Dear Reader, April 2000

Thank you for taking the time and interest in reviewing the results of the Willamette National Forest's Fiscal Year 1999 Monitoring and Evaluation Report. This was our ninth year of forest management under the direction of the Willamette National Forest Plan and the fifth complete year of implementation of the Northwest Forest Plan amendment.

The Forest continues to pursue new ways of providing the stewardship you expect on the Willamette. As our budgets continue to decline, we are not always able to meet our expectations regarding the amount of monitoring set forth in the Forest Plan. We do strive, however, to remain alert to those interests currently most important to you, our constituents, and make those our high priority. This year some examples of our monitoring highlights include:

- Expanded section on air quality monitoring using lichens. This section contains an example map of what is available to the public on the lichen web site (page 15).
- Highly effective adult bull trout monitoring using a new electronic counting device (page 21).
- Increased monitoring specific to riparian reserves and special habitats (page 24).
- Development of an Integrated Natural Fuels Management Strategy. The final document expected this year (page 36).
- Examples of the Forest's use of funds collected from recreationists through the Fee Demonstration Program, to fund recreation programs (page 45).

The Forest, as well as the Forest Service as a whole, continues to make changes to meet the public's demands and expectations. In 1999 our Chief released his draft Natural Resource Agenda. The agenda serves as the Chief's statement of commitment; especially to watershed health improvements, sustainable forest management, outdoor recreation, and a scientific-based forest road policy that meets the needs of Americans and protects the environment. The Chief will continue to achieve his agenda through ongoing policy changes and proposed budgets that reflect the agenda's priorities. The Forest will continue to follow his lead.

Finally, if you are not already aware, you can access our monitoring report on the Willamette National Forest internet home page. At this location (www.fs.fed.us/r6/willamette) you will find this report as well as many other items of current interest. This step has made the Monitoring Report easily accessible to more people while cutting production costs to the Forest.

The proceeding report presents a summary of a great deal of information. If you would like more detailed data and studies, or if you have questions about any specific item in this report, I urge you to contact one of the persons listed at the end of this report.

Sincerely,

Darrel L. Kenops
Forest Supervisor
WILLAMETTE NATIONAL FOREST

MONITORING AND EVALUATION REPORT

This report focuses on the monitoring and evaluation process described in Chapter V of the Forest Plan. An overview of the many diverse Forest activities and program accomplishments can be found in another document The 1999 Willamette National Forest Annual Report.

If you have not received a copy of the 1999 Annual Report and would like a copy, please contact Sue Olson (541-465-6539) or write: Willamette National Forest; PO Box 10607; Eugene, OR 97440.

CONTENTS

INTRODUCTION AND BACKGROUND

The Land and Resource Management Plan (Forest Plan) for the Willamette National Forest was approved by the Regional Forester on July 31, 1990. We began implementing the Forest Plan on September 10, 1990.

The Forest Plan is the basis for integrated management of all the Forest's resources. It designates areas of resource management emphasis based on the capabilities of these areas and the differing levels of goods and services that are projected to come from them. The Forest Plan also specifies monitoring and evaluation requirements to provide the information to determine whether promises are being kept, and to assure assumptions made during analysis are generally valid.

On April 13, 1994, the Secretaries of the Departments of Agriculture and Interior signed a Record of Decision for the Management of Habitat for Late-Successional and Old-Growth Forest Related Species, also referred to as the Northwest Forest Plan or NWFP, that amended the Forest Plan by which establishing new land allocations (management areas) and standards and guidelines (S&Gs). The implementation of these new management areas and standards and guidelines began May 20, 1994. All projects and activities planned and implemented on the Forest after that date are to follow the Forest Plan direction as amended by the Northwest Forest Plan.

Monitoring Strategy

To meet the challenge of monitoring, the Forest developed a strategy designed to address questions asked in the monitoring section of the Forest Plan (Chapter V) and to assure compliance with the Standards and Guidelines established in the Northwest Forest Plan. The basic elements of that strategy were:

1. *Identify the monitoring that is currently being done on the Forest*
2. *Supervisor's Office Staff develop plans and programs to address the questions asked in the monitoring section of the Forest Plan (Chapter V).*
3. *Forest Supervisor and Staff review at least one project on each District. The focus of that review being to determine, "Did we do what we said we would do?"*
4. *Publish a report displaying the results of monitoring and an evaluation of those results.*

The measure used in the Forest Plan monitoring questions is the Threshold of Variability or TOV. The TOV is a threshold that when exceeded triggers further investigation to determine a proper course of action. For many questions the TOV has been exceeded due to the subsequent Northwest Forest Plan that materially altered many outputs predicted in the Forest Plan. A Forest Plan revision scheduled to begin before 2005 will alter predicted outputs to a level probable under the Northwest Forest Plan.

Monitor and Evaluation

Monitoring and evaluation provide the control system over management activities on the Forest. Monitoring and evaluation each have distinctly different purposes.

Monitoring is gathering information and observing management activities. Forest Plan monitoring is organized into three levels:

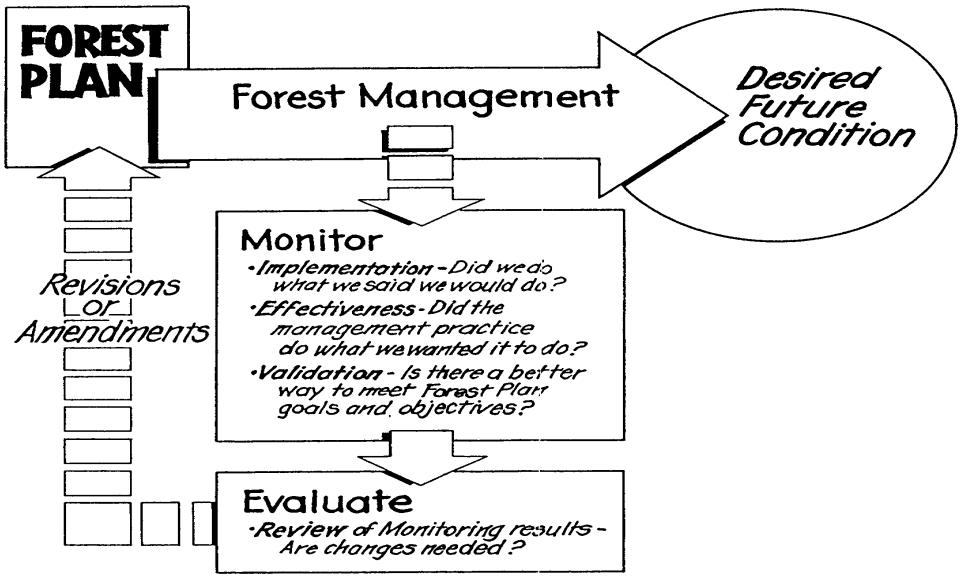
Implementation Monitoring is used to determine if the objectives, standards, guidelines, and management practices specified in the Forest Plan are being implemented. "Did we do what we said we were going to do?"

Effectiveness Monitoring is used to determine if the design and execution of the prescribed management practices are effective in meeting the goals, objectives, and desired future condition stated in the Forest Plan. "Are the management practices producing the desired results?"

Validation Monitoring is used to determine whether data, assumptions, and coefficients used to predict outcomes and effects in the development of the Forest Plan are correct. "Are the planning assumptions valid, or are there better ways to meet Forest Plan goals and objectives?"

Evaluation is the analysis and interpretation of the information provided by monitoring. Evaluation is the feedback mechanism identifying whether there is a need to change how the Forest Plan is being implemented to comply with existing direction, or whether there is a need to change Forest Plan direction itself through amendments or revisions.

Typically, several years of effectiveness and validation monitoring results are needed to permit meaningful evaluation of trends against baseline data. For this reason, this report contains few results on the effectiveness of the Standards and Guidelines or the validity of Forest Plan models and assumptions. It emphasizes the question, "Did we do what we said we were going to do?" as well as reporting the progress that is being made on questions of effectiveness and validation. This approach is consistent both with the first assumption behind our Forest Plan monitoring strategy and the last guarantee in the Forest Plan Guarantee that promises we will show you how we are implementing the Plan.



SUMMARY OF MONITORING FINDINGS

I. PHYSICAL RESOURCES

A. WATER

Monitoring Questions 25 & 26: Water Quality: Temperature and Turbidity

Are Standard and Guidelines effective in meeting State Water Quality Standards for turbidity and temperature?

The forest conducted water quality monitoring at 142 stations during FY99. Water quality monitoring parameters in streams included temperature, turbidity, suspended sediment, flow, and on a limited basis pH and conductivity. Not all stations collected all parameters listed. The following chart shows a typical sampling frequency by parameter for more permanent long term stations on the Forest:

Monitoring Parameter	Unit of Measure	Sampling Frequency
Suspended Sediment	mg/l	Oct. 15 through May 31 increasing during high flows
Turbidity	NTU's	Oct. 15 through May 31 increasing during high flows
pH	pH Scale	Monthly throughout the year
Conductivity	micromhos	Monthly throughout the year
Temperature	Degree	Hourly May 15 through Oct. 15
Discharge	CFS	Hourly throughout the year

The Forest uses water temperature standards set by Oregon State DEQ to monitor streams.

The Oregon State Department of Environmental Quality updated water temperature standards in 1996. The standards established vary from 50^0F to 64^0F absolute numeric criteria with a provision for the development of a basin temperature management plan when temperature exceeds this level due to human influence. The Forest will continue to monitor streams that do not meet the State's standards. Those streams whose peak temperatures persist above their established standard and have not been listed as water quality limited under the Clean Water Act (CWA) will be proposed for listing. Below is a summary of the temperature data collected on the Forest. The completed report on temperature data is too detailed to list in this report but is available on the Forest by contacting the Forest Hydrologist.

Summary of 1999 Temperature Data Collected on the Willamette

Fifth field watershed	Sites Monitored	Percentage of sites Meeting standards	No data[1]	Max. 7 day moving ave.	Location
Fall Creek	15	47%	13%	69.6	Mouth of Gold Creek
Winberry	12	67%	25%	64.2	Mouth of SF Winberry Creek
North Fork, Middle Fork of the Willamette River	15	80%	7%	72.9	Mouth of Chalk Creek
Middle Fork Willamette River below Salmon Creek	3	33%	67%	61.2	Mouth of Buckhead Creek
Salmon Creek	6	100%	0%	61.8	Mouth of Salmon Creek
Salt Creek	7	100%	0%	62.5	Mouth of Salt Creek
Hills Creek	6	67%	33%	63.2	Hills Creek at USGS gauge site
Middle Fork Willamette River	32	56%	44%	64	Mouth of Windfall Creek
South Fork McKenzie River	6	83%	17%	62.8	Mouth of Augusta Creek
Blue River	2	100%	0%	59.2	Unnamed trib to Blue River ` 100 feet west of road 1508
Upper McKenzie	18	89%	6%	71.4	Deer Creek ~ 400 feet upstream of upper bridge
Horse Creek	1	100%	0%	53.6	Horse Creek 200 feet west of bridge on road 2638
North Santiam	15	100%	0%	59.1	Mouth of Sauers Creek
Blowout Creek	7	86%	0%	66.4	Blowout Creek at road 10 bridge
Breitenbush	9	100%	0%	59.8	Devils Creek Rd 2231-890 crossing
South Santiam	11	91%	0%	64.2	South Santiam River @ Trout Creek Campground

[1] No data was attained at some sites due to equipment malfunction, vandalism, or equipment still in the field.

Of the 142 stations measured for water temperature on the Forest, 12 were in excess of the 64^0F absolute numeric standard for water temperature. The highest recorded value was 71.4 on Deer Creek approximately 400 feet above the crossing with the upper bridge.

Infrared video imagery of the McKenzie River collected in FY99.

In addition to the instream temperature monitoring, the McKenzie and Blue River Districts and the Central Cascades Adaptive Management Area completed collection of aerial infrared video imagery of the McKenzie River from the confluence with Quartz Creek to Trailbridge Reservoir; South Fork McKenzie River from the mouth to Cougar Reservoir; and Deer Creek from the mouth

to the confluence with Conroy Creek. Approximately 37 miles of stream were filmed, and the imagery is being processed by Oregon State University. A formal report has been prepared and a GIS database of the collected data was installed in January 2000. The detailed report can be found on the web (http://ucs.orst.edu/~torgersc/) under the "Research" link.

Streams are carefully monitored in accordance with the Clean Water Act.

Listing of streams and waterbodies under the Clean Water Act (CWA) takes place every two years. Listing of waterbodies is intended to protect the most sensitive beneficial use within the waterbody. Listings can be based on evidence of temperature exceeding standards, a declining trend in water quality, or beneficial use impairment. All streams below were listed in 1998 because of measured temperatures exceeding standards. Standards vary from 50^0F to 64^0F and are listed in the last column. Management plans are planned for listed streams. The following 303d listed stream segments are limited to stream segments on or near the Forest.

Department of Environmental Quality - 303d Water Quality Limited Streams on/or adjacent to the Willamette National Forest (1998)

Stream/ stream segment	Sub-basin	Parameter for listing	Reason for listing
Blue River – Mouth to Blue River Reservoir	McKenzie	Temperature	Salmon Spawning 55^0F USFS Data
Deer Creek – Belknap Area – Mouth to Headwaters	McKenzie	Temperature	Rearing 64^0F – USFS Data
Horse Creek – Mouth to Eugene Creek	McKenzie	Temperature	Oregon Bull Trout 50^0F – USFS Data
McKenzie River, South Fork McKenzie River to Trailbridge Reservoir	McKenzie	Temperature	Oregon Bull Trout 50^0F – USFS Data
South Fork McKenzie River – Mouth to Reservoir	McKenzie	Temperature	Salmon Spawning 55^0F – USFS Data
Coal Creek – Mouth to Headwaters	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data
Fall Creek – Reservoir to the Headwaters	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data
Hills Creek – Reservoir to Juniper Creek	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data
Mike Creek – Mouth to Headwaters	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data
Monterica Creek – Mouth to Headwaters	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data
Portland Creek – Mouth to Logan Creek	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data
Packard Creek – Mouth to T22S, R2E, Sec 24, SW1/4	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data
Salt Creek – Mouth to South Fork	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS Data

Middle Fork Willamette – Hills Creek Reservoir to Staley Creek	Middle Fork Willamette	Temperature	Rearing 64^0F – USFS/USGS Data

303d Water Quality Limited Streams, continued.

Stream/ stream segment	Sub-basin	Parameter for listing	Reason for listing
North Fork of Middle Fork Willamette, Mouth to Christy Creek	Middle Fork Willamette	Temperature	Rearing 64F – USFS Data
Winberry Creek, Mouth to North/South Confluence	Middle Fork Willamette	Temperature	Rearing 64F – USFS Data
North Fork Winberry Cr., Mouth to Blanket Creek	Middle Fork Willamette	Temperature	Rearing 64F – USFS Data
South Fork Winberry Cr. Mouth to Monterica Cr.	Middle Fork Willamette	Temperature	Rearing 64F – USFS Data
Blowout Creek – Mouth to Headwaters	North Santiam River	Temperature	Rearing 64F – USFS Data
Boulder Creek – Mouth to Unnamed Creek in T10S, R6E, Sec 10, Se1/4	North Santiam River	Temperature	Rearing 64F – USFS Data
Elkhorn Creek – Mouth to Headwaters	North Santiam River	Temperature	Rearing 64F – BLM sites in lower river.
Little North Santiam River – Mouth to Headwaters	North Santiam River	Temperature	Rearing 64F – BLM sites in lower river
Quartzville Creek – Green Peter Reservoir to Headwaters	South Santiam River	Temperature	Rearing 64F – Four BLM sites between reservoir and Galena Creek.

MQ 26 is concerned with water quality as measured by turbidity levels. Maximum turbidity values are associated with winter storms and spring runoff conditions. The February flood event of 1996 bears the greatest relevance to this question. Following the flood, turbidity levels in Detroit reservoir were extremely high and remained so into the summer months. During high runoff the North Santiam River downstream from the reservoir did exceed state water quality standards. A cooperative study among technical specialists was completed 1997. A summary of the findings can be found in the Summary of Monitoring Findings 1998 or a complete report of the findings is available at: http://nppwm1.npp.usace.army.mil/NSRC.html.

A cooperative effort with the McKenzie Watershed Council is looking at water quality on 12 streams.

During the winter, District personnel cooperated with the McKenzie Watershed Council in the collection of water quality information associated with storm runoff events. Specifically, water samples were collected on 12 streams to be analyzed for turbidity and bacterial contaminants. Data from these sites, in combination with data from more than 30 other sites and more comprehensive data sets from 7 permanent sites throughout the sub-basin, will be used by Watershed Council personnel and cooperators to characterize water quality associated with storm water runoff in the sub-basin. This is expected in 2000.

Stream channel monitoring shows an array of adjustments

Related to water quality are channel conditions. Stream channel condition has been monitored since the Forest Plan. Projects

in channels.

completed to date include:

- Cross sections established and morphometric measurements taken on 14 sites on streams and reservoirs. These cross section surveys were reanalyzed following the flood event of February 1996. The objective of the monitoring is to detect and document aggradation or degradation of stream channel conditions over time and to calculate and predict threshold of particle entrainment under prescribed flow conditions. The results noted major channel changes in some alluvial stream segments. The results are available at the District Ranger Stations.
- A longitudinal profile of the bed and water surface elevation completed for the Middle Fork of the Willamette River just before the 1996 flood and the survey route plotted on the 1996 photos.
- And finally, to document a wide array of channel adjustments including new channel formation, new bar formation, channel abandonment, bank erosion and side channel opening and damming, aerial photography was taken on 18 miles of the Middle Fork of the Willamette River and 16 miles of Salt Creek in 1996 and 1997. .

Taken together, data from the latter two projects will allow quantitative comparison of width, depth, and slope on a site-specific basis in the lower 8 miles of the Middle Fork Willamette. Restoration efforts begun, in 1998, on this section of the stream channel and effects will be monitored in coming years.

Implementation monitoring shows compliance with BMPs and water related S&Gs.

Watershed personnel on the Forest conducted limited implementation monitoring, primarily on the Sweet Home R.D. Implementation monitoring could be defined by answering the question “Did we do what we said we were going to do?” As shown in the tables below most projects were found to be compliant with Best Management Practices and applicable standards and guidelines. Only some minor variations from the requirements called for in environmental documents were found. The following table is organized by category of sampling. It provides a description of activities and indicates the level of compliance with Environmental Assessment and contract requirements.

Results of implementation monitoring of timber sales for compliance with water related EA and contract requirements.

Standards and Guidelines	BMP Description	Number reviewed	Rating Results
Water quality shall be protected with BMP's (FW-92)	Sale Area Maps	1	Meets
Do not exceed 20% detrimental soil conditions (FW-81) No tractor operations on slopes greater than 30% (FW-83)	Tractor Loggable Ground	2	Meets
Water quality shall be protected with BMP's (FW-92).	Log Landing Location	1	Meets
Do not exceed 20% detrimental soil conditions (FW-81); Water quality shall be protected with BMP's (FW-92).	Tractor Trail Location	2	Meets
Do not exceed 20% detrimental soil conditions (FW-81); Water quality shall be protected with BMP's (FW-92).	Suspended Log Yarding	1	Meets
Water quality shall be protected with BMP's (FW-92)	Time of Yarding Activities	2	Meets
Use BMPs to meet Oregon State Water Quality Standards (MA15-10)	Timing of construction	2	Meets
Water quality shall be protected with BMP's (FW-92)	Dispersion of Subsurface Water	1	Meets
Water quality shall be protected with BMP's (FW-92)	Erosion Control Incomplete Roads	1	Meets
Consider reconstruction to stabilize existing sediment sources from roads (FW-097)	Road surface drainage	2	Meets
Use BMPs to meet Oregon State Water Quality Standards in road design, construction, and maintenance (FW-94).	Control of sidecast material	1	Meets
Water quality shall be protected with BMP's (FW-92)	Disposal of Right of Way Slash	1	Meets

Monitoring Question 27:

Are there changes in the amount or timing of streamflows in subdrainages where management practices are implemented?

If increases in peak flows occur, are they having detrimental effects on stream condition?

Findings published on peak flows demonstrate importance to planning for watershed cumulative effects.

In conjunction with the Pacific Northwest (PNW) Research Station the Forest has been working on a reexamination of the six large watersheds that initially were used in making predictions on the effects of peak flows. That data collection and compilation portion was completed in FY92 and analysis was begun in FY93. Publication of findings occurred in FY94 (Jones and Grant, 1996).

Thomas and Megahan published a reanalysis of methods and data used in the above study in December 1998. Contrary to Jones and Grant, they could not detect any effect of cutting on peak flows on or within one of the large basin pairs, and results were inconclusive in the other two large basin pairs. One small watershed was 100% clear-cut, and a second was 31% patch-cut with 6% of the area affected by road construction, and a third was held as a long-term control. Peak flows were increased up to 90% for the smallest peak events on the clear-cut watershed and up to 40% for the smallest peak flows on the patch-cut and roaded watershed. Percentage treatment effects decreased as flow event size increased and were not detectable for flows with 2-year return intervals or greater on either treated watershed. Treatment effects decreased over time but were still found after 20 years on clear-cut watershed but only 10 years on the patch-cut and roaded watershed.

For small basins from Jones and Grant

- Peak flows show a response to both roads and clearcuts. The magnitude of the change depends on the type of event. Large to medium storms in winter and spring bring the greatest change. This is most probably due to saturated soil mantle conditions.

- The effects of roads alone appear to increase the peak flows and bring the time to peak forward.

- The effects of clearcutting alone appear to increase the peak flows and delay the time to peak.

For large basins from Jones and Grant

- Rain-on-snow events do not appear to be the primary mechanism contributing to increased peak flows in a watershed.
- Changes in channel efficiency and channel roughness do not have a significant effect on changes in peak flows.
- Peak discharge increases by 0.14 cubic meters per second per square kilometer in basins with 10% more cumulative area cut.

[1] Jones. J. A., G. E. Grant. Peak flow responses to clear-cutting and roads in small and large basins, western Cascades, Oregon, *Water Resour. Res.*, 32(4), 959-974, 1996.

[2] Thomas. R. B., W. F. Megahan. Peak flow responses to clear-cutting and roads in small and large basins, western Cascades, Oregon: A second opinion, Oregon, *Water Resour. Res.*, 34(12), 3393-3403, 1998.

Monitoring Question 30: Water Quality Lakes

Are Standard and Guidelines effective in maintaining the chemical, biological, and physical characteristics in lakes surrounded by areas of timber management and/or intensive recreational use?

The Regional lake sampling protocol was completed and implemented on 32 lakes located on the Middle Fork and McKenzie Districts. Of these 22 were sampled by the Pacific Research Station in the Moolack Complex fire area. A complete listing of the lakes and their location is available at the Forest Supervisors' Office.

Too early to detect trends from lake sampling.

Sampling will continue in the next few years for the lakes impacted by the Moolack Complex fire in the Waldo Lake Wilderness. For the other lakes it is too early to detect trends. Interpretive reports have been written for lakes sampled on the McKenzie RD and are available at the Ranger Station.

Measurements at Waldo Lake will establish baseline data for future monitoring.

Cascade Research Group who has participated in monitoring the lake since 1986 conducted four sampling trips on Waldo Lake. An interim report will be prepared in FY2000. A science plan and funding request has been prepared. Four major tasks are needed: 1) Compilation of all existing data in a comprehensive electronic database, 2) development of a current sampling protocol, 3) determination of the Status of the Lake and 4) a long term monitoring scheme. The first two tasks have been completed. Funding was requested to determine the Status of the Lake but is currently unfunded. Likewise a long-term monitoring plan has not been funded nor developed.

B. SOIL

Monitoring Question 32: Soils, Mass Movement

Are Forest Plan construction and reconstruction S&Gs effective in controlling mass movement?

Are Forest Plan mitigation practices effective in stabilizing mass movements, regardless of cause; effective in preventing or minimizing mass movement and erosion of road surfaces?

Are failures in meeting road system miles or standards which are a result of lower maintenance accomplishments resulting in mass movement or erosion in excess of the rates predicted for these sites?

Are road decommissioning techniques effective in preventing mass movement and erosion of road surfaces?

Is the data being collected to establish baseline information for naturally occurring landslide events?

Positive trend noted in minimizing and controlling mass movement.

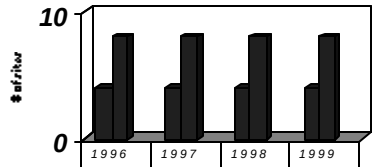
Mass movements of potential highly unstable landtypes, where land management activities have occurred, were monitored either visually or through electronic and/or mechanical instrumentation. The sites were divided into five categories 1) construction/reconstruction; 2) post stabilization mitigation; 3) maintenance practices; 4) decommissioning; and 5) large earthflows/historical baseline. Monitoring results for these five categories are displayed on the following page.

Conclusions from 1999 monitoring include:

- construction practices of the past 15 years have been effective in minimizing slope failures,
- stabilization measures have been generally effective at treating active slope movements,
- maintenance practices have been partially successful at managing slope failures, and
- movement of 10 earthflows in 1999 was expected considering the continued periods of high rainfalls.

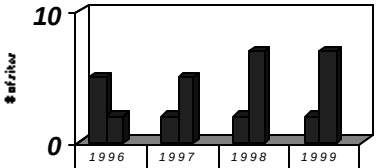
In addition three decommissioned roads monitored remain stable or within the TOV.

Contsruction - Reconstruction



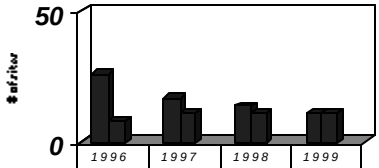
	1996	1997	1998	1999
Sites actively moving	4	4	4	4
Sites stable	8	8	8	8
Percent exceeding TOV	33%	33%	0%	0%

Post Stabilization Mitigation



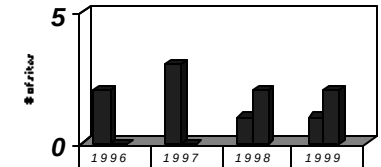
	1996	1997	1998	1999
Sites actively moving	5	2	2	2
Sites stable	2	5	7	7
Percent exceeding TOV	57%	14%	22%	22%

Maintenance Practices



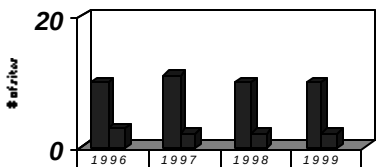
	1996	1997	1998	1999
Sites actively moving	26	17	14	11
Sites stable	8	11	11	11
Percent exceeding TOV	59%	50%	36%	32%

Decommissioning



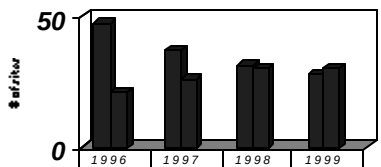
	1996	1997	1998	1999
Sites actively moving	2	3	1	1
Sites stable	0	0	2	2
Percent exceeding TOV	100%	100%	0%	0%

Large Earthflows



	1996	1997	1998	1999
Sites actively moving	10	11	10	10
Sites stable	3	2	2	2
Percent exceeding TOV	38%	38%	25%	25%

All mass movement monitoring



	1996	1997	1998	1999
Sites actively moving	47	37	31	28
Sites stable	21	26	30	30
Percent exceeding TOV	51%	43%	23%	21%

Monitoring Question 33: Soils Productivity, Mass Movement

Are the watershed rates, magnitudes, and/or intensities of mass movement from both managed and unmanaged lands consistent with the historic levels and assumptions?

Most landslides during the 1996 floods were associated with managed lands.

The flood of February 1996 is the most significant event for which this question is relevant. The February flood had a return interval range from 50-100 in unregulated watersheds and approximately 5-year return interval for regulated systems. The Forest contributed to a Regional overview as to the location and triggers of landslides. This initial review was titled "Storms and Floods of the Winter of 1995-1997: An Assessment of Effects on USDA-Forest Service and USDI-Bureau of Land Management Lands." The review found that of 1,290 landslides inventoried 31% were associated with timber harvest units and 52% were associated with roads. It is recommended that the Forest do a landslide inventory of the Forest when up to date aerial photographs become available.

Monitoring Question 34: Soils Productivity

Are the Standards and Guidelines for soil condition, erosion, and nutrient cycling being implemented?

The obliteration of Road 1516-510 was a primary activity monitoring the effects on soil conditions, erosion and nutrient cycling.

Road 1516-510 obliterated in FY99.

Road 1516-510 was obliterated and the hill slope topography reestablished on the Middle Fork RD. Monitoring performed the following spring indicated varied success. Grasses were well established in locations where the soils were relatively fine textured on cooler aspects and along areas with effective shade. Erosion matting was used where the stream channel was established and was effective at limiting erosion and sediment transport. A quantitative assessment of the Class IV stream channel topography was initiated in the summer of 1999 to determine whether the re-established channels closely matched that of the channel topography above and below the road. In addition, an assessment was performed on the amount of sediment generated while the newly established stream channel adjusted during the first winter following obliteration. Results indicated that the re-established channels within the road prism closely approximated the cross sectional shape of the channel and former flow capacity. Subsequent channel migration and down-cutting during the first winter incised one of the three channels monitored. Sediment generated within the active stream channel during the first winter ranged from between 1 to 5 cubic meters. The average per stream channel was less than 2 cubic meters and the average sediment generated per unit of channel length ranged from 0.1 to 0.5 cubic meters per meter.

C. AIR

Monitoring Question 35: Air Quality

Were there deviations from state smoke management plan requirements for fuel consumption within the zone?

Did any reportable intrusions occur in designated or smoke-sensitive areas?

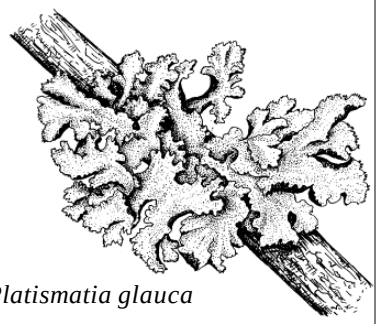
Were visibility standards for Wilderness Class I areas exceeded during the summer restriction period as a result of management activities?

The Forest meets state issued requirements for smoke management.

Activities on forest lands must meet state issued requirements for visibility, particulate emissions, and instructions on prescribed burning. In FY99 seven activities deviated from the Oregon State Smoke Management daily forecast; however, all deviations were discussed and authorized by Oregon Department of Forestry prior to burning. No intrusions occurred in designated or smoke-sensitive areas from prescribed burning. There were no reported or measured impairments of visibility standards in Class I areas nor were any comments received as a result of burning beyond the normal curtailment date. At no time was the TOV exceeded.

Lichen samples have been used to monitor air quality on the Forest since 1993.

The Willamette National Forest has participated in a regional in-house air quality biomonitoring program since 1993. Lichens help federal land managers detect and delineate air pollution and its effects. Data from lichen surveys and element concentrations in lichen tissue were collected between 1993 and 1997 from 237 plots on the Forest's 3.4-mile Current Vegetation Survey grid. Additional information to aid data analyses was collected in 1998 and 1999 at the HJ Andrews Experimental Forest acid deposition monitor. Data have been compiled in a web-accessible, relational database. Relative to other parts of the region and the nation, air pollution on the Forest from sulfur- and nitrogen-containing criteria pollutants is low. However, lead levels were elevated along the crest of the Cascades and anthropogenic nitrogen and sulfur were detectable in three Class I Wildernesses (Three Sisters, Mt. Jefferson and Mt. Washington) and along the western boundary of the Forest. The map shows the distribution of nitrogen-containing criteria pollutants and is an example of the maps that are available at the web site. No adverse effects were observed on lichen communities, a highly sensitive component of forested ecosystems.



Platismatia glauca

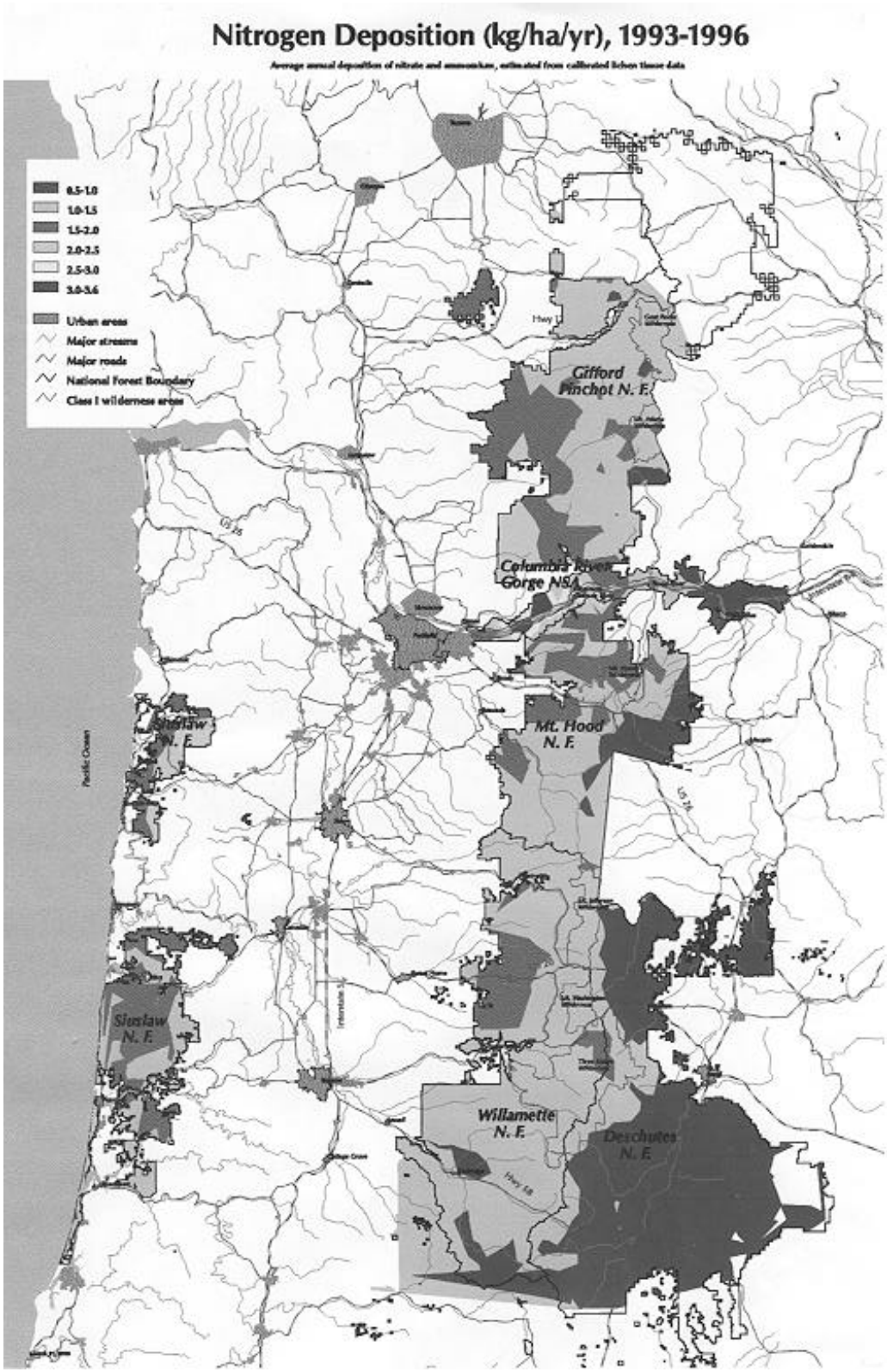


Figure. Wet deposition of nitrogen, estimated from calibrated lichen data. Deposition on the Willamette N.F. was greatest in the northwest and in the Three Sisters Wilderness.

More information on lichens on the web.

Another accomplishment in 1999, as part of the air quality biomonitoring program, was the development of a website to make our information easily accessible, www.fs.fed.us/r6/aq. By choosing, “Get Lichen Information”, a web-user can see a review of air quality conditions in the Pacific Northwest, learn how lichens are used as biomonitors, learn about the specific sensitivities of Pacific Northwest lichens, and query the lichen databases. The databases contain 36,700 records of lichens from over 1800 plots in Pacific Northwest forests. The maps above are examples of information available on the web site.

II. BIOLOGICAL RESOURCES

A. FISH

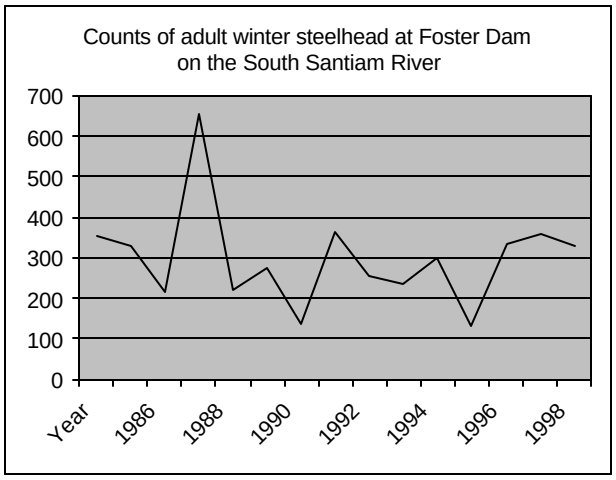
Monitoring Question 13: Fish Populations

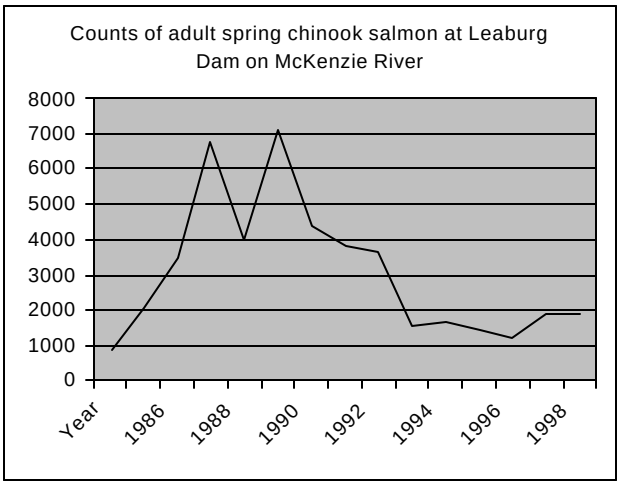
Are winter steelhead and spring chinook smolt numbers increasing in proportion to the number of adults as a result of land management activities?

Is existing and potential Oregon chub and bull trout habitat being maintained or improved? Are populations stable or increasing?

Counts of spring chinook passing over Leaburg continued to increase since 1996. Winter steelhead numbers decrease slightly.

Smolt numbers were not monitored on the Forest due to the difficulty and expense related to obtaining accurate fish counts. Instead, the Forest monitors the number of returning adult spring chinook salmon and winter steelhead. The Oregon Department of Fish and Wildlife (ODFW) and Eugene Water and Electric Board (EWEB) record the adult spring chinook numbers at the Leaburg Dam on the McKenzie River and the numbers of returning adult winter steelhead at the Foster Dam on the South Santiam River. Monitoring results for 1999 show 1,909 returning adult spring chinook salmon (ODFW website), and 328 returning adult winter steelhead (Wayne Hunt, ODFW, pers. comm., 2000).





Dams the primary limiting factor for increased fish production.

Field observations of successful adult spawning and abundant numbers of juvenile fish seem to indicate that the existing habitat is capable of producing and supporting salmon and steelhead. The primary limiting factor for increased fish production on the Forest continues to be the presence of dams, which block or hinder fish passage. The TOV cannot be evaluated.

Instream restoration and the implementation of the 1994 Northwest Forest Plan is continuing to allow for the passive and active restoration of the riparian/aquatic ecosystems, which should lead to improved smolt survivability in the future.

Oregon Chub habitat stable

With respect to Chub habitat, site visits to eight known sites on the Forest by ODFW personnel found that all existing Oregon Chub habitat was maintained during FY99, therefore the TOV was not exceeded. The Forest, in conjunction with the U.S. Army Corps of Engineers, constructed three ponds in the Buckhead Creek drainage, and this will provide highly suitable habitat for Oregon Chub in future years.

Illegal introduction of largemouth bass probable cause of a dramatic decline of chub population in one pond.

ODFW personnel also found that the eight Oregon Chub populations on the Forest are stable, with one exception. The East Ferrin population of Oregon Chub dramatically declined from 3,500 fish observed in 1998 to only 60 fish in 1999. Predation by largemouth bass, illegally introduced in 1998, is the likely cause of this decline. This TOV was exceeded due to this population reduction. One new population of Oregon Chub (n = 3,010) was discovered in the Buckhead Creek drainage, and will be monitored in future years.

Referencing the bull trout habitat and populations, the Forest improved 12.4 miles of bull trout habitat in FY99. All existing bull trout habitat is currently protected by the implementation of the Northwest Forest Plan, and specific protection measures designated during bull trout consultation efforts with the US Fish and Wildlife Service. The TOV for this question has not been exceeded.

Monitoring results show most bull trout populations stable or improving.

Extensive bull trout population monitoring continued in FY99. Bull trout redd surveys were conducted on Anderson Creek, a McKenzie River tributary, and the results indicate that this population is stable. Redd counts on other McKenzie River tributaries (Olallie Creek, Roaring River, and Sweetwater Creek) are fairly stable, with the exception of the trailbridge population. This population appears to be declining but is expected to recover in future years due to restoration efforts.

Stream	1995	1996	1997	1998	1999
Anderson Creek (index)	30	26	18	29	47
Anderson Creek (total)	74	82	85	79	77
Olallie Creek	10	7	9	7	6
Trail Bridge Mainstem McKenzie R., incl. Sweetwater Cr)	7	7	3	2	0
SF McKenzie River (Roaring River)	2	0	0	6	13

New fish counting equipment improves monitoring efforts.

New bull trout monitoring was cooperatively implemented with ODFW in FY99. A Vaki electronic adult bull trout counting device was installed at the mouths of Roaring River and Anderson Creek. Results from this year showed 37 adult bull trout moving into Roaring River and 251 adults into Anderson Creek. This new monitoring tool will allow us to develop, over time, a correlation between the number of adults moving into the spawning streams, and the number of observed redds, as an indicator of spawning success. Additionally, a new video monitoring device was installed at Sweetwater Creek and recorded 5 adult bull trout migrating upstream. No redds, however, were discovered during subsequent spawning surveys.

Other bull trout population actions accomplished in FY99 includes the trapping and relocating of 1,976 bull trout fry from Anderson Creek in the McKenzie Watershed. These fish were transplanted to four sites in the Middle Fork Willamette Watershed to augment the populations near extinction. This is the third year of this augmentation program; 178 bull trout fry were transplanted in 1997, and 1,497 were transplanted in 1998. This program is expected to continue in FY2000.

Post-release snorkel monitoring by the Middle Fork RD personnel found bull trout at three of the four release sites, and the fish were in size classes representative of all age classes expected (1-3 years). Observations of these transplanted fish show that growth rates are exceeding those of bull trout fry in their natal streams, indicating that the Middle Fork Willamette habitat is suitable for bull trout.

Instream trap monitoring at one release site by the Middle Fork RD personnel showed that there was no outmigration of juvenile fish at that site. It is expected that these fish will start outmigrating in the next few years, as they reach maturity, and eventually distribute into other suitable habitat in the watershed. This TOV has not been exceeded.

B. DIVERSITY

Monitoring Question 14: Aquatic Habitat & Streambank Stability

Are Standards and Guidelines effective in maintaining and enhancing aquatic habitat and streambank stability?

Stream surveys continue but quantitative, replicated data is not extensive enough for trend analysis.

There were 18 streams (approximately 50 miles total length) surveyed during FY99 on the Forest using the Forest Service PNW Regional Level II stream survey protocol. Nine of these surveys were repeats of prior surveys. Due to different survey protocol definition, only four of these repeated surveys yielded comparable data sets and only two sets are available at this time. Also, an estimation of percent of fine substrate was recorded starting in 1996, however these surveys have yet to be replicated for trend analysis. Values for streambank stability are too qualitative for trend analysis and therefore it is not appropriate to reach conclusions on trends in a short time period.

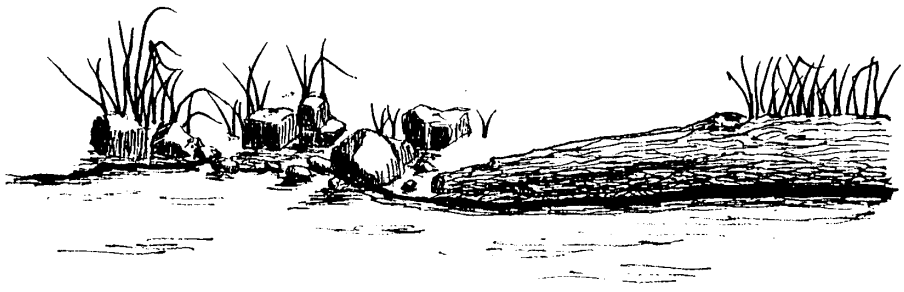
Of the two streams with complete data sets, there were some changes in two stream habitat parameters. Buck Creek side channel was surveyed before and after an enhancement project. The woody material and pool habitat parameters showed an increase as expected. The re-survey of the SF Staley Creek shows a reduction in woody material and an increase in pool habitat. This may be due to the 1996 flood event. This survey methodology is too coarse to differentiate the effects of land management as opposed to changes due to natural events. Detailed data is available on the Forest.

Fish populations were monitored for TES fish species on the Forest, and these populations appear to be stable (see previous discussion). Additional bio-surveys were conducted on approximately 300 reach segments of 600 feet in length on the Middle Fork RD. All observed fish were enumerated and classified by length. This relative abundance data will serve as baseline data to compare to future surveys for trend analysis. Additionally, the 50 miles of stream survey mentioned above also recorded relative fish abundance for a subset of habitat units.

Macroinvertebrates monitored as part of a cooperative study.

Macroinvertebrates were monitored on the Forest in FY99 through a cooperative effort with Utah State University. The project entitled "Development and Testing of a Procedure for Providing Quantitative, Consistent, and Interpretable Measures of the Effects of Forest Management on the Ecological Integrity of Streams", collected data in 1998 from 118 streams in Oregon and Washington, west of the Cascade crest. Twenty-two 22 sites were on the Forest. Sixteen additional streams in 1999 were surveyed. A total of 135 distinct taxa were found on the Forest. The McKenzie Ranger District, in cooperation with the McKenzie Watershed Council, collected Macroinvertebrate data at an additional 11 sites on the Forest. Analysis is underway.

It is difficult to determine if the TOV has been exceeded for this question. The complex nature of stream systems make it very difficult to collect a data set of adequate size necessary to differentiate changes to the stream system due to the effects of forest management. Natural variability in stream systems is expected. An extensive data set would be required to note changes through a short time period (less than 10 years). Indicators of ecological change, such as macroinvertebrate sampling, may develop into an adequate surrogate for determining change in stream systems. More extensive monitoring of stream features should also occur in the future. Based on the level of protection provided to stream habitat by the Forest Plan and the Northwest Forest Plan, it is likely that this TOV was not exceeded in FY99.



Monitoring Questions 28 & 31: Riparian Terrestrial Habitat and Wetlands

Are Riparian Areas providing for quality and diversity of Riparian plant and wildlife habitat?

Are management practices maintaining aquatic invertebrates, vegetation, and water quality in representative small wetlands?

In FY99, the Forest IDT recommended site specific monitoring of riparian reserves, especially along Class III/IV streams. As a result five streams in or adjacent to regeneration harvests were visited. Two Class III's had a standard reserve tree prescription of 150 feet on each side. Three received reduced widths of 50 feet on each side. One Class IV was buffered approximately 75 feet on each side.

While some blowdown had occurred in some units, the major impacts to the sites seemed to result from increased solar radiation. Landform and topographic position are important factors in determining effects to the reserve boundary near- or in-channel habitats. Mesic communities may be more sensitive to increased exposure. Temperature impacts on the forest floor or in-channel flora and fauna may also be significant, but were not examined. Detailed monitoring notes from these trips are available on the Forest.

Riparian reserves are protecting stream channels but irregular boundaries may provide more protection.

Overall physical protection of the channels appeared to be successful, but the condition of the vegetation within the reserve deserves more attention during on-the-ground delineation. Where shading or connectivity of mesic communities is of concern, delineating lopsided buffers should be considered taking into account topography and aspect. The same size buffer shifted to provide more protection against insulation may be more effective and may provide more flexibility in meeting site-specific conditions.

Though the TOV was not directly measured, protection given through the NWFP for riparian and wetlands areas maintains the quality and diversity of these areas beyond the Forests original expectations.

Monitoring Question 40: Biological Diversity

Is an ecologically sound distribution of plant association groups and seral stages being maintained?

Is a Forest-wide network of ecologically significant old-growth stands being maintained?

Are old-growth stands evaluated for ecological significance prior to project design?

Is within-stand diversity meeting standards and guidelines for live green trees, snags and down logs?

Are unique or special wildlife or plant habitats for which prescriptions have been written being maintained?

Since Forest Plan implementation, the Forest has had difficulty answering the question of whether biological diversity is being maintained. A FY98 monitoring recommendation was to look at range of natural conditions in the province (a more appropriate scale than the Forest) and determine more meaningful methods of measuring our success. Further, it was recommended that connectivity should be analyzed to assess the relative importance of gaps in group/seral stage distributions.

Data and tools are being put into place to more accurately measure biological diversity.

In FY99, a plant association group model revision was completed which extended our ability to model the Willamette Province. In addition, agreements are in place to provide a base layer suitable for describing current conditions within the Province's forested lands and preliminary agreements made to provide provincial ecological analysis tools. These tools include an updated plant association group model, seral stage classifications of the current forested stand conditions, and fire regime mapping which will be implemented in FY2000-2005.

Possible outputs with these tools include:

- an analysis of range of natural conditions at the provincial scale,
- preliminary evaluation of the maintenance of ecologically sound distributions of seral stages across plant association groups,
- more appropriate TOV's linked to connectivity, and
- identification of habitat gaps.

Further development of ecological tools at the provincial scale and appropriate evaluation criteria should be pursued.

Special habitat monitoring stepped up in FY99.

In reference to special habitat prescriptions, monitoring trips specifically designed to focus on special habitat protection was scheduled during FY99. The trips were designed to determine if special habitat prescriptions were implemented and the effectiveness of the prescription. Site visits focused on wet special habitats. Four recent harvest units on the forest with special habitats prescriptions were monitored. Harvest activities included a partial cut, shelterwood, and two regeneration harvests (clearcuts with reserves).

In all cases, the buffers were implemented as prescribed. No direct impacts (ground disturbance, mechanical damage) were noted on any site. However, some indirect impacts were noted such as invasive weeds, blowdown, and potential soil movement.

Overall, the special habitat prescriptions that we monitored appeared sufficient to prevent direct and immediate impacts to the habitats. Mid- to long-term indirect impacts should be selectively monitored where the potential for such effects seems high.

Another objective of the monitoring was to investigate how to improve monitoring specifically related to special habitats. Establishing formal quantitative replicated measurements as originally envisioned in the special habitats guide is not feasible from the funding or staffing perspective. However, informal monitoring can be effective if monitoring sites and methods are tracked in GIS and other databases. Currently this type of tracking is not in place but will be further investigated in FY 2000,

A variety of special habitat monitoring continues on the Forest.

Restoration effectiveness monitoring continues on a variety of projects. Examples include sites on Blue River (Chucksney Meadows), Middle Fork (Rigdon Point), McKenzie (Bunchgrass Ridge—in cooperation with Dr. Charles Halpern, UW), and Sweet Home (Camas Prairie). In addition, effects of wildfire on high elevation wetlands are being tracked on the Middle Fork's Torrey/Charlton Research Natural Area. Other special habitats monitoring related activities include the cooperative project between the USFS/BLM/Oregon Natural Heritage Program-The Natural Conservancy for classification of wetlands and riparian vegetation in NW Oregon where wetlands on the Willamette were sampled during the summer of 1999.

C. WILDLIFE

Monitoring Question 15: Bald Eagle

Are all 24 known and potential nest sites protected in accordance with the Forest Plan?

Have bald eagle management plans been prepared for all occupied territories, all newly discovered nest sites, and potential sites that have become occupied?

Have Standards and Guidelines been applied to all activities that might affect habitat in Management Area 8?

Are bald eagle numbers and habitat being maintained or increased on the Forest?

Known populations of bald eagles increasing; continuing need to prepare individual site plans.

All known and potential bald eagle nest sites are protected in accordance with the Forest Plan, and the Standard and Guidelines have been applied to all activities that might affect habitat in Management Area (MA) 8. Protection zones are mapped for all territories so that the locations of the protection zones are known during project planning. Three sites have completed and approved management plans, while 8 additional known sites have management plans in progress. This exceeds the TOV that requires all plans be completed within three years of Plan implementation or two years after discovery.

Results of bald eagle population and nesting surveys for 1999 indicate twelve known sites were occupied, and nesting occurred at seven sites with six young fledged. One new site was discovered at Lost Lake. No existing sites were abandoned. One nest did fall out of its tree in February, otherwise no sites blew down or were otherwise lost. During mid-winter surveys 8 adults juveniles were found.

Monitoring Question 17: Northern Spotted Owls

MQ 17 is concerned with the 1989 Forest Plan land allocations reserved for maintaining the northern spotted owl and is now obsolete due to the Department of Agriculture's 1990 decision to eliminate these reserved areas.

Monitoring Question 18: Peregrine Falcon

Has all suitable nesting habitat been validated on the Forest?

Have the identified nest sites been surveyed for falcon activity or nesting?

Have management plans been prepared for each nest site?

Have Peregrine Falcons begun to use these sites and maintain a stable population?

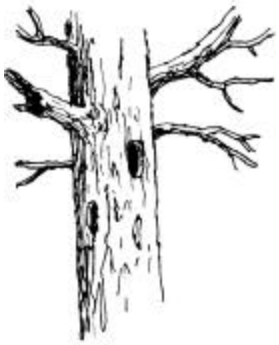
As of August of 1999 the peregrine falcon has been removed from the federal Threatened and Endangered species list (delisted). The forest currently manages the bird as a Regional Forester's sensitive species. A requirement of the Endangered Species Act is to monitor a delisted species for at least 5 years so the Forest will continue to monitor the known territories.

Peregrine falcon population continues to rise on the Forest.

Not all suitable nesting habitat has been validated on the forest; however, all 21 identified nest sites have been surveyed and validated on the Forest. District personnel and a regional specialist have completed activity surveys. The results below show the forest population is currently very productive. The TOV has been met on the second subquestion but not the first.

Total number of identified & surveyed nest sites	**21**
Sites surveyed and occupied	*20*
Nesting verified	*14*
Pair present, nesting unknown	*2*
Total adult population surveyed	**42**
Young fledged	*23*
New sites discovered and verified	*2*

A Master Site Plan providing management recommendations for all peregrine falcon sites on the Forest as been completed. Site-specific management plans are to be developed for each site. Three of these site plans out of 21 territories are finalized with Section 7 consultation complete. Eighteen site plans are drafted with the protection zones mapped. Project planning activities are coordinated with the site plans and priority for completion has been placed on those sites that have proposed projects within or near the boundaries. All 18 draft plans have been reviewed by Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service (USFWS), and are currently undergoing a final review by the TES (threatened, endangered, and sensitive) program. Site plans should be completed within 2 years of nest site discovery. The TOV is exceeded on the third subquestion.



Snags are being left as prescribed and monitoring continues on existing snags and their fall rates.

Monitoring Question 19: Primary Cavity Excavators

Are the number, size, species, and distribution of wildlife trees prescribed in the EAs and prescriptions being left on harvest units?

Are wildlife trees retained on harvest units being used by primary excavator and secondary cavity nesting species? Are populations of primary excavators at the predicted levels?

Are the existing snags and replacement trees standing and remaining suitable for the predicted length of time?

A sampling of 96 units in 1999 shows that wildlife tree Standard and Guidelines are being met on 85 of those units. Eleven units did not meet their prescription. Of the 2043 snags surveyed 70 had signs of primary cavity excavator activity.

In reference to the third subquestion, very little information exists on the use of created snags or on the decay and fall-down rates of created snags. To address this lack of information, the Forest began a long-term monitoring project of 1220 snags. These snags will be sampled every three years or more frequently to develop an understanding of the factors associated with the use of snags by wildlife and examines decay and fall-down rates of snags. The TOV is not being exceeded.

Monitoring Question 20: Marten & Pileated Woodpeckers

Have marten and pileated habitat areas been provided in patterns maintaining three directional links to other habitat areas or mature/old-growth habitats?

Does the habitat mapped for pileated and marten habitat meet the definitions for mature/old-growth habitat?

Are projects being implemented to meet the intent of the standards and guidelines for maintaining habitat conditions and security needed for dispersal, foraging, and reproduction?

Are habitat areas providing conditions that allow the species to reproduce successfully?

Pileated woodpecker and marten habitat network replaced with a new network of reserves.

The original strategy in the Forest Plan for providing nodes of habitat for the pileated woodpecker and the marten was a network of blocks of habitat arranged at spatial intervals across the Forest. At that time this approach would guarantee critical denning and nesting habitat and that the node habitat would likely be connected functionally. Upon adoption of the NWFP, marten and pileated habitat areas were returned to the matrix unless "local knowledge indicates that other allocations and these standards and guidelines will not meet management objectives for these species". Each district wildlife biologist took a look at their respective network of pileated woodpecker and marten nodes and made a determination about the adequacy or need for each node in light of the new NWFP allocations. Some of the nodes were retained across the forest to meet pileated woodpecker or marten management objectives. As a result of working with the provincial Level 1 and Level 2 teams, the Santiam Pass Area of Concern on the north end of the Forest was reevaluated and the boundary redrawn in light of the new NWFP allocations. In keeping with the requirement to provide connectivity between large LSRs, the pileated woodpecker and marten nodes were retained or dropped depending on the matrix habitat conditions for the two species and the added spatial benefit of providing spotted owl dispersal habitat in the matrix thus facilitating the connectivity of LSRs. As a result of major changes in how we manage for pileated woodpeckers and marten under the NWFP, the monitoring portion of the Forest LMP for these species needs revision.

Monitoring Question 21: Deer and Elk

Are projects being implemented to achieve the habitat effectiveness values as predicted in the Forest Plan?

Are habitat improvements increasing the use of management areas by deer and elk?

Are deer and elk population densities maintained at the index values estimated for the three levels of management emphasis?

Deer and elk habitat is monitored for its effectiveness in maintaining elk population densities. FY99 is not a reporting year for this question. Habitat effectiveness as measured by forage and cover quality, road density, and size and spacing of forage and cover continues to be modeled according to S&Gs. No problems were reported in FY99.

In FY98 we reported a planned update to the elk management strategy on the Forest. The Forest continues to work with ODF&W on updating the big game Wisdom model by testing specified graduated values for cover and forage to reflect current treatment activities under the Forest Plan as amended by the Northwest Forest Plan. In 1998, 60 harvest units were sampled for forage production. The data were analyzed in 1999 for quality forage and the forest expects to have agreement on updates to the elk model in FY2000.

New monitoring question added.

Survey and Managed: *Have surveys been conducted for Category 2 survey and manage species for all habitat-disturbing activities 1999 or later?*

In 1994 the Northwest Forest Plan listed specific species for special protection. Known sites of these species should be managed for their protection and surveys are to be conducted for listed species whose habitat is planned for ground-disturbing activity. This "survey and manage" provision provides benefits to amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropods.

Regarding the monitoring question, 15,187 acres were surveyed for great gray owls and 10,516 acres were surveyed for mollusks. Red tree vole (RTV) surveys were initiated in the fall of 1999. Surveys to protocol will be conducted on all activities, which have the potetial to affect RTV habitat. Management recommendations to follow when the RTV is found have yet to be finalized by the regional executives. Species not suspected to occur or lack habitat on the Forest do not require surveys. Protocols for other species are still being developed.

D. PLANTS

Botanists located a small population of Potentilla villosa, once thought extinct.

Monitoring Question 16: Threatened, endangered, and sensitive plants

Are sensitive plants inventories being completed to determine the status/presence of populations in wilderness areas and other areas removed from timber harvest?

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

Has the Forest established a "Monitoring Watch List" identifying plant species that are rare, unusual, or of special concern?

Have protective measures implemented as part of project activities been effective in maintaining the integrity of sensitive plant populations?

Have species management plans been prepared to guide management activities to project sensitive plant populations?

Has demographic monitoring of Cimicifuga elata, Aster gormanii, Ophioglossum pusillum, and Frasera umpqaensis been conducted to determine if populations are stable? If populations are declining has management been prescribed?

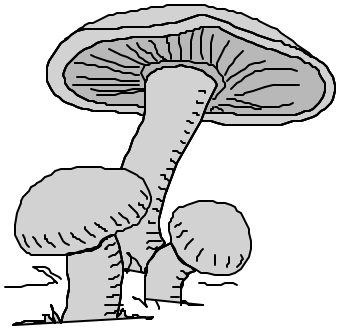
The first monitoring question focuses on surveys in wilderness and other special areas. This is the second year of surveys outside timber harvest allocations that have fallen significantly below the annual target of 1,400 acres, exceeding the TOV. With limited resources, botanists concentrated their efforts on learning to identify and survey for species listed in the NWFP as requiring surveys before ground disturbing activities.

In addition to Survey and Manage species, botanists on the Forest also surveyed for and verified *Corydalis aqua-gelidae,* cold water corydalis. This was a previously misidentified species. Botanists collaborated with the Native Plant Society to locate *Potentilla villosa,* hairy cinquefoil. This species, once thought to be extinct in Oregon, had a former range of Alaska to Mt. Hood, Oregon. A small population of 12 plants has been located on the Willamette and will be closely monitored.

Seventy-nine Biological Evaluations were written for sensitive plant surveys covering to 8,450 acres on 79 projects this year. As a result three additional populations of *Cimicifuga elata* and one population of each of *Botrychium montanum* and *Iliamna latibrateata* were located.

Three additions are made to the Monitoring Watch List.

The Monitoring Watch List, consisting of an inventory of locally rare or genetically significant plant species, serves as a tracking system for rare species and is reviewed and updated annually. Three additions to the Monitoring Watch List include 1) a new sedge, *Carex disperma;* with only one location on the Forest; 2) two sites of the beautiful leopard lily, *Lilium pardalinum,* and 3) a high elevation sandwort, *Arenaria obtusiloba,* with only one location,. All were found on the Middle Fork RD. Regarding the fourth subquestion, stable populations of *Botrychium montanum* and resurging populations of *Botrychium minganense* (rare grapeferns) are monitored yearly. It is unknown if the temporary decline in *B. minganense* populations constituted a natural variation.



No new species management guides were started in 1998. A Conservation Strategy for Brewer's reedgrass, *Calamagrostis breweri,* is in progress.

Monitoring of *Frasera umpquaensis, Aster gormanii,* and *Ophioglossum pusillum* all show the populations are stable. *Cimicifuga elata's* has been monitored since 1992. A population on the Lowell RD is smaller than before, but due to blowdown and subsequent canopy opening, reproduction is higher. On Sweet Home RD activities were initiated including enclosures to protect plants from elk browse. OSU is looking at between and within population variability to determine which populations are of concern for conservation. The genetic diversity evaluation suggests population inbreeding.

Though the monitoring questions below have not been incorporated into the Forest Monitoring Plan, they serve as very good indicators of the degree of success in implementing the Forest Plan as amended by the Northwest Forest Plan.

Additional monitoring questions help track the success of survey and managed species, noxious weed management, and native species revegetation.

Survey and Manage: *Have surveys been conducted for Category 2 survey and manage species for all ground-disturbing activities 1999 or later?*

Noxious Weeds: *Has the Forest implemented noxious weed prevention activities as called for under the Mediated Agreement for Region 6 EIS, Managing Competing and Unwanted Vegetation?*

Has the Forest implemented an Integrated Vegetation Management Program? Has effectiveness been monitored?

Native Species Revegetation: *Is the Forest using native species for re-vegetation purposes (roadcuts, restoration following soil disturbance, erosion control, etc.) for all projects?*

With respect to survey and managed a total of 148 new populations of vascular plants, bryophytes, mosses, and fungi were located. A report of species and number of sites is available.

With respect to noxious weeds, the Forest implemented various control methods. An Environmental Assessment in 1993 states the Forest will monitor use of chemicals on the Forest and document a reduction in reliance on chemical methods over time. One less acre was treated with chemicals in 1999 than in 1998. Each treatment with herbicide is followed up with monitoring and hand-pulling of remaining plants. Preventing noxious weeds centered around education of publics using the Forest. The use of weed-free forage for stock has been added to permits issued for outfitter guides.

Control method	Acres
Biological	200
Manual	300
Mechanical	440
Chemical	43
Fire	0

The Forest works towards a Forest seed mix made entirely of native species for natural areas.

In terms of native species revegetation, approximately 3,000 pounds of genetically localized native grass seed was used on the Forest in 1999, mostly in streamside riparian areas and Late Successional Reserves. The Forest's ultimate goal is to have a Forest seed mix made entirely of natives for natural areas.

E. FIRE

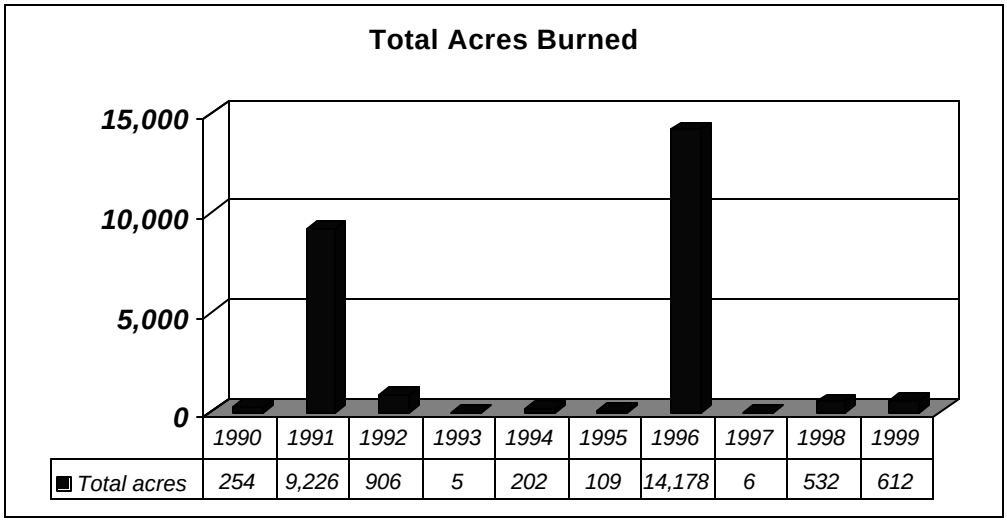
Monitoring Question 36: Fire protection

Are the acres burned by wildfire within the levels considered in the Plan?

Wildfire burned 612 acres in FY99.

There was a total of 612 acres burned stemming from 135 fires in FY99. As illustrated by the graph below, this fiscal year continues to depict the high degree of variability among fire patterns across the Forest. This natural variability coupled with changes in wildland fire policy prompts a need to review and validate contributing factors, both natural and human, based on the experiences of the last ten years and develop realistic thresholds. The acres burned since 1997 are far lower than the annual average. Fire protection thresholds were not exceeded; however, as a result of fires in 1996, the four-year average exceeds the TOV for acres burned in the Wilderness. There were no prescribed natural fires or unplanned ignitions on the Forest in FY99.

Year	Acres by wilderness status	
	Wilderness	Non Wilderness
1996	10,713	3,458
1997	0	6
1998	163	369
1999	3	609



Monitoring Question 37: Fuels Treatment

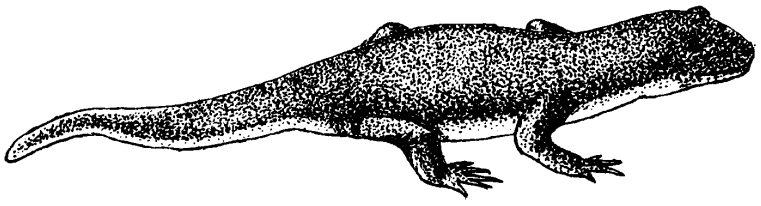
Were fuel loading/distribution standards met on affected activity areas?

During FY99 fuel monitoring was completed with district input from prescribed burn plans. The Forest treated 1,781 acres or 103% of the projected Forest Plan level.

Fuel strategy will identify possible approaches for returning forest to a more balanced condition.

Beyond completed fuel monitoring, the Forest (in partnership with Eugene and Salem Districts of the BLM) is developing a natural fuels management strategy. The Integrated Natural Fuels Management Strategy (INFMS) should be complete by the end of April 2000. The project will identify: a) priority treatment areas; b) alternative fuels treatment options; c) a five-year action plan; and an education and information program.

The Forest is also assessing the long-term effects of large scale commercial thinning, which is common on the Forest. Also current issues dealing with survey and management of forest species are expected to be an impact to the fuels program. Strategies to best deal with these issues are being developed.



III. RESOURCES AND SERVICES TO PEOPLE

A. CULTURAL RESOURCES

Monitoring Question 2: Cultural Resources

Are known significant and potentially significant cultural resource sites being damaged since implementation of the Forest Plan?

Are significant historic buildings being maintained, stabilized, or repaired according to historic preservation standards?

Is consultation with SHPO, Advisory Council, and American Indian groups occurring?

Are the cumulative effects of Forest Project activities in cultural resources being tracked and studied?

The Forest cultural resource inventory reflects a resource base of over 2200 known historic properties, including archaeological sites, historic sites, trails, and structures, in addition to isolate finds and features. Each year sites are monitored, generally in conjunction with other duties. Each site monitored is documented by recording observations on a standardized form.

Total sites monitored[1]	85
Sites showing new impacts	20
Cause of damage	
recreation	*9*
weathering/erosion	*4*
vandalism	*4*
fire suppression activities	*1*
no one contributing factor	*2*

[1] Represents less than 4% of the total inventory of heritage sites on the Forest. Of the 85, 15 were historic structures.

Damage to cultural sites is a problem.

"New impacts" were noted at 20 (23%) of the sites monitored, 7 of which were reported as moderate or severe.
Overall, impacts are weighted toward management and human-related causes. Some key areas of concern are increased recreation, reservoir drawdown, and lack of maintenance to remote historic buildings. Though individual impacts were relatively minor, measures should be taken to avoid more serious continued and cumulative effects. The TOV was exceeded.

The Forest manages an inventory of 91 significant historic buildings. Fifteen historic buildings were monitored in FY99. Four were reported as having significant new impacts from lack of maintenance and vandalism. Alternatives and formal decisions, with public input, should be considered regarding the use and management of historic structures.

Cumulating effects to our heritage resource a concern.

With respect to cumulative effects, our monitoring efforts are beginning to reveal patterns of continued degradation of sites as a result of some management practices and some land uses. A programmatic approach to mitigating cumulative effects should be pursued.

Consultation with SHPO continues.

The Forest continues to follow legal consultation requirements with SHPO under the 1995 Programmatic Agreement for NHPA compliance. SHPO is consulted on projects determined to have "no adverse effect" and "adverse effect." With some exceptions, heritage files hold evidence of this consultation. However, a review of 14 NEPA documents on file at the Supervisor's Office indicates, that tribal contacts are not well documented during the environmental analysis. Also of concern was SHPO failed to concur on one project based on inadequate documentation of a site/project boundary interface. This documentation is being revised and will be resubmitted. The TOV is exceeded when at least 5% of the documents fail to identify involvement of these groups. If the documents reviewed are a representative sample, the TOV has been exceeded. Becoming familiar with the issues addressed in MOUs, increasing contact with interested publics and documenting the communication in environmental documents will improve the consultation process.

The public participates in many interesting projects on the Forest. One such project receives national attention.

In addition to the regular program of work, the Forest Heritage staff hosted three projects, under the national program "Passports in Time"(PIT). This program provides opportunities for volunteers to participate in heritage resource projects. Related to this, the Detroit District Archaeologist (Cara Kelly) was recognized with the Chief's Award for Windows on the Past for her efforts and accomplishments on the Hogg Railroad, a PIT project. Outside the PIT program volunteers assisted forest heritage staff in the structural rehabilitation of Gold Butte Lookout, artifact drawing, artifact cataloging etc.

The Forest Heritage Staff also conducted heritage tours and interpretive talks. Sweet Home under the Recreation Fee Demo program hosted one Heritage Expedition.

The Hogg Railroad added to the National Register of Historic Places.

The listing of Hogg Railroad to the National Register of Historic Places was finalized in FY99 following years of research, inventory, and documentation of this linear resource that crosses the Forest along the North Santiam area. An evaluation of significance was also completed for the North Fork Logging

Railroad on the Middle Fork District.

B. SPECIALLY DESIGNATED UNIQUE AREAS

Monitoring Question 3: Wilderness

Are Wilderness Resource Spectrum (WRS) class settings consistent with the standards and guidelines for Wilderness management?

Are Wilderness use levels within the limits established for management plans for each WRS class?

Pertaining to the first subquestion, WRS class settings are consistent with the standards and guidelines in the Forest Plan for Wilderness management.

A number of wilderness areas experiencing above-standard use levels.

The second subquestion relates to the number of people using the wildernesses. A permit system is still in place to monitor visitor use in all wildernesses on the Willamette National Forest.

Based on wilderness permit and encounter data, there are a number of areas which have use levels above standards for WRS classes, particularly in Transition and Semi-Primitive classes. McKenzie and Detroit RDs continue to monitor use in the Obsidian and Pamelia Limited Entry Areas (LEAs). Data for Three Sisters Wilderness is yet complete but it clearly shows an increase in the number of people using the wilderness since 1991. In terms of use it is an issue of distribution, rather than sheer numbers of people. Popular destinations will continue to be the most impacted. For this reason our main objective in 1995, when LEAs were initiated, was to reduce the number of encounters (visitors meeting other visitors) and imapacts to resources at the two LEAs. In both areas, the number of encounters has been reduced from levels prior to LEAs, but adjustments may be necessary in the future to deal with non-compliance and the increase in average party size per permit. At both areas, LEAs have had a positive effect on overnight crowding (campsites within site and sound).

To reduce negative impacts, use in the most popular wilderness destinations continues to be limited.

In Jefferson Park (Mt. Jefferson wilderness), where a campfire prohibition was initiated in 1995, the effects of wood gathering and firerings have been reduced dramatically. A formal study of the effects of designated campsites was completed in 1999, but data is not yet available.

The TOV has not been exceeded in the Forest's wilderness acres for Pristine and Primitive WRS classes, and in most of the acres in the Semi-Primitive WRS class. Based on wilderness permit data, there are a number of areas that have use levels above standards for WRS classes, particularly in Transition and Semi-Primitive classes. Use is maintained at a

level above acceptable standards, but at lower levels than 1995, when the LEAs were established.

Monitoring Question 4: Wild and Scenic Rivers

Are the outstandingly remarkable river values of designated study and potential Wild and Scenic Rivers being protected consistent with the Wild and Scenic Rivers Act?

Have management plans been written for designated Wild and Scenic Rivers?

Have there been any changes in the designation status of eligible and study rivers?

All designated study and potential Wild and Scenic Rivers are being protected consistent with the Wild and Scenic Rivers Act. Monitoring indicates the Outstandingly Remarkable Values or ORVs are within the TOV. On the McKenzie River, the district has initiated voluntary registration at launch sites to gather information about non-commercial users, and to validate total recreation use (commercial and non-commercial). On-river use continues to be monitored by personnel river ranger program. Twenty-six monitoring trips were conducted during the 1999 season. The district is also working in cooperation with local bicycle shops to encourage users of the McKenzie River National Scenic Trail to not use the trail during wet periods. Most damage occurs during that time.

McKenzie and North Fork of Middle Fork covered by management plans.

Management plans have been written for McKenzie and North Fork of the Middle Fork Wild and Scenic Rivers. Both of these rivers were designated in the Forest Plan. A management plan for Elkhorn Creek (recently designated as part of the Opal Creek Wilderness) has yet to be written.

Beyond the newly designated Elkhorn Creek there has been no change in the status of eligible and study rivers.

Monitoring Question 5: Roadless Areas

Are the acreage and number of inventoried Roadless Areas consistent with Forest Plan direction and projections?

This question is concerned with whether the acreages and numbers of inventoried roadless areas and other unroaded areas are consistent with Forest Plan direction. The acreage that remains roadless is well within the levels anticipated by the Forest Plan. Lower than predicted impacts to roadless areas is expected to continue.

Temporary suspension on road construction or reconstruction directed in Jan, 1998.

Roadless areas have received a great deal of attention in the last two years. Currently the agency only receives about 20 percent of the annual funding needed to maintain roads, creating a backlog on road maintenance and reconstruction. Moreover, timber harvesting within roadless areas is expensive, in terms of engineering and environmental analysis costs, and almost inevitable litigation. Because of this and the fact that roads may contribute to resource degradation, a temporary suspension of road construction and reconstruction in roadless areas was directed in January 1998.

Permanent protection of roadless areas being considered.

Subsequent to the suspension of road construction and reconstruction, the President directed the Forest Service on October 13, 1999, to begin an open and public dialogue about the future of inventoried roadless areas within the National Forest System. The Agency initiated this process by publishing a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) in the Federal Register (October 19, 1999).

Monitoring Question 9: Special Interest Areas

Are actions used to accommodate and manage human use of SIAs, OGGs and the OCRA employed in a manner to maintain and protect the special attributes of these designated areas, as specified?

Unique areas on the Forest such as SIAs, OGGs and OCRA are being managed to protect their special attributes. At Fall Creek, in riparian areas where dispersed sites were blocked from vehicle use in 1998, long-term occupation has been reduced. Sites show signs of vegetation recovery and there is less trash. However, some sites are continually re-opened by the public.

On Sweet Home RD, a 20-foot bridge was constructed on the Santiam Wagon Road to facilitate traffic across an unstable wet area and to prevent erosion. On McKenzie RD at Fish Lake SIA

cabins were restored for renting.

Monitoring Question 39 Research Natural Areas

Is management preventing or minimizing disturbance to the RNA?

Do existing and proposed sites within the RNA system provide the ecological reference points necessary for the use of management and research in the Forest's ecosystem?

Are baseline data and periodic remeasurements for ecological reference objectives being collected and made available to researchers and managers?

Site visits were made to Torrey/Charlton, Rigdon Point, and Hagan RNAs during FY99. The purpose of the Torrey/Charlton trip was to continue monitoring the post-1996 wildfire developments in the upland forest and across the wetlands. Knobcone pine regeneration was monitored at Rigdon Point, and an annual mortality check on the permanent sample plots in Hagan was conducted

The first subquestion to MQ 39 is concern with preventing or minimizing disturbance to the RNAs from human sources. No human impacts were noted during the Torrey/Charlton visit.

The RNA system has not changed since the expansion the Wildcat RNA in 1998.

Scientists gathered to define the purpose and criteria of a Fire Process RNAs. Meeting notes are available.

Warner Creek Natural Succession Area was proposed as a RNA in the Warner Creek Fire Recovery ROD. Process RNAs were introduced in the 1998 Oregon Natural Heritage Plan. Since fire process RNAs are new and the Warner RNA, in particular, is of high public interest, a gathering of scientists and technical experts were assembled with the objective to define the purpose and the criteria needed to better define a Fire Process RNA. The outcome of this meeting is available at the Forest Supervisor's Office. At this time Warner Creek remains a Natural Succession Area.

The third subquestion directs its attention to the flow of data and information from the RNAs. Torrey/Charlton and Hagan continue to collect baseline data. In Torrey/Charlton measurements were taken to evaluate the impacts of the Charlton fire through the collection and periodic re-measurement of wetland ecotone transects and upland plots. The biggest development found was the re-establishment of a few seedlings, largely lodgepole, predominately confined to those sites where the duff was not consumed. The understory is also making a comeback, particularly the grouse whortleberry in the forested areas.

Cover, however, is not up to pre-fire abundance. With the recovery of some of the berry and seed producing plants, some bird species have returned (robins, juncos). Snags are still intact. In Hagan RNA, results showed a 2-3% annual mortality rate, the 2nd or 3rd highest rate recorded in 17-19 years.

Monitoring the ¼acre burned plots at Rigdon Point in August 1999 showed that approximately 11 Knobcone pine germinated in the spring. No new Douglas fir were found. Natural regeneration came from both the surrounding stands and from cones opened during the test burn. Three Douglas fir and 4 Knobcone seedlings that germinated died over the winter. Currently there is one Pacific silver fir, 22 Knobcone pines and 3 Douglas-fir seedlings on the test burn. Monitoring in the next few years should show rapid recovery of ground cover and continued increases in seedling establishment. Monitoring of the Rigdon Point 1997 knobcone test burn is scheduled for 2000.

The TOV was not exceeded for any of the subquestions.

C. RECREATION

Improvements at Cougar Reservoir have brought the area into its intended ROS class setting.

Monitoring Question 6 Recreation Opportunity Spectrum

Are activities used for the removal of resource products or the actions taken to accommodate or control human use in ROS class setting being conducted in accordance with management standards and guidelines?

Monitoring activities for FY99 are based on routine observation and periodic site visits by district personnel to a range of Recreation Opportunity Spectrum (ROS) settings within the Forest.

This monitoring question asks whether the physical, environmental, social, and managerial conditions for dispersed ROS settings indicate that changes are in accordance with S&Gs. Observations indicated activities are within the parameters of the Forest Plan. For example, the changes initiated in 1998 in the Cougar Recreation Area (Fee Demonstration) continue to provide an enhanced recreation opportunity for Forest visitors at Cougar reservoir and Terwilliiger Hot Springs. Use continues to remain within acceptable levels, as does visitor behavior.

Additional activities in this area include a management plan for Waldo Lake is being completed to address ROS settings and recreation use and facilities in the area.

Monitoring Question 7 Recreation Visitor Use

Are projected rates of increase in recreation visitor day (RVD) use for dispersed Recreation Opportunity Spectrum (ROS) areas, trails, and developed recreation settings being realized?

Recreation visitor use is changing at expected rates in developed recreation areas and wildernesses where accurate data exists. For dispersed recreation and non-wilderness trail, however, use data is unreliable. The TOV cannot be evaluated.

Monitoring Question 8 Scenic Resources

Are the effects of individual landscape alterations consistent in design and implementation with the scenic quality standards for each management area?

Are the cumulative effects of all management activities and natural events such as fires, insect, and disease that might physically alter the landscape consistent with VQOs in the Forest Plan?

Scenic quality in major viewsheds improving

The quality of the Scenic Resource on the forest remains consistent with the design and implementation of scenic quality standards. Landscape alterations within viewsheds meet the visual quality objectives and are inconspicuous to the casual viewer. Effects from management and natural events are consistent with the VQO's in the Forest Plan; however, viewsheds with mixed public ownership may contain management actions that affect the quality of the scenic resources. The quality of the scenic resources remains high. The TOV has not been exceeded.

Monitoring Question 10 Trails

Are project management activities consistent with standards and guidelines for trail management classes?

Is trail construction and reconstruction being accomplished as scheduled in the Forest Plan?

Trail maintenance is down due to lack of funds.

Project management activities are consistent with S&Gs for trail management classes. The reduction in the Forest's timber sale program has greatly reduced the potential for adverse effects to the trail program. Although trail maintenance funding has increased, trail maintenance on much of the Forest has been primarily limited to removal of logs, trailside brushing and erosion structure maintenance. Heavy maintenance is not being funded at a level to maintain trails consistent with Forest Plan standards. However, Fee Demonstration (Trail Park) receipts do allow the Forest to accomplish some heavy maintenance projects. For example the Forest spent $133,000 which helped fund such projects as improved signs, toilets, and trail access to list only a few projects at many trailheads. The Forest collected $82,000 from Trail Park passes in FY99

Fee Demonstration receipts fund needed improvement projects at trailheads and other recreational spots on the Forest.

Trail construction or reconstruction has not been accomplished at expected levels. The Forest has not been funded to accomplish all of the trail projects called for in the Forest Plan.

Monitoring Question 11 Developed Recreation

Are the developed recreation sites provided by the Forest maintained to standards acceptable and expected by the recreating public?

Are developed sites being used in a manner consistent with the site design purpose?

Are the range of sites provided and distributed throughout the Forest consistent with customer's preference and use trends?

In FY99 monitoring activities related to developed sites are primarily based on routine site visits by recreation personnel as well as opportunistic contacts with the recreating public. Supporting information when applicable is supplied through the Forest's recreation database.

Concessionaires provide a service the Forest under current funding levels would not have been able to provide.

Referring to the first subquestion, concession operated facilities are maintained and operated at a standard above which the Forest could have managed, given the reduced level of annual appropriated funds received by the Forest. All of the other developed recreation sites managed by Forest Service are managed under the Fee Demonstration program, and are managed at acceptable standards within the range of public expectations and desires.

Most developed campgrounds are used within their limits while popular sites continue to have user conflicts and overuse.

Considering the second subquestion, most developed sites on the Forest are generally used in a manner consistent with their basic design. However, at Detroit reservoir and other areas, there are growing conflicts between day users and overnight campers near campground boat ramp areas. There is an extreme shortage of day use facilities on Detroit reservoir and what day use facilities exist are very heavily used. Increasing day use coupled with multiple car-parties has created a Forest-wide parking/capacity problem. Increasing party sizes are impacting the area beyond hardened campsite boundaries. Many site managers have established site capacities (people/vehicles) to manage use levels within site capacities. A trend towards more and larger vehicles (RVs) also affects capacity and sometimes creates conflicts between visitors.

Some customers show a preference towards campgrounds with more amenities.

Finally distribution of sites are consistent with customer's preference and use; however, in some areas, the number and location of developed sites is not adequate to meet demands during the high use season (Detroit reservoir, McKenzie River, Hills Creek), especially on holidays and weekends. Visitors who use trailers and RVs are expressing a desire to have showers, flush toilets, and electrical hook-ups. Cove Creek campground, the Forest's newest campground, is one of the most popular on the Forest due to its amenities (hot water, showers, flush toilets). Cabin rentals offered do not meet public demand. The Forest has six structures available for rent to the public and is readying others for the program.

Monitoring Question 12 Off-road Vehicle Use

Are quality ORV opportunities provided in areas which are suitable for ORV use and the needs, skills, and interests of users?

Are the ORV opportunities provided effective in minimizing conflicts between user groups and safe for users and the general public?

Are the ORV opportunities provided in locations which minimize degradation's of soil, water, vegetation resource damage, and wildlife harassment?

Surveys of District Recreation Staff were conducted to gather ORV related use and management information. Monitoring activities at the District level have primarily been documentation of on site observations, user interviews, direct public contacts, and public meetings.

Off-road vehicle use within Forest Plan standards.

The Forest designated ORV/OHV system for summer use is primarily limited to roads or trails. There are several areas, however, designated in the Forest Plan where ORV/OHV use is also not prohibited. In some places, ORV users are confused about the appropriate routes of travel.

Illegal use of wilderness by snowmobilers has been reduced by assistance of user groups.

The incursion of snowmobiles into designated wildernesses in past years has become more common. This has been largely due to a lack of boundary indicators and a lack of patrols. Incursions have been reduced significantly along the Three Sisters and Mt. Washington boundaries due to placement of boundary markers and increased presence of law enforcement and wilderness patrols. Snowmobile user groups have assisted in the placement of boundary indicators and signs.

User conflicts are increasing.	With limited success the ORV opportunities provided have been effective and safe. The Forest is experiencing a higher rate of conflict during the winter between snowmobile users and nordic skiiers and snowshoers. Districts are receiving complaints about snowmobile damage to ski/snowshoe trails, noise, reckless driving, and lack of courtesy. Districts are increasing patrols and are working with user groups to minimize conflicts, but regulations limiting the use of snowmobiles may be necessary in some areas. The practice of "high marking" with snowmobiles on extremely steep, unstable slopes is becoming increasingly popular in the Santiam Pass area. Safety is an issue for participants.
ORV use is occurring where resource/wildlife damage is known to exist.	Addressing the third subquestion, some ORV use is occurring where resource/wildlife damage is known to exist. At Detroit, for example, ORV use has occurred on service roads for power transmission lines, on steep, erosion-prone slopes. Vegetation loss and soil erosion has resulted. The District has begun a process to identify management actions to eliminate or mitigate these problems.
Resource damage by ORVs is increasing in some fragile areas.	Use of ORVs on mud flats of Lookout Point and Hills Creek has potential to disturb Bald Eagle populations on adjacent National Forest lands. Blockage of access roads to the mud flats at Lookout Point has reduced the use to motorcycles only. There is potential for disturbance of turtle basking and nesting activities in both reservoirs. The McKenzie RD has observed increased use and incursion onto steep, easily eroded slopes of Hoodoo Ski area. Ruts created by ORVs climbing open slopes and fragile ski runs has created unacceptable resource impacts. The District is working with the Hoodoo Ski Area permittee to determine appropriate management actions.

D. TIMBER

Monitoring Question 22 Timber Suitability

Are lands identified as not suitable for timber production still unsuitable and those identified as suitable for timber productions still suitable?

Have cumulative changes to allocations caused changes to total suitable acres?

Two types of changes usually result in an alteration to the total suitable acres for timber harvest. This is our ability to assure adequate reforestation of the site within 5 years and whether programmed timber harvest is part of the objectives for that particular piece of land. This is partially reflected by its management allocation. Changes to the suitability of lands for timber production have not changed since FY93. At that time the forestwide Soils Resource Inventory was updated.

With respect to land allocations, implementation of the Northwest Forest Plan established a set of additional land allocations and standards and guidelines for the Forest Service and Bureau of Land Management that reduced lands available for commercial timber harvest. Analysis completed in February 1998 indicates that there are 98,978 acres suitable and available within the Adaptive Management Area and 297,628 acres suitable and available in matrix lands for a total of 396,606 acres. Additional changes to the landbase such as additional riparian reserves, location of species requiring special protection, mapping refinements will prompt another update possibly in 2000.

The TOV is exceeded when there is more than a 5% change in the overall suitable land base from the predicted 774,608 acres in the Forest Plan. There has been an overall 49% reduction in the suitable and available land base. The TOV has been exceeded.

Monitoring Question 23 Timber Program

Is the number of acres and volume of programmed timber sold similar to the predicted amount?

Is the number of acres of programmed timber sold by working group, distributed as planned?

What is the actual rate of harvest on the less than full yield allocations such as scenic areas?

Is uphill falling being implemented as directed in the Standard and Guidelines? Are the effects similar to predictions?

In Fiscal Year 1999 the Forest timber sale program can be classified into two categories, volume "offered" under the regular sale program and alternative volume "awarded" in response to Public Law 104-19, Section 2001 (k)(3) more commonly called the Rescission Act. The information is stored in a Forest level database called the Sales Tracking and Reporting System database or STARS.

Timber volume offered or awarded is 17% of predicted levels in the Forest Plan

In FY99 the Willamette NF offered 8.8 mmbf for sale. Most of this volume was offered through advertisement in the newspaper, although the totals do include any product that can be converted and measured in board feet such as firewood, posts, poles, and so on. These amounts are all included in meeting our PSQ levels. Of the amount offered for sale, bids were received from prospective purchasers on 7.3 mmbf, of which 0.4 mmbf have been awarded. The remaining is held up pending completion of survey and manage requirements. To avoid double counting acres and volume when reporting during monitoring, the total amount sold will be reflected in FY99's program.

The Forest also awarded 13.9 mmbf of alternative volume sales.

Silvicultural prescription	**FY99 timber sale program Offered**		**AV Awarded**		**Forest Plan PSQ**	
	Acres		Acres		Acres	
Regeneration cuts w/ Reserves	0	--	546		3,144	--
Commercial thinning	539	--			2,808	--
Salvage	97	--			--	--
Partial Cuts	0	--			--	--
Total (acres → mmbf)		***636 →8.8***	***546***	***→ 13.9***	***5,952***	***→ 136.0***

Lawsuit settlements have a large impact on the Forest timber sale program.

The TOV is exceeded when the volume sold deviates more than 10% from the predicted amount. In both the volume and acres totals, the TOV is exceeded. There are also TOV deviations when comparing individual silvicultural prescription totals as seen in regeneration cuts and commercial thinnings. The reasons for the significant deviation are due to a settlement agreement with ONRC on survey and manage species.

The next subquestion comparing the distribution of acres by working group to planned levels, is no longer possible to ascertain. When the Forest Plan was amended by the NWFP the projected volume sold changed from 491 mmbf to 136 mmbf. The method used to develop the new level did not include a link to a particular working group. Without a link it is no longer possible to make a comparison to determine the TOV. In a similar way the NWFP PSQ does not include a link to a particular management area. While a comparison cannot be made, information in the table below shows how sales were distributed across management areas.

Mgt. Area	Description	Acres[1]
6E	Wild and Scenic River	0
11A	Scenic Modification Middleground	249
11C	Scenic-Partial Retention Middleground	0
11D	Scenic-Partial Retention Foreground	0
11E	Scenic-Retention Middleground	0
11F	Scenic-Retention Foreground	0
14A	General Forest	658

[1] Includes acres from both regular sales and alternative volume programs
A small amount of acres was lumped into General Forest during an update of the STARS database.

The final subquestion refers to the use of uphill falling practices to reduce breakage in harvested trees. No formal monitoring has been conducted. In fact, the change in harvest prescriptions away from regeneration cuts, and away from old growth harvest indicates that this may no longer be an appropriate question to monitor. Timber sale contracts include language to require falling techniques that protect residual stands, soil, water, and other resources rather than requiring uphill falling. Fallers are urged to maximize utilization of timber after considering protection of resources and personal safety. Sale activities (both utilization and protection of resources) are regularly monitored as a part of the sale administrator re-certification standards. In FY98 eight re-certification reviews were completed. All reviews indicated acceptable utilization and resource protection.

Monitoring Question 24 Silvicultural Practices

Is stocking being established and maintained at recommended levels and time frames?

Is growth response to intensive management practices similar to predicted amounts?

Are stocking levels, fertilization and release being accomplished as predicted or prescribed levels?

Is genetically improved planting stock utilized as planned?

Are created openings within established maximum size limits and are the size limits meeting objectives?

Are destructive insects and disease organisms below potentially damaging levels?

The first subquestion concerns the regeneration of harvested stands within the National Forest Management Act mandate of 5 calendar years from harvest. Adequate stocking is determined through a certification process that the Forest and District silviculturists track with a stand treatment database. The 5 step process after initial harvest includes: 1) site preparation, 2) planting, 3) first year surveys, 4) third year surveys and certification, and 5) reporting. Some stands require an additional step of replanting. The time frame of the process is subject to the time of year harvest occurs, burning season restrictions that occur during site preparation, accessibility to units, seedling availability for replanting, and planting or replanting priorities among projects. Despite prompt reforestation, any of the above factors may prolong certification

beyond the five-year window.

Despite prompt reforestation of all harvested stands, certification process takes longer than the scheduled 5 years on 1% of the stands.

Of the 2,273 acres harvested in FY94, 2,245 acres (99%) were certified. The remaining, 281 acres (1%) are in the examination stage following reforestation and are awaiting certification. Any remaining acres will be evaluated for retreatment. Since 95% of the stands must meet certification standards within 5 years of harvest the requirement has been met and the TOV has not been exceeded.

Timber stand improvement (TSI) accomplishments consist of treatments, primarily thinnings and fertilization, that occur on previously harvested and regenerated stands. Thus TSI is directly related to harvest levels; however, TSI occurs many years subsequent to harvest and at various times during stand development. The chief objective for TSI is maximization of tree growth for future forest products.

	Acres of treatment			
	Precommercial thinning	**Release treatments**	**Fertilization**	**Total**
FY99 accomplishments	5,566	359	4,495	10,420
Forest Plan predicted amounts	--	--	--	18,100
Future level under NWFP	--	--	--	6,250

Planting and timber stand improvement activities are expected to transition down to new levels.

TSI accomplishments are displayed in the table above. The total of 10,420 acres is 58% of the average annual treatment acres projected in the Forest Plan. Average annual treatment during the eight years of the Forest Plan is 10,676 acres or 59% of predicted needs. The predicted needs are associated with the original plan ASQ of 491 MMBF with an annual regeneration harvest level of 9,100 acres. Accomplishments are not at predicted plan levels of 18,100 primarily due to shrinking budgets and reduced suitable and available land and are now prioritized base on available funds. As the Northwest Forest Plan is implemented, it is currently anticipated that the treatment needs will phase downward to the level of approximately 6,250 annual acres. During this period of transition the TOV is difficult to assess, as we will not fully know this level until the Forest Plan revision.

In reference to the second subquestion, growth responses from TSI activities were observed in the field. Tree height and diameter growth experienced this year appeared to be normal for the growing season.

Genetically improved planting stock consistently used.

Referencing the fourth subquestion, genetically improved planting stock is being utilized as planned. No conifer seedlings grown were from collections of non-certified seed. All seedlings planted in FY99 are capable of maintaining equivalent growth of natural seedlings and a majority is expected to exceed natural seedling growth because much of the seed used was collected from trees that appear to grow better than their neighbors.

With respect to the size of created openings all regenerated harvest units were less than the Regional maximum of 60 acres. The TOV has not been exceeded.

Bark beetle kill increases in 1999.

Insects and disease surveys conducted in 1999 showed mortality increased from 2,295 acres last year to approximately 16,200 acres this year. The summer aerial survey found that Douglas-fir bark beetles killed approximately 17,950 trees. The mortality was on 4,746 acres within wilderness and 9,834 acres outside wilderness. The beetles expanded from the 1996 populations that were attracted to blown down trees. There is a good possibility the population will kill more trees in 2000. TOV has not been exceeded.

E. TRANSPORTATION

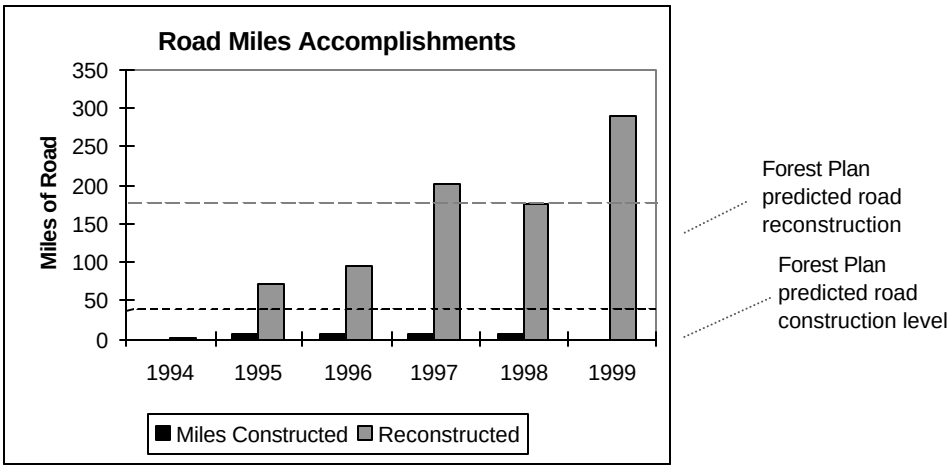
Monitoring Question 38 Transportation System

Are planned projects and program targets being accomplished?

Are system roads and temporary roads meeting Plan objectives?

What traffic volumes and characteristics are using the transportation system?

Monitoring activities specific to the road system are monitored through tracking accomplishments in the ROADS database and the Forest Transportation Management System (TMS) database.

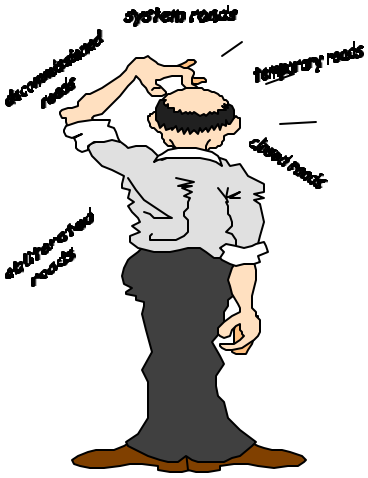


Road reconstruction is increased to repair damage from the 1996/1997 storms.

Planned activity levels for road construction and reconstruction are 40 miles and 174 miles per year, respectively. Road reconstruction typically includes activities necessary to bring an existing road up to the standard of its intended use. The TOV is exceeded when road construction deviates more than 10% over 3 years. Accomplishment levels averaged for the past 3 years are 4.2 miles of construction per year and 290 miles of reconstruction, exceeding the TOV. This is largely due to land set aside from logging for protection of other resources, a new emphasis on minimizing road impacts, and reduced budgets for road construction. Road reconstruction, however, is 67% above planned activity levels due to emergency supplemental funding used to reconstruct roads damaged by the 1996/1997 storms. Planned accomplishments should be adjusted based on the

NWFP amendment and monitoring continued.

Transportation management terms defined.



The second subquestion looks at system roads and temporary roads. *Temporary roads* are low impact roads constructed to provide access for short-term resource management needs. The ground is restored and the road is removed after intended use. Temporary roads are not a part of the forest developed transportation system composing of roads generally referred to as *system roads*. The Forest database tracks system roads designating their status as open or closed to vehicular traffic. Roads are *closed* to vehicular traffic to reduce the risk of erosion and need for annual maintenance. Some roads are *decommissioned* or permanently closed and obliterated. Decommissioning entails a process of stabilizing the roads for non-use over an extended period of time with methods that protect resources without requiring regular road maintenance. Decommissioning goes further towards restoring hillslope drainage than roads simply closed to vehicular traffic; however, the roads are not altogether removed.

Miles of road open to vehicular use are expected to decline.

Roads suitable for passenger cars are within 1% of predicted levels in the Forest Plan. Roads suitable for high clearance vehicles are greater than 10% below predictions exceeding the TOV. The TOV has also been exceeded for the number of roads closed to vehicles. This pattern is expected to continue due to reduced road management funding. To prevent road generated sedimentation, an increasing number of closed roads will be decommissioned. The overall Forest road network is also expected to decline as budgets decline. Finally road mileages will change as adjustments and corrections are made to the Forest's road databases.

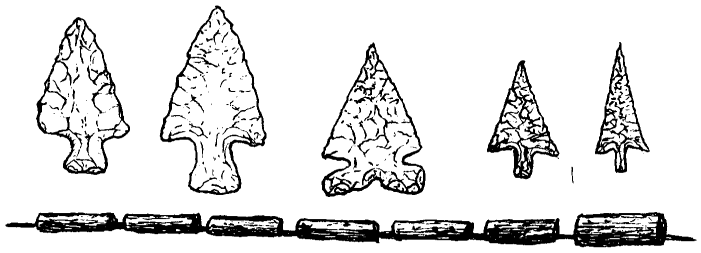
Forest roads' database will be updated.

Forest Plan direction requires temporary roads to be closed and vegetative cover re-established no later than 10 years from completed use. In FY99, 3.0 miles of temporary roads were reported closed. There is a low level of confidence associated with the reported miles and a more consistent procedure is needed.

Three miles of system roads were closed, obliterated, or otherwise removed. The TOV, met by removing at least 90% of the unneeded roads, cannot be evaluated. The reporting and tracking of roads identified for removal is not formalized coupled with Forest Plan road terminology conflicts with the NWFP.

Traffic increases on arterial roads but remains well below capacity to safely accomodate traffic.

Traffic volumes were monitored using mechanical traffic counters placed in strategic locations along designated roads. Traffic counts in 1999 were obtained on the Salmon Creek Road (2400000), the Rigdon Road (2100000) and Aufderheide (1900000). During the summer months of June, July and August 184 vehicles per day Seasonal Average Daily Traffic (SADT) were counted on Salmon Creek Road; 221 SADT on Aufderheide; and 455 SADT on Rigdon Road. The TOV measures the mix of traffic and/or volumes from the historical 3-year level. Summer traffic volumes from 1997 to 1999 appear to be increasing for Aufderheide (11.6%) and Rigdon Road (5.1%) and decreased 17% for Salmon Creek Road. It appears, however, that traffic volumes are increasing over time on the Forest arterial routes. As a result the arterial routes will continue to have high priority for annual maintenance and repair.



IV. SOCIAL, ECONOMIC, AND BUDGET

A. ECONOMIC RETURNS AND PAYMENTS

Monitoring Questions 41: Economic and Social Assumptions

Have there been changes in the local population, local employment or income?

Do the 3-year average annual payments to each county meet projections?

Do the average annual receipts conform to predictions?

Do changes in local employment and income by industry meet projections?

Do total costs by resource activity and major program costs conform with predictions?

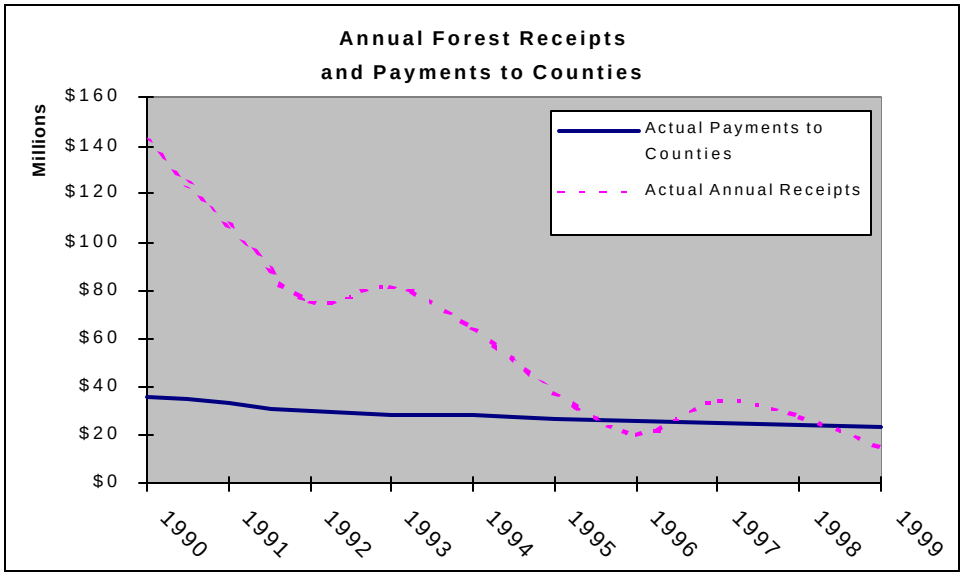
Has there been a significant change in public attitudes, beliefs or values; or in National or Regional direction?

Has the Forest's contribution to area forest products industries changed?

Payments to counties exceed forest receipts for FY99.

Payments to the counties (via the State) under the National Forest Fund have averaged 41% below Forest Plan projections in FY99 and 16% over three years, exceeding the TOV for this subquestion. This is a direct result of the reduced timber sale program. Without benefit of special legislation, which modified the traditional formula, these payments would have been considerably less. Due to this protection, payments to counties, traditionally receiving 25% of forest receipts, are in fact receiving 159% of the forest receipts. Counties receiving the majority of the National Forest Funds contributed by the Willamette National Forest are Lane and Linn counties. Marion, Clackamas, Jefferson, and Douglas counties are affected to a lesser degree by the Forest's contributions.

Forest's receipts have also been considerably less than projected by the Plan and exceed the TOV. When the Forest's receipts are compared to payments to counties, which traditionally were 25% of Forest receipts, the relationship between the two are no longer evident. The graph illustrates the effects legislation passed to protect the payments to counties from the same decline as Forest receipts.



Temporary increases in Forest expenditures due to unpredictable factors.

The fifth subquestion asks whether total costs by resource activity and major program conform to predictions. Beginning in FY93 this was reported based on actual expenditures rather than on budget allocations. Since expenditures better reflect total costs by resource activity, reporting for this subquestion will continue to be by expenditure. In FY99 expenditures decreased to 80% of FY97. The Forest expenditures are expected to continue declining. Any increase in expenditures the last several years have been of emergency funds for flood repair, replacement of the Oakridge Ranger Station, and supplying alternative timber volume. Forest expenditures overall and within several specific funds exceed the TOV.

Concerning local population, the three principal counties within the Forest's area of influence increased by 2.5% for 1997 through 1999, well within the TOV.

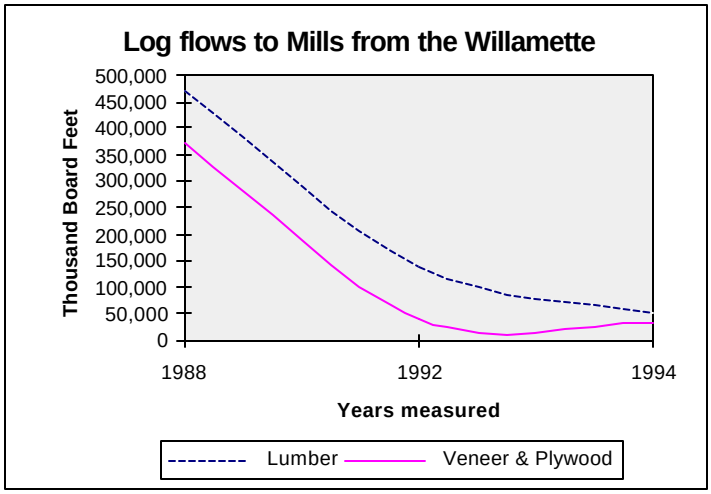
Local employment and income is a three-year trend question determining the degree to which there have been changes in these areas. For 1998 employment within the lumber and wood products sector has shown a decline of 4.6%. The TOV is exceeded when a greater than 15% gain or drop is experienced within three years. The TOV is not exceeded. A related question, looking generally at changes in overall local employment, within the primary area of influence, shows an increase of 2.8% over last three years. This is within the TOV.

Post-plan log flows analyzed; cause and effect obscured by lawsuits and court injunctions

The question of whether the Forest's contribution to the area's forest products industries has changed is figured from a periodic publication from the Pacific Northwest Research Station. The latest publication, available in FY97, displays log flows from the Forest to various industries for 1994. This is the second time since Plan implementation that log flows from the Forest have been analyzed; unfortunately any effects from the Forest Plan most definitely have been masked by the turmoil (lawsuits, court injunctions) experienced during this time period and the subsequent implementation of the Northwest Forest Plan in 1994. The reports do show all products produced from log flows off the Forest experienced sharp declines with post, pole and piling being eliminated as a product off the Forest in 1992. The chart and table below illustrate the changes in products produced from the Willamette and the overall trend in log flows from the Willamette.

Log Flows from the Willamette by Industry
Reported in Thousand Board Feet (MBF)

Year Measured	Lumber	Veneer & Plywood	Pulp & Board	Shake & Shingle	Post, Pole, & Piling	Total
1982	195,668	232,182	0	2,116	352	430,318
1988	469,060	372,772	0	4,127	1110	847,069
1992	139,335	39,827	0	675	0	179,837
1994	51,978	33,726	2,550	375	0	88,629



The Forest Service's top priorities are watershed health and restoration, sustainable forest management, roads and recreation. .

One objective of MQ 41 is to evaluate whether there has been significant changes in public attitudes, values, or beliefs or significant changes in National or Regional direction. As the agency strives to meet public demands, emphasis on ecosystem management as a policy, adopted by the Forest Service several years ago, provides a framework for implementing the existing Forest Plan direction. The Northwest Forest Plan, adopted in April 1994, amended aspects of the Willamette Forest Plan to provide better protection for the northern spotted owl and other old growth related species. This amendment together with the ecosystem management policy reflects ongoing adjustments in the Forest Plan in response to new resource information as well as shifts in public attitudes and values. In March 1998 the Chief presented the USDA Forest Service Natural Resource Agenda that encompassed many of the critical issues facing the agency today and it sets priorities for addressing those concerns. The Natural Resource Agenda focuses on four key emphasis areas and is being used to direct shifts in budget and policy and to align resources with the work that needs to be done. The four emphasis areas of the Agenda are watershed health and restoration; sustainable forest management; national forest road system; and recreation.

Changes in public attitudes, values and beliefs regarding the management of National Forests in general and the Willamette National Forest in particular are difficult to describe and quantify on a yearly basis. Issues current to FY99 include water quality flowing from the North Santiam watershed, future fire management policies, road management including closures and roadless area management, recreation fees, and methods to calculate payments to counties. A casual comparison of the range and intensity of issues raised by the public in 1990 when the Forest Plan was implemented to current public issues show little or no change.

IMPLEMENTATION MONITORING OVERVIEW

BACKGROUND

MQ 1 could be paraphrased, "Did we do what we said we were going to do?" This is the definition of implementation monitoring and the focus of many of the monitoring activities that occur on the Forest. Implementation monitoring is accomplished through a variety of formal and informal quality control processes.

Examples of these include technical service visits by SO Staff to Ranger Districts; Forest interdisciplinary team meetings with Districts; resource program reviews, certification programs for timber sale administrators, silviculturists, and civil engineers; and timber sale and road construction contract compliance reports.

To supplement current monitoring activities and to focus specifically on compliance with the Forest Plan, various levels of interdisciplinary monitoring review were carried out in 1999. One level was carried out at the Forest level by the Forest Supervisor, the second at the District level by the District Rangers.

The results and findings of implementation monitoring reviews are summarized below. The follow-up actions based on the evaluation of these results are included in the section, FY99 Evaluation and Follow-up Actions.

FOREST SUPERVISOR MONITORING REVIEWS

At the Forest Supervisor level, a Forest Supervisor monitoring team monitored several projects. The results and findings of each monitoring trip were documented and used to provide feedback to the District as well as contribute to the overall evaluation of the Forest Plan. Very often these trips also result in recommendations to the Supervisor's Office (SO) for changes or clarification to the Forest Plan standard and guidelines. Three potential projects were submitted to the SO from each hosting District of which one was chosen. The projects to be monitored may be from any resource program area. Criteria for projects are those planned under current Forest Plan as amended by the NWFP standards and guidelines and those with a substantial amount of on-the-ground work accomplished.

The monitoring team consisted of the Forest Supervisor or Deputy Forest Supervisor, SO Staff Officers, the Forest Interdisciplinary Team Leader, SO technical staff, District Rangers, and District staff. In addition to the Forest Service personnel, other interested publics participate in these monitoring reviews. In FY99 a microbiologist from the Environmental Protection Agency participated in one of the reviews.

The projects monitored by the Forest Supervisor reviews in FY99 were:

Ranger District	Activity Monitored
Blue River	Augusta Timber Sale and Environmental Impact Statement
Detroit	Breitenbush Road ERFO project – Road 4693 Obliteration and Decommissioning
Middle Fork	Car Hop and Carpet Hill Timber Sales
Sweet Home	Powder Regen III ATV, Unit 15

SUMMARY OF RESULTS

Numerous Forest Plan Standards and Guidelines (or specific direction items from the Northwest Forest Plan) were checked for compliance on the above projects. In addition, the reviews examined the consistency of the projects to Forest Plan general goals and objectives and to the specific management area goals and objectives. Specific management areas reviewed during the project monitoring included riparian reserves, general forest, trail buffers, visual areas, and adaptive management area. The documentation (NEPA analysis, decision documents, prescriptions) and as well as the on the ground results were checked for compliance with the Forest Plan.

The reviews on Blue River, Middle Fork and Sweet Home were all timber sales with similar issues and are summarized together. Monitoring of the obliteration of Road 4693 on Detroit is covered separately.

Road 4693 Obliteration and Decommissioning on Detroit Ranger District

This ERFO project was categorically excluded from NEPA documentation under the category for road maintenance. All activities occurred within the road prism and were no greater in scope than heavy road maintenance. Specific findings included:

- Specialists' input and specific requests were followed and applicable requirements met. Examples of met requirements included a fisheries specialist present during culvert removal, specific recommendations by the hydrologist regarding the removal of the culvert, planting of hardwoods and conifers in sections of obliterated roads and in the riparian area along the stream near the removed culvert, and no disturbance to logs in a debris pile above the culvert location.
- Application of Best Management Practices were followed

The project brought up questions that applied to this project and will continue to be relevant to similar projects in the future.

- How do we ensure these roads are tracked using the INFRA database?
- In road decommissioning should all culverts be removed, how much depends on local conditions?
- What are the long-term implications of obliteration versus decommissioning? If the resulting resource impacts are similar for given roads, what other factors should be considered?

Follow up suggestions included:

- The Forest needs to display/report the results of completed projects such as this on in various venues, i.e. Forest SOPA, Forest Website.
- County officials need to be involved or have the opportunity to be involved in decisions regarding road obliterations.

Timber sales on Blue River, Sweet Home and Middle Fork Ranger Districts

Seven units were monitored, two on Blue River, four on Middle Fork, and one on Sweet Home.

Soil Impact and Disturbance

Many of the units were skyline logged with one end suspension. All units reviewed for soil disturbance met applicable Forest Plan standards; however, one yarding corridor was evident on the slope but the selected harvest system met suspension requirements. One unit that was tractor/skidder logged used shovel logging in selected areas during the wet season. The review team agreed this was a good decision. A temporary road was constructed and then obliterated after use using a log loader. This technique seemed successful at eliminating soil compaction and returning the site to production.

Prescribed Fire

Units, where burning was used, successfully reduced fuel loadings and created sufficient planting spots for successful regeneration. Retention trees were protected from fire mortality. One unit was grapple piled and accomplished fuel reduction objectives as well as site prep objectives.

Coarse Woody Debris

Coarse woody debris direction was met on all sales reviewed except two. Both units prescribed a sufficient number of wildlife trees meeting current snag habitat guidelines; however, those trees left on the site expected to provide future down wood but did not have adequate dbh that when felled meet the 20" diameter on the small end requirement. One unit also did not meet the required 240 lineal feet requirement.

Green Tree Retention areas)

The Northwest Forest Plan requires at least 15% of matrix land allocations to be established in Green Tree Retention areas (GTRs) for every cutting unit. These GTRs should contain the largest, oldest live trees, decadent or leaning trees, and hard snags occurring in the unit. All units reviewed for GTRs met the requirement. In one instance the GTR also blocked the unit from a trail, providing an added benefit of providing a visual buffer along the trail prior to the trail being relocated. Units on Blue River were unique in that one unit's prescription was designed to emulate a variable density stand resulting from a high intensity stand replacement fire. A total of 15% canopy closure, with an additional 7.5 trees per acre left for snags and down woody material, was prescribed for retention. The second unit's prescription was designed to emulate a low intensity fire by retaining 50% canopy closure on the lower slopes gradating to 20% canopy closure on the upper slopes. The reviews emphasized the importance that these GTR areas be identified in our Geographical Information System (GIS) database.

Riparian Reserves

Riparian reserve widths were measured with a string box. In all cases the buffers exceeded the required distance. On one unit the buffer significantly exceeded the prescribed width, however, in this unit the extra area in the riparian reserve can be included in the next entry scheduled in 40 years.

Roads

Each district visited had at least one road recommended for closure or installation of a gate. For example the Carpet Hill timber sale was recommended for closure of road 5824-127 with a gate and the road was indeed closed with a gate. There is also additional miles of road planned to be closed. The gate closure requirement for road 1927-240 on Blue River was in the contract but the requirement to give hunters advance notice through signing was not. Finally a gate was installed on road 710 as prescribed closing the road but far enough from the nearby intersection to provide a dispersed site location as recommended in the recreation prescription.

Selected Observations

- The monitoring section of the EIS for the Augusta timber sale should have been expanded.
- Two units on the Middle Fork were designed to partially mitigate the visual effect of two older clear cuts, which are highly visible from highway 58. These units were placed along the upper edge of the clear cuts to soften their appearance by feathering their existing edge. Units are irregular in shape and when viewed from Highway 58 they do break the straight line of the existing clear cuts.
- One unit on the Middle Fork employed an uneven-aged management prescription designed to aid in the increase of structural diversity in the stand, which will provide spotted owl habitat and commodities. The initial impression was that the harvest prescription would increase the structural diversity in this stand.
- The wildlife report for the Powder Regen III ATV sale recommends the wildlife trees be retained as clumps and these clumps need to be further than 75 feet from all roads. As implemented,

the wildlife trees were evenly dispersed throughout the unit not clumped but the individual trees were greater than 75 feet from the roads.

- It is unclear if the wildlife prescription with respect to owl surveys were completed to protocol.

OTHER FOREST PLAN IMPLEMENTATION MONITORING

In addition to the Forest Supervisor monitoring reviews described in the previous section, several other Forest-level implementation monitoring reviews were done in FY99. Examples of these additional projects monitored were:

Ranger District	Activity Monitored
Middle Fork	South Cupit Timber Sale
Sweet Home	Moss harvest activities
Middle Fork	Mule Mountain Timber Sale
Blue River	Devil's Club special habitats

South Cupit Timber Sale

The Middle Fork Ranger District conducted a monitor review of a group select harvest from the South Cupit timber sale completed several years ago. The objective of the trip was to see how well the group selection openings were reforesting. The experimental prescription was chosen due to concerns for timely reforestation given that clearcuts and shelterwood cuts had not been very successful on similar sites. The intent of prescribing these small groups was to imitate the small openings created by phellinus root rot, which have been observed to regenerate naturally. The prescription also relied on natural regeneration because planning to accomplish reforestation would result in a negative net present worth to the government. The results from a cursory look showed less natural regeneration than anticipated. Given the small size of the created openings and the abundance of tree species and seed produced, a very dense stand of seedlings was expected. It may be that the sites were not disturbed enough to provide the best seed bed. Certain sections of the skid trail system, which were quite disturbed had abundant mountain hemlock reproduction. Future activities might consider a more thorough site preparation method, smaller group selection openings, or both.

Moss harvest activities

The Forest botany program, in cooperation with researchers at Oregon State University, looked at moss harvest activities. The objective is to further support a decision made in a Special Forest Products Environmental Analysis not to allow moss harvest on the Forest. The project is looking at biomass, composition, and growth rates of 70 plots. Predictive models where harvestable moss mats may occur will be developed. Only 13 of the 70 plots had harvestable quantities of moss. No harvestable quantities were found beyond 300 horizontal meters or 80 vertical feet from a body of water or stream. One protected survey and managed moss species (*Antitrichia curtipendula)* was located in most plots. Moss growth rates on the Forest are less than a third of that in the Coast Range. Findings generally support the decision not to allow moss harvest on the Forest.

Mule Mountain Timber Sale

The Middle Fork Ranger District also monitored a thinning in LSR220 designed to accelerate development of late-successional characteristics in 35-45 year old Douglas-fir stands. The group looked at several areas of interest and concern. These included the effectiveness of the thinning prescription; temporary spur road management and sediment production; fuel loadings; road maintenance vs. reconstruction; an unmapped stream; and owl surveys and seasonal restrictions.

Regarding the thinning prescription the group wanted to verify whether the spacing retained the desired 40 percent canopy closure. Tree count plots were taken and opening sizes and tree spacing were measured. Based upon this information and overall appearance of the stand, the group decided the result of this thinning was as prescribed and anticipated.

The group also looked at a spur road that had begun to generate sediment. The group looked at the hay bales that had been placed to stop the sediment from reaching the stream and agreed upon the future management of these spur roads until their final closure. This included replacing the hay bales seasonally until the road was closed and removal of the accumulated sediment in the road channel during road ditch cleanout.

The prescription for fuels reduction was piling and burning within 25 feet of roads. To meet Forest Plan standards and guidelines tree tops were yarded to the road to be burned. The group determined that this activity achieved the desired fuels reduction, though it was near the high end of the range.

The group reviewed a unit where a few trees had been felled by mistake inside a protected stream buffer. The group felt this situation was not especially important because it involved only a few trees and the tops would be removed. The logging system was changed to protect the stream.

Other discussion on the trip such as pre-haul road maintenance versus road reconstruction and seasonal restriction for owls produced no noted concerns from the group. The monitoring group felt overall that the project to date had been implemented as planned in an acceptable manner.

Devil's Club monitoring

Informal monitoring of logging impacts to special forested habitats with devil's club *(Oplopanax horridum* or OPHO) communities began in 1995 in Blue River's Long Term Ecosystem Productivity site. In 1997, results following clearcutting had reduced the OPHO abundance (canopy cover) substantially, due to cutting during logging, crushing under slash, and shock from exposure. The control showed no apparent changes to OPHO. Further monitoring in 1999 showed a continued decline in OPHO cover in the clearcut. Though the control plot has not yet been measured, a plot installed in a riparian buffer, maintained cover measured in 1997.

NORTHWEST FOREST PLAN MONITORING ON THE WILLAMETTE

The Northwest Forest Plan (NWFP) amendment to the Willamette Forest Plan resulted in new land allocations and new Standards and Guidelines (S&Gs). The Regional Ecosystem Office (REO), representatives of the various Federal land management and regulatory agencies in the Pacific Northwest charged with coordinating the implementation of the NWFP, has developed a monitoring strategy to specifically monitor the Region-wide aspects of the NWFP. The purpose of the monitoring is to verify that actions implemented under the NWFP were designed and completed consistent with the Standard and Guidelines (S&Gs) of the NWFP and implemented as described in the environmental documentation. The second goal is to provide feedback on those S&Gs that have proven difficult to implement and draw attention to needed clarification or resolution.

The Northwest Forest Plan Implementation Monitoring program is entering the 4th year of activities. The first 3 years of work, which focused on timber sales, roads, restoration projects, and watersheds, have been an excellent success, with activities complying with the Record of Decision and its Standards and Guidelines at the 95% level or higher overall.

For FY99, the focused was on timber sales and watershed scale questions. Three timber sales, one from each administrative unit within the Willamette Province, with volume greater than 1 million board feet and having substantive harvest completed, were monitored. Only one project, Moby ATV Timber Sale on the McKenzie RD, was selected for monitoring on the Willamette.

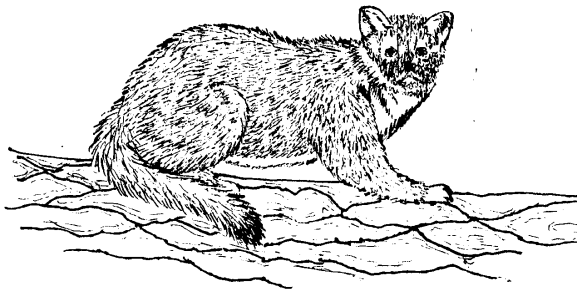
The province monitoring process consisted of a set of 90 questions covering Late Successional Reserves; Riparian Reserves; Survey and Managed species; and matrix. Each question to assess whether the project met, failed to meet, exceeded, was not capable of meeting or if the question was not applicable for that project. The questions are based on specific NWFP direction and requirements. The methods for determining compliance are visual inspections of on-site conditions, discussion with district staff that designed the project, and a review of applicable documentation such as environmental assessments, LSR assessments and watershed analyses.

Interagency teams did the monitoring from administrative units in the Willamette Province including Forest Service, BLM, and US Fish and Wildlife Service staff. In addition, several non-agency employees and members of the Willamette Province Advisory Committee also participated in the monitoring reviews.

RESULTS

Moby ATV was a relatively small sale, comprised of only 2 units and 140 treated acres. The final volume of the sale was 2.4 MMBF. The objective of the sale was to remove approximately 60% of the existing shelterwood overstory to release the growing understory. No new system roads were built for the sale and minor road reconstruction associated with the sale was ripped and revegetated after harvest. One Class IV stream was located within the unit with a 50 feet no treatment buffer and only precommercial thinning was allowed within 180 feet of the stream.

Only 24 of the 90 questions were applicable to this sale. Many of the remaining questions pertained to LSRs, research units, or Adaptive Management Areas not present in the project. The team determined that the project "met" all remaining requirements; however, the team was not entirely in concurrence that this project met the intent of the Northwest Forest Plan. It was unclear if an underburn that scorched approximately 1 ¼ acres of the unit was needed. Clarification is needed by REO to the broad issue of disturbance such as prescribed fire on both coarse woody material and residual trees.



KEY WATERSHEDS

Key Watersheds were recognized in the Northwest Forest Plan as areas having the highest quality habitat and the greatest potential for restoration, and therefore, are given special consideration. The NWFP requires watershed analysis prior to a resource management activity in Key Watersheds. Furthermore, to protect the remaining high quality habitats, the NWFP recommends there be a reduction in existing road mileage within Key Watersheds or require at least no net increase in road mileage within Key Watersheds.

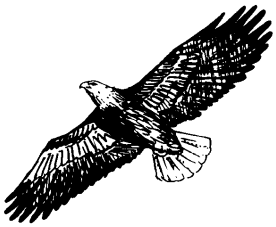
Districts with key watersheds report all road activities within their key watershed. New roads proposed are accompanied by identifiable roads of similar type for decommissioning. This source of information will become the basis for tracking any net changes to key watersheds. The table below represents a summary of changes and scheduled changes to the road system within key watersheds since 1995.

Road System Changes within Key Watersheds Since 1995

Key Watershed	Miles of road built	Miles of road decommissioned	Current net change	Roads scheduled for decommission *	Predicted net change
Little North Santiam	0.00	0.30	-0.30	0.00	-0.30
Upper North Santiam	0.41	1.10	-0.69	0.00	-0.69
Upper McKenzie	1.12	2.40	-1.28	2.40	-3.68
South Fork McKenzie	0.00	5.20	-5.20	0.00	-5.20
NF MF Willamette	1.70	0.00	1.70	5.10	-3.40
Horse Creek	0.00	0.00	0.00	0.00	0.00
"Chub" Watersheds	0.00	0.00	0.00	0.00	0.00

* Actual decommissioning of scheduled roads is dependent on funding.

In reference to Watershed Analyses and their prompt completion, no activities took part in a Key Watershed without first a Watershed Analysis or proper approval.



EVALUATION AND RECOMMENDED ACTIONS

In March 2000, the Forest Interdisciplinary Team met to review and evaluate the Forest Plan monitoring results of FY 1999. The group determined which areas needed increased emphasis and follow up actions based on the monitoring results. Following are the areas recommended for follow up action.

1. SOILS – MASS MOVEMENT

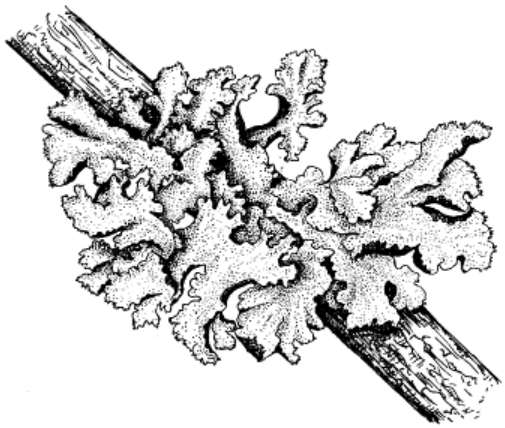
The Forest needs to continue work in monitoring flood effects on the Forest similar to that completed subsequent to the floods of 1996. Fundamental to addressing this work is a landslide inventory. This would be used as a baseline of information to track new landslides, their locations and mechanisms in both timbered and harvested landscapes. ***The Forest recommends, with adequate funding, a Forestwide inventory of landslides, their locations, and mechanisms.***
[Responsibility: Natural Resource Staff Officer and Forest Hydrologist]

2. FISH POPULATIONS

Monitoring Question 14 monitors the population of Management Indicator Species and Threatened Species, specifically spring Chinook salmon and winter steelhead. The question relies on the trend of smolt numbers to adult escapement. Smolt numbers however, have not been monitored because of the difficulty and expense of obtaining accurate fish counts. ***Focusing on a limited area, the SO staff should investigate the means to accurately obtain smolt numbers (possibly through partnerships) or develop a monitoring question that is possible to answer and still portray a reasonable accurate picture of the effects of land management activities on this fish populations.***
[Responsibility: Natural Resource Staff Officer and Forest Fish Biologist]

3. RIPARIAN RESERVES

In FY 1999, the Forest IDT recommended site specific monitoring of riparian reserves, especially along Class III/IV streams. The result from this monitoring is reported under "Biological Resources", Monitoring Questions 28 & 31. As a result of those findings the ***Forest recommends a one-year continuation of this monitoring. This monitoring should focus on Class III streams, possible implementation of lop-sided buffers, and the integration of habitat connectivity into riparian reserve prescriptions.***
[Responsibility: Natural Resource Staff Officer and Forest Ecologist]

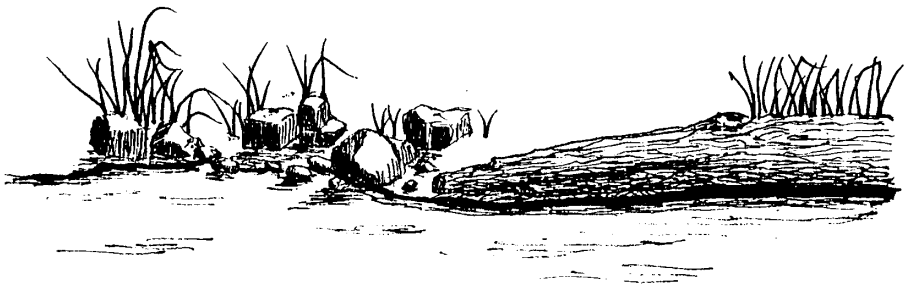


4. SPECIAL HABITATS

In FY 1999 the Forest IDT recommended increased emphasis on monitoring special habitat prescriptions. The results from this monitoring are reported under "Biological Resources", Monitoring Question 40. ***The Forest recommends a continuation of the special habitat monitoring in FY 2000. Empahsis should be placed on methods to strenghten monitoring of prescriptions and activities surrounding special habitat and disucss methods to prioritize monitoring projects (possibly through a database that tracks special habitat monitoring).***
[Responsibility: Natural Resource Staff Officer, Forest Botanist, and Forest Ecologist]

5. DISPERSED RECREATION

Recreation use on the Forest does not show signs of slowing and in places has increased substantially causing environmental damage. Unfortunately, evaluation of changes in recreation use and recommendations for improvement are hindered by limited baseline data and a structured monitoring program. An area of great need is quantifying dispersed use, for both roaded and unroaded types of recreation. To increase our information base, ***the Forest will participate in a national recreation use project, a four-year sampling program to gather baseline data on visits, visitor characteristics, and will include visitor surveys.***
[Responsibility: Recreation, Lands, and Minerals Staff Officer, Recreation Coordinator]



ACCOMPLISHMENTS

FOREST PLAN OBJECTIVES - OUTPUTS AND SERVICES

The following table compares the actual accomplishment of selected Forest Plan objectives during the fiscal year 1999 (FY 1999), October 1998 through September 1999) with the predictions in the Forest Plan (Chapter IV, pages IV-10 to IV-12). Also shown are the cumulative outputs and accomplishments since the Plan was implemented. The cumulative results are expressed as average annual amounts.

It is important to understand that the projections in the Plan are average annual amounts based on a 10-year planning period. Outputs may vary annually for many reasons including year-to-year scheduling decisions, market conditions, budget appropriations, and even weather conditions. Thus, comparison of a single year may not provide enough information for an adequate evaluation. As we continue to monitor over several years, trends or averages of accomplishments will provide a better basis for evaluation.

The Northwest Forest Plan was the basis for significant modifications to land allocations and to Standards and Guidelines. With these changes coupled with declining budgets, notable differences between Forest Plan projections and subsequent accomplishments have emerged. The following table (Summary of Program Accomplishments) reflects adjustments to the Forest Plan projections for timber related activities; however, no other projections were altered.

SUMMARY OF PROGRAM ACCOMPLISHMENTS

Output or Activity	Units	Projected Forest Plan Level	FY 1999 Accomplishment		Cumulative Avg. Accomplishment	
		Units	Units	%	Units	%
Recreation						
Developed Recreation Use	MRVDs	2,056.0	1,176.0	57%	1,697.0	83%
Nonwilderness Dispersed Recreation	MRVDs	1,770.0	3,024.0	171%	1,723.5	97%
Wilderness Recreation Use	MRVDs	342.0	64.0	19%	199.6	58%
Trail Construction	Miles	6.0	3.0	50%	3.0	49%
Trail Reconstruction	Miles	72.0	7.0	10%	30.9	43%
Developed Recreation Construction	PAOT	327.0	0.0	0%	103.0	31%
Developed Recreation Reconstruction	PAOT	844.0	120.0	14%	350.6	42%
Timber						
Timber Sale Program[1]	MMBF	136.0	22.7	17%	83.9	62%
Chargeable (net)			--	--	--	--
Nonchargeable (gross)			--	--	--	--
Timber Sale Treatments[1]						
Regeneration Harvest	Acres	3,144.0	1,106.0	35%	1,274.8	41%
Commercial Thins	Acres	2,808.0	960.0	34%	1,800.6	64%
Other[2]	Acres	--	720.0	--	--	--
Timber Stand Improvement	Acres	18,100.0	10,420.0	58%	10,675.6	59%
Reforestation[1]	Acres	3,144.0	1,900.0	60%	3,623.6	115%
Fuel (Slash) Treatment[1]	Acres	3,144.0	1,781.0	57%	2,191.6	70%
Roads						
Road Construction	Miles	40.0	.8	2%	6.2	16%
Road Reconstruction	Miles	174.0	290.9	167%	107.9	62%
Roads Closed	Miles	890.0	772.0	87%	761.3	86%
Roads Suitable for Passenger Car	Miles	1,580.0	1,572.0	99%	1,592.1	101%
Roads Suitable for High Clearance Vehicles	Miles	4,530.0	4,092.0	90%	4,056.9	90%
Fish&Water						
Watershed Improvement	Acres	533.0	108.0	20%	715.4	134%
Anadromous Fish Habitat Improvements	Miles	6.0	9.0	150%	6.1	--
Resident Fish Habitat Improvements	Miles	5.8	3.5	60%	4.0	69%
Wildlife						
Wildlife Habitat Improvements	Structures	451.0	104.0	23%	531.6	118%
Livestock Grazing	AUM	200.0	0.0	0%	154.7	77%

[1] Cumulative average based on 5 years of implementing the Northwest Forest Plan.

[2] Volume harvested with treatments not predicted in the Forest Plan (e.g. salvage, selection cuts). Reporting beginning in FY 1997.

FOREST PLAN BUDGET

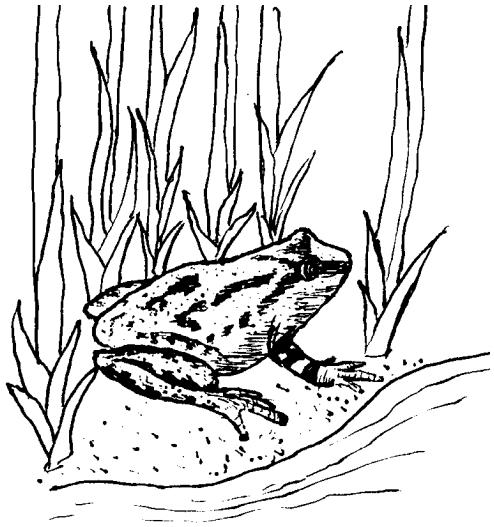
The following table compares Forest expenditures from FY 1998 with the Forest expenditures for FY 1999. Also shown is the percent change from FY 1998 to FY 1999. Included in both the predicted and the actual amounts are:

- Funds appropriated by Congress for the management of National Forest lands and,
- Permanent and Trust Fund monies.

Funds appropriated by Congress are for specified purposes such as wildlife management, timber, or general administration. The Forest does not have the authority to spend money appropriated for one type of activity on some different activity. As a result, even if there is a surplus in one type of fund, that surplus cannot be used to make up a shortfall in another type of fund.

Permanent and trust funds are fees collected for specified Forest projects and uses such as timber sales, salvage sales, and road use. The funds are used for specific activities associated with these projects such as slash disposal, preparation and administration of salvage sales, reforestation, and road maintenance.

Since publication of the Forest Plan, a great deal of changes have taken place that has affected the amount of funding the Forest receives. That coupled with the introduction of new fund categories and changes in the arrangement of other funds, renders comparison of individual funds back to the Forest Plan budget meaningless. The total budget predicted for the Forest Plan will be the only meaningful comparison until new predictions can be made. Though the Forest's budget showed an increase the previous 2 years, the increase was due to emergency funding for flood repair, the replacement of losses due to the fire at the Oakridge Ranger Station, and supplying alternative timber volume. A decline of almost $10 million in FY99 is in part due to the reduction of these expenditures. None of these expenditures will continue past FY 2000



Fiscal Year 1999 Final Expenditures Compared to Fiscal Year 1998 Expenditures

DESCRIPTION	FY98	FY99	FY99 Expenditures as % of FY98 Level
Adjustment Factor to FY99 Dollars	*1.013*	*1.000*	
Air Resources[1]	26,457	0	0%
Anadromous and Inland Fish[2]	674,323	693,351	103%
Cooperative Forestry	190,717	124,948	66%
Cultural Resources	78,717	74,696	95%
Ecosystem Management	755,546	289,985	38%
Facilities[3]	927,801	378,576	41%
Fire Protection	5,930,428	4,357,253	73%
Flood	8,279,991	3,715,087	45%
General Administration[2]	7,795,479	6,558,167	84%
Insect & Disease	0	2,569	--
Lands, Minerals, & Geology[2]	1,957,308	524,616	27%
Law Enforcement	118,993	65,381	55%
Range Management	56,443	59,390	105%
Recreation & Wilderness Activities[2]	2,438,013	3,556,028	146%
Senior Community Services Program	68,191	87,428	128%
Threatened, Sensitive, & Endangered	197,756	153,781	78%
Timber Management	13,399,915	10,050,636	75%
Transportation Activities[2]	4,018,361	6,659,511	166%
Watershed Resources[2]	548,369	667,677	122%
Wildlife Management	998,655	815,236	82%
TOTAL	48,461,463	38,834,316	80%

[1] Expenditures for "Air Resources" can be found in "Watershed Resources"

[2] Expenditures in this category exclude the money spent for flood restoration. That money is displayed in one category labeled "Flood". This money is not part of the regular program of work.

[3] Expenditures on facilities can be found in part in the "Recreation & Wilderness Activities" and "Transportation Activties" categories.

Note: Purchaser credit roads and quarters maintenance are not included in this table.

STATUS OF FY98 RECOMMENDED ACTIONS

In March 1999, the Forest Leadership Team and Interdisciplinary Team met to review and evaluate the Forest Plan monitoring results of FY98. The group determined which areas needed increased emphasis and follow up action in 1999 based on the significant monitoring findings. Below is a follow up on these recommendations for action.

1. TRANSPORTATION SYSTEM

The potential for a permanent reduction in the overall transportation system on Forest Service lands is a rising issue. This is spurred on by a decrease in road maintenance funds and the potential for environmental damage caused by unmaintained roads. It is expected the Forest will be increasing the number of roads closed as Environmental Analysis and Access and Travel Management Plans are completed. ***In response to this change the Forest should increase its monitoring program of closed roads. This monitoring should incorporate interested publics to evaluate if monitored roads are in fact effectively closed to future travel and resources are adequately protected.***

Status:

The Forest is currently performing field condition surveys for 25% per year of its Maintenance Level 1 (closed) and 2 roads over the next 4 years. The condition surveys will identify deferred and annual maintenance needs. Each road closure will be evaluated for effectiveness at this time. Roads that are supposed to be managed as closed, but are in fact open, will be identified. The deferred maintenance action needed to rectify ineffective road closures will be noted over the next 4 years.

Cascadia Wilderness Project (CWP), a public organization interested in road closures, contacted Detroit District Engineer, Bill Day during the summer of 1999. Detroit provided a list of roads in the "closed" status to CWP. According to CWP, based on a field survey conducted by them, they found that 85% of the closed roads on the list were actually open and drivable. While this estimate is unverified, the forest does acknowledge a large backlog of deferred maintenance, which includes ineffective road closures. Road closures will be evaluated over the next 4 years as part of the forest wide deferred maintenance reporting effort.

The Middle Fork Ranger District is informing interested publics about potential road closures resulting from Access and Travel Management Planning. They have put notices in various media venues and attached poster signs out in the field to solicit input and public comment about potential changes in the transportation system.

2. KNUTSON-VANDENBURG FUNDS

KV funds are a very valuable tool for funding and accomplishing Forest Plan objectives. Forest Supervisor monitoring this year found good documentation for KV needs but the review team noticed some differences among the Districts to the extent KV was used to address resource needs and the quality of tracking KV funds until completion. ***The SO staff should consider a Forest KV Symposium to exchange information on how KV funds are being used and ways to optimize their use for meeting resource objectives. The SO staff should also implement a unified KV tracking system that will assure all identified KV projects, their costs, and final outcome are carefully documented.***

Status:

SO staff with cooperation from the District Silviculturists developed a spreadsheet on which KV plan values were allocated. This allowed the Forest to distribute the stumpage values to the funds so that all commitments can be met. The SO staff conducted training at all the Districts to explain the method and discuss how to optimize the funds through various KV projects. All districts were represented at the training and discussed workable projects that could be accomplished with the KV funds. More detailed training is planned in FY2000 for wildlife, fish, recreation, and other resources who benefit from KV funds.

3. RECREATION USE

Recreation use on the Forest does not show signs of slowing and in places has increased substantially causing environmental damage. Unfortunately, for the past several years evaluation of changes in recreation use and recommendation for improvement have been hindered by limited baseline data and a structured monitoring program. In preparation of a Forest Plan revision, **recreation use data and monitoring should be evaluated and strengthened. This should include a critical analysis of available data such as traffic counts and options to utilize the data to augment current recreation use data.**

Status:

Recreation use data is being collected at developed recreation sites, popular wilderness destinations and snowparks. The Forest still needs to increase its emphasis on quantifying dispersed use, both roaded and unroaded. The Forest has not been able to structure a monitoring program to acquire comprehensive baseline data. At this time the resources on the Forest are not available to accomplish this and meet other higher priorities. In 2001, the Forest will participate in a national recreation use project, that will conduct a four-year sampling program to gather baseline data on visits, visitor characteristics, through visitor surveys. This will provide the Forest with an opportunity to gather reliable use data.

4. FLOOD RECOVERY AND RESTORATION

In FY96 the Forest experienced a Forestwide rain-on-snow event triggering widespread flooding and landslides. The Forest in conjunction with the Region has used this event to study the relationship between flooding and landslides. The study initiated in 1996 will be completed in 1999. ***Realizing the importance of these results to future planning and interested publics, final results should be widely published and available for use.***

Status:

The above study initiated in 1996 was completed in 1999. The study documents and evaluates storm damage that occurred during the major precipitation and flood events in February and November 1996. The paper presents an analysis of debris flow occurrence in the Blue River and Rigdon areas of the Forest. GIS is used to assess debris flow occurrence relative to elevation, geology, slope angle, forest stand seral stage, road density, and soil stability. The paper in its entirety is available on the web at: www.fs.fed.us/r6/water/wil_nonerfo.pdf

5. FUELS MANAGEMENT

Since the Northwest Forest Plan amended the Forest Plan, commercial thinning has increased in relation to the amount of regeneration harvest. This change in the mix of thinning and regeneration harvest has affected the original Forest Plan assumptions as it relates to fuels. ***The Forest recommends the evaluation of Forest Plan S&Gs and current prescriptions for their effectiveness in mitigating fuel accumulation.***

Status:

No further action has been taken on this issue. It remains a concern and the Forest will continue to monitor the situation.

6. CULTURAL RESOURCE

Monitoring results of the cultural and heritage resources continue to indicate damage and adverse impacts that exceed thresholds set in the Forest Plan. The Forest feels that resolving this problem may require more than just improvements to the monitoring procedures or increased emphasis on Forest Plan compliance. ***The SO staff should consider a program review of the Forest cultural heritage program involving Regional Office cultural staff, local line officers and others the Forest Supervisor requests.***

Status:

Due to other Forest priorities, no such review was initiated. Now scheduled for July 2000

7. RIPARIAN RESERVES

New S&Gs putting greater emphasis on riparian area protection through larger reserve areas surrounding streambanks were incorporated into the Forest Plan with the adoption of the Northwest Forest Plan. These new S&Gs have now been implemented for the past five years. ***The Forest recommends an evaluation of the effectiveness of these riparian areas within harvested areas.***

Status:

Five streams in or adjacent to regeneration harvests were visited specifically looking at the effectiveness of riparian reserves within harvested areas. Results from these trips are summarized in Findings (page 24). Resulting from these trips was also the recommendation that the condition of the vegetation within the reserve be given more attention during on-the-ground delineation. For example, where shading or connectivity of mesic communities is of concern, delineating buffers larger on one side be considered taking into account topography and aspect. This may provide more effective protection and provide more flexibility in meeting site-specific conditions.

8. SPECIAL HABITATS

Monitoring the protection and management of special habitats has been difficult to accomplish since Forest Plan implementation. ***The Forest recommends an increased emphasis on monitoring special habitat prescriptions in FY99 and FY2000 with site visits to managed areas with special habitat protection. Monitoring trips would visit randomly selected projects containing special habitat prescriptions. The trips would focus on whether prescriptions were followed and were effective in maintaining habitat.***

Status:

Four recent harvest units with special habitats were visited specifically looking at whether prescriptions were followed and the effectiveness of those prescriptions. Emphasis was placed on wet special habitats. Dry habitats will be monitored in FY2000. Results from the trips are summarized in Findings (page 26). Also resulting from these trips was the recommendation to more formally track and store monitoring data of special habitats to protect the investment in initial monitoring and to ensure that mid- to long-term information on selected sites can be collected, evaluated, and reported for adaptive management purposes.

9. RESOURCES SPECIFIC MONITORING

Forest Supervisor monitoring trips began immediately following implementation of the Forest Plan. The objective of the trips have been to focus on the implementation of a specific project and whether that project was effective in meeting its resource objectives. The structure of these highly successful trips have included the Forest Supervisor or Deputy, Forest and District level staff and resource specialists. ***The Forest recommends continuation of these trips and an expansion of the concept to include single resource focused trips. The additional trips would be initiated and led by the appropriate resource specialist and would include at least three trips. Although the Forest Supervisor is not necessary on these trips, a staff member would sponsor the trips and participate in at least one trip. Staff sponsors would review the documentation and results of all the trips and brief the Forest Leadership Team.***

Status:

This provides a good prototype for strengthening resource specific monitoring trips; however, no trips were organized in FY99 that followed this model exactly. But numerous trips, sponsored by resource specialists and at times with staff participation, took place throughout the year.

10. RESOURCE MONITORING QUESTIONS AND ACCOMPLISHMENTS

The Forest Monitoring Plan developed as part of the Forest Plan and has been updated over the years to maintain its applicability. With the of the adoption of the Northwest Forest Plan, shifting priorities, and significant changes in funding levels, several Monitoring Questions and/or projected levels for accomplishments now need to be updated to provide a more realistic picture of the Forest monitoring priorities. ***The Forest recommends an evaluation of monitoring questions to look for opportunities to improve the overall Forest Monitoring Plan while still maintaining the objectives inherent in the Monitoring Plan. This may require adding monitoring questions, adjusting the Threshold of Variability or improving the recommended monitoring activity.***

Status:

An evaluation of monitoring questions is in progress. Each question is being assigned a grade of 1 through 4 for how well the question is being address. Questions answered as originally intended in the Forest Plan receive a 1 and questions not addressed at all receive a 4. Also each question is assigned a priority rating. Questions that must be answered to meet laws and regulations receive the highest priority. Questions that assess the effects of management practices posing the greatest potential risk to productivity and quality of the environment receive a second priority. The assessment will conclude with a list of monitoring questions and their priority for being changed.

FOREST PLAN AMENDMENTS

Your Forest Plan is a dynamic document that can be amended in response to:

- Errors and/or discrepancies found during implementation.
- New information.
- Changes in physical conditions.
- New laws, regulations, or policy that affect National Forest management.

We frequently learn about the need for amendments through monitoring.

Since first published in the summer of 1990, there have been 38 nonsignificant amendments to the Willamette National Forest Plan. In addition, during 1994 the Northwest Forest Plan was completed and amended all Forest Plans in the range of the Northern Spotted Owl including this Forest. Because all Forest Plans were amended at the Regional level, the amendment did not receive a number.

The following summarizes the amendments to the Forest Plan:

Amendment	Implementation Date	Type of Change
1	10/30/1990	Vacates Regional Guide for spotted owls. (Decision by Assistant Secretary of Agriculture John Evans; Federal Register Notice published 10/03/1990.)
2	12/10/1990	Allows snowmobile use in certain parts of Santiam Pass area.
3	08/05/1991	Corrects errors and omissions in Forest Plan (errata).
4	08/05/1991	Requires roadside brush management methods be consistent with scenic resource needs and allows machine mowing.
5	08/05/1991	Corrects mapping error in boundary of Diamond Peak Wilderness.
6	08/05/1991	Changes and clarifies direction about retention of downed wood to better meet functional and operational objectives.
7	03/22/1992	Established Management Plan for the McKenzie Wild and Scenic River; places the river in a new Management Area(MA), MA-6d; and establishes a new Special Interest Area Carmen Reservoir.

Amendments - *continued*

Amendment	Implementation Date	Type of Change
8	03/22/1992	Establishes Management Plan for the North Fork of the Middle Fork of the Willamette River Wild and Scenic River; places the river in a new Management Area, MA-6e; and changes the scenic allocation of about 29,000 acres of viewshed near the river from Modification Middleground to Partial Retention Middleground.
9	02/20/1992	Changes official Forest Plan Map from manually drafted management areas on mylar USGS quadrangles to a digital version on Forest's Geographic Information System.
10	03/14/1992	Changes about 67 acres in Spring Butte area (Rigdon) from General Forest (MA-14a) to Special Habitat Area (MA-9d).
11	03/14/1992	Changes about 65 acres in Beaver Marsh area (Rigdon) from Special Interest Area (MA-5a) to Special Habitat Area (MA-9d).
12	04/04/1992	Adds Habitat Conservation Areas (HCAs) for northern spotted owl and adopts the standards and guidelines recommended by the interagency Scientific Committee. (Decision by Assistant Secretary of Agriculture James R. Moseley.)
13	07/29/1992	Makes initial allocation of about 640 acres of land acquired by land exchange not far from the South Pyramid area on the Sweet Home Ranger District to General Forest (MA-14a).
14	07/29/1992	Changes about 51 acres in the Long Ranch area, Sweet Home Ranger District, from Dispersed Recreation - lakeside Setting (MA-10f) to Special Habitat Area (MA-9d).
15	07/06/1992	Adds standard and guideline MA-1-20a to clarify that the visual quality objective for wilderness is Preservation, and deletes FW-059.

Amendments - *continued*

Amendment	Implementation Date	Type of Change
16	07/29/1992	Establishes new Management Area, Integrated Research Site (MA-3b) to support research on long-term site productivity on about 1,500 acres on Blue River Ranger District, and moves a pileated woodpecker site within the area. Also, relabels the H.J. Andrews Experimental Forest as MA-3a.
17	02/17/1993	Extends deferment of timber harvest and road construction in the Opal Creek area for up to an additional two years to allow time for resolution of various issues surrounding management of the area, including decision about how the Forest Service will meet Recovery Plan objectives for the northern spotted owl.
18	02/17/1993	Clarifies direction in Forest-wide standard and guideline FW-018 to provide more site-specific and objectives-based analysis for placement and remedial actions associated with dispersed campsites.
19	06/02/1993	Relocates about 1,100 feet of Bornite Brook and 900 feet of Vanishing Creek, and by so doing interchanges the actual location of affected lands between MA-14a and MA-15. Upon reclamation of the bornite project's tailings impoundment, creates about 5 acres of wetlands converting that acreage from MA-14a to MA-15.
20	05/17/1993	Adds S&G to require an integrated management approach for weed management. After identification, noxious weed sites should be analyzed for the most effective control methods, based on site-specific conditions.
21	06/23/1993	Makes initial allocation of 123 acres acquired through land exchange on the Blue River RD, 59 acres allocated to MA-5A (Gold Hill SIA); 64 acres allocated to MA-11d near Blue River Reservoir.
22	11/24/1993	Allows temporary reduction in availability of elk cover in Mill Creek and Anderson Creek High Emphasis areas (McKenzie RD) to allow stand management practices which will accelerate the development of high quality cover.

Amendments - *continued*

Amendment	Implementation Date	Type of Change
23	01/05/1994	Establishes the Forest's Special Forest Products Management Plan, including implementing direction through several new Forest-wide S&Gs.
	05/20/1994	Establishes land allocations and S&Gs as described in the Record of Decision for Amendments to the Forest Service and Bureau of Land Management management plans.
24	09/29/1994	Changes 1/2-acre in the Westfir area from Scenic-Partial Retention (MA-11c) to Special Use-Permits (MA-13a).
25	05/26/1995	Modifies the S&Gs for riparian reserves, wildlife tree provisions, and fueling loadings in MA-3b and AMA Long-Term Ecosystem Productivity project. This was a nonsignificant amendment to the Forest Plan.
26	05/17/1995	Modifies the S&Gs for visual objectives, big-game management, and the retention of large woody material. This was a nonsignificant amendment to the Forest Plan.
27	06/22/1995	Designates approximately 110 acres as MA-9d, Special Wildlife Habitat, in the Heart Planning Area on the Oakridge RD.
28	11/29/1995	Designates the electronic site as a Special-Use-Permits area (MA-13a). Prior to this decision the site was located within Scenic-Modification Middleground (MA-11a). For specifics see Santiam Cellular Environmental Assessment and Decision Notice.
29	01/12/1996	Expand the current Special-Use-Permit area (MA-12b) from 732 acres to 802 acres. Master Plan provides for improvements to the alpine ski facility, as well as adding other year-round recreational opportunities. For specifics see the Hoodoo Master Plan FSEIS and ROD.

Amendments - *continued*

Amendment	Implementation Date	Type of Change
30	04/17/1996	Within the Browder Cat timber sale boundary, decreases riparian reserve widths to 50 feet for both sides on four intermittent streams within and adjacent to harvest units and establishes riparian reserves of 175 feet for both sides on two perennial non-fish bearing streams adjacent to a proposed unit.
31	05/15/1996	Established the Rigdon Point RNA.
32	09/04/1996	Decreases the interim Riparian Reserve widths 21 acres for Class IV streams and 5 acres for Class III within the Augusta Timber Sale Planning area located in South Fork McKenzie Tier 1 Key Watershed.
33	01/23/1997	Assigns a management area to recently acquired land in the following way: 13 acres to McKenzie River Wild and Scenic River corridor (MA 6d), 11 acres to Scenic Partial Retention/ Middleground (MA 11c) and .25 acres to Special Interest Area (MA 5a).
34	01/23/1998	Changes approximately 1,900 acres of land from Scenic Modification/Middleground (MA 11a) to General Forest (MA 14a) and removes 275 acres of inventoried roadless area on the Middle Fork Ranger District.
35	5/17/1997	Temporarily reduced winter range cover for elk in a high elk emphasis area below the 0.5 Habitat Effectiveness rating required by S&G FW-149 in the Robinson-Scott project area.
36	07/08/1997	Establishes new S&Gs for four sensitive plant species; Gorman's aster, *Aster gormanii;* Common adders tongue, *Ophioglossum pusillum;* selected populations of tall bugbane, *Cimicifuga elata;* and selected populations of Umpqua swertia, *Fraseran umpquaensis.*
37	05/19/1997	Assigns initial allocations for about 2,180 acres of acquired lands located on Detroit and Sweet Home Ranger Districts.
38	01/21/1998	Changes management emphasis to provide for a proposed action to build a replica fire lookout station museum on the Lowell Ranger District.

Amendments - *continued*

Amendment	Implementation Date	Type of Change
39	06/01/1998	Establishes two new communication sites on the Sweet Home Ranger District. The development involves less than 1/4 acre.
40	07/13/1998	Establishes the 2,877 acre Torrey-Charlton Research Natural Area (RNA). The RNA spans over both the Willamette and Deschutes National Forests.
41	08/24/1998	Establishes two new communication sites on the Detroit Ranger District. The development involves less than 1/4/ acre.
42	08/30/1999	Allows the Forest to continue a program of noxious weed treatment based on the type of infection.

FOREST PLAN UPDATES

Forest Plan Amendments (discussed above) change decisions made by the Forest Plan. consequently, they also require environmental analysis under the National Environmental Policy Act (NEPA). From time to time other changes to the Forest Plan are needed which are not intended to affect earlier decisions or Plan objectives. Examples of such changes include corrections; clarification of intent; changes to monitoring questions; and refinements of management area boundaries to match management direction with site-specific resource characteristics at the margin. We call these types of changes "Updates." Since they do not change any Plan decision, they do not require NEPA analysis.

There have been six updates to the Forest Plan:

Update	Implementation Date	Type of Change
1	07/06/1993	Makes two minor management area boundary adjustments on the Oakridge Ranger District (RD). Two acres were changed from MA-6e to MA-9d to correct a boundary line running through a pond. Two hundred sixteen acres were changes from MA-11c to MA-14a so management for visual sensitivity would better match actual topographic characteristics.
2	10/18/1993	Clarifies the Forest-wide S&Gs for prescribed fire in nonwilderness. Accomplishes this by deleting FW-248 through FW-252 and substituting in their place rewritten FW-248 through FW-250. The changed S&Gs better reflect management intent to conduct objectives-based fuels analysis considering a range of resource protection and enhancement needs appropriate to site-specific conditions.
3	10/18/1993	Updates and reprints the Forest's Monitoring Tables from Chapter V of the Forest Plan. Eliminates duplication, improves clarity, and refines data, and analysis requirements to better address monitoring concerns.
4	10/17/1994	Special Forest Products (SFP) Table IV-32a shows a type of collection allowed by management area. To clarify that the exclusion of commercial SFP collection applies only to the large, mapped Late-Successional Reserves (LSR) and not to all of the owl activity centers that are now 100-acres LSRs.

Updates - *continued*

Update	Implementation Date	Type of Change
5	12/15/1995	Updates pertaining to the role of natural fires in Wilderness. Insures direction for prescribed natural fire is consistent with Wilderness policy through adjustments to the Forest Management Goals, Desired Future Condition, Forest-wide S&Gs, Management Area prescriptions, and Monitoring Questions.
6	01/23/1997	Updates to the Forest Plan Map of Record changing Swift Creek (MA 10f); corrections to 100 acre Late Successional Reserves (MA 16b), AMA designation correction (MA 11f to MA 17), and Hoodoo Master Plan boundary correction (MA 12b).