

1997

**Monitoring and Evaluation
Report**

Gifford Pinchot National Forest

Dear Forest User,

In this report are the findings of our seventh consecutive year of monitoring the implementation and effectiveness of our amended Forest Plan. I am proud of the progress we have made in meeting the Northwest Forest Plan objectives of maintaining and restoring ecosystem health while supporting the economy with forest products and providing a wide array of recreation opportunities.

A summary table, beginning on page 2, highlights the results for the 31 items in our 1997 monitoring program. New in this year's report are a monitoring item which evaluates grazing practices on the east side of the Forest (page 12), two others which assess implementation and effectiveness of riparian standards and guidelines (pages 19 and 20), and a fourth which reports recreation impacts on riparian areas associated with high elevation lakes (page 8).

As was reported in our 1996 monitoring report, our timber program recorded a net financial loss as a result of a dramatic reduction in timber harvest in FY 1996. In FY 1997, timber harvest rebounded and the timber program earned a \$9 million surplus. See page 16 for more information.

Section G, page 34, of this report describes the second year of an interagency effort to involve our Province Advisory Committee in monitoring our implementation of the standards and guidelines of the Northwest Forest Plan.

The last section of the report, beginning on page 37, describes the many monitoring activities conducted on the Forest which are not directly related to Forest Plan implementation.

To make this information more accessible to the public, it is posted along with two previous years' reports and many other items of public interest on our Internet site (<http://www.fs.fed.us/gpnf>).

Send me a letter (or an e-mail to gpinchot/r6pnw_gp@fs.fed.us) and let us know what you think of the report or how you would like to become involved in our monitoring program.

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Forest Supervisor

1997 Monitoring and Evaluation Report

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Monitoring and Evaluation Report

Gifford Pinchot National Forest

Fiscal Year 1997

A. Introduction

This document reports Forest activities and accomplishments of 1997 and compares them to the Amended Forest Plan direction, and projected outputs and effects. Monitoring and evaluation are important elements in the implementation of the Forest Plan. They are key to making the Plan a dynamic and responsive tool for managing a complex set of natural resources and values in a climate of social and economic change. This document reflects the seventh full year of implementing the Gifford Pinchot National Forest Plan which was approved on June 1, 1990.

The Plan was amended by the Northwest Forest Plan Record of Decision to incorporate new standards and guidelines to ensure protection of late-successional and aquatic ecosystems in April 1994.

Monitoring and Evaluation

There are three types of monitoring:

- **Implementation Monitoring:** determines if goals, objectives, standards and guidelines are implemented as described in the Plan. The question being asked is, "Did we do what we said we would?"
- **Effectiveness Monitoring:** determines if management practices as designed and implemented are effective in meeting the Plan goals and desired future conditions. The concern here is, "Did the management practice accomplish what we intended?"
- **Validation Monitoring:** determines if data, assumptions, and coefficients are accurate. Here, the important question is, "Is there a better way to meet the Plan goals and objectives?"

Our 1997 monitoring effort emphasizes implementation monitoring, although several items contain elements of both implementation and effectiveness monitoring.

Evaluation is the analysis and interpretation of monitoring results. Essentially, the question being

asked in evaluation is, "Are changes needed?" These changes may involve amending or revising the Plan or changing the way activities are implemented.

The following outline briefly describes each section of this report:

- A. Introduction** - This brief overview of what monitoring is about.
 - B. Monitoring Results - At a Glance** - Summarizes monitoring results described in detail in Section C.
 - C. Monitoring Item Results** - Displays the individual results, evaluations and recommended follow-up actions for all items monitored in 1997.
 - D. Accomplishments** - Shows trends in program accomplishments over FYs 1991-1997 and compares 1997 accomplishments to our assigned targets.
 - E. Expenditures** - Compares expenditures over the last 7 years and the composition of FY 1997 expenditures.
 - F. Forest Plan Amendments** - Lists all Forest Plan amendments, and briefly describes the content of each, and when it was approved.
 - G. Northwest Forest Plan Monitoring** - Included is the report from our first year of implementation monitoring conducted on the Gifford Pinchot as part of an owl region-wide monitoring program.
- Glossary of Terms** - Definitions of the technical terms used in this document.

B. Monitoring Results - At A Glance

The following table briefly summarizes monitoring results by resource area. Detailed information for each monitoring item can be found on the page referenced in Section C, beginning on page 4. Not all items in the Forest Plan were monitored this fiscal year, which accounts for the gaps in the in the item numbers.

Monitoring items preceded with an asterisk in the table below are all or part effectiveness monitoring, others are implementation monitoring. Refer to the Glossary for meanings of technical terms used in this report.

Monitoring Results - At A Glance

RECREATION	☺	* Wild/Scenic Rivers (page 4) - Activities in compliance, character of potential Wild and Scenic River corridors has been protected.
	☺	* Recreation Setting (page 4) - Activities monitored met semi-primitive and nonmotorized standards and guidelines.
	☺	* Scenic Quality (page 4) - Scenic standards were met on all projects monitored.
	☹	* Wilderness Use and Condition (page 5) - Campsites exceed standards for impacts and are located too near lake shores.
	☺	* Trail Inventory, Setting and Condition, ORV (page 6) - Trail standards and guidelines are being met. Trail construction and reconstruction exceed the Forest Plan projection in 1997.
	☹	* Recreation Use and Facility Condition (page 7) -Twenty-one major maintenance or reconstruction projects were completed on Forest campgrounds in 1997. However, the majority of all developed sites are still in need of repair or upgrading to meet new standards such as those for handicap accessibility.
	NEW ☹	* High Lakes Riparian Area Monitoring (page 8) - Monitoring shows recreation impacts on riparian areas are common. The Forest has an active program directed at restoring degraded riparian areas.
CULTURAL RESOURCES	☺	* Cultural Resource Protection (page 7) - Sixty-five heritage resource properties associated with projects implemented in Fiscal Year 1997. Protective measures were successful in all but one case.
WILDLIFE	☹	Forage Production (page 10) - This item was not monitored in 1997 because there was no timber harvest in the deer and elk biological winter range.
	☹	Optimal Cover (page 10) - Watersheds surveyed were found to be below the desired 44% optimal cover. No regeneration harvest occurred in optimal cover in the allocated winter range.
	☺	Raptor Habitat (page 11). Under a provision of the Northwest Forest Plan, the protection buffer requirement was relaxed for a goshawk nest area associated with a research project. Disturbance was minimized by implementing a limited operating period.
	☹	Retention Trees and Down Logs (page 12) Requirements for down wood were met on both sales monitored. One sale met only 77 percent of the requirement for green tree retention.
	☹	* Snag Effectiveness (page 12) Evidence of snag use was found on 7 percent of the 5 year-old snags inspected.
*All or part effectiveness monitoring.		

Monitoring Results - At A Glance (Continued)

GRAZING	☺	* Grazing Practices (page 12) Cattle and sheep grazing practices conform to standards and guidelines.
BOTANICAL	☺	* Research Natural Areas (page 13) - Standards and guidelines and management objectives are being met in the T.T. Munger Research Natural Area.
	☺	* Botanical Special Interest Areas (page 14) - Five BSIA's were monitored in 1997, no unacceptable impacts were discovered.
TIMBER	☺	Adequate Reforestation (page 15) - Three years after harvest, 97 percent of the harvested area was adequately stocked.
	☹	Silviculture Methods (page 15) - Silviculture activity was approximately 32 percent of the amended Plan projection.
	☺	Regeneration Harvest Units Size (page 16) - The intent of standard and guidelines pertaining to the size and spacing of created openings were met. The forty acre opening limit was relaxed on four harvest units to reduce fragmentation created by past harvest.
	☺	Volume Sold (page 16) - In 1997 the Forest advertised 63.8 million board feet. The goal for 1997 was 64.3 million board feet..
	☺	Timber Revenue and Expenses (page 16) - After showing a loss in 1996, the timber program earned \$8.8 million in 1997.
	☺	Silvicultural Prescriptions (page 17) - Review of five prescriptions found each to be consistent with all applicable standards and guidelines.
SOIL AND WATER	☺	Soil Productivity (page 17) - Soil productivity standards and guidelines were met on all sales monitored.
	☹	Best Management Practices (page 17) - On one of the 3 sales monitored, one riparian buffer was found to be less than the prescribed width.
FISHERIES	☹	Fish/Riparian S&G Implementation (page 19) Review of three timber sales found incorrect stream classification and buffer delineation which affected less than 10 percent of the total riparian area.
	☺	* Effectiveness of Riparian S&Gs (page 20) Riparian standards appear effective in meeting Forest Plan management objectives for riparian, fish and water resources.
	☹	* Steelhead and Bull Trout Populations (page 21) - Neither the Wind River nor East Fork Lewis River Steelhead populations are considered viable. The estimated population of North Fork Lewis River Bull Trout of 233 is somewhat above the viability threshold of 200 adults.
	☹	* Effectiveness of In-Channel habitat Improvement Structures (page 24) - Of 45 structures monitored, 25 (56%) fully met project objectives.
TRANSPORTATION	☺	Road Closures (page 27)- Thirty six miles of system roads were decommissioned during 1997. There has been a net reduction of roads in key watersheds.
COMMUNITIES	☺	Community Effects - Payments to Counties (page 28) - The U.S. Treasury returned \$10.5 million dollars to the six counties with lands within the Forest administrative boundary. The Forest administered \$1.7 million in community assistance grants.
MINING	☺	Mining Operating Plans (page 29) - Three plans of operation were approved in FY 1997.
*All or part effectiveness monitoring.		

C. Monitoring Item Results

Wild and Scenic Rivers

Introduction: On the Gifford Pinchot National Forest there are no Congressionally designated Wild, Scenic or Recreational Rivers; however, the Forest Plan recommended the Lewis River, Cispus River, and the Muddy Fork and Clear Fork of the Cowlitz River be designated as Wild and Scenic Rivers. In addition, twelve other rivers were recommended for further study.

The values for which these corridors were either recommended or deemed eligible for recommendation are being protected until Congress takes action on the Forest's recommendation or further studies are completed. The Forest monitors activities in each of these corridors to ensure they are not jeopardizing a future Wild and Scenic River designation.

Results: All projects within potential Wild and Scenic River corridors were monitored. The results are displayed in Table 1.

Table 1 - Project Monitoring in Potential Wild and Scenic River Corridors

Corridor	Project	Stds. Met
Cispus River	Tower Timber Sale	Yes
Wind River	Hatchery Reach Restoration Project	Yes

Evaluation: After reviewing the activities shown in Table 1, all of the projects were found to be in compliance with the Plan standards and guidelines.

Recommended Action to be Taken: No corrective action required -- monitoring to continue.

Semi-Primitive Recreation

Introduction: The Forest Plan provides a framework for managing different classes of outdoor recreation settings, activities and opportunities. This framework is a continuum comprised of seven classes: Primitive, Semi-primitive Non-motorized, Semi-primitive Motorized, Roaded Modified, Roaded Natural, Rural and Urban. This monitoring item focuses on maintaining the character of the two semi-primitive

classes. The emphasis in these areas is to maintain a predominantly natural or natural appearing environment. Motorized recreation use is not permitted in the semi-primitive non-motorized category.

Results: The following activities were planned or completed within the semi-primitive motorized or non-motorized management areas.

Table 2 - Project Monitoring in Semi-Primitive Recreation Areas Project

	Standards Met
Lakes Trail Construction	Yes
Independence Pass Trail Construction	Yes
Sheep Canyon Trail Constion	Yes

Evaluation: All projects reviewed were in compliance with Forest Plan standards and guidelines.

Recommended Action to be Taken: No corrective action required -- monitoring to continue.

Scenic Quality

Introduction: The Forest Plan delineated 37 viewshed corridors across the Forest. Lands within view of 21 of these viewshed corridors have management objectives requiring maintenance or improvement of scenic values. In these viewsheds, management activities are to be compatible with scenic quality objectives.

Results: One project was monitored for compliance with scenic quality standards in 1997. The project review determined that standards and guidelines for scenic quality, as specified in the Forest Plan, were met.

Table 3 - Scenic Quality Project Monitoring Summary

Project	Viewshed	Standards Met
Galahad Timber Sale	Cispus River	Yes

Landscape-scale viewshed condition monitoring was conducted for six viewsheds in 1997, results are shown in Table 3. Each viewshed is monitored every 5 years to determine if changes in the condition have occurred.

Table 4 - 1997 Viewshed Monitoring Results

Viewshed and No.	Road or Trail	1985 Rating	1997 Rating
Alder Lake - 10	Hwy. 7	Heavily Altered	Heavily Altered
Carson Guller - 27	Road 60	Moderately Altered	Slightly Altered
Cowlitz Valley - 8	Hwy. 12	Slightly Altered	Heavily Altered
King Mountain - 24	Road 82	Natural Appearing	Natural Appearing
Tilton River - 9	Hwy. 508	Heavily Altered	Heavily Altered
White Pass - 18	Hwy 12	Slightly Altered	Natural Appearing

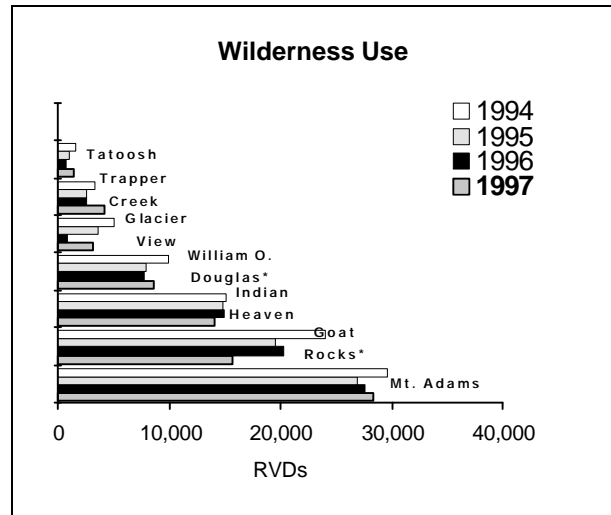
Evaluation: The project met the standards and guidelines for scenic quality. Conditions of the viewsheds monitored have improved somewhat under the Forest Plan, except for the Highway 12 corridor. The decline is the result of more recent harvest of units planned prior to the 1990 Forest Plan.

Recommended Action to be Taken: No corrective action required -- monitoring to continue.

Wilderness Use and Condition 4 😊

Introduction: The Forest currently has about 180,000 acres in seven wildernesses. Each wilderness is partitioned according to the nature of recreation opportunity. The range of these opportunities is called the Wilderness Recreation Opportunity Spectrum. Each category has a set of standards describing the desired recreation experience. This monitoring determines if standards for the experience in each category have been met. It measures wilderness use and impacts of recreation use on wilderness character.

Figure 1 - Wilderness Use 1994 - 1997



Results:

A. Wilderness Use - Table 5 and Figure 1 compares the 1994 through 1997 wilderness use:

Table 5 - Wilderness Use

Wilderness Name	Recreation Visitor Days				96-97 % Change
	1994	1995	1996	1997	
Mt. Adams	29,650	26,960	27,630	28,410	3%
Goat Rocks *	24,000	19,590	20,300	15,750	-22%
Indian Heaven	15,050	14,770	14,960	14,030	-6%
William O. Douglas *	9,900	7,900	7,780	8,700	12%
Glacier View	5,000	3,640	890	3,100	248%
Trapper Creek	3,250	2,590	2,520	4,232	68%
Tatoosh	1,550	1,010	730	1,500	105%
TOTAL	88,400	76,460	74,810	75,722	1%

* Gifford Pinchot National Forest portion only.

B. Limits of Acceptable Change (LAC). Limits of Acceptable Change is a measure of impacts associated with recreation use such as trampled area, vegetation loss at camp sites, and mineral soil exposed. Table 6, page 6 summarizes field-monitoring results for Limits of Acceptable Change:

Evaluation:

A. Wilderness Use

None of the Wildernesses currently exceed the 120 percent use/capacity threshold-of-concern. The localized use patterns and impacts indicate that some sites and trails are being overused. Based on recent permit data, the capacity figures calculated for the Forest Plan appear to be an overestimate.

Table 6 - Wilderness Sites Monitored - 1997


Wilderness	Site Changes from Baseline
Goat Rocks	36% improved 34% no change 30% degraded
Indian Heaven (Blue Lake)	Thirteen sites monitored. All sites exceeded standards for vegetation loss and exposed mineral soil and all are located within 100 feet of the lakeshore.
Indian Heaven (Thomas Lake)	Three sites monitored. All sites exceeded standards for vegetation loss and exposed mineral soil and all are located within 100 feet of the lakeshore.
Mt. Adams (South Climb)	No specific formal sampling was conducted. However, observations indicate this area exceeds standards for recreation density and number of campsites visible when occupied. In addition, the standard for number of parties encountered (40+ on several weekend days) is being exceeded.
Trapper Creek (Soda Peaks Lake)	Two sites monitored. Both sites exceeded standards for vegetation loss and exposed mineral soil, and are located within 100 feet of the lakeshore.

B. Limits of Acceptable Change

The information gathered in the LAC field studies indicates a majority of the sites show evidence of continued degradation from recreation use. Examples include establishment of new, and expansion of existing campsites, and recreation related impacts to riparian areas.

Recommended Actions to be Taken: In the sampled wildernesses, resource conditions that are degrading rather than improving are a clear indication of the needs for corrective action. Recent monitoring on other wildernesses on the Forest has yielded similar results. Measures such as rehabilitation, education, and attempts to confine damages to areas already impacted have worked to some degree to reduce impacts; however, it has become clear that these are

not always effective, and that further actions are necessary to protect wilderness resources. Consequently, the Forest, in cooperation with users and other interested parties, is evaluating alternatives for increased protection in two wilderness management environmental assessments scheduled for completion in 1998.

Trail Inventory and Condition 

Introduction: On the Forest there are 1,490 miles of trail on the Forest, including 317 miles within Wilderness. These trails are managed to maintain a diverse array of travel opportunities. Difficulty, mode of travel, and distance are factors affecting the mix of travel opportunities. Each Forest trail is assigned a trail management level, with associated standards and guidelines for management of adjacent lands. These management levels offer a range of protection from roading and timber harvest impacts. We also monitor the amount of trail construction, maintenance, use, and management.

Results:

A. Trail Construction and Maintenance --

Table 7 compares the amount of trails constructed or reconstructed in 1997 with the amount projected in the Forest Plan.

Table 7 - Trail Construction and Maintenance

Trail Activity	Miles from Forest Plan	1997 Miles Accomplished	Percent of Plan Level
Construction or Reconstruction	34 ^{1/}	75	221
Maintenance	1490	628	42

^{1/} Trail mileage average based on projects listed in Appendix A of the Forest Plan.

Reconstruction occurred on 0.2 miles of the 227.9 miles of trails designated for motorcycle use.

Approximately 628 miles (42 percent) of the 1,490 miles of the existing summer and winter use trails in the Forest Trail System were maintained to full Meaningful Measures Standards (see Glossary, page 40).

B. Trail Setting - The following table shows trails that were reviewed either in the planning phase (through the review of planning documents) or on the ground.

Table 8 - Trail Setting

Trail Reviewed Name and No.	Planned Mgt. Level	Meets Management Level in Plan	Existing Trail Meets Standards
Dry Creek # 194	II	Yes	Yes
Thomas Lake #111	I	Yes	Yes
Ridge #275	III	Yes	Yes
Clear Lost #76	II	Yes	Yes
Table Mountain #18	II	Yes	Yes
Wright Meadow #80	II	Yes	Yes

C. **Trail Use** - We responded to public comments concerning use conflicts on several trails across the Forest. For example, on Pineside Trail there were conflicts between cross-country skiers and snowmobile use, on Thomas Lake #111 there were conflicts between hikers and horse riders, there were reports of mountain bike use on the Pacific Crest Trail #2000 and there were reports of unauthorized motorized vehicle and mountain bike use on Truman #207 and Ape Canyon #234F.

Evaluation: Over twice the annual average trail construction/reconstruction estimated in the Forest Plan was accomplished. Much of this was work associated with flood damage repair projects.

About 42 percent of the trail system was maintained in 1997. There are four reasons that trail maintenance was not accomplished: new standards, inadequate staffing, reduced trail maintenance budget and substantial flood damage.

In some cases, the existing trail condition does not meet standards. However, for planned activities, departures from the standards and guidelines are few.

User conflicts were reported on fewer than 10 percent of the system trails and thus do not exceed the threshold of concern for complaints.

Recommended Action to be Taken: Meeting the new standards for trail maintenance at a time of declining maintenance budgets and increasing use has presented a major challenge to the Forest. We plan to make even greater use of volunteers, and will be getting additional funds from the Regional TrailPark Fee Demonstration project. Beginning in 1998, the fees generated from the sale of Trail Park passes will be returned to the Forest to fund trailhead and trail maintenance activities. The

resulting improved maintenance should be apparent beginning in 1999.

Develop and Dispersed Recreation Use and Facility Condition 7 ☹️

Introduction: The Forest has about 120 developed recreation sites, not including visitor centers, with a combined capacity of 16,650 persons-at-one-time (PAOT). Capacity increased in 1997 with the opening of the Johnston Ridge Observatory (1900 PAOT) and the additional capacity of 43 TrailParks. The Forest has experienced increasing demand for recreation opportunities from the fast growing populations of the Portland metropolitan area and the international notoriety of Mount St. Helens and the Columbia Gorge. Accompanying the growth in demand has been a decline in recreation budgets. The Forest has pursued some innovative measures to close the gap between demand for services and the recreation budget through partnerships, volunteers, user fees and use of campground concessionaires. Despite these measures, the condition of many recreation facilities continues to deteriorate.

All of the Forest fee campgrounds and some day-use sites are operated by concessionaires. This helps ensure that these sites are managed to standard since sites are operated and maintained according to the concessionaires' operating plans approved by the Forest Service. In addition, most of the revenues generated from camping fees go toward operation and maintenance.

Results: A total of 21 major maintenance or reconstruction projects were completed on Forest campgrounds in 1997. However, the majority of all developed sites are still in need of repair or upgrading to meet new standards such as those for handicap accessibility.

A dispersed camping activity review during the summer of 1994 also indicated numerous dispersed camping sites, accessible by vehicle, were showing evidence of overuse. Concerns include inadequate sanitation; resource damage; tree removal; trash; user conflicts; and user-defined sites located too close to streams, lakes, and scenic highways.

Evaluation: Many developed recreation facilities are continuing to show the need for reconstruction

or heavy maintenance. Deferring routine maintenance of these facilities has resulted in a devaluation of the capital investment and increased maintenance costs.

Condition surveys of developed recreation sites indicate that a majority do not meet accessibility or sanitation standards.

Monitoring of dispersed roaded recreation camping sites indicates that many of these sites do not meet standards.

Recommended Actions to be Taken: Additional opportunities for generating user fees should be evaluated. Currently, two sources of revenue are available for operating and maintaining recreation facilities in addition to appropriated funding. The first is the Mount St. Helens National Volcanic Monument user-fee that is being charged as part of the Congressionally-authorized fee demonstration program. This funding is earmarked for use on the Monument. The second source of revenue for trail operation and maintenance will come from the TrailPark recreation fee demo program. Trail park collections can be applied to trail maintenance on any trails in the TrailPark program. For both of these programs, 80% of fees collected will go directly into maintaining the respective facilities.

The Forest will continue to evaluate the ability to meet existing and future developed recreation needs, while providing facilities that meet operation, maintenance, and accessibility standards identified in Meaningful Measures (see Glossary). A Forest-wide recreation review will utilize criteria and standards developed through the Meaningful Measures process. A strategic action plan will recommend sites to retain, close, expand or reduce in size; new sites to be constructed; priorities for construction and reconstruction, fee status, and concessionaire operation.

High Lakes Riparian Area Monitoring¹ 62 ☺

Introduction: Forty-seven lakes were surveyed from 1991 - 1997 for recreational impacts to riparian areas. Lakes surveyed included wilderness lakes, developed and dispersed campsites at lakes

with and without "drive-up access," and lakes in the Mt. Margaret backcountry

Results: The Mt. Margaret lakes (surveyed in 1991 and 1993 prior to establishment of a trail system) showed little impact from recreational activities (camping, hiking, fishing).

Impacts on wilderness lakes ranged from no impact to heavy impacts, depending on how accessible they were from trails.

Drive-up lakes had the highest riparian impacts. Small non-fish bearing lakes off the road and trail system had the lowest impacts.

Are developed and dispersed recreation sites located closer than 100 feet to edge of the lake?

The majority (70%) of the 47 lakes surveyed from 1991 to 1997 had either developed or dispersed campsites closer than 100 feet to the water's edge.

Are trails located within the riparian influence area (up to 300 feet) of the lake?

The majority (70%) of the 47 lakes surveyed from 1991-1997 had trails located within the riparian influence area (generally less than 100 feet from the shoreline).

Evaluation: Are dispersed and/or developed recreational activities degrading the quality of riparian areas?

A little over half (54%) of the 47 lakes surveyed from 1991-1997 had riparian areas degraded by recreational activities within the riparian area. Problems observed included inappropriate disposal of garbage, damaged riparian vegetation due to user-created trail systems, dispersed camping within riparian zones, and human feces.

¹ See Riparian Reserve S&G for Recreation (Amended Forest Plan page 2-52)

What is being done to correct problems?

Although riparian impacts related to recreation activities have been documented in past years' monitoring reports, this is the first time we have compiled data from our lake survey database. The following are examples of restoration projects:

1992 - Lake Comcomly

User-made pit toilets were removed from the vicinity of the lake outlet. The 051 road spur was closed approximately 100 feet from the shore. Restoration activities included ripping the road bed, planting native seed and vegetation, and mulching with "weed-free" straw.

1994 - Forlorn Lakes

Developed campsites were moved back to beyond 100 feet from the shoreline. Old sites were ripped and seeded. Increased patrols were initiated in area to inform visitors and enforce regulations.

1997 - Wood Lake

A user-made access road was closed to prevent drive-up access to the lake.

On-going - Wilderness Lakes

New fire rings at wilderness lakes are being removed each year. Wilderness management planning is proposing to limit access and use at wilderness lakes. Efforts are underway to determine the appropriate number of wilderness campsites and remove any excess. The Forest has requested funding in the FY 98 budget (through the Jobs in the Woods Program) for lake-shore rehabilitation.

Recommended Action to be Taken:

Use partnership efforts (Teachers in the Woods) to continue monitoring effort in FY98. Develop monitoring protocols tailored to ROS category.

Cultural Resource Protection ¹¹

Introduction: Cultural resource sites identified in the project survey and inventory process include those that are significant and those that are not. Significance is measured by the criteria of the National Register of Historic Places. Projects are usually designed to protect significant sites through avoidance. In rare cases, potential project effects are mitigated through data recovery methods, including scientific excavation and analysis. Typical site protection strategies involve the

establishment of non-activity buffer zones. Monitoring ensures that prescribed protective measures were properly implemented in the field. Monitoring also provides an opportunity to evaluate the effectiveness of various protection strategies.

Results: There were 65 heritage resource properties associated with projects implemented in Fiscal Year 1997. The projects included 13 commercial timber sales, 2 road engineering projects, 2 trail reconstruction projects, a quarry expansion project, a stream channel restoration project, and a dispersed camp development project. Fifty-one of the heritage resource properties were determined significant. Avoidance measures were prescribed for 38 of these properties, and in some cases involved modification of planned timber sale cutting unit boundaries.

The largest single category of cultural resource properties identified was peeled cedar trees. The trees exhibit scars that are the result of historic cedar bark collection by Native Americans, primarily for the manufacture of folded bark baskets. A total of 28 peeled cedar sites were associated with nine of the timber sales awarded in 1997. Thirteen of these sites were placed in "preservation" management status; 15 in "harvest after mitigation" status. Management of peeled cedars is governed by a 1987 Programmatic Memorandum of Agreement between the Forest, The Washington State Office of Archaeology and Historic Preservation, and the Advisory Council on Historic Preservation. A management plan update prepared in 1997 identified a total of 5,975 peeled cedars in 338 sites on the Forest. A total of 46% of the known peeled cedars are currently managed in preservation status.

Data recovery efforts associated with the peeled cedars in "harvest after mitigation" status are ongoing as specific cutting units under contract are harvested. Results will be summarized in a later comprehensive report.

Other types of heritage resources found in association with 1997 projects include prehistoric lithic scatter sites, a prehistoric rock shelter site, artifact isolates, historic cabin sites, a fire lookout site, historic railroad logging features, culturally-modified aspen and pine trees, and several historic trails.

Avoidance measures were effective in all but one case. Flood damage repair to a major system road on the Randle District resulted in the inadvertent dumping of rock fill over part of a significant prehistoric archaeological site. After consultation with the Washington State Office of Archaeology and Historic Preservation, some, but not all of the fill was removed by the company under contract for the road repairs.

Evaluation: Protective measures were successful in all but one case.

Recommended Action to be Taken:

1. In response to the Randle District incident noted above, The Washington State Office of Archaeology and Historic Preservation has asked the Forest to provide additional awareness training on heritage site protection to engineering personnel in 1998. Heritage program staff will also take measures to provide better written documentation on protection measures for contract files.
2. Recommended action from 1996 pertaining to two prehistoric sites damaged by trail construction was not taken. A damage assessment is again recommended, and should be conducted as early in 1998 as possible. Documentation will include determination of the spatial extent of both sites, calculation of percent of disturbance, and significance evaluation.

Forage Production ³¹ 😊

Introduction: The Forest has an objective of maintaining populations of deer and elk (Forest Plan, page IV-25). The Forest seeks to meet that objective by providing cover and forage in the proportions needed to support the populations (see Item 32). Timber harvest is the primary means of creating new forage on the Forest.

The Forest has a goal of producing 550 pounds of forage per acre after harvest of timber, compared to the approximately 300 pounds per acre which would be produced under unmanaged conditions. The harvest level proposed by the 1990 Forest Plan was not expected to provide adequate forage to meet population goals without enhancing forage production by seeding and fertilizing. Subsequent reductions in harvest brought by the Northwest

Forest Plan in 1994 cast further doubt on the Forest's ability to support existing populations of deer and elk. In the future, forage seeding and fertilization will play an increasingly important role in supporting deer and elk populations.

Results: In FY 97 there were no regeneration harvests units within the biological winter range; therefore, no units were monitored.

Recommended Action to be Taken:

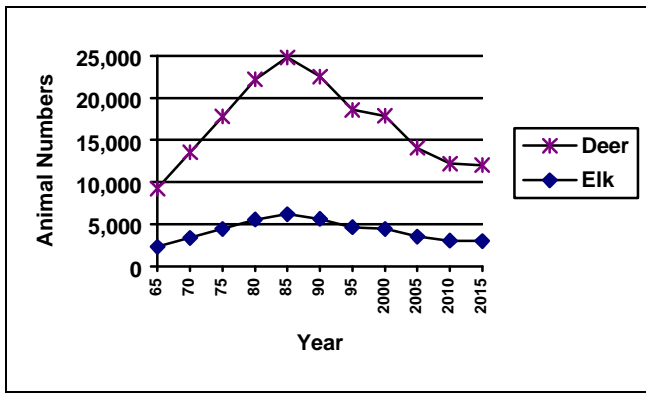
Continue monitoring. Develop a photo series to facilitate estimating forage production. Continue to enhance forage production.

Optimal Cover ³² 😊

Introduction: The Forest seeks to maintain populations of deer and elk by providing cover and forage in the proportions needed to support the populations (see Item 31). Part of that strategy involves maintaining 44 percent of the winter range in a vegetative condition characterized by four vegetation layers from trees larger than 21 inches in diameter in the overstory to an herbaceous layer providing forage. The overstory can intercept and hold a substantial amount of snow, yet has dispersed, small (less than 1/8 acre) openings. These conditions are generally achieved when the dominant trees average 21 inches dbh or greater, have 70 percent or greater crown closure, and are in the large tree or old growth stand structure condition. This *optimal cover* supports deer and elk by providing thermal cover, hiding cover and forage. Where the winter range in a watershed is below 44 percent optimal cover, regeneration harvest should be deferred from Management Area Category E (Deer and Elk Winter Range) in the same watershed.

Under the Northwest Forest Plan, the amount of optimal cover will, in time, exceed 80 percent of the biological winter range. This addition, beyond the 44 percent goal, will not offset the reduction in open forage. The present population of deer and elk will not be supported on National Forest System lands. Our review of the forage/cover ratio by the year 2015 has a potential habitat reduction of about 35 percent of the potential deer and elk population. Figure 2 projects deer and elk populations under current management direction.

Figure 2 - Projected Deer and Elk Populations



The Forest monitored optimal cover in three watersheds across the Forest in FY 1997.

1. Upper Cowlitz:

Results: About 19,620 acres within the biological winter range were monitored within this planning area. Approximately 32 percent of this portion of the biological winter range is optimal cover. The shortage of optimal cover is attributed to past timber harvest and forest fires around the turn of the century.

Evaluation: Current thinnings within portions of the biological winter range will increase growth rates and accelerate the development of optimal cover. In other portions of the biological winter range, older stands are already developing the structural components of optimal cover.

Recommended Action: Pursue thinning opportunities to restore and enhance habitat in watersheds that are deficient in optimal cover.

2. Muddy River:

Results: Approximately 29,500 acres within this portion of the biological winter range were analyzed. About 22 percent of the area analyzed is in optimal cover.

Evaluation: The shortage of optimal cover is attributed to the 1980 eruption of Mt. Saint Helens.

3. Little White Salmon:

Results: About 6,500 acres of this portion of the biological winter range were analyzed. Approximately 51 percent of this winter range is in optimal cover.

Evaluation: Fifty-one percent is above the optimal cover value of 44 percent.

Habitat for Osprey, Swainson's Hawk, Goshawk, Ferruginous Hawk and Great Blue Heron ^{35b} 😊

Introduction: The Forest Plan (page 2-75) provides standards and guidelines aimed at minimizing the disruption of habitat during critical nesting periods. Direction is also provided to minimize disturbance of key winter habitat. Species protected include: Bald Eagle, Peregrine Falcon, Golden Eagle, Osprey, Swainson's Hawk, Goshawk, and Great-Blue Heron.

Results: One of the three Ranger districts reported a project where known nesting habitat for raptors exists. The project was in a timber sale conducted as part of the Demonstration of Ecosystem Management (DEMO) research project. The raptor species is a nesting northern goshawk pair. Normally, a 660 foot protection buffer would be established around the nest and a management plan developed for management of the protection buffer. After consultation with biologists in our Regional Office, the decision was made to forgo the protection buffer in the interest of maintaining the integrity of the research project. A seasonal operating restriction was applied which prohibited harvest during the breeding season between March 1 and August 30.

After harvest occurred in 1997, the sale was surveyed for goshawks. A capture attempt was made to attach a radio collar, but the capture attempts were unsuccessful. The goshawks were known to be in the general area in late August of this year.

Evaluation: The Northwest Forest Plan contains a provision to relax standards and guidelines in the interest of bona fide research. This DEMO project was reviewed by the REO Research and Monitoring Committee and met the intent of the Northwest Forest Plan.

Recommended Action: Surveys will be conducted in the spring of 1998 to determine the presence of the goshawks.

Retention Trees and Down Logs ⁴⁰ 😊

Introduction: Dead and partially dead trees referred to as "snags" are important to certain wildlife species. To provide suitable habitat, a snag needs to be at least 17 inches in diameter and 40 feet high. They serve as breeding areas, shelter, and a host to insects which provide food for birds.. Species dependent on snags include the pileated woodpecker and several other woodpecker species, red-breasted sapsucker, red-breasted nuthatch, and northern flicker.

Ecological studies expanding our understanding of the role of down woody material in forest ecosystems. Down logs are important because of their role in mineral cycling, nutrient mobilization, and moisture retention. In addition, down logs provide structure and habitat suitable to many wildlife species.

Results: Two timber sales were monitored in 1997 for compliance with Forest Plan standard and guidelines. Table 9 provides a summary of the sales. Both sales provided substantially more than the required amounts of down wood, although much of the surplus was in smaller diameter logs. Edit essentially met the requirement for green tree retention. Papa Bear provided only 77 percent of the required numbers of retained green trees. Insufficient numbers of green trees were designated during sale layout.

Table 9 - Projects Monitored for Green Trees, Snags, and Down Logs

Timber Sale Projects	Standards Met? (Yes or No)		
	Green Tree	Snag	Down Woody Debris
Pre-Forest Plan There were no pre-Forest Plan timber sales monitored in 1997.			
Post-Forest Plan Edit units 2, 7	N	N	Y
Papa Bare Unit 3,4	N	N	Y

Evaluation: Retention trees on the Papa Bear Sale underachieve the objectives of the NWFP. Although numbers were insufficient, over 1100 green trees were retained within the 43 acres harvested. The Edit sale substantially met the retention tree requirement but was 4 percent short of the targeted number.

Recommended Action to be Taken: Unit managers will verify that layout and marking guidelines ensure sufficient retention trees are designated for retention.

Snag Effectiveness ^{40a} 😊

Introduction: The Forest Plan standards and guidelines (Amendment 11, pages 6-4 to 6-6) call for the retention of snags and green trees in timber sale areas. To determine whether retention of snags and green trees is effective in providing habitat for cavity excavators, 11 sites were monitored. The areas monitored were those where snags were created at least 5 years previous.

Results: A total of 121 snags were monitored at 11 sites. The snags, created in 1992 and 1994, ranged from 17 to 30 inches in diameter at breast height (dbh). Seventy six snags were created by blasting the tops of green trees and 45 were created by girdling live trees. Bark was characteristically tight on all trees. Evidence of use by woodpeckers was found in 7 percent of the snags.

Evaluation: The low level of use, at most sites, is probably due to the fact that the snags were still very sound and had not passed stage 3 category of snag decay. Evidence suggests that the woodpeckers were foraging, most likely, for bark beetles.

Recommended Action to be Taken: Return to these same sites for monitoring in 5 years.

Grazing Practices ⁴⁵ 😊

Introduction: The grazing of cattle, horses, and sheep are among the "multiple-use" activities on National Forest System lands. Included within the grazing program is range administration and noxious weed management.

Noxious weeds are a problem because they can be toxic to wildlife, domestic livestock, and humans and displace desirable plant communities. Toxicity to flora and fauna is the primary concern because they are rarely ingested by people. Ecosystem changes produced by noxious weeds can be dramatic and have highly adverse impacts to plant and animal environments. These types of changes impact all resources.

There are three active allotments on the Gifford Pinchot National Forest. These allotments are on transitional rangeland. They are located on the Mt. Adams District and eastern portion of the Mt. Saint Helens National Volcanic Monument. Skills center in the areas of Twin Buttes, Mt. Adams and Ice Caves. Permitted livestock use for the season totaled 2756 animal months (AMs) for the Forest.

Table 10 - 1997 Grazing Monitoring

Allotment	Activity	Standards Met?
Twin Buttes	* Inspected	Yes
	** Monitored	Yes
Mt. Adams	* Inspected	Yes
	** Monitored	Yes
Ice Caves	* Inspected	Yes
	** Monitored	Yes
Cave Creek	* Inspected	Yes
	** Monitored	Yes
Noxious Weeds	* Inspected	Yes
	** Monitored	Yes

* Inspection: detailed site evaluation with the permittee.
 ** Monitored: site evaluation performed by FS employee using one or more of the following methods: Photo plots, weekly site-specific ocular survey, roadless monitoring by horseback and collateral to other project work.

The allotment management plans for these allotments are current and periodic evaluations of the allotment sites are performed. For cattle, the allotment management plan is reviewed and reissued every ten years, with the same happening for sheep every five years. Every year an annual operating plan is developed between the permittees and the Forest Service. Through our evaluations, we ensure that the Forest Plan standards are met. This is achieved through inspections of the sites prior to dispersal of livestock, and monitoring of the livestock while on-site to ensure proper utilization of resources, distribution of livestock, and maintenance of ecosystem health. Range improvement such as maintenance of fences, cattle guards, and water-line maintenance have been performed by the permittees.

Our monitoring utilizes photo monitoring plots of vegetation which aids in determining the condition and trends within certain plant communities over time. When grazing in or near riparian zones we ensure that the objectives for the Aquatic Conservation Strategy are fulfilled, including but not limited to water quality, stability of streams and ponds, riparian vegetation and fish and wildlife

habitat. In the past, post-grazing levels of vegetation were reviewed by Regional and Forest personnel and our current post-grazing vegetation levels fall within their guidelines. We do not permit grazing in research natural areas or botanical special areas.

Results: The monitoring of range allotments is summarized in Table 10

Noxious Weeds Treatments: In the Cave Creek drainage and other past treatment areas, there was a total of 300 acres monitored. We hand pulled eight targeted species on 151 sites. These 151 sites are conservatively estimated to represent infestations of 600 acres. Approximately 30,000 acres were surveyed. Sixty-three new Class A and B populations were found, documented, and treated. Of the 30,000 acres surveyed most had at least Class C populations. The surveys occurred on road prisms and harvest units outside of wilderness and roadless areas. Sixty-three new infestations were documented and treated.

Evaluation: All projects reviewed were in compliance with the amended Gifford Pinchot Forest Plan standards and guidelines.

Recommended Action To Be Taken: No corrective action required - monitoring and current management practices are to be continued

Continue to coordinate monitoring activities with botany, wildlife, fish and hydrology specialists to ensure resource protection.

A comprehensive inventory of noxious weed infestations is needed.

Research Natural Areas (RNA) 

Introduction: The Forest Plan requires that no activity occur within an RNA that would adversely affect the natural values of an RNA for which it was established. Prohibited activities include livestock grazing; timber and miscellaneous forest products harvest; recreation development and use; road construction; temporary facility installation; unlawful mining or mining of common variety materials; establishment of exotic plant, animal, or insect species; and establishment of non-endemic levels of insects, pathogens, or disease.

The six areas designated as RNAs through the planning process are listed in the table below. The Forest is presently studying the Monte Cristo area on the southeast side of the Forest for addition to the system of RNAs. These areas provide representative examples of biologically important ecosystems and are managed to conserve their biological diversity. They serve as undisturbed controls for comparison with managed areas and are valuable for studying natural processes. Research Natural Areas are permanently protected federally designated reserves where long-term studies that contribute to our knowledge of the ecosystem is encouraged. The standards and guidelines for Research Natural Areas focus on maintaining their natural state for research and education. Monitoring serves to evaluate whether the natural conditions of the Research Natural Area have been modified, and prescribes corrective actions if necessary.

Table 11 - Research Natural Area Monitoring

Name	Last Monitored	Standards & Guidelines Met?
Butter Creek	1991	yes
Goat Marsh	1993	no
Sisters Rock	1994	yes
Steamboat Mountain	1994	no
Cedar Flats	1996	yes
Thornton T. Munger	1997	yes

Results: T.T. Munger RNA was monitored this year. It was last monitored in 1995, shortly after the installation of the canopy crane. Operation of the canopy crane appears to be consistent with RNA objectives. No adverse impacts to this site were noted. In addition, Ecological Status Monitoring was also conducted at the T.T. Munger RNA.

Other Research Natural Area Activities:


- T.T. Munger Management Plan revision is drafted.
- A Management Plan for Goat Marsh RNA is in preparation.
- Contracts to conduct inventories for fungi at Sisters Rock and for lichens and vascular plants at Butter Creek and Steamboat were initiated in 1997.
- Weigle Hill EA is complete.
- Smith Butte EA is in preparation.

- Steamboat Mountain addition EA is in preparation.

Evaluation: Standards and guidelines and management objectives were met at T.T. Munger RNA and significant progress in the Gifford Pinchot NF Natural Areas program were made in 1997.

Recommended Action to be taken:

- ◆ Implement a new monitoring plan for Research Natural Areas.
- ◆ Continue compiling species lists to determine plant and animal diversity.

Botanical Special Interest Areas ^{35d} 

Introduction: Thirty botanical special interest areas (botanical areas) have been designated on the Gifford Pinchot National Forest. These areas often contain plant species or communities that are significant because of the occurrence of threatened, endangered, or sensitive plant species; are floristically unique; or have noteworthy specimens, such as record-sized tree specimens. They range in size from one to over 2,000 acres, though most are 20 acres or less. Some of these areas are popular destinations and warrant monitoring to ensure that recreational impacts do not compromise the integrity of the sites. Other botanical areas serve as baselines for monitoring trends of sensitive species. Botanical areas are selected for monitoring each year, based on level of risk to resources and vulnerability to change. In addition, one or more botanical areas are monitored each year to track population trends of fringed pinesap.

Results: Field visits were made to five botanical special interest areas in 1997. These areas are:

- Branching Montia (*Montia diffusa*) site #1113,
- Grassy Knoll,
- South Prairie Bog,
- Trout Lake Big Tree, and
- fringed pinesap (*Pleuricospora fimbriolata*) site 3114.

Population monitoring continued on one of the sites established to maintain viable populations of fringed pinesap. Monitoring continued at South Prairie Bog to evaluate a population of pale blue-eyed grass (*Sisyrichium sarmentosum*) within and outside a cattle grazing enclosure.

Evaluation: Fringed pinesap population trend is stable at the site monitored. The population of Montia was not relocated. Pale blue-eyed grass was grazed heavily outside the enclosure at South Prairie Bog. Noxious weeds were reported at the Grassy Knoll site.

Action to be taken:

- Revisit Montia site earlier in year to determine if population is still extant.
- Continue monitoring pale-blued grass at South Prairie Bog to evaluate impact of cattle grazing.
- Implement new monitoring plan for Botanical Special Interest Areas.
- Control noxious weeds at Grassy Knoll.

Vegetation Management

In 1994 the Gifford Pinchot National Forest began implementing the standards and guidelines of the Northwest Forest Plan. Beginning in 1996 we began comparing accomplishments to the projections made for the 1994 Northwest Forest Plan. In past years, we compared accomplishments to our 1990 Forest Plan projections.

Adequate Reforestation ⁵⁰ 😊

Table 12 - Adequate Reforestation

Plantation Acres Surveyed	Adequately Stocked	% Adequate Stocking
4,045	3,932	97%

Adequate stocking is based on the presence of at least 250 seedlings per acre at the third year survival exam. Standards and guidelines regarding plantation stocking were met.

Timber Harvest Methods ⁵¹ 😐

Table 13 - Timber Harvest Methods

Silvicultural Practice	1997 Acres Harvested	NW Forest Plan Projection
Clearcut Harvest	14	0
Regeneration Harvest	959	1839
Commercial Thinning	400	2309
Totals	1359	4148 acres

The 14 acres of clearcutting was the result of harvest of a pre-NWFP sale. Under the NWFP clearcutting would only be proposed under exceptional circumstances. Overall, an acreage about 32 percent of the Northwest Forest Plan projection was harvested in 1997.

Regeneration Harvest Units Size ⁵² 😊

Forty-nine harvest units were sampled to see if they met Forest Plan standards for size and separation. Four units exceeded the 40 acre limit on size of openings. Three of the harvest units that did not meet the standard were reviewed and approved by the Regional Forester. All projects exceeded the 40 acre size limit in an effort to reduce habitat fragmentation associated with timber harvest. Harvesting around the edges of existing openings reduced fragmentation compared to the alternative of locating harvest units in interior habitat. Because of a procedural oversight, the fourth unit was not reviewed by the Regional Office.

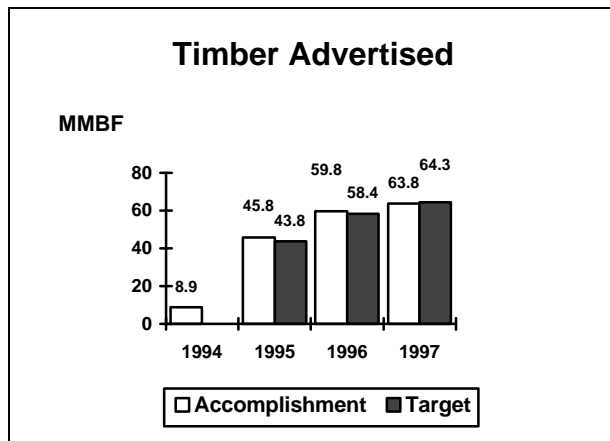
Volume Advertised to be Sold ⁵⁴ 😊

The Forest accomplished the 1997 advertisement goal.

Table 14 - Volume Advertised to be Sold

Volume Advertised MMBF	Volume Goal MMBF	Volume Advertised MMCF	Volume Goal MMCF	% of Volume Goal
63.8	64.3	12.3	12.4	99.2%

Figure 3 - Target Accomplishment



Timber Revenue and Expenses ⁵⁵ 😊

Table 15 shows timber harvest and timber program related financial transactions over the past five years. After posting a net loss in 1996 because of a record low level of timber harvest, harvest and revenues rebounded in 1997. Before payments to counties, the timber program revenues exceeded costs by nearly \$9 million.

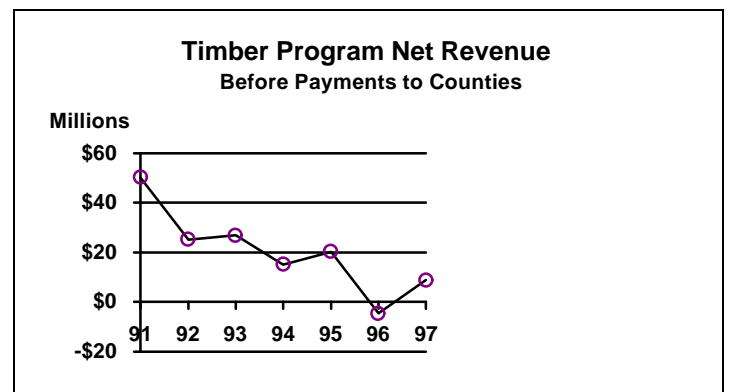
Table 15 - Timber Revenue and Expenses

Timber Harvest and Monetary Outlays	1993	1994	1995	1996	1997
Timber Revenues	\$44,751,000	\$30,894,000	\$16,501,000	\$3,296,000	\$18,567,000
Timber Expenses	\$17,924,000	\$15,745,000	\$14,474,000	\$7,409,000	\$9,766,000
Net Revenue Before Payments to Counties	\$26,827,000	\$15,149,000	\$2,027,000	\$-4,113,000	\$8,801,000
Payments to Counties	\$11,701,000	\$11,701,000	\$11,287,000	\$10,874,642	\$10,465,537
Volume harvested (MMBF)	155	96	59	11.3	41
Volume under contract (MMBF)	196	83	34	63	78
Volume advertised (MMBF)	14.4	8.9	45.8	59.8	63.8
Volume sold (MMBF)	22.7	5.8	45.8	48.8	57.5
Total Acres Harvested	3,234	3,459	2,229	643 ²	1,359

¹ Based on preliminary 1998 TSPIRS accounting.

² Estimated. Data unavailable.

Figure 4 - Timber Program Net Revenue



Introduction: The silviculture prescription is the result of examining forest stands and diagnosing treatment needs. It prescribes the methods and timing of silvicultural activities. These determinations take into account numerous factors involving silvics of the trees and the local site conditions but also other resource objectives and Forest Plan direction. The procedure consists of preparing a general prescription and engaging an interdisciplinary team to establish limits and objectives to be achieved based on Forest Plan goals and objectives and standards and guidelines. The purpose of this item is to ensure that silviculturists are considering other resource objectives and the prescriptions are developed through an interdisciplinary process.

Results: Five silvicultural prescriptions (four timber sales and one pre-commercial thinning project) were selected for review for compliance with the Forest Plan. Each prescription was reviewed with respect to the following standards and guidelines:

- Prescription Logic
- Created Openings
- Dead/Down in Riparian
- Current Hardwoods in Riparian Areas
- Chemicals in Riparian Areas
- Silvicultural Exams for Vegetative Management Plans in Developed Recreation Areas
- Consistent with Visual Quality and other Objectives in Recreational Rivers
- Cavity Excavators
- Species Conversion
- Chemicals in Deer/Elk Winter Range
- Forage Seed in Deer/Elk Winter Range
- Select Criteria from Appendix F of the Final Environmental Impact Statement
- Site-Specific Considerations

Evaluation: All prescriptions reviewed meet the applicable standards and guidelines.

Action to be Taken: Continue monitoring. Develop a protocol which focuses on on-the-ground results.

Introduction: Soil productivity is critical to all management activities. The 1976 National Forest Management Act directs forest and range managers to carry out their management activities such that they do not significantly or permanently impair the future productivity of the land. The purpose of this monitoring item is to ensure that guidelines for maintaining long-term soil productivity are being implemented when ground-disturbing activities occur.

Three sales were reviewed, one on each ranger district.

Results: The Galahad AMA (NSC) had some tractor yarding. Skid trails spacing for the most part was acceptable. The amount of disturbance fell well within guidelines. However, one skid trail was located on a slight sideslope and resulted in some avoidable soil displacement. This skid trail could have been located on an adjacent ridge where less soil displacement would have occurred.

On the other sales, designated skid trails and a temporary truck road were properly located and used during harvest operations. On the Edit TS (SSC), temporary truck roads were required to be ripped (tilled to mitigate the effects of compaction), seeded, and fertilized after harvest. This has not occurred in all cases. In harvest unit #5 the truck roads and landings had not been ripped.

On the Rock TS (CSC), the mechanical activities completed at the time of review are maintaining soil productivity. In one location, slash piling was too clean. This was recognized by the sale administrator and stopped before a third of an acre was completed. On truck roads a grapple on a yarder was used to rip the compacted area. Not all of the truck road received sufficient scarification.

Evaluation: The standards and guidelines that require ground disturbing activities to not exceed 20 percent of the harvest area were adhered to on all harvest units of the three timber sales reviewed. The Edit Timber Sale needs some additional attention on truck roads and landings even though the amount of soil damage is within acceptable limits. The use of a grapple on a yarder in the case of the Rock Timber Sale did not provide consistent, complete scarification of compacted soils.

Recommended Action to be Taken: Monitoring for this standard and guideline should continue. The SSC need to complete the job of scarifying truck roads and landings on the Edit TS. Since grapples have been found to be ineffective, the Forest should evaluate the effectiveness of all tools used for scarification of compacted soils.

Implementation of Best Management Practices (BMPs) ⁶¹ 😊

Introduction: Best Management Practices are the primary mechanism to ensure water quality standards are met during project implementation. BMPs are selected and tailored for site-specific conditions to provide project level protection of water quality. The 1976 National Forest Management Act directs us to protect streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where activities have the potential to seriously and adversely affect water conditions or fish habitat.

Each of the three Ranger districts reviewed one timber sale selected randomly from twenty completed timber sales.

Results: Three timber sales (Galahad AMA, Rock TS, Edit TS) were reviewed and evaluated, one on each Ranger district.

Rock Timber Sale - Mt. Saint Helens NVM
This sale did not have harvest units in the vicinity of streams or wetlands. Surface erosion control measures were in place and adequate as prescribed. These efforts met the BMPs for the timber sales.

Galahad AMA Timber Sale - Cowlitz Valley RD
This sale had a swale (concaved topography), which showed insufficient scour and deposition to qualify as an intermittent stream. A 50-foot no harvest buffer was left on each side of the drainage. Trees were directionally felled away from the swale. Since timber harvest has the potential to increase flow in this drainage, the 50-foot buffer width seems appropriate.

Edit Timber Sale - Mt. Adams RD This sale had the riparian reserve on a perennial stream associated with a wetland that was greater than 10 percent less than the prescribed width. This situation occurred in one of 5 harvest units that were reviewed. Since the buffer width was inadequate, the BMP objective to "*minimize potential adverse effects of nearby logging and related land disturbance activities on water quality and beneficial uses*" was not met. Further, temporary road obliteration and landing ripping was not completed. These infractions resulted from the purchaser going into bankruptcy before contract obligations were complete.

Evaluation: The Edit Timber Sale was a pre-Northwest Forest Plan timber sale that was revisited and revised after the ROD was signed. At that time understanding of Northwest Forest Plan requirements was in its infancy. Since then training has improve our understanding and compliance with ROD standards.

Although the standard was violated, no damage occurred to stream banks as a result of harvest occurring closer to the stream and the wetland than standards permit. The loss of function by harvesting inside the Riparian Reserve will probably not affect water quality or the water table. However, the characteristics of the Riparian Reserve have been changed and therefore, two of the Aquatic Conservation Strategy Objectives, may have been compromised (spatial and temporal connectivity, and habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species). Further evaluation at a broader scale would be needed to confirm the effects.

Recommended Actions to be Taken: The District Ranger and person preparing the timber sale contract must ensure that all mitigation measures, and standards and guidelines are addressed in the timber sale contract. Identification of perennial and intermittent streams, and wetlands should become a part of the sale layout employees training. Forest Service Representatives shall also be knowledgeable of riparian standards and guidelines and their implementation. If springs or streams are found before or during the sale, the Forest Service Representative must act promptly to add the required riparian reserve to the sale area map.

Introduction: The Forest Plan outlines specific standards and guidelines to ensure protection of fish and riparian resources. The emphasis on this monitoring item is to determine whether fish and riparian standards and guidelines are implemented through project planning and implementation. This monitoring item is evaluated at the project-level. Specific questions addressed are:

- What riparian mitigation was planned for the project?
- Was planned mitigation consistent with standards and guidelines?
- Was the project contract written to include provisions to meet standards and guidelines?
- Was the project implemented in compliance with standards and guidelines?

A variety of project types (i.e., timber sale, road construction, recreation development, watershed restoration, etc.) may be evaluated under this monitoring item. Timber sale projects were the focus for this year. The Forest’s three skill centers each selected one timber sale project for review (Table 16). The same projects are evaluated, on page 20, under *Effectiveness of Riparian S&Gs*. The Galahad AMA and Edit sales were also monitored for *Soil Productivity* (page 17) and *Best Management Practices* (page 18). A total of 10 units were evaluated. Two of the three timber sales, Cinnamon and Edit, were originally planned under the 1990 *Forest Plan*, prior to the 1994 *Northwest Forest Plan*. The Cinnamon Timber Sale was planned and logged prior to the 1994 *Northwest Forest Plan*. The Edit and Galahad AMA sales were logged in 1997. These two sales were modified prior to logging to ensure compliance with new standards and guidelines under the 1994 *Northwest Forest Plan*.

Results:

Riparian Mitigation Planned?

All three timber sale projects employed mitigation measures to protect riparian resources. Riparian mitigations were developed during the project planning process as part of required environmental analysis. Mitigations included:

- Establishment of riparian reserves along streams and wet areas.
- Designation of streams on sale area maps.
- Directional tree felling away from Class III (perennial, non-fish bearing) and Class IV (intermittent) streams. *Note: Class I (municipal water supply and/or anadromous fish-bearing) and Class II (resident fish-bearing) streams were not found within or adjacent to the 10 units evaluated.*
- Felled trees should be yarded away from streams.
- Stream crossings (road reconstruction) would follow management guidelines in the Washington Department of Fish and Wildlife Hydraulic Permit.

Table 16 - FY 97 Timber Sale Projects Evaluated for Monitoring Items 62a and 62b.

Ranger District	Timber Sale	Units	Planning Vintage	
			1990 ¹	1994 ²
Mt. Adams	Edit	2, 5, 8, 10		√
MSH NVM	Cinnamon	1, 2, 32, 33	√	
Cowlitz Valley	Galahad AMA	7, 8		√

¹ Project planned under 1990 Gifford Pinchot National Forest Plan.
² Project planned under 1994 Northwest Forest Plan.

Planned Mitigation Consistent with S&Gs?

In all cases, planned riparian mitigation measures were consistent with Forest Plan standards and guidelines.

Contracts Written to Include Necessary Provisions?

Not all timber sale contracts included contract clauses necessary to meet Forest Plan standards and guidelines. Four small Class III and IV streams were not identified on-the-ground or designated on sale area maps for three of the 10 units evaluated: Edit Unit 8; Cinnamon Unit 33; and Gallahad AMA Unit 8 (Table 17). In addition, some perennial streams were incorrectly classified as intermittent streams on sale area maps (Cinnamon units 1 and 32).

Table 17 - Deviations from Fish/Riparian S&Gs for FY97 Timber Sales Evaluated.

Timber Sale	Unit	Deviation	Result
Edit	5	Stream properly classified and mapped but not buffered as specified.	Stream along NE portion of unit buffered at 128 ft. instead of 156 ft. as specified.
	8	Two Class III streams found outside of unit along southern boundary. Not designated on sale area map.	Streams buffered at 75 ft. and 100 ft. instead of 156 ft. as specified in the standard and guideline.
Cinnamon	1 and 32	Streams improperly classified as Class IV.	Riparian areas did not receive proper felling and yarding specifications.
	33	One Class III stream not identified on sale area map.	Riparian area did not receive proper felling and yarding specifications.
Gallahad AMA	8	One Class IV stream not identified on sale area map.	Temporary Road 2304026 constructed within designated buffer zone. Road approx. 100 ft. upslope from origination of Class IV stream.

Were projects implemented in compliance with S&Gs?

Generally, all three timber sale projects were implemented in compliance with Forest Plan standards and guidelines. However, some deviations were noted for each sale monitored (Table 17).

Evaluation: Most noncompliance with fish and riparian standards and guidelines involved a lack of or incorrect designation and classification of streams within and adjacent to timber sale units. The effected streams are typically small, headwater streams averaging one or two feet wide and may be easily overlooked. If sale layout occurs in the summer or early fall, many of these streams will be dry.

While some deviations from planned mitigations were observed, no observable impacts to fish and riparian resources were documented by the fish biologist, hydrologist, and soil scientist staff members conducting these evaluations -- see discussion under *Item 62b Effectiveness of Riparian S&G, page 20*. Deviations from planned

riparian reserve buffer widths are believed to represent 10 percent or less of the entire riparian reserve area monitored for these three timber sales. It should be emphasized that the Cinnamon Timber Sale is a pre-1994 Northwest Forest Plan sale, and is thus not representative of sales planned and logged on the Forest today. The Edit and Gallahad AMA sales were two of first sales on the Forest planned and logged under the 1994 Northwest Forest Plan. These minor deviations are expected as the Forest transitions to a new management standards and guidelines. More recent timber sales under the 1994 Northwest Forest Plan are planned and logged in accordance with the recommended actions outlined below.

Recommended Actions to be Taken: Ensure that fish biologist, hydrologist, and soil scientist personnel participate in locating and classifying streams and wet areas prior to completion of the timber sale contract (preferably during preparation of the environmental analysis).

Provide necessary training for timber sale layout and marking personnel to ensure that all streams and wet areas are properly identified and treated in accordance with specified mitigations.

Survey within two site-potential tree-heights around the perimeter of each timber sale unit to ensure all adjacent streams and wet areas are treated appropriately.

Effectiveness of Riparian Standards and Guidelines ^{62b} 😊

Introduction: The intent of this monitoring item is to determine if planned mitigations are effectively meeting *Forest Plan* management objectives for protection of riparian, fish, and water resources. The same projects investigated under *Fish/Riparian S&G Implementation* (Table 17, page 20) are evaluated here. Three specific questions shall be answered:

1. Is channel stability maintained?
2. Is stream shading maintained?
3. Are sediments originating from management activities reaching the stream course?

Results:

Maintenance of Channel Stability

Channel stability was maintained for all streams evaluated except for the one Class III stream not identified or mapped in Cinnamon Unit 33. Trees in Unit 33 were commercially thinned in 1992. The residual stand was severely impacted by a heavy windstorm. The majority of trees left standing along the stream blew over, altering the course and configuration of the stream channel.

Maintenance of Stream Shading

Stream shading was adequately maintained along all streams examined. Deviations from specified buffer widths did not impact the zone of shade influence along perennial, Class III streams affected. No water temperature data were provided for any of the timber sale projects evaluated.

Sediment Transport to Affected Stream Course?

Sediment originating from timber sale activities was not observed reaching any of the associated stream channels for the three sales monitored. Bank disturbance from windthrown trees along the Class III stream in Cinnamon Unit 33 undoubtedly resulted in additional sediment delivery during the first couple years after the windthrow. Streambanks have since stabilized, and natural revegetation has halted additional sediment delivery.

Evaluation: Riparian standards and guidelines appear effective in meeting Forest Plan management objectives for protection of riparian, fish, and water resources. In all cases where prescribed mitigations were followed as specified, they appear effective. The Edit Timber Sale was logged during the winter of 1996/97, and thus requires an additional winter to pass before a thorough evaluation of riparian standard and guideline effectiveness can be made.

Recommended Action to be Taken: Continue monitoring.

Steelhead and Bull Trout Populations 62c



Steelhead

Introduction: Steelhead (*Oncorhynchus mykiss*) is an anadromous form of rainbow trout inhabiting several rivers and streams throughout the Forest. Adult steelhead spawn in rivers and streams by laying their eggs in depressions in the gravel called "redds." Fry emerge from the gravel and rear for one to three years in freshwater before migrating to the ocean as smolts where they grow to adults. The number of fish present may serve as an indicator of stream health. However, many factors other than habitat quality influence the population size and structure of anadromous fish: angling, hydroelectric facilities, ocean conditions, avian and marine mammal predation, and hatchery introductions.

Past years' monitoring efforts focused on assessing resident cutthroat trout (*O. clarki*) population viability. Data collection efforts were somewhat limited, thus yielding highly variable and speculative results. This form of monitoring was determined very costly and provided questionable results. Therefore, cutthroat trout population assessments were discontinued and focus was redirected to steelhead. This year's monitoring efforts continue emphasis on adult steelhead counts for the Wind and East Fork Lewis rivers. Additionally, a smolt population estimate was made for the Wind River. While data provided here are insufficient to determine population viability, these data do provide useful information on population trends.

Results:

Wind River

Adult steelhead counts are made on the Wind River by snorkel surveys conducted in partnership with the Washington Department of Fish and Wildlife and Clark/Skamania Flyfishers. Multiple surveyors make a basin-wide count on 26 miles of mainstem and tributaries in mid-summer. Only 44 wild summer steelhead were observed during the 1997 snorkel count: 45 percent of the 5-year average

Figure 5). This is the lowest recorded count documented since surveys began in 1988, prompting the Washington Department of Fish and Wildlife to issue an emergency sport angling closure for steelhead. Figure 6 displays the total number of steelhead smolts estimated leaving the mouth of the Wind River.

Figure 5 - Wind River Adult Steelhead Counts

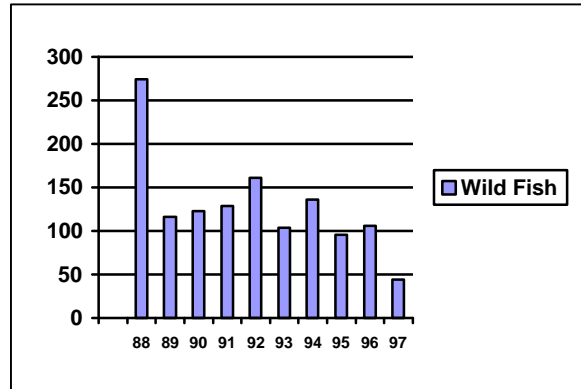
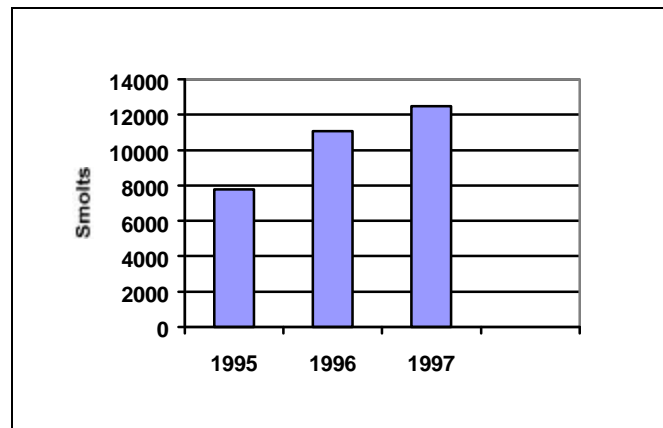


Figure 6 - Wind River Steelhead Smolt Population Estimates



East Fork Lewis River

Snorkel counts on the East Fork Lewis River are conducted in partnership with the Washington Department of Fish and Wildlife.

Snorkel counts are made in mid-summer on approximately 30 miles of mainstem and tributaries. Stock status of each fish are determined as wild (no marks) or hatchery (fin clipped). Occasionally, fish are observed only briefly and thus are recorded as "unknown." Only 159 total adult steelhead were observed in the East Fork Lewis River system in 1997 (Figure 7). The count is down by almost half from the previous two years.

Evaluation: Population Viability and Influencing Factors

Wind River

Many factors in addition to habitat are known to affect anadromous fish populations. Global weather patterns, specifically the drought years from the late 1980s through 1993, have exacerbated the effect of declining habitat conditions. Sport and commercial fishing have also taken their toll. Continued harvest of depressed stocks further contributes to their decline. The Wind River steelhead population has shown a drastic decline in the last year of survey over the 10-year record. Losses of riparian vegetation and altered streamflow and sediment regimes have reduced the watershed's ability to support aquatic life. Impacts are manifested by increased water temperatures, reduced pool quality and abundance, reduced woody debris in streams, and increased stream width-to-depth ratios (*Wind River Watershed Analysis*, 1996). The impact of Hemlock Dam on Trout Creek and Bonneville Dam on the Columbia River have not been quantified to an acceptable level of confidence. According to state officials, Bonneville Dam accounts for 10-15 percent mortality of outmigrating smolts on the Columbia River.

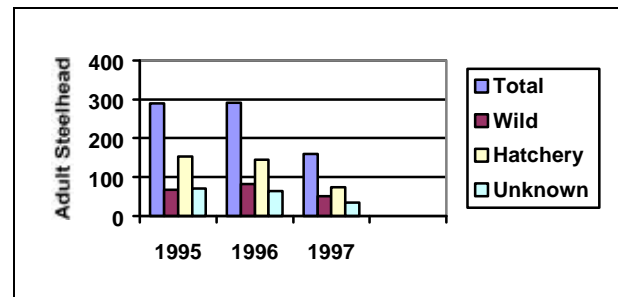
The Forest Service is currently undertaking an extensive effort to restore watershed and habitat conditions in the Wind River system. Major restoration efforts have already been made in Trout Creek, a primary spawning and rearing tributary. Efforts include road decommissioning, riparian vegetation improvement, and fish habitat enhancement. Initial habitat restoration work was completed along the mainstem Wind River in 1997. Further efforts are planned for 1998 and 1999. Additionally, the Forest Service is an active participant in a multi-agency, multi-partner approach to building a basin-wide recovery effort for wild steelhead in the Wind River. We have taken a system-wide approach to determining steelhead recovery needs. Efforts are currently in progress.

East Fork Lewis River

The East Fork Lewis River steelhead population has also shown a marked decline in the last year of survey (Figure 6). Very few wild adult steelhead have been observed over the three-year survey period. Major factors influencing population levels

are habitat loss, reduction in habitat quality, harvest, illegal take, disease and predation, and poor ocean conditions. The Forest Service is currently pursuing an aggressive watershed and habitat restoration effort in the East Fork Lewis River system upstream of Sunset Falls. Implementation of restoration activities is scheduled for 1998 and 1999. Substantial habitat improvements are anticipated on Forest Service lands by 2000.

Figure 7 - East Fork Lewis River Snorkel Counts



Recommended Action to be Taken: The following actions are recommended:

- Continue watershed restoration efforts aimed at Wind River steelhead recovery.
- Promote the development of a similar partnership recovery approach for steelhead in the East Fork Lewis River. Implement planned watershed and habitat restoration. Monitor results.

Bull Trout

Introduction: Bull trout (*Salvelinus confluentus*) are currently listed as a Regional Forester sensitive species and are proposed for listing under the Endangered Species Act. The only verified population on the Forest exists in the North Fork Lewis River system above Swift Dam. The population is considered adfluvial. Adults spend the majority of their life cycle in Swift Reservoir, ascending its tributaries each year to spawn. Since juvenile bull trout require exceptionally cool, clean water, they are considered a good management indicator of watershed condition and aquatic ecosystem health.

Bull trout population monitoring has been conducted in partnership with the Washington Department of Fish and Wildlife and PacifiCorp

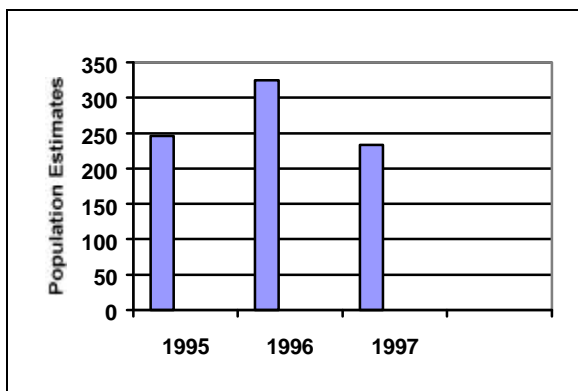
since the early 1990s. Early monitoring efforts focused on determining population size and viability through collection of catch per unit effort data. Beginning in 1994, population estimates were derived using a sophisticated mark-visual observation method. Adults are captured in the reservoir in the spring, uniquely marked, then released. In the late summer and early fall, repeated snorkel surveys are used on a weekly basis to observe the ratio of marked to unmarked adults active on the spawning grounds. Using a Joint Hypergeometric Maximum Likelihood Estimator (JHE), a population estimate is calculated along with a 95% confidence limit.

Two conditions are modeled in deriving the JHE:

1. A 10 percent reduction in the number of reservoir marked adults appearing on the spawning grounds (based on prior year radio telemetry studies), and
2. A 10 percent tag loss.

Results: The estimated population size for bull trout in the North Fork Lewis River system upstream of Swift Dam is 233 (Figure 8). We are 95% sure that the true population size is between 192 and 291 adults. These results are very close to those observed in 1995.

Figure 8 - Bull Trout Population Estimates Above Swift Dam



Evaluation: Population Trend and Influencing Factors

The population trend appears stable. The 1996 population estimate had very poor reliability due to sampling efforts being hindered by the major flood in February 1996. Reliability of the 1997 population estimate is much better. Factors

affecting the bull trout population above Swift Dam are habitat quality, illegal harvest, and the hydroelectric facility. Certain tributaries to Swift Reservoir, such as the Muddy River, contain sub-optimal habitat for bull trout. Despite restrictive angling regulations on Swift Reservoir and its tributaries, illegal take of bull trout still occurs on occasion. Lack of fish passage facilities at Swift Dam isolate the Swift Reservoir population from mixing and reestablishing with the isolated population of a Yale Lake tributary.

Recommended Actions to be Taken: The following actions are recommended:

- (a) Continue supporting education and law enforcement efforts to curb illegal take of bull trout.
- (b) Install adult traps in partnership with Trout Unlimited and the Washington Department of Fish and Wildlife to obtain actual spawner escapement counts.
- (c) Participate in FERC relicensing efforts on the North Fork Lewis River system to address bull trout needs in relationship to existing hydroelectric facilities.

Effectiveness of In-Channel Habitat Improvement Structures ^{62d} 😊

Introduction: Stream habitat restoration activities have been implemented on the Forest since the early 1980s. Activities focus on improving habitat availability and quality. The majority of restoration efforts have focused on improving habitat for anadromous species, primarily steelhead. Monitoring provides important feedback for improving in-channel habitat structure designs and applications for future efforts.

Monitoring was conducted on four streams in 1997 (Table 18). Fish biologists surveyed the entire length of project area on each stream, evaluating the function and performance of individual habitat improvement structures. Specific data were collected to provide insight on structure success.

Table 18 - In-channel Habitat Improvement Projects Evaluated in 1997.

Skill Center	Stream	Project Area (RM ¹)	Distance Surveyed	Year Implemented
South	Trout Creek	RM 8.2 to 8.8	0.6 mi	1996
Central	Clear Creek	RM 0.0 to 1.2	1.2 mi	1988
North	Skate Creek	RM 7.3 to 7.8	0.5 mi	1988
North	Smith Creek	RM 4.7 to 5.0	0.3 mi	1988

¹ RM = river mile.

Results: A total of 45 structures were evaluated. Fifty-six percent of the structures evaluated are fully meeting intended objectives; 16 percent partially; and 28 percent not meeting intended objectives (Table 19). Seventy-one percent of the structures evaluated are currently in place as designed; seven percent have shifted on-site; and 22 percent dislodged and transported downstream.

Evaluation:

Trout Creek

Overall project objectives for Phases I and II of the Trout Creek Restoration Project are to:

- 1) Increase bank stability.
- 2) Increase amount of in-stream large woody debris.
- 3) Restore natural channel geometry characteristics.
- 4) Reduce width-to-depth ratio.
- 5) Increase stream shade.
- 6) Reduce maximum water temperatures.

Table 19 - Summary of In-channel Habitat Improvement Structure Performance.

Stream	Number of Structures Evaluated	Meeting Objectives			Current Location		
		Fully	Partially	Not	In Place	Shift On Site	Left Site
Trout Creek	24	23	1		24		
Clear Creek	1			1		1	
Skate Creek	11		1	10	1	1	9
Smith Creek	9	2	5	2	7	1	1
Total	45	25	7	13	32	3	10
Percent		56%	16%	28%	71%	7%	22%

Primary project treatments included reconfiguration of channel geometry, bank stabilization, gravel bar development, reactivation of an old-growth stream channel, and riparian planting. Objectives 1-4 were fully accomplished. Careful project design based on intensive study and analysis of physical and ecological characteristics of the site resulted in 96% effectiveness of structures. Applied treatments effectively accomplished each of the first four project objectives. Objectives 5 and 6 were accomplished by reactivating 0.7 miles of old-growth channel, thus increasing stream shade and decreasing solar warming. Increased shade and decreased water temperatures throughout the remainder of the project area are long term objectives that are dependent on the growth rate of riparian vegetation. Full project benefits are anticipated within 10-15 years after implementation.

The Trout Creek Restoration Project incorporated structural designs not represented in the adopted Regional monitoring protocol. For example, bar retaining structure type codes and associated structure type objectives are not available in the Regional protocol. District personnel conducted this monitoring effort using an expanded protocol to fit the unique structural designs and treatment applications. Adoption of an expanded Regional protocol is needed. Important monitoring data may be obscured or information lost with the limitations of the existing Regional protocol.

The timing of survey during low flow makes it difficult to recognize all processes influencing the success or failure of individual treatment sites. For example, one structure that appeared to fully meet design objectives at low flow was later found to only partially meet objectives at high flow.

Clear Creek

Substantial changes have occurred within the Clear Creek project area since 15 original structures were installed in 1988. The same project area was monitored in the summer of 1996 to evaluate impacts from the 100-plus year flood of 1996. At that time, a total of 10 structures were located and evaluated within the project area. Fifty percent of the structures located in the 1996 monitoring effort were found in-place as originally constructed, while the other half dislodged and transported downstream from their original construction sites. It is not clear at this time why such dramatic change occurred over the winter of 1996-97, although a substantial 5-year flood event was recorded in January 1997. One possible explanation is

the 100+ year flood event in 1996 dislodged many of the original structures leaving them highly susceptible to downstream transport during the smaller magnitude flood in January 1997.

Skate Creek

The Skate Creek Project was heavily impacted by winter storms. Most structures were dislodged and transported downstream from their original sites. Almost all structures evaluated are not meeting their intended objective and are not providing much function in their new locations. Logs used for structural materials were undersized. Furthermore, anchoring of structures using rebar pins appeared ineffective. Surveyor observations indicate the need for incorporating larger woody debris pieces with attached root-wads for future projects in streams of similar size or larger.

Smith Creek

The Smith Creek Project was implemented in 1988 using manual labor rather than heavy machinery for site construction. It is quite difficult to achieve desired results and structural performance when making installations using manual labor in a stream of this size. Furthermore, structural materials were determined undersized and anchoring was insufficient in some locations.

Recommended Actions to be Taken: The following actions are recommended:

- Emphasize interdisciplinary involvement during project initiation and design. Assure, at a minimum, the design team has the following mix of skills and expertise:
 - 1) An understanding of fluvial geomorphic processes.
 - 2) An understanding of hydraulic processes and relationships.
 - 3) An understanding of life cycles and ecology of fishes present in project area.
 - 4) Practical experience with heavy machinery and construction of in-stream structures.
- Establish a Forest monitoring protocol, compatible to the Regional protocol, that address all types of in-channel habitat improvement designs and applications.

Road Closures

Introduction: Several factors lead to road closures across the Forest.

- The Northwest Forest Plan calls for no net increase in roads in key watersheds; some roads have been identified as sources of sediment in streams.
- Road use can lead to harassment of wildlife.
- We are closing roads because in an era of declining budgets and reduced support from our timber program we can no longer afford to maintain them properly.
- The storms of 1996 provided opportunities to close roads damaged by floods.

Road closures include permanent, and seasonal closures and decommissioning. Permanent closures are year-round closures created by berms, rock barricades, or by allowing vegetative growth to obscure the road. Seasonal closures are effected by gates or other barriers that allow the road to remain open during non-critical periods. Decommissioning involves permanent removal of the road from the system by removing drainage structures, restoring the natural grade and ripping and revegetating the roadbed.

Results: Road closures are one of the means of reducing wildlife harassment in deer and elk winter range. The Forest Plan established a goal of reducing open road density to 1.7 mile of open road per square mile within the biological winter range. Currently the density within biological winter range is 2.2 miles of open road per square mile. This average is the same as that of 2 years ago, and is an increase of 0.2 miles per square mile over last year.

The projected miles of road closure from the Forest Plan are 1,230 miles of road in seasonal or permanent closure. With 916 miles closed year-round or seasonally, and 132 miles of road decommissioned to date, the Forest is at 85 percent of the projected goal, the same percentage as reported last year.

Table 20 compares current road mileage in the 10 key watersheds on the forest with mileage at the time the Northwest Forest Plan was implemented.

Table 20 - Roads in Key Watersheds

KEY WATERSHED	1994 Road Miles	Miles Decommissioned	Miles Constr.	1997 Road Miles	Net Change Road Miles
Clear Fork Cowlitz	110	0	0	110	0
E.Fork Lewis	79	0	0	79	0
Lewis River	737	22	0	715	-22
Little White Salmon	133	8	1	126	-7
N. Fork Cispus	102	0	0	102	0
Packwood Lake	23	0	0	23	0
Siouxon Creek	69	0	0	69	0
Upper Cispus	70	5	0	65	-5
White Salmon	129	14	1	116	-13
Wind River	433	49	0	384	-49

Evaluation:

Closures For Biological Winter Range (BWR)

Many areas of the Gifford Pinchot NF are still closed to normal traffic due to flood damage from the last 2 seasons. This may explain the slight increase in illegal breaches of road closures in BWR, since flood closures elsewhere put greater pressure on areas still relatively accessible to Forest users. Indeed, if all the roads in BWR that are prescribed for closure were effectively closed, we would have achieved a road density of 1.2 mile per square mile of BWR, much better than the 1.7 mile goal. The 2.2 mile figure probably does not accurately represent actual closures, since during the years that BWR is needed by elk and deer populations, many more roads are closed to vehicle traffic by snow. When snow is less than about one foot deep in BWR, the areas are not as important to deer and elk, since they are not forced to retreat to these lower elevations, but can stay dispersed at higher elevations.

Table 21 - Road Closures and Density

Road Density in Deer & Elk Winter Range	
Miles of open road	742
Land Area (sq. mi.)	339
Road Density	2.2 mi./mi. ²

General Road Closures

Planned road closures on the Gifford Pinchot NF now include 1,571 miles of existing forest road, well over the 1,230 mile projection envisioned by the Forest Plan. However, monitoring surveys of those roads show that as many as 42 percent of their closures have been illegally breached by Forest users. The estimate of effectively closed system road miles is, therefore, only 916 miles this year. The goal of 1,230 miles of closed road was intended to include roads no longer used for vehicular traffic, so this should not only include roads permanently barricaded or seasonally close by means of gates, but also those roads we have decommissioned and taken permanently out of service. Since the Plan took effect, 132 miles of system roads have been decommissioned, (36 miles in 1997) bringing the total of roads closed permanently or at least part of every year to 1,048 this year, which is 85 percent of the goal. Another factor to consider is that many roads are closed yearly by snow, or have been closed by flood damage. Many flood-damaged roads are currently on the records as being open, but environmental analyses and public input are underway that may result in decommissioning, year-round closure, or conversion to trails of 158 miles of road on the Packwood and Randle Ranger Districts alone. These districts were hardest-hit by the 1996 floods, and the need to mitigate the effects of storm-damaged roads on streams has resulted in funds being made available to decommission many roads now that would otherwise have waited years to receive decommissioning funds. This will result in a major reduction in the number of roads and their impacts on wildlife habitat and water quality.

Recommended Action to be Taken: Continue to check for the effectiveness of road closures, repair road closure devices that are breached or ineffective, and continue to close unneeded roads.

Community Effects - Payments to Counties 84 ☺

Introduction: By an act of Congress in 1908, 25 percent of revenues are paid to the counties in proportion to the amount of national forest land in each county. The act stipulates that the money generated is to be spent on public schools and roads.

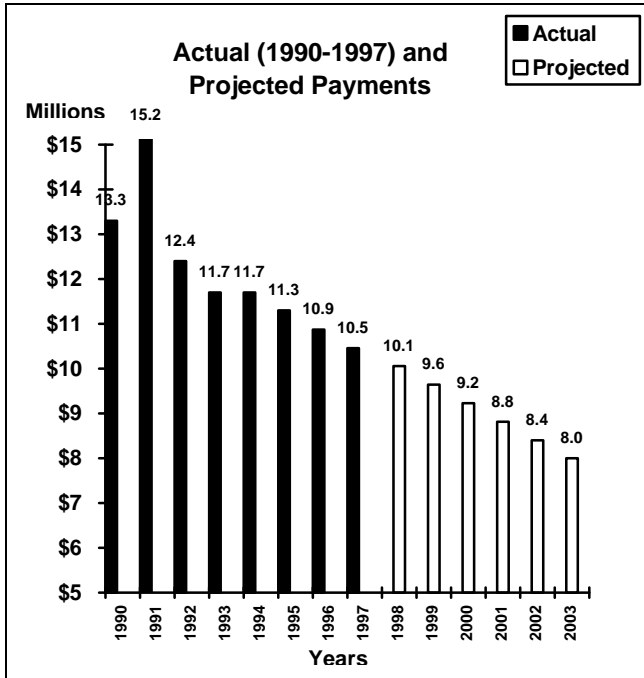
County receipts on the Gifford Pinchot National Forest are generated primarily by timber harvest. Collections from recreation, mining, grazing, and administrative uses account for less than 5 percent of the total receipts

Results: Over \$10 million was returned to the six counties with lands in the Forest boundary. If payments were based on actual receipts from timber harvested, less than \$2 million would be returned to the counties. Instead, payments were computed under a provision of the Interior and Related Agencies 1993 Appropriations Act which provided for 1994 payments to counties of not less than 85 percent of the five-year average payments for fiscal years 1986-90 for those National Forests affected by decisions on the northern spotted owl. Beyond 1994, guaranteed payments are reduced 3 percent per year until 2003. Under the law, payments for 1997 were computed as 76 percent of the 1986 to 1990 average. Next year the receipts will be 73 percent of the same average. These funds are distributed to the counties based on the proportion of the total National Forest in each county. In 1997, \$7.98 was returned to the counties for each acre of the Gifford Pinchot National Forest within each county. The current distribution among counties within the Forest boundary is displayed in Table 22.

Table 22 - Community Effects--Payments to Counties

County	Percent Total Distribution	1997 \$ Distribution
Clark	0.1	9,415
Cowlitz	2.5	273,087
Klickitat	1.1	116,017
Lewis	28.6	2,982,251
Skamania	64.8	6,788,828
Yakima	2.9	295,939
Total	100.0	\$10,465,537

Figure 9 - Historical and Projected Payments



An important Forest Service goal in recent years has focused on helping rural communities adjust to changing federal land management practices and policies. The Forest Service has developed a program designed to provide both financial and technical assistance to natural resource-based communities and rural development organizations striving to diversify and revitalize local economies. The program, called Rural Community Assistance, invested \$1.7 million in the infrastructure of communities surrounding the Forest. Grants by county in FY 1996 and 1997 are tabulated in Table 23.

Table 23 - Rural Community Assistance Grants

County	1996 Grants \$	1997 Grants \$
Cowlitz	1,284,328	490,738
Klickitat	864,128	454,659
Lewis	420,200	473,196
Yakama	64,700	0
Wahkiakum	48,200	76,200
Clark	24,000	0
Skamania	23,728	220,850
Pierce	20,000	27,000
Total	\$2,749,284	\$1,742,643

Mining Operating Plans ⁹¹ 😊

Introduction: The Forest Service has been charged with making minerals available to the economy, while at the same time, minimizing the adverse impacts of mining activities on other resources. Mining is unlike other “multiple use” activities on federal lands in that the General Mining Law of 1872 grants the federal land management agencies far less authority over mining activities than over timber harvest, recreation, grazing and other activities. The Forest Service minerals regulations, 36 CFR 228, require that where feasible, mining operations be conducted to minimize environmental impacts. These regulations require that a Notice of Intent be submitted to the Forest Service District Ranger on the district where the mining is proposed. The operator is required to submit a Plan of Operations if the District Ranger determines “that such operations will likely cause significant disturbance of surface resources.”

Results: On the Mt. Adams District two Plans of Operation were monitored for compliance.

On the Cowlitz Valley Ranger District twelve Notices of Intent were received. No plans of operation were submitted in 1997.

On the Mt. St. Helens National Volcanic Monument one Notice of Intent was received and one Plan of Operations was submitted and approved.

No cases of noncompliance were identified or reported.

No reclamation activities were required and none were accomplished.

Evaluation: Standards and guidelines are being met.

Recommended Action to be Taken: No corrective action required - monitoring to continue.

D. Accomplishments

The following table compares program accomplishments for FY's 91-97:

Table 24 - Program Accomplishments

Output	Units	Outputs							1997
		1991	1992	1993	1994	1995	1996	1997	Target
Developed and Dispersed Recreation Use	Recreation Visitor Days	NA	NA	NA	NA	7,740	3,981	5,600	*
Wilderness Use	(thousand)	NA	69.5	75.8	88.4	76.5	74.8	76.1	*
Trail Const/Recon.	Miles	64	32.2	20	54	55.3	46.7	10.9	*
Trails Maintained	Miles	955	988	1015	712	903	256	627.3	*
Wildlife Habitat Improvement:									
• Structural	Structures	2,727	2,881	1,720	592	1,919	1,253	28 [‡]	18
• Nonstructural	Acres	8,245	600	39,046	120	46	433	199	191
Wildlife Indicator Species:									
• Deer	Habitat Capability	21,745	20,960	20,170	19,385	18,600	18,450	18,300	*
• Elk	animals	5,435	5,240	5,040	4,845	4,650	4,610	4,570	*
• Mountain Goat	animals	240	250	260	275	290	290	290	*
• Gross Sell Volume	MMCF	3.7	4.2	3.1	0.6	8.7	11.4	12.3	*
	MMBF	19.1	22.3	15.6	8.9	45.8	59.8	63.8	58.4
• Net Sell Volume	MMCF	2.4	3.8	2.9	1.0	8.3	11.3	12.0	*
	MMBF	11.7	19.8	14.8	5.8	43.6	57.8	61.9	*
• Volume Harvested	MMBF	286.4	160.3	154.9	96.1	58.7	11.3	41.0	*
• Reforestation	Acres	8,843	5,703	6,104	5,622	3109	1,801	3,888	5,557
• Fuel Wood	CF	847	469	511	509	560	328	295	*
• Precommercial Thin	Acres	3,340	3,091	1,861	3,089	3113	3,123	2643	4,359
• Release	Acres	158	0	0	0	100	0	257	*
• Fertilization	Acres	2,018	3,100	3,166	971	100	0	74	*
*There are no Regional targets for these items.									
‡Does not include KV projects.									

D. Accomplishments (continued)

Output	Units	Output							
		1991	1992	1993	1994	1995	1996	1997	1997 Target
Grazing	AUMs	2,430	2,193	1,732	1,732	1,732	1,732	2,756	*
Watershed Improvement	Acres	34	168	18.6	24	155	50	72.3	45
Air Quality	Particulate/ Tons	NA	NA	584	43	74	41	30.2	*
Fuel Treatment	Acres	7,897	6,684	4,002	4,143	2,183	1,279	316	318
Timber Purchaser Roads:									
• Construction	Miles	32.7	7.5	7.8	2.3	2.9	2.9	0	*
• Reconstruction	Miles	17.0	5.4	1.3	6.5	4.9	15.1	41.5	*
Allocated Funding (Roads):									
• Construction	Miles	0.5	0.1	0.3	3.1	0	0	6 ^{2/}	*
• Reconstruction	Miles	10.7	10.7	0.9	16.1	14.4	10.8	31.4	*
TOTAL ROAD ACTIVITY	Miles	60.9	23.7	1.2	28.0	22.2	28.5 ^{1/}	73.9	*
Roads Open to:									
• Passenger Cars	Miles	1,247	997	998	811	828	808	828	*
• High Clearance	Miles	2,488	2,428	2,295	2,091	2,424	2,402	2388	*
Roads Closed	Miles	773	897	1,035	1,416	1,019	1,017	1009	*
TOTAL ROAD SYSTEM	Miles	4,508	4,322	4,328	4,318	4,284	4,261	4225	*
Returns to Govt.	\$ Million	62.4	34.3	31.3	32.8	11.3	2.7	6.1	*
Payments to Counties	\$ Million	15.6	12.4	11.7	11.7	11.3	10.9	10.4	*
Potential Timber Related Jobs Source: TSPIRS Reports	Jobs	4,200	2,362	2,219	1,425	864	147	533	*
Landlines:									
• Located	Annual Mi.	18	28	19	10	10	6	4	4.0
• Maintained	Annual Mi.	20	0	5	2	6	6	7	6.5
Congressionally Designated Boundaries	Miles	21	10	10	5	5	6.5	2.5	*
TOTAL BUDGET	\$ Million	67.8	50.5	42.5	39.5	27.7	39.3	26.9	*

*There are no Regional targets for these items.

^{1/} Does not include 35 miles of ERFO funded road reconstruction.

^{2/} Includes 5 miles constructed by Federal Highway Administration to replace the Curly Creek Road.

E. Expenditures

The budget for the Gifford Pinchot National Forest is an outcome of the annual congressional appropriations process. Congress allocates an annual budget for the Forest Service which is subsequently disaggregated to the nine Forest Service Regions. Forest Service Regional Offices then allocate the Regional budget among Forests in each Region. Budgets are not directly related to receipts from timber sales or other activities on the Forest. With few exceptions, receipts collected on the Forest are returned to the US Treasury. In FY 1997, the Forest began collecting user fees on the Mount St. Helens National Volcanic Monument. Eighty percent of the \$2 million collected in 1997 will be kept on the Forest for use in maintaining recreation facilities.

The chart below displays expenditures on the Gifford Pinchot National Forest over the seven years we have implemented the Forest Plan.

Forest budgets have been buoyed the past two years by funds to repair damage from the 1996 floods. Flood repair accounts for most of the expenditures labeled Transportation expenditures in Figure 11.

Figure 10 - Total Expenditures 1991-1997

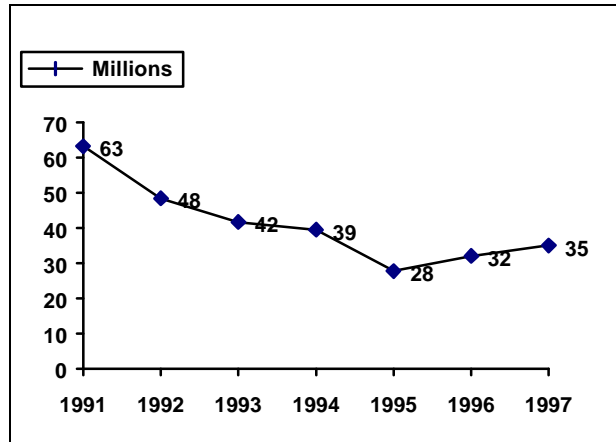
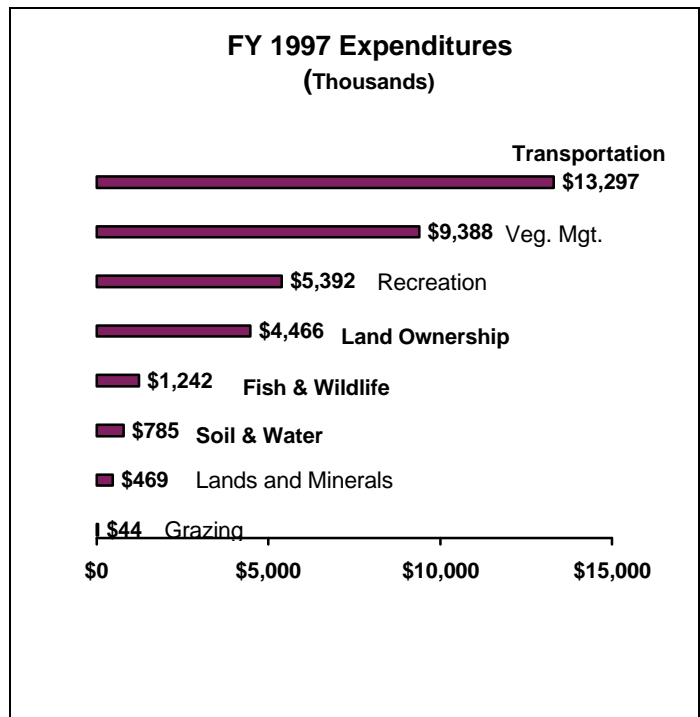


Figure 11 shows the composition of 1996 expenditures by program area.

Figure 11 - Expenditures by Program Area



F. Forest Plan Amendments

The following is a list of amendments to the Forest Plan that have been approved to date:

Table 25 - List of Forest Plan Amendments

Amendment No.	Approved	Description
1	5/1/91	Decision Memo - Adds Pacific Yew to the list of Acceptable Species in all working groups.
2	9/24/91	Decision Memo - Provides additional direction for visual resource management and mineral claims and leases in Wild River corridors.
3	9/24/91	Decision Memo - Clarified the lower terminus of the Cispus River Wild and Scenic River recommendation in the Forest Plan documents so that it coincided with the Federal Energy Regulatory Commission license boundary of the Cowlitz Falls Hydroelectric Project.
4	9/24/91	Decision Memo - Adds Bigleaf Maple as an Acceptable Species in the Western Hemlock Working Group.
5	9/24/91	Decision Memo - Includes monitoring criteria for the goldeneye and wood duck.
6	8/12/92	Decision Memo - Adds a section on Managing Noxious Weeds and Unwanted Vegetation to the Forest Plan.
7	11/24/92	Decision Notice - Opens Blue Horse Trail 237 to winter motorized use (snowmobiles).
8	3/3/93	Decision Memo - Modifies boundaries of the Forest Plan Map of Record.
9	12/13/93	Decision Notice - Allows grazing in enclosure area of the Cave Creek Wildlife Special Area.
10	7/08/94	Decision Memo - Allows grazing in the Grand Wildlife Special Area, a great blue heron rookery.
11	4/13/94	Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. Subsequent documentation reconciles Forest-wide and Management Area Standards and Guidelines and the Forest Plan Map with the Record of Decision for the President's Plan. Replaces Forest Plan pages IV-45 through IV-150.

G. Northwest Forest Plan Implementation Monitoring

Monitoring is a key component of the Northwest Forest Plan. A Region wide implementation monitoring program was initiated in FY 1996 to monitor our implementation of the Northwest Forest Plan standards and guidelines. Two sales on the Gifford Pinchot were drawn in a 10 percent random sample from a pool of sales among the national forests and BLM districts in the range of the northern spotted owl. Monitoring was conducted by field trips to both sales and by completing a 131 question survey relating to compliance with the standards and guidelines from the Northwest Forest Plan. Below is an excerpt from the monitoring report filed by the Gifford Pinchot and Southwest Washington Province.

Southwest Washington Province NWFP Implementation Monitoring

August 26-27, 1997

The Gifford Pinchot conducted the 1997 Northwest Forest Plan monitoring on August 26 and 27, 1997 on the Randle and Packwood Ranger Districts. Answers to the questionnaires were reviewed in the office the first day and selected sites in each of the five projects were visited on the ground the second day. Members of the monitoring team from the Forest Service and the Province Advisory Committee team are listed below.

Russ Wigley - Lewis County Commissioner
Ron Lee - Environmental Protection Agency
Lee Carlson - Yakama Indian Nation
John Squires - Province Advisory Committee
Member
Jeanette Johnson - Province Advisory Committee
Member
Randy Shepard - Packwood District Ranger
John Roland - Team Leader

The monitoring team was supported by Forest Service staff who had been involved in the planning and administration of the projects:

Bill Uyesugi - Sale Planning
Ron Pfeifer - Silviculturist
Doug Reiper - Engineer
Tom Kogut - Wildlife Biologist
Ed Tompkins - Silviculturist
Harry Cody - Randle District Ranger
Greg Cox - Wind River and Mt. Adams D.R.
Deb Couche - Forest Restoration Coord.
Erin Shallow - Student Employee -
Environmental Science Student, Evergreen
State College

All projects are located in the Cispus Adaptive Management Area.

Doe Timber Sale

Doe Timber Sale is a portion of a harvest plan documented in the 20/35 Environmental Analysis. This EA was the District's first experience in contracting the preparation of an EA to a consulting firm. The area was identified by the Middle and Upper Cispus Watershed Analysis as an important late-successional connectivity zone where silvicultural treatments should focus on restoration and development of late-successional wildlife habitat. Harvest prescriptions were also designed to mitigate visual effects in the portion of the sale area visible from the Cispus River, which has been recommended for Scenic River classification.

The harvest prescriptions called for a combination of small gap creation, variable space thinning from below, and unthinned patches. As recommended by the Watershed Analysis, thinning was prescribed for the riparian reserves to enhance riparian function by accelerating tree growth and crown development, however no harvest is to occur within 75 feet of the streams. Canopy closure will be maintained at 65 percent within the riparian reserves. The intent of Matrix standards and guidelines for snags in intermediate harvests will be met by converting 243 green trees with KV funds. Down wood needs will be met by maintaining existing down wood intact during logging.

During the planning phase, this sale was on the itinerary of a field trip attended by members of the public interested in the development of the AMA plan. The project area is the site of a study on mushroom research techniques. The sale had not been logged at the time of our review.

The sale had been laid out prior to conducting sensitive plant surveys. The district was in the process of adjusting one harvest unit boundary to exclude a population of *Allotropa virgata*, a Survey and Manage Strategy 1 and 2 species. There is no approved a management standard or survey protocol for this species.

An implementation issue discussed on this project was the process by which site-tree height was determined for the purpose of establishing riparian reserve boundaries. Project planners used the tallest site-tree height for the planning area. The Forest's intent is that the site-tree height be based on the riparian area site-index within each harvest unit. Sale planners will be advised of this interpretation and the direction will be clarified in the Forest Plan at its next update. Since the watershed analysis recommended thinning within the riparian reserve, the the width of riparian reserves had no effect on sale layout. The concern is the appearance that planners are arbitrarily applying standards in the interest of expediency rather than achieving the desired function.

Walupt Cispus Timber Sale

Walupt Cispus is the regeneration harvest portion of the original Walupt Cispus project. The Walupt Cispus EA contained regeneration and commercial thinning units. The commercial thinning units were twice offered as the Cispus Flats timber sale but received no bids. The Walupt Cispus was offered in the FY 1997 program but received no bids. A limited operating period, the complexity of the harvest prescription and a weak market for true-fir have been suggested as reasons for lack of interest in this sale.

A goal of the sale was to "block-up" a highly fragmented area by harvesting less functional remnant stands with the intent of providing better functioning late-successional habitat (larger unfragmented patches) in the future. Harvest was deferred from important connectivity corridors. Walupt Cispus was opposed by members of the environmental community because of its harvest of old growth timber; stand ages range from 260 to 315 years. The project was the subject of an environmentalist rally held at Walupt Lake. The initial proposal was adjusted to avoid incidental take of spotted owl habitat by dropping regeneration harvest units within the designated home range of an owl pair in the area. The operating season was restricted to 45 days to avoid activities during spotted owl nesting season and elk calving season.

Riparian reserves were established based on site-index of the treatment unit, rather than the riparian area. In the unit we visited (RG-2), the observation was made that the use of the site-index to estimate the site-potential tree height had underestimated the actual average height attained by trees in the unit. This may be accounted for by micro-sites within the unit exceeding that sampled in the silvicultural prescription, or the assumption that height growth subsides at the 200 year age used to estimate site-tree height.

Down wood was surveyed during marking and additional trees were designated to meet the Matrix standard for down wood. To meet snag requirements, 3.4 trees per acres were designated for future snag creation. An additional 1 tree per acre was designated to compensate for snag deficiencies in adjacent plantations.

The project would pursue several learning opportunities proposed by the AMA strategies including monitoring the effects of broadcast burning on leave tree survival.

Precommercial Thinning Restoration Projects

Two precommercial thinning projects were reviewed, one on the Randle and one on the Packwood Ranger Districts. Both projects were scheduled precommercial thins of plantations intended to maintain vigorous growth. The prescriptions for both projects emphasized increasing species diversity by favoring minor species, such as cedar, Pacific yew, western white pine, lodgepole pine and hardwoods. The watershed analysis supported precommercial thinning in the riparian reserves. The Randle thinnings prescribed a 10 foot no cut buffer on slopes less than 50 percent; and on slopes greater than 50 percent, the no-cut buffer would extend to the slope break or a maximum of 50 feet. The Packwood units were on relatively flat ground and did not prescribe a no-cut buffer, although one of the units 10 half-acre no-cut buffers was located adjacent to a portion of the Class IV stream in the unit. Seasonal restrictions were prescribed to minimize effects in calving and fawning areas, and during the spotted owl nesting season.

Those who consider restoration actions as remedial by definition do not believe this type of project is properly classified as a restoration activity. These thinnings were planned with the objective of stand management rather than watershed restoration. However, all agree that the thinning will enhance species and structural diversity, and by accelerating tree growth will promote hydrological recovery.

2325 Road Stabilization

This project involved about 5 miles of Road 2325 and 2 miles of Road 2325042 in the East Canyon Creek basin and the Middle Cispus watershed. Activities included removing unstable road shoulders and fill slopes, improving drainage structures and erosion control using mulch, seed, and plantings. This project was incomplete but the group viewed examples of armored water bars and drainage dips, and areas where unstable fill slopes had been pulled back.

East Canyon creek was identified in the Middle and Upper Cispus Watershed Analysis as a high priority for restoration activities. This project was presented to the public in a watershed analysis public meeting in March, 1995 and was reviewed by the PIEC/PAC.

There is a concern that the current prioritization process which identifies watersheds rather than sites for restoration should be reconsidered. While there is still support for the principle of a holistic approach to restoration at the watershed scale, the process needs to also consider exceptional problem areas in lower priority watersheds. If this rule had been applied, this road may not have been selected as there were more serious restoration needs in other watersheds.

Summary Findings

The Forest appears to have implemented the standards and guidelines of the Northwest Forest Plan in each of the five projects. After discussion with the monitoring team and District staff, none of the monitoring questions on any of the projects were marked "Fails." Questions on riparian reserve widths for the Doe Timber Sale (#39-41) were marked "Exceeds" based on the use of the maximum site-tree height for the planning area rather than the harvest unit. Restoration question #92 concerning retention trees, snags and down wood was marked as "Not Capable" for the precommercial thinning projects. All other questions were marked either "Meets" or "N/A."

Coordination with the tribes was identified as an area needing improvement in last year's report. For the two timber sales reviewed, the tribes were consulted in person rather than simply notified by mail, as had been the case in the projects reviewed last year.

There is an opportunity to better coordinate project design with the EPA. Ron Lee offered to make himself available to consult to project ID teams on issues related to accomplishment of Aquatic Conservation Strategy Objectives.

H. Other Forest Monitoring Activities

The Forest routinely conducts a wide range of monitoring activities which are not directly linked to the Forest Plan. Examples of these monitoring activities, which we conduct to evaluate the effectiveness of resource program management and trends in the resources, are briefly described in this section.

Recreation

- Campsite facilities monitoring.
- Activity reviews.
- Review and inspection of special-use permittees at visitor centers.

Research Natural Areas (RNAs)

- Monitoring for compliance with RNA management plans. Long-term structure monitoring every three to four years.

Wildlife

- Monitoring of northern spotted owl nests not connected to timber sales.
- Effectiveness monitoring for K-V projects.
- Periodic monitoring (throughout the year) of raptor (osprey/goshawk) nests.
- Nest box monitoring (ducks, etc.).
- Annual surveys for harlequin ducks.
- Annual breeding bird surveys.
- Monitor restoration projects.
- Verification of wildlife sitings.
- Status checks on various habitats (e.g. heron rookeries).
- Monitoring for challenge cost-share projects (e.g. amphibian project).

Botany

- Informal monitoring of sensitive species sites.
- Monitoring of specific species across the Forest in partnership with Partners for Plants.
- Tracking of population trends of rare plant species (such as the fringed pinesap, which has nine sites across the Forest).
- Pine broomrape monitoring study.
- Pale blue-eyed grass monitoring study on grazing impacts.

Fisheries

- Annual stream surveys.
- Annual steelhead snorkel surveys.
- Bull trout monitoring in the Lewis River.

Hydrology/Watershed

- Implementation and effectiveness monitoring of restoration projects including erosion control, culvert removal, and riparian fencing.
- Monitoring of restoration projects within the Adaptive Management Area (in collaboration with PNW Research).
- Yearly utilization monitoring for grazing allotments.
- Informal observation/monitoring of watershed/soils condition when FH personnel out in the field.
- Monitoring of mass movement through the watershed analysis process.
- Baseline stations monitoring water temperature (25 stations across the Forest).

Air Quality

- Air quality monitoring (Packwood Lake) in collaboration with EPA and WA State Ecology Department, June through September.
- Lichen surveys, one quarter of the Forest each summer.

Timber

- Surveys for down and dead woody material, and standing wildlife trees during sale administration.
- Random sale inspections documented with Inspection Reports.
- Monitoring of roads, landings, mitigation, riparian areas, wildlife trees, and down woody material.
- Forest Headquarters sale area visits.
- Contracting Officer Review of performance/techniques of individuals administering timber sales.
- Official sale inspections.
- Genetics program monitoring.
- K-V reforestation surveys (1st and 3rd year).
- Informal slash monitoring.

Engineering/Roads

- Maintaining status of roads gated and decommissioned (necessitated by p. C-7 of ROD, which requires no net increase in roads).
- Inventory of number and mileage of temporary roads.
- Monitor road maintenance activities (ours and purchasers) for compliance with Road Management Objectives and Road Management Specifications.
- Monitor road and trail bridges for safety.
- Monitor public drinking water stations.
- Monitor traffic signing program (monitoring of uniform traffic control devices).
- Quarterly groundwater monitoring at Chelatchie Prairie.
- Year-round traffic counts across the Forest.
- Weather conditions, especially rain-on-snow events for flood forecasting.

Fire

- Effectiveness monitoring in units after prescribed burning.
- Annual preparedness monitoring.
- Periodic NIFMAS monitoring.
- Pre/post-prescribed burn fuel inventories.

Glossary

A

Anadromous fish - Those species of fish that mature in the sea and migrate into streams to spawn. Salmon, steelhead, and searun cutthroat trout are examples.

B

Big game - Large mammals hunted for sport. On the National Forest these include animals such as deer, elk, antelope, and bear.

Big game winter range - A range, usually at lower elevation, used by migratory deer and elk during the winter months; usually more clearly defined and smaller than summer ranges.

C

Cavity - The hollow excavated in trees by birds or other natural phenomena; used for roosting, food storage, and reproduction by many birds and mammals.

Ceded lands - Lands surrendered to the federal government by treaty.

CF (cubic foot) - The amount of timber equivalent to a piece of wood one foot by one foot by one foot.

Creel - A wicker basket used by anglers to carry fish.

Cultural resource - The remains of sites, structures, or objects used by humans in the past-historic or prehistoric.

Cumulative effects - Those effects on the environment that result from the incremental effect of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

D

Diameter at breast height (d.b.h.) - The diameter of a tree measured 4 feet 6 inches above the ground.

Dispersed recreation - A general term referring to recreation use outside developed recreation sites; this includes activities such as scenic driving, hiking, backpacking, hunting, fishing, snowmobiling, horseback riding, cross-country skiing, and recreation in primitive environments.

E

Endangered species - Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

F

Forage - All browse and nonwoody plants that are available to livestock or game animals and used for grazing or harvested for feeding.

Fringed pinesap - A sensitive plant species.

K

Knutson-Vandenberg (K-V) - Legislation authorizing the collection of money from timber sales receipts for reforestation, stand improvement or mitigation projects on timber sale areas.

M

Management Area Category (MAC) - Provides direction and practices for specific portions of the Forest. Each MAC identifies a goal, or management emphasis, and the desired future condition of the land. Each MAC includes one or more Management Prescriptions.

Management indicator species - A species selected because its welfare is presumed to be an indicator of the welfare of other species using the same habitat. A species whose condition can be used to assess the impacts of management actions on a particular area.

Mass movement - A general term for any of the variety of processes by which large masses of earth material are moved downslope by gravitational forces - either slowly or quickly.

Meaningful Measures - A recreation management process to better guide recreation management activities at the project and site level intended to provide quality service to recreation visitors. It includes standards of quality, as well as prioritization for work to be accomplished based on documented expectations, needs, visitor preference and resource condition. Examples of standards for trail maintenance include: trees removed, tread maintained and brush cleared to predetermined widths.

MMBF - Million board feet

MMCF - Million cubic feet

MRVDs (Thousand recreation visitor day) - A measure of recreation use, in which one RVD equals twelve visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

N

National Forest Management Act (NFMA) - A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act, requiring the preparation of Regional Guides and Forest Plans and the preparation of regulations to guide that development.

National Environmental Policy Act of 1969 (NEPA) - An Act to declare a National policy which will encourage productive and enjoyable harmony between humankind and the environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, to enrich the understanding of the ecological systems and natural resources important to the nation, and to establish a Council on Environmental Quality. (The Principle Laws Relating to Forest Service Activities, Agriculture Handbook No. 453, USDA, Forest Service, 359 pp.)

Northwest Forest Plan (NWFP) -An amendment to westside Forest Plans intended to ensure viability of the spotted owl and other late-successional dependent species, and maintenance and restoration of healthy riparian ecosystems.

O

Optimal cover - For elk, cover used to hide from predators and avoid disturbances, including humans. It consists of a forest stand with four layers and an overstory canopy that can intercept and hold a substantial amount of snow, yet has dispersed, small openings. It is generally achieved when the dominant trees average 21 inches diameter at breast height or greater and have 70 percent or greater crown closure.

ORV - Off Road Vehicle. A category of recreational vehicles which includes four-wheel-drive vehicles and trail bikes.

Owl Region - National Forests and BLM districts within the range of the northern spotted owl.

P

Partial Retention - Management activities remain visually subordinate to the characteristic landscape.

PC (Precommercial) thinning - The practice of removing some of the trees less than marketable size from a stand so that the remaining trees will grow faster.

R

Raptor - Predatory birds, such as falcons, hawks, eagles, and owls.

Redd - Depressions in gravel in streams where salmon, steelhead, and trout lay their eggs.

Riparian - Pertaining to areas of land directly influenced by water. Riparian areas usually have visible vegetative or physical characteristics reflecting this water influence. Streambanks, lake borders, or marshes are typical riparian areas.

S

Selection - The annual or periodic removal of trees (particularly mature trees), individually or in small groups, from an uneven-aged forest, to realize the yield and establish a new crop of irregular constitution.

Semiprimitive motorized - A classification of the Recreation Opportunity Spectrum, characterized by a predominantly unmodified natural environment in a location that provides good to moderate isolation from sights and sounds of people, except for those facilities/travel routes sufficient to support motorized recreational travel opportunities which present at least moderate challenge, risk, and a high degree of skill testing.

Semi-primitive non-motorized - A classification of the Recreation Opportunity Spectrum, characterized by a predominately unmodified natural environment of a size and location that provides a good to moderate opportunity for isolation from sights and sounds of people. The area is large enough to permit overnight foot travel within the area, and presents opportunity for interaction with the natural environment with moderate challenge, risk, and use of a high degree of outdoor skills.

Sensitive species - Plant or animal species which are susceptible or vulnerable to activity impacts or habitat alterations. Those species that have appeared in the Federal Register as proposed for classification or are under consideration for official listing as endangered or threatened species, that are on an official State list, or that are recognized by the Regional Forester as needing special management to prevent placement on Federal or State lists.

Seral - Transitory stage in an ecological succession.

Shelterwood - A regeneration method under an even-aged silvicultural system. A portion of the mature stand is retained as a source of seed and/or protection during the period of regeneration. The mature stand is removed in two or more cuttings.

T

Silviculture - The art and science of controlling the establishment, composition, and growth of forests.

Snag - A standing dead tree.

Soil productivity - The capacity of a soil to produce a specific crop such as fiber or forage under defined levels of management. Productivity is generally dependent on available soil moisture and nutrients, and length of growing season.

Special Interest Areas - Areas managed to make recreation opportunities available for the understanding of the earth and its geological, historical, archeological, botanical, and memorial features.

TE&S - Threatened, endangered and sensitive species.

Threshold of Concern - Degree of departure from a standard and guideline which would trigger an analysis to determine if a change in practices or plan adjustment is needed.

Threatened species - Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. (See also Endangered species.)

