	52.5^{o}
	October:	49.0^{o}
	Novermber:	42.0^{o}

  Water temperatures in July and August 2000 ranged from 46.5^{o} F to about 62.0^{o} F., well below the State 7 day average maximum standard of 64.0^{o} F.

Zigzag Ranger District

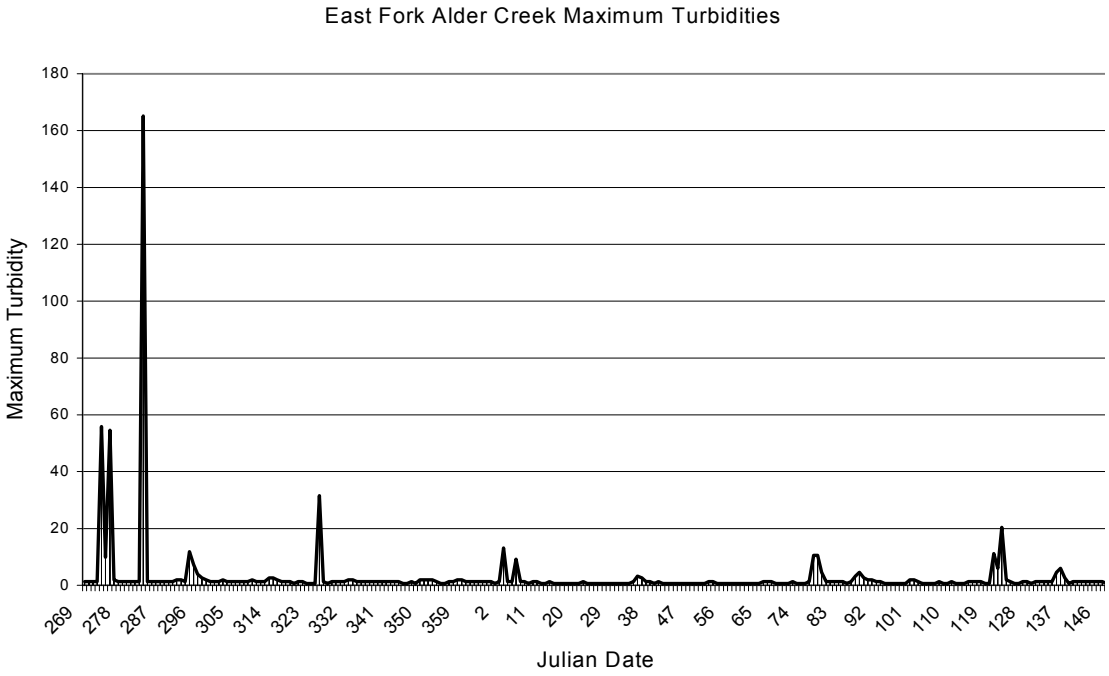
Alder Creek

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 stream gaging station will measure streamflow and turbidity with the data telemetered to the Zigzag Ranger Station. As of February 2000 turbidity is being logged every ½ hour on a datalogger at each site. The equipment to telemeter the data is planned to be installed in the summer of 2000.

During 2000 the turbidity monitoring station on the main stem of Alder Creek didn't operate due to equipment problems. A graph of turbidity data (Figure 2-8.) from September 26, 2000 through June 3, 2001, for the East Fork of Alder Creek is shown below. Turbidities at this site are very low with the exception of some elevated turbidities (up to about 165 NTU's) in October and November 2000. Elevated turbidities of this magnitude are normal during storm periods in the winter in response to heavy rainfall or rain-on-snow.

Figure 2-9: East Fork Alder Creek Maximum Turbidites



Water Quality Monitoring of Salt Application to Palmer Snowfield at Timber Line Ski Area - 2000 Season

The following report is a summary of the Timberline Ski Area Annual Report Forwater Year 2000 completed by Golder Associates Inc. Seattle, Washington. A more detailed summary report regarding this monitoring is on file at the Zig Zag Ranger District Office.

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

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

This report presents the annual water quality analysis for the Timberline Ski Area for water year (WY) 2000 (October 1, 1999 to September 30, 2000). This evaluation was prepared in accordance with the Salt Management Plan developed by Timberline in 1996. The Salt Management Plan provides a framework for the management of all aspects of salt application on the Palmer snowfield, including all environmental evaluations. The data presented in this report are supplemented by historical data collected by Timberline from 1988 to 1989 (CH2M Hill) and from 1990 to 1999 which were presented in reports prepared by Golder Associates.

- Salt application occurs on a 320-acre area from the top of the Palmer chair lift (8,500-ft elevation) to the bottom of the Magic Mile chair lift at Timberline Lodge (6,000-ft elevation). Salting primarily occurs during summer months (typically from mid-May to Mid-September) to maintain a firm ski surface in areas of high solar exposure.

- Surface water runoff from the Palmer snowfield drains to the Still Creek and Salmon River basins. Perennial streams begin in the vicinity of Timberline Lodge at about 6,000 or 7,000 ft elevation. Still Creek discharges to Zigzag River near the town of Rhododendron (about 1,600-ft elevation), which then discharges to Sandy River near the town of Faubion (1,300-ft elevation). Salmon River discharges to the Sandy River below the confluence of Sandy and Zigzag Rivers at the town of Brightwood (about 1,000-ft elevation).

- In 1996, Timberline submitted an application to the Oregon Department of Environmental Quality (ODEQ) for certification pursuant to Section 401 of the Federal Clean Water Act in conjunction with issuance of the Forest Service Special Use Permit for the Timberline Ski Area on the Mount Hood National Forest. As part of the certification process, ODEQ provided Timberline with several special conditions specific to the Timberline area to be fulfilled. ODEQ specified the following water quality conditions:

- Instream water quality at continuous monitoring sites and monitoring stations downstream of continuous monitoring sites shall not exceed the weekly mean total dissolved solids (TDS) guidance value, or specific conductance guidance value if used as a substitute for TDS, of 117 mg/L TDS or 175 umhos/cm specific conductance.

- Water quality samples shall not exceed the secondary drinking water criterion of 250 mg/L for chloride;

- Water quality samples shall not exceed the National (EPA 440/5-88-001) freshwater chronic toxicity criterion for aquatic organisms of 230 mg/L for chloride; and

- Water quality samples shall not exceed the National (EPA 440/5-88-001) freshwater acute toxicity criterion for aquatic organisms of 860 mg/L for chloride.

- Salt was applied to the Palmer snowfield on nearly a daily basis from May 26 to September 3, 2000. The ski area was shut down for a period in mid September, and no salt was applied to the snowfield. Additional salt was applied to the snowfield on a sporadic, as needed basis from September 16 to October 16, 2000, and then ceased for the year.

A total of 1,065,680 pounds of salt were applied to the Palmer snowfield during the summer of 2000, which is 42,000 pounds less than the total salt applied in 1999, and 88% of the total salt applied in 1995 (the highest salt application year). The peak months for salt application in 2000 were June (11,170 pounds) and July (13,460 pounds).

Conclusions and Recommendations

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

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

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

- The low flow that occurs in streams at the end of the summer results tends to result in increased concentrations of chloride, specific conductance and TDS due to the reduced dilution of surface water originating at the Palmer snowfield.

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

- Laboratory and datalogger measurements of chloride concentrations in Salmon River and Still Creek are low and remain substantially below aquatic water- quality standards.

- Laboratory measurements of specific conductance in Salmon River and Still Creek are all below the ODEQ guidance value of 175 umhos/cm.

- TDS values at Salmon River 3445 and Still Creek 3600 are typically below the ODEQ guidance value for TDS (117 mg/L), with exceptions occurring in the fall of the past two years at Still Creek 3600 (i.e., below the point where Mineral Creek enters Still Creek). Since these exceedances occur below the confluence of Mineral Creek and not above that confluence, they are determined to be the result of influences from Mineral Creek rather than salt application on the Palmer snowfield.

- The dataloggers at Salmon River 3445 and Still Creek 3600 provide chloride, specific conductance, and temperature measurements at 15 minute intervals This information is very useful for monitoring the water quality at these stations, and it is recommended that these instruments be used to provide long term monitoring. Since these dataloggers provide nearly continuous monitoring, it is recommended that the datalogger measurements be used as the primary monitoring data, and that the manual sample collection be phased out beginning in the summer of 2001 at most stream sampling locations.

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 seven 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)

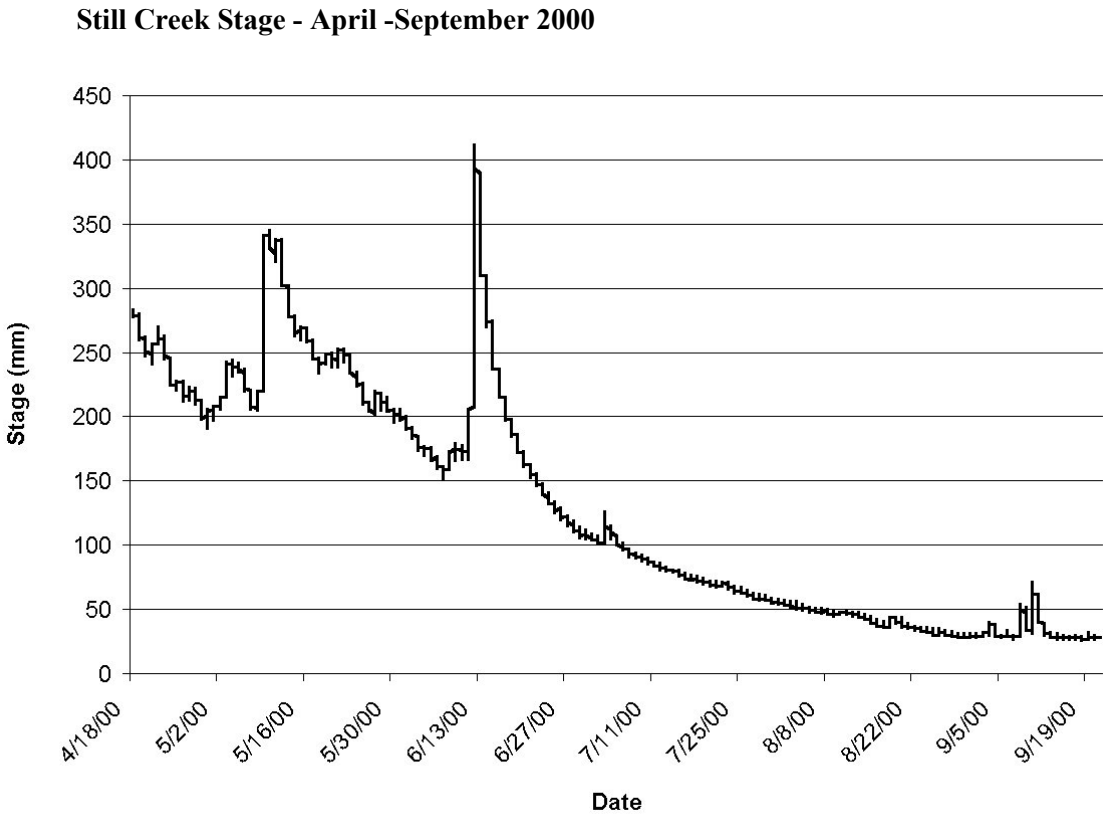
The Forest funded a telemetered USGS stream gage on Fish Creek (Clackamas River Ranger District), and has reestablished a discharge measurement gage at a previously decommissioned USGS gaging station on the Upper Clackamas River at Big Bottom. Streamflow information from the Fish Creek gage is useful 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 montoring questions and data gaps were identified for each watershed. One of the monitoring opportunities and associated data gaps identified was streamflow data on Still Creek. This site was identified as critical due to it’s association with the smolt trap used to assess salmonid escapement from Still Creek.

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

Figure 2-10: Details Stream Stage in Still Creek from April 18 through September 21, 2000.



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, after, and during the project is used to characterize levels, duration and declines of sediment produced from representative project sites.

Due to the inaccessibility of most of the project area during the winter months, automated sensors able to sample turbidity and streamflow were used. Turbidity is measured in NTU's (nephlometric turbidity units) every 30 minutes using turbidity sensors with a self-cleaning wiper.

In addition, water levels were measured and related to the turbidity data to determine whether the turbidity values were collected when flows were rising or falling.

Turbidity data is telemetered to the NRCS SNOTEL network using the NRCS meteor scatter telemetry system. The data is accessible over the Internet.

Turbidity monitoring was implemented in July of 1999, however due to damage to the downstream site associated with a bear attack it was decided to use the dataset starting on June 27, 2000, where there is paired data from the upstream and downstream sites, for the analysis.

For the analysis the Wilcoxen-Mann-Whitney statistical test was used to assess differences between the above and below treatment sites. The Wilcoxen-Mann-Whitney Test is a non-parametric test used to determine the statistical significance of the difference in the medians of two sample populations. The half hourly "raw" data, daily mean, and daily medians were analyzed to assess changes between the above and below treatment sites before, during, and after treatment activities. 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).

Figure 2-11 illustrates the daily average turbidities for the above and below sites and the average stream stage at the lower site. This chart details the elevated turbidity associated with project activities at the lower site and the elevated turbidity associated with storm events after the project at the upper site.

Figure 2-11: Nanny Creek Turbidity and Stage – July through October 2000

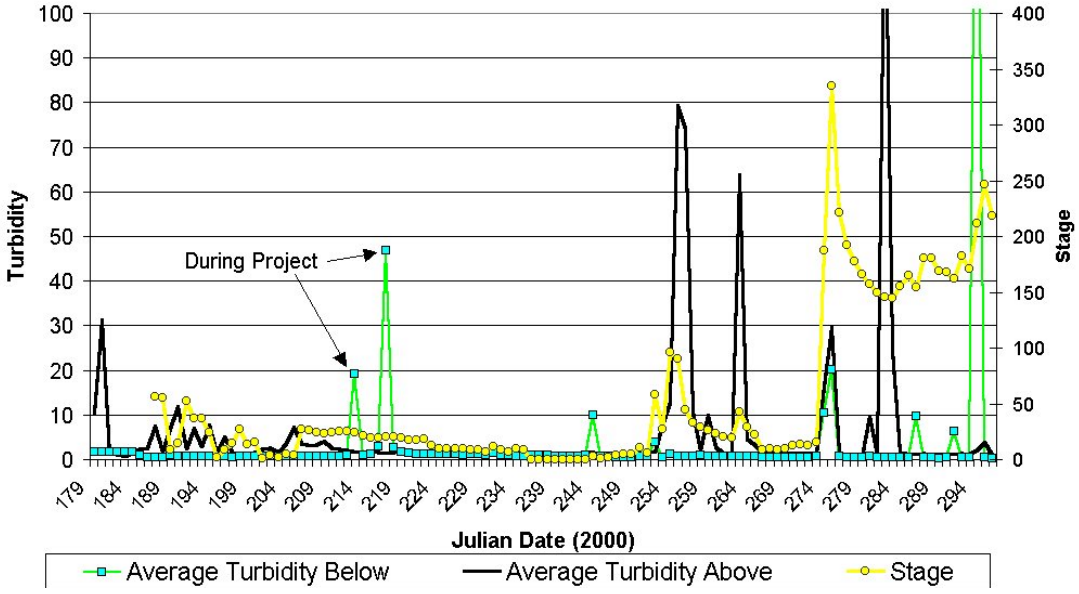


Figure 2-12 details elevated turbidities associated with culvert excavation and removal during the period from August 1 through August 8, 2000. During the culvert excavation and removal Water Quality Protection Best Management Practices were implemented including capturing and pumping water around the project site, using bio-bags to trap sediment, installation of channel liners after the culvert was removed, and using upstream "U" boulder structures to keep the stream from cutting into the streambanks during high flow events.

Figure 2-12: Turbidity During Project Activities

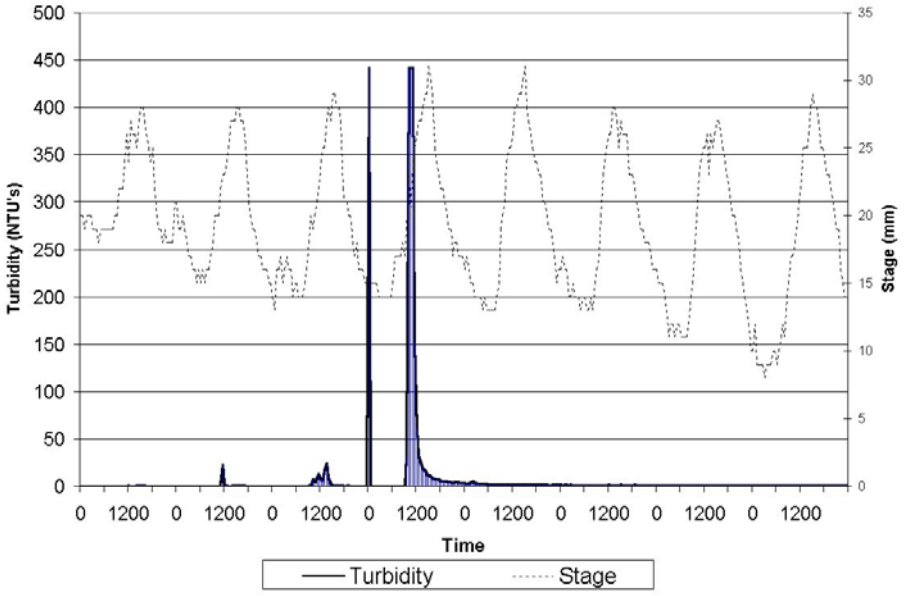


Figure 2-13: Nanny Creek During Activity

Figure 2-14: Nanny Creek After Activity

Figure 2-15 illustrates stream stage in Nanny Creek based on half hourly readings from a site near the downstream turbidity collection site. This chart details deposition of approximately 130 mm of material during a storm on September 30th. This material that was deposited appears to be associated with the alluvial deposits near the culvert inlet and from unconsolidated material that was used to "bed" the culvert. Water Quality Protection Best Management Practices that were used to prevent the movement of sediment included channel liners, bio-bags, erosion control on side slopes (heavy mulch and grass seed), and boulders formed in a downstream U to prevent channel bank erosion.

Figure 2-15: Nanny Creek Stage Sept-Oct 2000

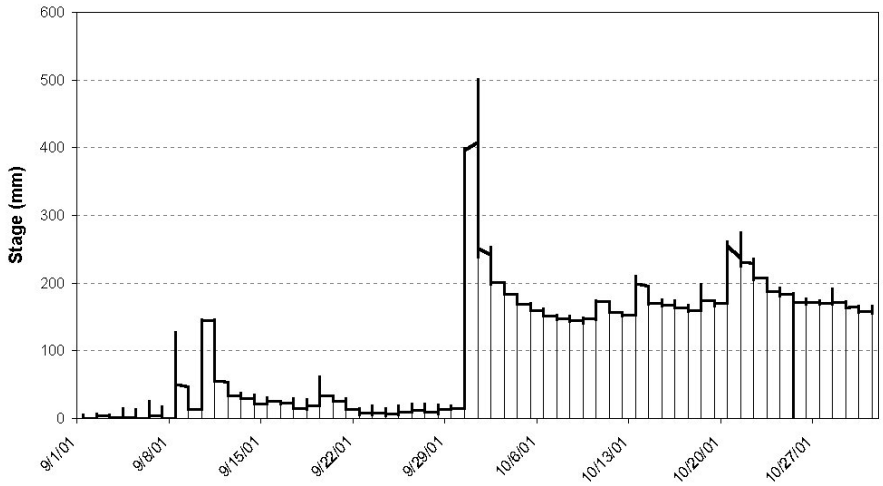


Figure 2-16: Downstream Turbidity Site After Activity

Wilcoxen-Mann-Whitney Test Results

Turbidity data was used to assess effects associated with the decommissioning project on raw water quality and associated suspended solids. For the analysis, the hourly data, daily averages, and daily medians were used to compare the above and below sites and the below site before and after activity.

Analysis of raw, hourly turbidity data (Table 2-26):

Above and Below Activity: Comparison of the above and below project sites indicates slightly higher turbidities **before** the project at the lower site, lower turbidities at the below project site **during** activity, and no difference in turbidity **after** the project was completed.

Below Activity: An analysis of the **before** and **during** activity data below the activity showed slightly higher (0.4 NTU's) turbidities during the activity. This is an extremely low level of turbidity not visible to the unaided eye. Similarly, an analysis of **before** and **after** activity turbidity data also showed slightly higher (0.4 NTU's) turbidities **after** the activity.

Comparisons of the **below** activity site were made to filter out the influence of the different sites. For both the **before** activity to the **during** activity and pre-activity to **after** activity, comparisons the **during** and **after** activity turbidities were slightly higher (0.3 to 0.4 NTU's).

For the **before** to **during** activity period, the streamflows were of similar magnitude so it is assumed results are associated with project activities. For the **before** activity to **after** activity periods, streamflows were of different magnitudes (summer low flow streamflows compared to higher fall streamflows with associated storm events), so it is unclear if the differences are associated with project activities or higher streamflows and associated storm events.

Analysis of daily turbidity data (Tables 2-27 and 2-28):

In order to filter out some of the spikes associated with the raw data from the turbidity probes (air bubbles or leaves can show up as high turbidity values), the daily average and daily median values were used to compare **above** and **below** activity sites and **before** and after the activity. Both the average and median were analyzed because the daily average values could demonstrate unrealistic high turbidities based on a few erroneous readings from an air bubble.

As Table 2-27 and Table 2-28 illustrate, based on daily averages and or daily medians, the below activity site does not demonstrate higher turbidity levels associated with project activities.

Table 2-26: Hourly Turbidity Values Data Analyses

Comparison	Difference in Medians	Significance Level
Pre-activity above and below sites	0.4 (lower site higher)	99%
During activity above and below sites	0.5 (upper site higher)	99%
During and after activity above and below sites	0.0	99%
Pre and During activity below site	0.4 (during activity higher)	99%
Pre and Post activity below site	0.3 (post activity higher)	99%

Table 2-27: Daily Average Turbidity Values Data Analyses

Comparison	Difference in Medians	Significance Level
Pre-activity above and below sites	1.5 (upper site higher)	99%
During and after activity above and below sites	0.5 (upper site higher)	99%
Pre and Post activity below site	0.03 (pre activity higher)	Not significant

Table 2-28: Daily Median Turbidity Values Data Analyses

Comparison	Difference in Medians	Significance Level
Pre-activity above and below sites	0.0	99%
During and after activity above and below sites	0.0	99%
Pre and Post activity below site	0.0	Not significant

Conclusions

- Even though the recommended Water Quality Best Management Practices were implemented there were some elevated turbidity levels during project implementation and sediment deposition downstream from the project.

- Comparison of the above and below project sites for the during and after project period indicates no increase in turbidities associated with the project.

- Comparison of the below site for the pre activity to during activity period indicates slightly higher turbidities (0.4 NTU's) for the 7 day activity period. Comparison of the pre-activity to post activity period indicates higher turbidities during the post activity period, however, it is unclear if the differences are associated with the project or higher streamflows during the post activity period.

- Comparison of daily average and daily median data indicate no increased turbidity levels associated with project activities.

Recommendations

Best Management Practices

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

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

- Consideration should be given to contracting for some of the BMP monitoring, given limited personnel and the large program of work associated with flood restoration and other project planning efforts.

Watershed Effects Analyses

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

Effectiveness Monitoring

- Continue both baseline and project-related water temperature monitoring Forest-wide. Continue implementing the program to monitor turbidity at key locations on the Forest, focusing on streams/watersheds which are source areas" for domestic/municipal water supplies. For those streams identified as exceeding state water quality temperature standards, do additional monitoring in 2001/2002 to determine if the water temperatures are naturally elevated. If the elevated water temperatures are a result of management activities or wildfire, work will begin on Water Quality Restoration Plans.

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.

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 2000, 0.0 miles of local road were constructed for timber support on the Forest. There were 28.3 miles of road reconstruction. Most of this reconstruction is repair of damage resulting from the 1996 and 1997 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

Currently, 475 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. No additional roads were closed in FY2000. Approximately 420 miles have been decommissioned and removed from the transportation system. In FY 2000, approximately 18 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.

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 2-29: 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 2000 there were 842 miles of road classified in maintenance levels 3-5 (maintained for passenger car use). Approximately 442 miles were maintained to standard. There were 2,130 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 will reduce 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. The Forest Roads Analysis will also provide input for identifying unneeded roads and levels of maintenance.

- Develop a GIS/INFRA/Travel Routes analysis to determine current forest-wide road densities for management areas over the entire forest.

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 2000. The site was found to be unoccupied. This site has not been occupied for several years. This former nest site has been protected and has received use by ospreys. No communal roosts have been located on the Forest but an individual roost site was identified. This site is currently protected by management guidelines in the Bull Run Watershed.

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 2000, 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. There will be little opportunity to increase the monitoring effort for the current year. In 2000, there was approximately 100 acres of late successional reserve (LSR) pre-commercial 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 2000 was confined to the two known nest sites. Fledging success at the two identified sites increased in 2000 with both nest sites producing two young each. 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.

Lynx

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

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 2000. The Wetland Wildlife Watch surveys indicated they found red-legged frogs and egg masses in the Bull Run reservoir in 2000. 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

The harlequin duck was removed from the Regional Forester's Sensitive Species List in FY 2001. No surveys for harlequin duck were conducted in 2000. Based on previous surveys this species occurs in several location across the Forest. Nesting has been recorded in past years. Habitat enhancement in 2000 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 2000 season. Volunteers with Wetland Wildlife Watch and Portland Audubon Society and Forest Service employees were used to maximize the effort. Fourteen sightings resulted in 1-3 adult observations per visit and three observations of 1-2 colts. At a minimum there were 7 adult cranes on the Mt. Hood and 2 adults seen on the Confederated Tribes of Warm Springs lands.

Cope's Giant Salamander

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

Townsend's Big-eared Bat

The Townsend's Big-eared bats was removed from the Regional Forester's Sensitive Species List in FY 2001. No surveys were conducted for this species this in 2000. The distribution and population trend across the forest is unknown.

Wolverine

No surveys were conducted for wolverine in 2000 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 2000. Up to 6 birds were observed from April 2 to the end of 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. However, we are falling below that 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 Knutson-Vandenberg (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 2-30: 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.
- Expand Lynx surveys to sample habitats proposed as critical for lynx to determine lynx habitat use in the southern cascades.
- Continue use of prescribed fire to enhance big game forage areas on east side districts.

Threatened, Endangered and Sensitive (TES) Plants

Sensitive Plant species that occur in forest habitats are considered to be stable at this time and were not monitored in 2000. Monitoring efforts were focused on species that occur in non-forested habitats including meadows, grasslands, cliffs and balds, which continue to be more vulnerable. Threats include encroachment by noxious weeds, off-road vehicle use and recreational rock climbing.

Results

Cooperative management of violet Suksdorfia (*Suksdorfia violacea*) with a local rock climbing association has resulted in the continuing viability of this Sensitive species while allowing for controlled recreational use of the site.

Monitoring of the black lily (*Fritillaria camschatcensis*) through a Challenge Cost-Share agreement with the Native Plant Society found the Forest's only population to be stable.

Monitoring the Forest's only site of Watson's desert-parsley (Lomatium watsonii) found the encroachment of knapweed, a noxious weed species, to be a continuing threat to the long-term viability of the population.

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

- The manual treatment of noxious weeds at the Watson's desert-parsley site has been successful in keeping knapweed from dominating the site, however, these treatments have had little effect in eradicating noxious weeds from the site. Consider the use of chemical weed treatment on a limited basis and determine its effectiveness.

- Continue to manage the violet Suksdorf site cooperatively with the Pete's Pile Climbing Association and monitor population numbers.

- An effort should be made to monitor adder's tongue (*Ophioglossum pus*illum) and tall agoseris (*Agoseris elata*), two Sensitive plant species which occur in moist meadow habitat and vulnerable to disturbance.

Northwest Forest Plan - Survey and Manage Species

Mollusk Species

The following Survey and Mange (C-3) terrestrial mollusk species are suspected to fall within the range of the Mr. Hood National Forest: *Deroceras 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 coeruleum* from the survey and manage list.

Table 31 shows the total number of Survey and Mange mollusk species were found in the 2000 field season. There are still a few "unknown mollusk" awaiting identification by a mollusk expert.

Table 2-31: Survey and Manage Mollusk Species Found on Mt. Hood National Forest 2000

Survey and Manage Species	Barlow, Hood River, and Zigzag	Clackamas River
Prophysaon dubium*	45	3
Monadenia fidelis minor	36	1
Prophysaon coeruleum*	0	101
Megomphix hemphilli	0	1
Hemphillia malonei	29	233
Total	110	339

** Removed from survey and manage list in 2001.*

Larch Mountain Salamander

Efforts to survey projects for Larch mountain salamander were undertaken in FY 2000. No Larch mountain salamanders were discovered during any of the surveys. The protocol for this species requires use of many personnel to adequately survey for this species. The survey protocol for this salamander requires searching every 25 meters along a series of transects three times during the season when the temperature and moistures are suitable.

One result of the Larch mountain salamander surveys was to expand the known range and numbers of the Oregon slender salamander on the Barlow and Hood River Districts. There were 544 individual Oregon slender salamanders identified on the Barlow Ranger District and 232 individuals identified on the Hood River Ranger District. This is a substantial increase in numbers and range for the species. Interestingly, this species was listed as sensitive based on information provided by the Oregon Natural Heritage program. Efforts will be 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 2,682 acres on the Forest during the Summer and fall of 2000. Twelve timber sales were surveyed on the Clackamas Ranger District and three sales were surveyed on the Zigzag Ranger District.

There were eight suspected nests discovered during the surveys and seven were climbed by a contractor. Those seven were determined to be nests of other species. The eighth was determined to be mistletoe brooms and was not climbed.

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.

FY 2000 efforts were focused on the control of knapweed species (*Centaurea* spp.) west of the Cascade Crest, tansy ragwort (*Senecio jacobaea*) east of the Crest, hound's-tongie (*Cynoglossum officinale*), common toadflax (*linaria vulgare*) and non-native hawkweeds (*Hieracium aurantiacum*, *H. pratense*).

Table 2-32: Acres of Noxious Weed Treatment

Acres Treated by Method					
Chemical	**Manual**	**Mechanical**	**Biological**	**Fire**	**Total**
267	166	30	10	0	473

Monitoring Questions

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

  Yes. Spotted, diffuse and meadow knapweeds and hound's-tongue east of the Cascade Crest, giant knotweed in the Sandy, Clackamas and Zigzag River watersheds and non-native hawkweeds in the vicinity of Lolo Pass.

- ***Are new infestations occurring?***

  Yes. New populations of giant knotweed and hawkweed have been detected in the past year.

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

  Some widely distributed species that have more than one biological control agent established have seen some control. These include tansy ragwort and Scot's broom west of the Crest. No biological controls have been approved for hound's-tongue, hawkweed, giant knotweed or common toadflax.

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

  When mitigations are recommended, there is a good attempt to implement them, however ground disturbing activities have occurred where no weed risk analysis or mitigations to reduce the risk of infestation are completed.

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

  Yes. County and State applicators completed all forms and abided by standards and guidelines stated in the FEIS.

Results

Chemical control methods were used to treat high priority hound's-tongue and knapweed sites on Barlow Ranger District as well as high priority knapweed sites on Zigzag and Clackamas River Ranger Districts. These treatments have been effective in reducing the number of plants, however, plants germinating from seed already in the soil will necessitate treatment in future years until this seed bank is exhausted.

Surveys for non-native hawkweeds in the vicinity of Lolo Pass found satellite populations in the Trillium Lake and Old Maid Flat Area. The Mt. Hood population is one of two currently known from Oregon and is a priority for treatment. To reduce the potential for wind-born seed spreading to other areas, manual treatments were made where plant density was the greatest. Weed eaters and a mower were used to cut the flowerheads and reduce seed production. While cutting may reduce the risk of new populations establishing by seed, these species also propagate vegetatively from underground stems. It appears that repeated cutting may actually increase plant densities where it is already established. The estimated acreage of hawkweed on the Forest has increased from 5 acres in 1999 to 10 acres in 2000.

All rock pit and gravel storage areas on Hood River and Barlow Ranger Districts were inventoried for noxious weeds and management recommendations made.

A survey for giant knotweed populations in the Sandy River was completed in cooperation with the Sandy River Watershed Council, METRO and The Nature Conservancy. A number of small, previously unknown populations were detected.

Recommendations

- The hawkweed infestation on Zigzag Ranger District is a high priority for treatment. With only one other population known in the State, not controlling the Mt. Hood population could have future implications for the entire area. Mechanical treatment should be viewed as a stop-gap measure for the short-term. It is likely that chemical methods will be the only means of controlling and eventually eradicating the population. Work needs to begin on the completion of an environmental analysis that includes herbicide use as a treatment method.

- Giant knotweed appears to be spreading rapidly within the Sandy, Zigzag and Clackamas systems. The spread of this riparian weed could adversely affect species dependent on riparian habitats, including fish. Greater effort is needed to complete a survey of known populations on the Forest and apply treatment.

- 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.

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 FY00.**

46.0 million board feet was **offered** for sale in FY 00.

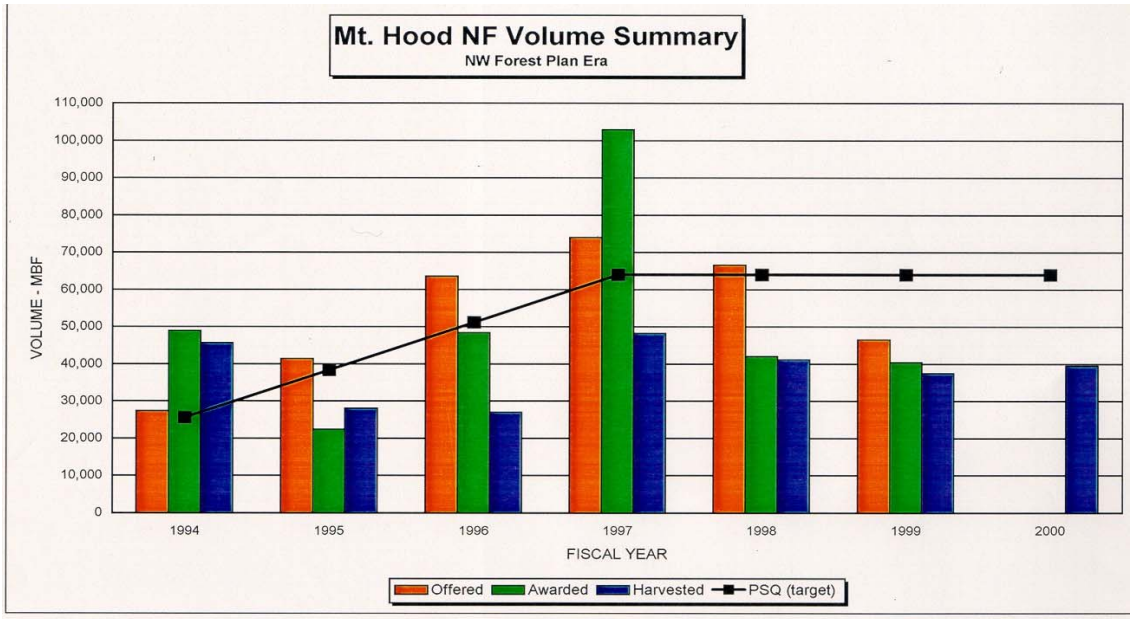
The following statistics show additional timber program details for FY 2000.

Table 2-33: Timber Volume Sold/Harvested - FY 00

Timber Volume Sold and Harvested		
	MMBF	**CCF**
Volume Offered	0 MMBF	0
Volume Sold and Awarded	0 MMBF	0
Value (Total Sold Revenue)	0	
Volume Harvested	39.4 MMBF	134,142 CCF
Acres Harvested	3,245 Acres	
Other Products Sold and Harvested		
Volume of Firewood Harvested	3,063 cords	
Value	$30,063	
# of Christmas Trees Harvested	4,107	
Value	$20,963	
# of Bough Permits	30	
Value	$120,545	
# of Bear Grass Permits	328	
Value	$11,810	

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 2-17: Mt. Hood National Forest Volume Summary



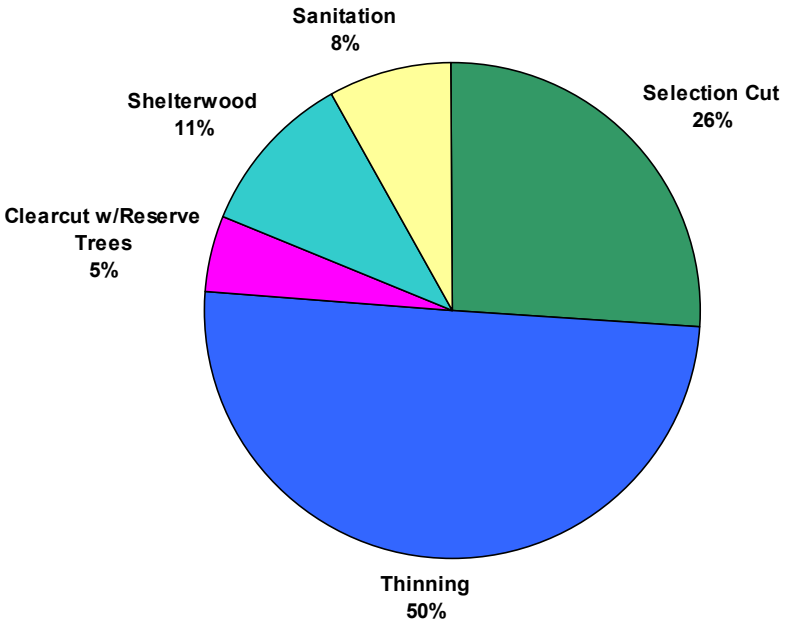
Volume Table - MBF

Year	Offered	Awarded	Cut	Vol PSQ
1994	27,300	48,946	45,647	25,600
1995	41,400	22,440	28,088	38,400
1996	63,600	48,409	26,961	51,200
1997	74,000	102,917	48,268	64,000
1998	66,592	42,073	41,148	64,000
1999	46,500	40,400	37,475	64,000
2000	0	0	39,408	64,000

Harvest Methods

The following figure displays the types of harvest methods that were implemented during FY 00. Commercial thins accounted for the majority of the acres treated (50%), followed by selection cutting (26%), shelterwood (11%), sanitation/salvage (8%) and clearcut with reserve trees (5%).

Figure 2-18:Silvicultural Harvest Methods (Acres Treated - 3,245)



Evaluation

Acres treated with different silvicultural methods shows a good mix of practices implemented to meet management objectives. Amounts of harvest methods assumed in the 1990 Forest Plan are different than those currently reported because clearcutting or regeneration harvest was assumed almost entirely in 1990 modeling. Reported acres follow management standards and guidelines, though, and the increases in thinnings, selection cuts and sanitation cuts, are a result of forest health issues and the concentration of efforts on younger stands. The very small amount of clearcut harvest is a direct response to standards and guidelines calling for more reserve trees and different approaches to harvesting to meet management objectives. The mix of harvest methods also reflect the shift in emphasis to eastside stands with primary methods of shelterwood, selection cuts and thinnings. Monitoring indicates that current management direction is being achieved.

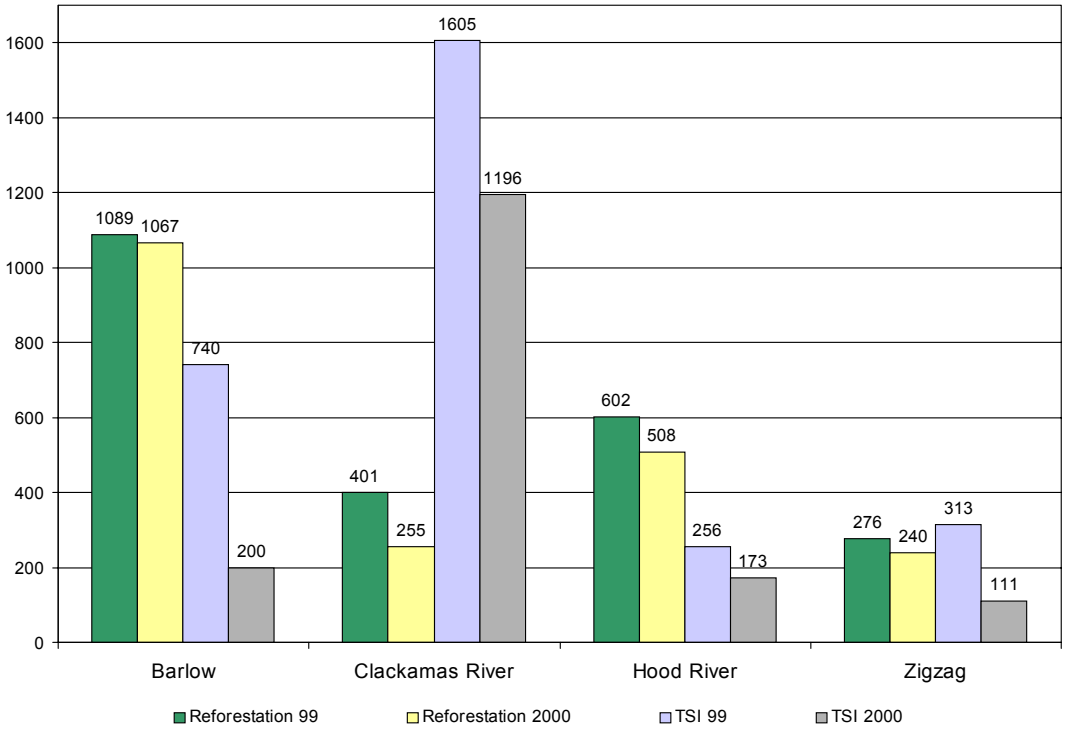
Silvicultural Activities

Silvicultural activities in FY00, such as planting, thinning, release, and fertilization of young stands, are at lower levels than previous years. The Mt. Hood National Forest reforested 2,070 acres in FY00, compared to 2,368 acres in FY99, 3,830 in FY98, 3,877 in FY97 and 4,758 in FY96. This downward trend in planting is directly related to the decreased level of regeneration harvests and decreased level of timber harvest overall.

The number of acres accomplished exceeded targets assigned to the Forest, although the amount of acres being precommercially thinned is falling below Forest Plan projections for the eighth year in a row. This is due to lack of appropriated funding from Congress to accomplish our needs. The Forest accomplished 1,680 acres of combined thinning, release and fertilization on young stands less than 25 years old, which is a very small proportion of acres treated compared to the need. Acres treated are also very small as compared to previous years: 2,914 treated acres in FY99, 3,759 treated acres in FY98, 2,295 acres in FY97 and 5,094 acres treated in FY96.

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

Figure 2-19:Reforestation and Timber Stand Improvement Accomplishments



Evaluation (Silvicultural Activities)

The total amount planted continues to decrease from previous levels. This is due to the overall decrease in harvest levels and less acres of regeneration harvest prescription.

Timber stand improvement (precommercial thinning) decreased by 42% from 1999 levels and this amount is still substantially less than the identified need. This is due to congressional appropriations that emphasize funding of reforestation and do not fully fund thinning. Currently we are not meeting our Forest Plan projections of thinned acres, and we are continuing to add to the backlog of unthinned young stands. This has the potential to create unhealthy forest conditions for the future.

Regeneration Activities

Reforestation survival information available for trees planted in fiscal year 2000 is from the first year survival and growth report. This showed from inventory of staked trees that the total first year survival, for all species planted, was 62%, which is below the regional goal of 80%. The primary reason for this fall is that the two eastside ranger districts made one last effort to bring the stocking level up on some of the older, poorly stocked plantations. Many of these acres lacked good site preparation for vegetation and for pocket gophers. Additionally, the lack of adequate funding for gopher control was a contributing factor. Combine these factors with the hot, dry summer and low survival was the result.

Acres harvested five years ago are tracked to ensure that reforestation will occur within the five year period required by law. The minimum standard to be considered adequately stocked is 125 trees per acre. Approximately 97-99% of the acres are now adequately restocked. The remaining one to three percent that is not adequately restocked has been planted but has less than 125 trees per acre because of rock piles, thick duff, pocket gophers, or other site factors. These are being evaluated for further treatments. In addition, natural regeneration may increase the stocking levels.

In order to maintain species diversity in our regeneration program, seven different tree species were planted in FY 00, including Noble fir, Western larch, lodgepole pine, Western white pine, ponderosa pine, Douglas fir and red alder. An ongoing program of planting native conifer shrub, grass and forb species continue to be implemented on the Forest. Natural regeneration also supplements the diversity of planted species.

The timber management shift from westside to eastside has also shifted the volume of seedlings by species, for example less Douglas-fir and more ponderosa pine. The eastside sites are often more difficult to reforest due to low moisture levels and pocket gophers.

Evaluation

On the average, this year's survival was 17% below that of FY99, which was 79%. The decrease is attributed to "last chance" plantings of difficult sites. The regional goal for first year survival is 80%. The forest previously had a 5-year average of 80% for first year survival and past experience indicates that reforestation will occur within the five-year period required by law. 97-99% of the acres harvested five years ago are adequately reforested and therefore compliant with NFMA and the Chief's policy of reforestation within five years. Approximately one to three percent, have not met the five year regeneration requirement and further treatments are being evaluated.

Forest Health - Insect Activity

Insect caused defoliation and mortality on the forest are monitored annually by an aerial sketchmap survey. The survey is conducted by Forest Insect and Disease personnel and maps current effects only, often indicated by red foliage. In 2000 the aerial survey showed approximately 5,524 acres of visible defoliation on the Mt. Hood National Forest and 7,876 acres affected by insects other than defoliators. The primary damaging agent in FY00 was the Douglas-fir beetle on all districts. A combination of larch casebearer and larch needle blight again affected more than 6,700 acres on the Barlow Ranger District. Of note is very little damage from mountain pine beetle, but an increase in balsam woolly adelgid.

Table 2-34: Forest Health Indicators - Insect Activity

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Acres currently affected by defoliating insects	234,245	47,535	32,301	12,693	794	5,323	8,688	6,738	5,524
Number of trees killed by bark beetles, adelgids and other damaging agents	12,092	4,340	2,700	9,483	855	11,130	4,614	7,637	2,861
Acres affected by agents other than defoliators	20,835	8,920	4,275	11,548	3,447	1,968	2,019	6,760	7,876

Note: *This table in past monitoring reports displayed a mix of reporting areas. Some years included only the Mt. Hood National Forest and some years included the forest and surrounding ownerships. The figures have been revised and updated in this report to include only the Mt. Hood National Forest.*

Evaluation

More than 6,700 acres on the Barlow Ranger District were affected by the larch casebearer and larch needle blight. 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. Therefore, the defoliation from casebearer is expected to decrease as the predators increase.

Both larch needle blight and larch needle cast are native organisms and neither of them cause serious impacts on thrifty, dominant and codominant trees. However, these larch needle pathogens, alone, or together with larch casebearer may kill or further reduce the competitive abilities of low-vigor suppressed or intermediate larch.

Approximately 2,600 acres were affected by the Douglas-fir beetle which is an endemic insect that breeds in weakened or down trees. More than likely these acres are associated with past defoliation, root disease or pockets of windthrow, and the Douglas-fir beetle continues to operate as expected. Levels of mortality are lower than FY99 although the aerial sketch map survey revealed significant areas of mortality from the Douglas-fir beetle in the scenic area.

Mountain pine beetle attacks trees under stress and is highly related to stand density. Overstocked stands are very susceptible, therefore selection harvest and commercial thinnings have been implemented in recent years to decrease stand susceptibility to insect attack. Actual pine beetle mortality decreased substantially in FY99 and FY00; however, the presence of large acres of overstocked stands increases the probability for insect outbreaks in the future.

Of interest is the 1,862 acres of balsam woolly adelgid identified by the aerial sketch map survey. This insect is a normative species that has become widely established in North America where it is highly destructive to Pacific silver fir, subalpine fir, and grand fir. The Mt. Hood National Forest was included in regional ground monitoring efforts in FY99 to see if populations are increasing. The aerial sketch map survey showed 656 acres of this insect in FY99.

Forest Health Restoration Spreadsheet

This was the fourth year the Forest implemented an additional reporting requirement for ecosystem monitoring. A "Forest Health Restoration Spreadsheet" was developed to display numerous activities. These activities, when reported together in context, are generally accepted as representing those activities we need to do to maintain or restore health of each watershed. The key question being asked is: *"To what degree is the forest outside the range of natural conditions, desired conditions or standards with regard to the factors below, and what is our rate of progress toward the desired state?*"

- Resilience of Landscape to Fire
- Stand Structure

- Conditions in Riparian Zones
- Noxious Weeds
- Road Density
- Soil Productivity

Enclosed is the "Forest Health Restoration" summary spreadsheet for the Forest. The key question behind the spreadsheet is to report two basic things:

- Total acres of each activity outside: desired condition, range of natural conditions, or FP/NWFP Standards and Guidelines, which would indicate that these acres/miles need treatment. These acres are to be available for treatment, considering the land allocation.
- Treated acres in this last fiscal year, by District. In other words, what was our progress in treating those acres outside desired conditions on our districts? How far did we get in restoring forest health for that particular item?

Figure 2-20: Forest Health Restoration Spreadsheet - Mt. Hood National Forest

FOREST HEALTH RESTORATION - MT. HOOD

Activity	Total Available Miles Needing Treatment as of 10/1/99*	Total Available Acres Needing Treatment as of 10/1/99*	Total Acres Treated by District				FY00 Total Forest Acres Treated
			Barlow	Clackamas River	Hood River	Zigzag	
Total Acres within Watersheds			175,497	414,879	208,416	266,606	
Forest Service Acres			164,632	409,993	190,592	256,533	
Prescribed Burn							
Natural Fuel		30,250	1,500	0	0	0	1,500
Activity Fuel		477	477	121	0	0	598
Fuels Treatment (mechanical & other)							
Natural Fuel		4,110	0	0	0	0	0
Activity Fuel		142	0	0	94	48	142
Precommercial Thinning (overly dense)		16,526	200	596	100	107	1,003
Reforestation							
Planting		4,310	1,046	255	100	230	1,631
Timber Sales							
Fire Salvage		0	0	0	0	0	0
Salvage for Fuels Reduction		10,000	0	0	0	0	0
Commercial Thinning (overly dense)		65,422	982	973	82	48	2,085
Other Forest Health Related		26,115	21	0	348	0	369
Riparian Restoration Projects Outside Stream		5,077	15	18	0	0	33
Noxious Weed Control		16,990					
Herbicide			247	0	0	0	247
Biological			0	0	0	20	20
Mechanical/Manual			13	0	445	0	458
Road Obliteration** - miles	540.00		0	17	0	0	17
Road Closures - miles	150		0	2	0	0	2
Subsoiling		545	15	0	0	0	15
TOTALS	690.00	179,964	4,516	1,982	1,169	453	8,120

*Total acres needing treatment are those acres outside of desired condition and "available" for treatment, considering land allocation. LSR's and wilderness may be available dep

**Road obliteration done for hydrological stability; "hydrologically maintenance free".

Figure 2-21: Forest Health Restoration - Barlow Ranger District

FOREST HEALTH RESTORATION - BARLOW

Activity	Total Available Miles Needing Treatment as of 10/1/99*	Total Available Acres Needing Treatment as of 10/1/99*	Progress (Treatment Acres) by Watershed								FY00 Total Acres Treated
			East Fork Hood River	Mill Creek	Miles Creek	White River	Warm Springs River	Badger-Tygh Creek	Rock-Three Mile Creek	Wapinitia Creek	
Total Acres within Watershed			4,531	11,396	34,836	42,824	1,320	45,987	34,551	52	
Forest Service Acres			4,531	10,201	33,382	42,062	1,320	41,271	31,812	52	
Prescribed Burn											
Natural Fuel		30,000				0		1,500			1,500
Activity Fuel		477		373	104	0			0		477
Fuels Treatment (mechanical & other)											
Natural Fuel		10									0
Activity Fuel		0									0
Precommercial Thinning (overly dense)		5,461		0	0	200		0	0		200
Reforestation											
Planting		1,703		0	303	433		310	0		1,046
Timber Sales											
Fire Salvage		0									0
Salvage for Fuels Reduction		0									0
Commercial Thinning (overly dense)		25,004			0	982	0	0	0		982
Other Forest Health Related		17,263				21					21
Riparian Restoration Projects Outside Stream		1,985			5	0.00			10		15.00
Noxious Weed Control		13,740									
Herbicide			3		18	139		12	42	34	248
Biological					0	0	0	0	0	0	0
Mechanical/Manual					1	6		2	4	0	13
Road Obliteration** - miles	305							0.00	0.00		0.00
Road Closures - miles	90				0						0
Subsoiling		384			0	15		0	0		15
TOTALS	395	96,027	3	373	431	1,796	0	1,824	56	34	4,517

*Total acres needing treatment are those acres outside of desired conditions and "available" for treatment, considering land allocation. LSR's and wilderness may be available depending on type of activity..

**Road obliteration done for hydrological stability; "hydrologically maintenance free".

Figure 2-22: Forest Health Restoration - Clackamas River Ranger District

FOREST HEALTH RESTORATION - CLACKAMAS RIVER

Activity	Total Availa Miles Needi Treatment as of 10/1/9	otal Availa cres Needing Treatment s of 10/1/9	Progress (Treatment Acres) by Watershed																FY00 Total Acres Treated
			Warm Springs River	Olallie Lake	Shitike Creek	Salmon River	North Fork eteenb River	Molalla River Tribs	Roarin River	Lower lackam River	uth Fo lackam River	Oak Grove Fork lackam River	ollawas River	Upper lackam River	Fish Creek	Eagle Creek	Clear Creek	North Fo lackam River	Hot Springs Fork ollawas River	
Total Acres within Watershed			10,335	2,965	703	3	7,540	2,168	26,777	40,923	15,235	62,744	58,420	94,794	29,498	6,200	1,858	16,576	38,140	
Forest Service Acres			10,335	2,965	703	3	7,540	2,168	26,777	40,397	14,108	62,744	58,420	94,656	29,498	6,132	1,617	13,790	38,140	
Prescribed Burn																				
Natural Fuel		0																		0
Activity Fuel		0	15							0	34	0	14	24				25	9	121
Fuels Treatment (mechanical & other)																				
Natural Fuel		0																		0
Activity Fuel		0												0						0
Precommercial Thinning (overly dense)		6,206								63	0	124	0	409	0	0	0	0	0	596
Reforestation																				
Planting		1,482	0							0	4	47	23	142	0	5	25	0	9	255
Timber Sales																				
Fire Salvage		0																		0
Salvage for Fuels Reduction		0																		0
Commercial Thinning (overly dense)		15,500						41	0	338	0	161	89	148	0	0	36	160	0	973
Other Forest Health Related		0																		0
Riparian Restoration Projects Outside Str		0								5	0	5	0	4	0			4		18
Noxious Weed Control		250																		
Herbicide										0		0		0						0
Biological									0	0	0	0	0	0	0	0		0	0	0
Mechanical/Manual										0		0	0	0						0
Road Obliteration** - miles	17												2	0	15				0	17
Road Closures - miles	2							1				1								2
Subsoiling		161										0	0	0	0	0	0	0	0	0
TOTALS	19	23,599	15	0	0	0	0	42	0	406	38	338	128	727	15	5	61	189	18	1,982

*Total acres needing treatment are those acres outside of desired conditions and "available" for treatment, considering land allocation. LSR's and wilderness may be available depending on type of activity.

**Road obliteration done for hydrological stability; "hydrologically maintenance free".

Figure 2-23: Forest Health Restoration - Hood River Ranger District

FOREST HEALTH RESTORATION - HOOD RIVER

Activity	Total Available Miles Needing Treatment as of 10/1/99*	Total Available Acres Needing Treatment as of 10/1/99*	Progress (Treatment Acres) by Watershed												FY00 Total Acres Treated
			West Fork Hood River	East Fork Hood River	Mill Creek	Columbia Gorge Tribs East	Hood River	Iddle For Hood River	White River	Badger-Tygh Creek	Columbia Gorge Tribs West	Sandy River	Salmon River	Oak Grove Fork Clackamas River	
Total Acres within Watershed			47,667	46,593	3,903	35,629	7,960	23,398	34,411	213	5,788	3	2,848	3	
Forest Service Acres			41,195	43,395	3,903	35,307	2,543	21,069	34,411	213	5,788	3	2,763	3	
Prescribed Burn															
Natural Fuel		250		0											0
Activity Fuel		0													0
Fuels Treatment (mechanical & other)															
Natural Fuel		4,100	0	0											0
Activity Fuel		94	89	2				3							94
Precommercial Thinning (overly dense)		2,599	27						73						100
Reforestation															
Planting		571	77	424	16			0	0						517
Timber Sales															
Fire Salvage		0													0
Salvage for Fuels Reduction		10,000													0
Commercial Thinning (overly dense)		14,918	0					82							82
Other Forest Health Related		4,652	348	0			0								348
Riparian Restoration Projects Outside Stream		2,792	0					0	0						0
Noxious Weed Control		3,000													
Herbicide															0
Biological			5	5	0			10							20
Mechanical/Manual			120	200	25	5	0	80	15						445
Road Obliteration** - miles	218		0												0
Road Closures - miles 1/	58		0	0											0
Subsoiling		0	0	0.00											0.00
TOTALS	276	42,976	666	631	41	5	0	175	88	0	0	0	0	0	1,606

*Total acres needing treatment are those acres outside of desired conditions and "available" for treatment, considering land allocation. LSR's and wilderness may be available depending on type of activity.

**Road obliteration done for hydrological stability; "hydrologically maintenance free".

1/ 293 miles of road identified in ATM, Category 5. Of this number (293), it is est. that 75% (or 220) will be decommissioned while approx. 25% (73 miles of road) will be closed.

Figure 2-24: Forest Health Restoration - Zigzag Ranger District

FOREST HEALTH RESTORATION - ZIGZAG

Activity	Total Available Miles Needing Treatment as of 10/1/99*	Total Available Acres Needing Treatment as of 10/1/99*	Progress (Treatment Acres) by Watershed													FY00 Total Acres Treated
			West Fork Hood River	Columbia Gorge Tribs East	White River	Columbia Gorge Tribs West	Bull Run River	Sandy River	Zigzag River	Salmon River	Little Sandy River	Gordon Creek	Roaring River	Oak Grove Fork Clackamas River	Eagle Creek	North Fork Clackamas River	
Total Acres within Watershed			1,596	1,061	5	4,526	68,816	41,331	37,752	65,005	13,698	3,257	393	16,909	12,254	3	
Forest Service Acres			1,596	1,061	5	4,526	65,637	37,839	36,778	64,714	13,228	3,065	393	16,909	10,779	3	
Prescribed Burn																	
Natural Fuel		0															0
Activity Fuel		0															0
Fuels Treatment (mechanical & other)																	
Natural Fuel		0															0
Activity Fuel		48								48							48
Precommercial Thinning (overly dense)		2,260						0		0				107	0		107
Reforestation																	
Planting		554						98		0				132	0		230
Timber Sales																	
Fire Salvage		0															0
Salvage for Fuels Reduction		0															0
Commercial Thinning (overly dense)		10,000								48							48
Other Forest Health Related		4,200															0
Riparian Restoration Projects Outside Stream		300															0
Noxious Weed Control		0															0
Herbicide									0								0
Biological							0	0	0	0	0			0			0
Mechanical/Manual									0								0
Road Obliteration** - miles	0.00																0.0
Road Closures - miles	0																0.0
Subsoiling		0															0
TOTALS	0.00	17,362	0	0	0	0	0	98	0	96	0	0	0	239	0	0	433.0

*Total acres needing treatment are those acres outside of desired conditions and "available" for treatment, considering land allocation. LSR's and wilderness may be available depending on type of activity.

**Road obliteration done for hydrological stability; "hydrologically maintenance free".

Evaluation

The forest continues to report on forest health restoration activities. Further refinement and verification is still needed to:

- Accurately display the total available acres needing treatment, and
- Provide consistency with other reporting documents.

The value of this spreadsheet is to point out broad areas where the resource is outside the desired condition and our rate of progress in treating that need. Currently there are several areas of concern on the forest regarding forest health as indicated on the spreadsheet.

- More than 16,000 acres of overly dense, young stands are in need of precommercial thinning, with an average of 15-25% of the need treated each year. In FY00 only 6% of the thinning need was accomplished due to minimal funding and the backlog keeps increasing.
- More than 65,000 acres of overly dense stands are in need of commercial thinning with less than 5% of the stands treated.
- Almost 17,000 acres of noxious weed problem areas are identified with less than 5% of the acres being treated.
- Several hundred miles of road have been identified for decommissioning, yet only a small percentage have been treated due to funding shortages.
- There are large amounts of natural fuel accumulations, especially in the Badger Creek wilderness. Only a small percentage of the need is being treated forestwide.

Forest Inventories

Ecological Unit Inventory

A multi-scale ecological unit inventory is being conducted on the Forest. The objective of the inventory is to classify and map ecological units based on relationships of climate, geology, geomorphology, soil and vegetation properties that determine ecological potentials, ecosystem capabilities and predicted responses. Inventory work is being completed at the landscape scale to facilitate land management planning analysis work. Work is also being completed at the land unit scale to validate and refine landscape level concepts. This hierarchical framework for defining ecological units at different scales provided by the inventory products allows a scientific basis for implementing ecosystem management principles at different levels of land planning.

Land unit mapping was completed on 10,000 acres in 2000.

Evaluation

There is an active schedule for inventories to validate or improve current data. The Ecological Unit Inventory is coordinated out of the Mt. Hood Forest Headquarters; however, staffing for this project came from Hood River and Barlow Ranger Districts. Additional staffing will be needed in order to accelerate the inventory. At the current rate of accomplishment, the Ecological Unit Inventory for the forest would take another 20 years.

Model Assumptions

Timber yields in our Forest Plan were generated from lands that are considered suitable for timber harvest. They 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 2-35: 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

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

Of the total acres harvested in FY 99, the following displays the percentage split between Northwest Forest Plan land allocations:

Administratively Withdrawn	2%
Late Successional Reserves	<1%
Riparian Reserve	0%
Matrix	97%
Total	100%

Table 2-36: Acres Harvested by Forest Plan Management Area in FY92-FY2000 (Data not available in FY94)

Management Area		Acres Harvested by FY							
		92	93	95	96	97	98	99	00
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
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
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
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
B12	Back Country Lakes					3			
C1	Timber Emphasis Area	2,723	1,896	744	510	1,064	2,104	1,762	2,257
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

**Note: The number of acres indicated here are slightly higher than the figure for acres harvested that is displayed earlier in this monitoring report. The acres displayed here are calculated from GIS map layers. Sometimes the mapping is adjusted to fit existing vegetation cells and may be slightly different than the actual harvest unit acres reported in the timber sale tracking.*

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, two-thirds of the total harvest occurred on C-1 Timber Emphasis lands.

Most of the remaining harvest occurred on "B" lands. A small proportion, 39 acres, was harvested on A13 – Bald Eagle Habitat allocation due to a recent increase in the size of this area. The thinning prescription is consistent with the standards and guidelines for A13. In addition, approximately 25 acres were harvested in the LSR due to difficulty in mapping on the ground. However, the thinning prescription was consistent with goals of the LSR (accelerating growth of trees less than 80 years old).

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 ftmds 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.
- Road decommissioning funding.

Update Monitoring Plan to incorporate Northwest Forest Plan direction focusing on a few critical items. These focus items would include:

- Effectiveness of silvicultural prescriptions in meeting given ecosystem objectives.
- Acres harvested where the objective was to accelerate development of late successional habitat.
- Acres treated within Riparian Reserves by objective.
- Amount of Late Successional/Old Growth by watershed.
- Continue to aerially monitor insect activity on the east side of the forest and augment with on the ground observations.

- 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 n order to meet the diversity of demand that exists and continues to grow.

Monitoring Items

Trails

The Forest has approximately 1,030 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 2-37: 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 2-38: FY 2000 Status

Trails	Types	Forest-Wide	Zigzag	Barlow	Hood River	Clackamas
Trails Maintained	To Standard	679	310	140	141	88
	Not to Standard	317	37	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.

Volunteers were an important contributor to trail maintenance activities. The indirect value is from customer satisfaction being able to access public lands safely.

The Fee Demonstration Project is 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. Eighty percent of the fees collected are returned to the forest to fund trail maintenance activities.

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 will 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 use exceeding the local carrying capacity, while other areas receive use within estimated capacities. 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 others on Wilderness ethics and values.

Wilderness Use	Forest Wide
Total	51,201 RVD

Wilderness climbing permits issued for Mt Hood ascents compose a significant portion of the RVD usage of the Mt Hood Wilderness.

Non-Conforming Wilderness Use were connected with helicopters during Search and Rescue Operations.

Non-Conforming Uses	Forest Wide	Zigzag	Barlow	Hood River	Clackamas
Authorized	6	3	2	1	0
Not Authorized	1	1	0	0	0

There were ten Search and Rescue operations in FY 2000 in the Wilderness Areas. The 80% of the search and rescue activities were in the Mt Hood Wilderness and associated with ascent activities. There were eight search and rescue operations last year and six the year before.

Developed and Dispersed Recreation

Use Data for Dispersed Recreation is not collected on this forest. A National sampling process 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. The current use of most of the sites now equals or exceeds their practical capacity for the use year. Backlog rehabilitation and reconstruction associated with these sites are a major concern.

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 by 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 (211,958 permits) represent about 1 million visitors recreating in winter sports on the Mt Hood Forest during the 2000-2001 winter.

Table 2-39: Sno-Park Permits

Sno-Park Permits		2000-2001				1999-2000			
		Annual	3-Day	1-Day	Total	Annual	3-Day	1-Day	Total
DMV Field Office	#	26,374	1,283	56,005	83,662	15,246	564	30,792	46,602
	$	$395,610	$8,981	$166,015	$572,606	$228,690	$3,948	$92,378	$325,014
Agents	#	43084*	7898*	77314*	128,296*	24,906	3,472	42,508	70,886
	$	$646,260*	$55,286*	$231,942*	$933,488*	$373,590	$24,304	$127,794	$525,683
Total	#	69,458*	9,181*	133,319*	211,958*	40,152	4,036	73,300	117,488
	$	$1,041,870*	$64,267*	$210,663*	$1,316,770*	$602,280	$28,252	$220,170	$850,792

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

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 permit system and data collection. Start 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.

- Postpone suitability studies on the 10 identified eligible rivers for the Wild and Scenic River program.

- 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 2000 (October 1, 1999 to September 30, 2000). 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 2000 was $24,693,000. Approximately 4% of the expenditures in FY 2000 were for flood damage repair work from the 1996 and 1997 floods. The following table identifies the major expenditure groups and does not reflect total cost incurred on the forest.

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

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

Table 3-40: Budget Levels Predicted/Actual (Partial List)

Activities	*Forest Plan Predicted (thousands/yar) 1990	** Actual Expenditures (thousands)					
		FY95	FY96	FY97	FY98	FY99	FY00
Fire							
• Brush Disposal	3,056	995	758	632	426	547	346
• Fire Fighting Fund	2,118	1,119	2,145	2,520	2,187	2,173	2,227
Engineering							
• Timber Roads	2,709	244	292	518	586	1015	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
• Trail Construction	1,279	606	253	534	346	383	174
• Road Maintenance	4,079	1,874	1,030	1,139	965	943	747
• Facilities Maintenance	478	271	222	230	264	375	357
Timber							
Salvage Sale Funds		5,918	6,647	4,696	2,501	2,950	4,346
• KV Funds	9,602	4,362	4,566	4,126	2,925	2,890	1,820
Forestland Vegetation	2,792	2,610	1,969	2,331	1,855	1,481	1,170
• Genetic Tree Improvement							
• Reforestation							
• Timber Stand Improvement							
Timber Sale Management	5,270	1,222	2,279	2,465	3,798	2,909	2,210
• Sale Administration							
• Sale Preparation							
• Silvicultural Exams							
Administration							
• General Administration	3,318	2,114	489	1,276	1,479	1,095	898
Recreation/Lands							
• Land Acquisition	50	521	7	128	23	8	0
• Cultural Resources	459	70	55	78	90	83	59
• Land Line Location	10	0	0	0			0
• Trail Maintenance/Recreation	5,924	2,036	2,045	1,692	2,021	1,640	1,983
Fish/Wildlife/Range/Soil/Water							
• Fish-Anadramous	986	768	644	491	557	584	667
• 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	
• Soil Inventory	112	152	60	30		128	69
• 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

** 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.*

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.

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 3-25: Mt. Hood National Forest Budget Trends

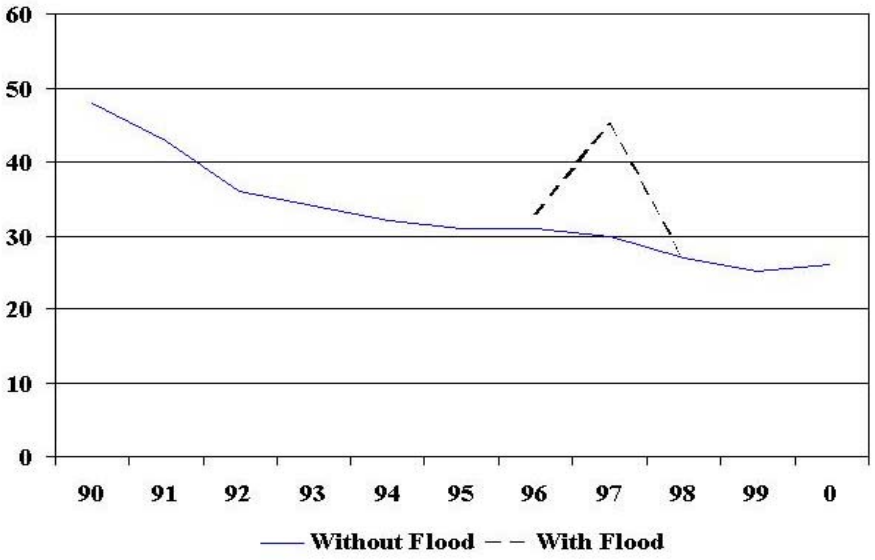
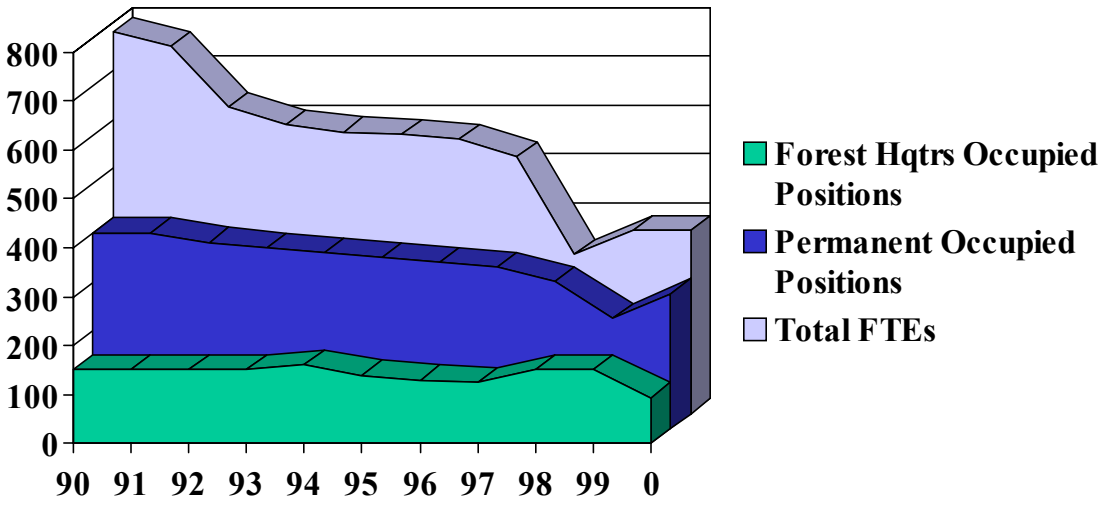


Figure 3-26: Mt. Hood National Forest FTE/Position Usage



Chapter 4

Forest Plan Amendments/ Recommendations

Chapter 4

Forest Plan Amendments/ Interpretation Process

As we continue to implement the Plan, it is apparent that amendments and clarification of direction is continually needed of 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, 2000, 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:

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

- 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

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

- 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

- 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

- 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

- 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

- 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

- 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

- 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

- 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.

- 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

- This amendment makes 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 is expected in 2001.

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 identified 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 during this past year 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.

Three watershed analyses were completed in FY 2000. As of October 2000, nearly 100% of the Forest is now covered by a watershed analysis. See map at end of this chapter. The three completed in FY 2000 were Columbia Tribs. West, Hood River, and Mill Creek. Existing watershed analyses will be revised as the need arises.

Watershed Restoration/Jobs-in-the-Woods

Although Watershed Restoration continued to be a major emphasis in resource management programs on the Mt. Hood National Forest in FY2000, the Jobs-in-the-Woods program was discontinued at the end of FY99. There was no specific budget line item allocation for the Jobs-in-the-Woods program in FY2000. The Jobs-in-the-Woods allocations of the previous six years were replaced by direction to incorporate the Jobs-in-the-Woods program into general programs of natural resource management and engineering. Contracts similar to Jobs-in-the-Woods contracts of previous years were awarded to local business through standard contracting procedures such as the Small Business Administration Set Aside Program.

Projects in road decommissioning, removal of culvert barriers to fish passage, and instream enhancement of fisheries habitat comprised the major emphasis area of the watershed restoration program in FY2000. The table below displays the elimination of the Jobs-in-the-Woods program as a specific budget line item.

Table 5-41: Jobs-in-the-Woods Expenditures (thousands $)

	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Total Jobs-in-the-Woods Allocation	338	600	700	720	718	539	0
Other funding included in Jobs-in-the-Woods Program	0	0	0	0	438	234	600

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 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.

Also, continuing the Forest Leadership emphasis for monitoring, one process was selected for review with the intent of moving toward an ecosystem based monitoring system. This effort focused on a watershed review and assessed whether we are moving toward our desired future conditions at the watershed scale.

The review was conducted by an interdisciplinary team selected from resource specialists across the forest. The review took place at the Clackamas River Ranger District.

The review included a variety of resource specialists, as well as the appropriate District management personnel. Specific highlights included recognizing the importance of complete documentation of actions and rationale. In addition, the close coordination between project implementation personnel and project planners was emphasized as the key to successful project completion.

The projects within the watershed are moving the areas towards the Desired Future condition and are very consistent with the appropriate Standards and Guidelines. The projects placed a strong emphasis on achieving the Aquatic Conservation Strategy and the National Resource Agenda.

The projects met Forest Standards and Guidelines and the reviews provided excellent information exchange of project implementation and problem solutions.

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 President Clinton's 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 2000 the Forest Service did not award any new grants to rural communities in the influence area of the Mt. Hood National Forest; however, the Forest did provide technical assistance.

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
Technical assistance to rural communities involves Forest Staff providing information, support and/or educational training opportunities that assist communities to build economic capacity. In 2000 the Mt. Hood National Forest provided technical assistance to South Wasco County and the City of Maupin by conducting 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

Unit: Mt. Hood National Forest, Hood River Ranger District

Description of Project: Project entailed placing approximately 600 logs into a 2.6 mile long reach of Green Point Creek, an anadromous fish bearing tributary to the West Fork Hood River. All logs were placed with a helicopter. Logs were designed to improve steelhead trout spawning and rearing habitat in the stream reach. Another aspect of the project was to plant cedar seedlings at appropriate locations throughout the reach. Forest Service involvement centered around providing technical expertise for design and implementation, 250 logs, 300 cedar seedlings, and $40,000 to help pay for log hauling and helicopter costs.

Describe Extent of Collaboration Within Area: Collaboration for this project was extensive. The lead agency was the Farmer's Irrigation District. Other partners included Oregon Department of Fish and Wildlife, Confederated Tribes of the Warm Springs Indian Reservation of Oregon, Hood River County, Longview Fiber (timber company), and several private landowners. The project was fully supported by the Hood River Watershed Group (council). Partners contributed a range of items including materials (logs), dollars, and personnel time.

Watershed Restoration and Enhancement Agreement

Documentation

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

Description of Project: Riverkeeper Project, Resort at the Mountain Golf Course Site

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: 1) Reconnection of anadromous passage into Wee Burn Creek, 2) Increase habitat diversity for coho, steelhead and cutthroat trout, 3) Re-establish a meandering stream channel currently flowing in a ditch, 4) Decrease site generated sediment by stabilizing stream banks, 5) 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 100 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) 00.

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:

- **1,150 different people**
- **Accomplishing 25 person years of work**
- **Valued at over one half of a million dollars in FY00.**

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) . Thirteen low-income seniors provided work for the forest, earning extra income while they gained job training skills. Five seniors were successful in transitioning into private sector employment during FY00.

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**
- **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**

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 eleventh 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 00. 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 including ***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 five 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 **5th 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 seventeenth 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 sixth 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 18 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 00.

The following is a brief list of the partnerships that occurred during FY 00 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.

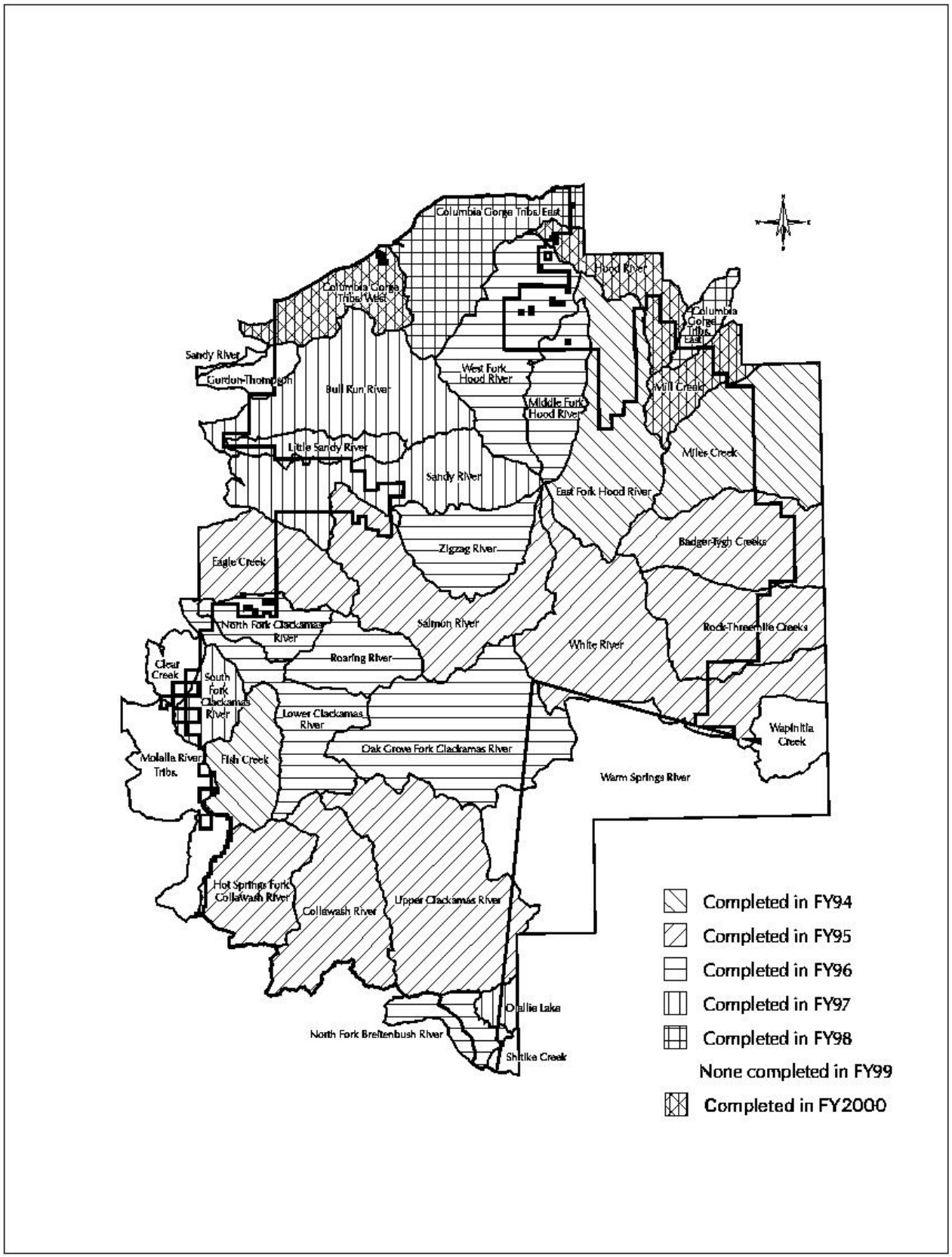
Those long termed partnerships that have spanned a decade or more are listed in italics.

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
Mac Laren 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*
Evans, Wendy - *Partnerships/Rural Community Assistance*
Gerstkemper, Jack - *Transportation*
Holder, Barb - *Financial*
Lankford, Nancy - *Timber*
Mellen, Kim - *Ecological Inventory*
Sachet, Glen - *Partnerships/Rural Community Assistance*
Stein, Marty - *Noxious Weeds*
Steinblums, Ivars - *Water/Flood*
York, Shelly - *Desktop Publishing*