United States
Department of
Agriculture

Forest Service

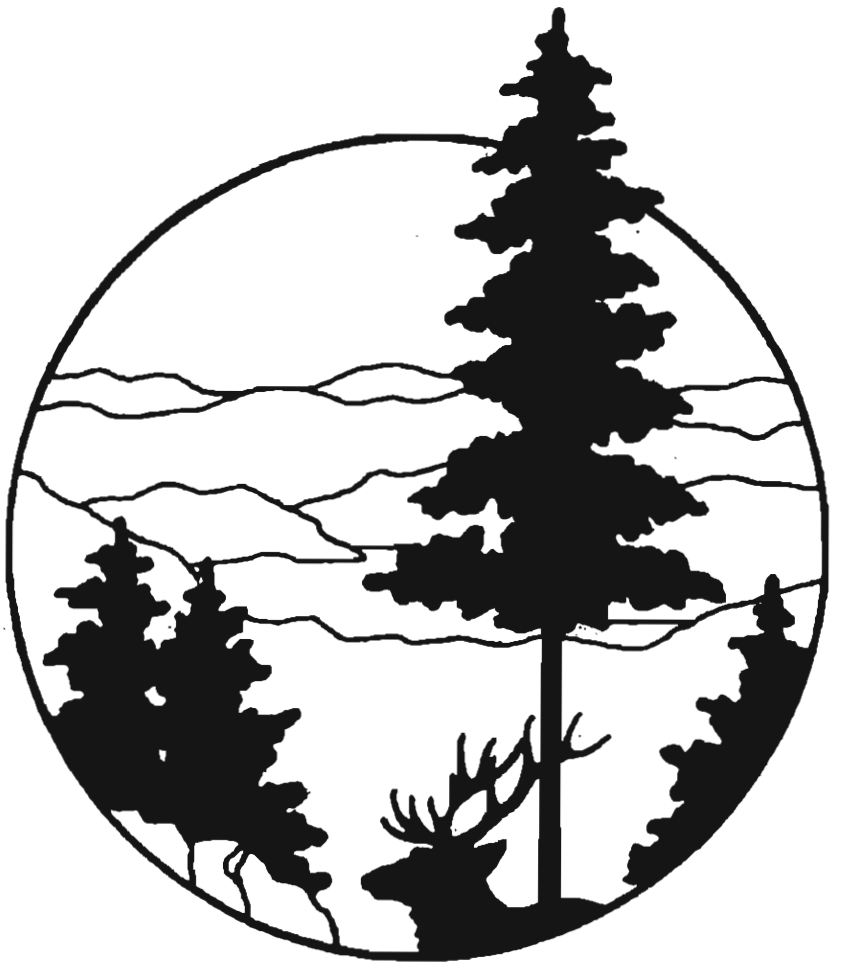
Pacific Northwest
Region

July 1997

Umatilla National Forest
Forest Plan

Monitoring and Evaluation Report

FISCAL YEAR 1996



United States Department of Agriculture **Forest Service** Umatilla National Forest

2517 S.W. Hailey Avenue
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Reply To: 1920-2-3

Date: July 18, 1997

Dear Reader:

Monitoring and evaluation continue to be an important, on-going process in management of the Umatilla National Forest. We have completed our sixth Annual Report, which documents the highlights from Monitoring and Evaluation activities conducted during FY '96. I am pleased to provide a copy of the Report to you.

As you are aware, the intent of monitoring is to determine how well the Plan is being implemented and if goals, objectives, and Desired Future Conditions are being achieved. Monitoring and evaluation also help to identify corrections and adjustments needed to improve land management and to better serve the public. Results will often not be immediately known because of the longer time frames involved with many projects and activities. Obtaining a clear picture of what is and is not working is often a function of these longer time frames. My commitment continues to be to keep you informed about our progress and things the Forest has learned from our monitoring activities, as we move into the future.

The advent and publishing of the Interior Columbia Basin Ecosystem Management Project (ICBEMP) Science Documents and Draft EISs point to some changes needed in the management of National Forests. The Forest monitoring results also suggest similar needs for change in the Umatilla's Forest Plan and Plan implementation.

The Umatilla's Monitoring and Evaluation process and results are being shaped by declining budget levels and a "downsized" organization. Although the Forests basic Monitoring Strategy has not been adjusted, impacts to the program are occurring as a result of the changes: monitoring is being done less frequently or intensely as in the recent past, some results are not reported as originally scheduled and the monitoring focus has shifted to key items. In addition, the Forest has begun a process of coordinated monitoring with our two neighboring Forests, the Malheur and Wallowa-Whitman. The long-term intent is to produce sharable results, more efficiently and at less cost. I expect to see initial results beginning in FY '97.

I am interested in your reactions to the Report or other Forest matters of interest to you. Your comments are valuable to improving the Forest monitoring program and other aspects of management. Please contact Lyle Jensen, 541-278-3823, in the Planning section of the Supervisor's Office for assistance. The addresses and phone numbers of each District office and for this office are listed on the following page.

Sincerely,

THOMAS K. REILLY
Deputy Forest Supervisor

Enclosure

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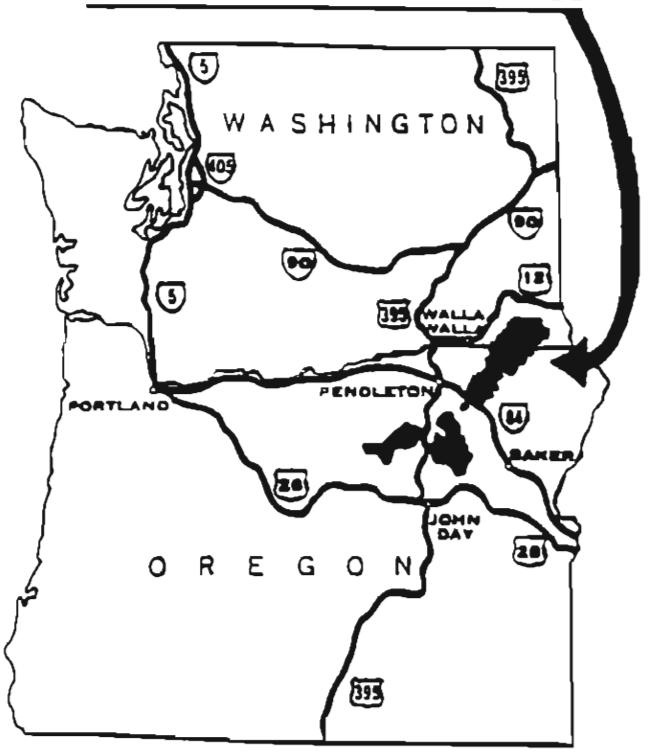
Umatilla National Forest



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INTRODUCTION

The Umatilla National Forest's Annual Monitoring and Evaluation Report for FY 1996 summarizes and documents the Forests continued progress and monitoring results. This report is the sixth one prepared by the Forest in support of Forest Plan Implementation. The Report is intended to provide information to the agency and public about how well the Forest is ensuring Plan implementation as intended and is meeting management objectives.

The Monitoring and Evaluation Report is composed of four primary sections:

- Introduction, including Summary of Recommended Actions
- Monitoring and Evaluation Results which summarizes results and findings for the various individual monitoring items.
- Forests Accomplishments which provides a comparison of planned versus actual program accomplishments.
- Forest Plan Amendments which covers the amendments made to the Forest Plan during the year.

MONITORING AND EVALUATION

Monitoring and evaluation continue to be an integral parts of the Forest management process. Monitoring consists of gathering data, making observations, and collecting and disclosing information. Monitoring is the means to measure progress in Forest Plan implementation, to determine how well objectives of the Forest Plan are being met, and to determine if management standards and guidelines are appropriate for meeting the Forest's outputs and environmental protection. Monitoring is also used to determine how well assumptions used in the development of the Forest Plan reflect actual conditions.

Evaluation is the process of analyzing data, information, and products resulting from monitoring. Evaluation determines if planned conditions or results are being attained and when they are within Plan direction. When a situation is identified as being outside the limits of acceptable variability, changes may need to occur. Therefore, evaluation serves two major functions: it initiates a change in management practices and provides a means to adjust the Forest Plan to keep it dynamic and responsive to changing conditions.

Three types of monitoring are recognized. The Forest's program focuses primarily on the first two types – implementation and effectiveness monitoring:

– *Implementation Monitoring* – determines if plans, projects, prescriptions, and activities are being implemented as designed and in compliance with Forest Plan goals, objectives, and management direction. *"Did we do what we said we were going to do?"*

– *Effectiveness Monitoring* – collects the information to determine if plans, projects, prescriptions, and activities are effective in meeting the intent of the Forest Plan. *"Are the management practices producing the desired results?"*

– *Validation Monitoring* – tests the validity in initial planning data and assumptions. *"Are the planning assumptions valid, or are there better ways to meet Forest Plans goals and objectives?"*

MONITORING STRATEGY

The FY '96 Annual Monitoring and Evaluation Report is based on the Umatilla Forest Plan Monitoring Strategy. The Strategy is an elaboration or clarification of the Forest Monitoring Plan in Chapter V of the Forest Plan. The Monitoring Strategy was updated in July 1994, to incorporate changes in management direction and improvements suggested by employees and others.

The main purpose of the Umatilla's Monitoring Strategy is to ensure consistency in implementing the Forest Plan. As required by the National Forest Management Act (NFMA), Forest Plan implementation must be evaluated to determine the effects of management practices, how well objectives have been met, and how closely management standards and guidelines have been applied. Requirements set by the Forest Plan, the Regional Monitoring Strategy, and NFMA form the foundation of the Forest's Monitoring Strategy.

The Strategy defines the items to be monitored and contains the key monitoring questions, thresholds of variability (for change), proposed monitoring approaches, and assigned responsibilities.

SUMMARY OF RECOMMENDED ACTIONS:

The following table summarizes the recommended actions to be taken as a result of monitoring and highlights some of the key findings. Three categories of action are identified in the table as follows:

- Change practices – Indicates that results of a current practice are outside of thresholds of variability and/or not meeting specific direction set by the Forest Plan and improvement is needed.

- Further Evaluation to Determine Action – More information and data are needed to determine or better identify cause of concern and/or future actions that need to take place.

- Amend Forest Plan – Identifies changes that need to occur in the Forest Plan which may occur from inconsistent results with the Plan or unclear direction.

Monitoring will continue on all items, even those with recommendations for action.

Summary of Recommended Action

– 1996 Monitoring Report –

Umatilla National Forest

PG#	MI#	Monitoring Item (MI)	1995 Action	Change Practice	Further Eval.	Amend Forest Plan	Remarks
I. PHYSICAL RESOURCES							
1	1	**A. Air** Air Quality	CM	•			No monitoring reported for FY '96. Continue monitoring with reporting and evaluation of information.
2	2	**B. Soil** Soil Productivity	FE		•		Soil protection practices are being implemented properly and are meeting standards. Subsoiling treatments continue to show positive results. Reporting and evaluation of project activity is improving. Effectiveness monitoring needed.
6	3	**C. Water** Water Quantity	FE		•		Still need long-term precip. and stream flow data evaluation. Umatilla Barometer Watershed report is forthcoming in FY 1997.
11	4	Water Quality	CP/FE	•	•		BMP monitoring, reporting, and evaluation is improving. Still have long term need to report on data evaluation.
15	5	Stream Temperature	CP/FE	•	•		State standards changed; meeting standards is becomming more difficult. Additional streams exceed standards for longer periods. Develop trend information where long-term data is available.
	6	Stream Sedimentation	FE	•	•		No monitoring reported for FY '96. Analysis of sediment data remains to be completed and reported.
18	7	Stream Channel Morphological Features	CP/FE	•	•		Monitoring only partially reported for FY '96. Important information collected through stream survey process but questions still not fully addressed.
20	8	Fire Effects - Wildfire On Water and Soils	FE	•	•		Major fire year on Forest. Suggests increased monitoring for erosion and rehabilitation effectiveness and reporting of results.
II. BIOLOGIC RESOURCES							
	9	**A. Vegetation Management** Riparian Vegetation	CP/FE	•	•		No monitoring reported for FY '96. Consistent riparian inventory and monitoring protocols/process and long-term trend evaluation is still needed. (See MI 11.)
22	10	Level of Utilization	CP/FE	•	•		Focus on riparian utilization monitoring and effectiveness of applied utilization standards in meeting DFC. Emphasize effective reporting and evaluation of results.

CM = Continue Monitoring CP = Change Practices FE = Further Evaluation AP = Amend Plan

Summary of Recommended Action (Continued)
— 1996 Monitoring Report —

PG#	MI#	Monitoring Item (MI)	1995 Action	Change Practice	Further Eval.	Amend Forest Plan	Remarks
	11	Range Condition and Trend	CP/FE	•	•		No monitoring reported for FY '96. Need improved protocols/process for riparian monitoring.
24	12	Noxious Weeds: Invasive Vegetation	FE		•		Continuing need to monitor treatment results and effectiveness of practices. Need to report trends in populations.
26	13	Silvicultural Harvest Method	FE		•	•	Harvest method changes needs evaluated and adjusted. (upon completion of ICBEMP process and EISs).
28	14	Created Openings	CM				Continue monitoring.
29	15	Stand Management — Regeneration	CM	•	•		Low survival results indicate a need for further review to understand the change.
31	16	Stand Management - Ponderosa Pine Regeneration	CP	•			Continuing need to develop a process to track natural regeneration of ponderosa pine.
32	17	Stand Management — Precommercial Thinning	CM				Continue monitoring.
33	18	Fire Effects — Prescribed Fire	CP	•			No report on prescribed burning activity for FY '96. Continue monitoring with emphasis on standardizing of vegetation data collection procedures.
	19	Vegetation Management	CM				No report for FY '96 on vegetation monitoring. Continue monitoring.
38	20	**B. Plants** Threatened, Endangered, and Sensitive Species	CM				Continue monitoring according to proposed cycle. Continue protection or mitigation measures needed to protect/enhance plant species.
40	21	**C. Insect and Disease** Insect and Disease Control	CM				Continue monitoring.
	22	**D. Fish** Anadromous and Resident Fisheries	CP				Continue monitoring. Last two years show declining trends in populations.
43	23	**E. Wildlife** Elk/Deer Habitat and Estimated Populations	CP/FE	•	•		HEI is not directly tied to populations level fluctuations; application of the elk vulnerability model is needed.
47	24	Old Growth Tree Habitat	FE		•		Continuing need for old growth habitat condition surveys particularly in areas of insect mortality.

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Summary of Recommended Action (Continued)
– 1996 Monitoring Report –

PG#	MI#	Monitoring Item (MI)	1995 Action	Change Practice	Further Eval.	Amend Forest Plan	Remarks
49	25	Dead and/or Defective Tree Habitat	FE	•	•		Need systematic, consistent post harvest monitoring. Also need good landscape level monitoring techniques.
51	26	Pileated and Northern Three-Toed Woodpecker Populations	CM				Further monitoring and evaluation is needed.
	27	Pine Marten	CM				No monitoring reported for FY '96.
52	28	Threatened/Endangered/Sensitive Wildlife and Fish Species	CM				Continue monitoring.
54	29	**F. Diversity** Plant and Animal Diversity	CM	•			Address monitoring questions thru Ecosystem Analysis process. Continue diversity monitoring.
III. RESOURCES AND SERVICES TO PEOPLE							
58	30	**A. Forest Plan Implementation** Management Areas/Standards and Guidelines	FE		•		A need exists to focus monitoring toward on-the-ground activities, specifically on implementation monitoring related to the Forest Plan.
60	31	**B. Recreation** Primitive/Semi-Primitive Recreation and Roadless Areas	CM				Some changes in Roadless Areas resulting from forest activity and wildfire. Continue monitoring.
	32	Off-Highway Vehicle Use	CM	•			Need to develop monitoring protocols and conduct formal monitoring; use incident (law enforcement) to track effectiveness of compliance.
62	33	Developed Sites	CP/FE	•	•		Use levels high at some developed sites suggesting the need for upgrading and/or expansion.
	34	Wild and Scenic Rivers	CM				Added since 1993. Monitoring.
	35	**C. Visual** Existing Visual Condition	CP/FE	•			Visual quality monitoring remains a low priority.

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Summary of Recommended Action (Continued)
– 1996 Monitoring Report –

PG#	MI#	Monitoring Item (MI)	1995 Action	Change Practice	Further Eval.	Amend Forest Plan	Remarks
64	36	**D. Wilderness** Non-conforming Uses	CP	•			Need to strengthen incident reporting.
65	37	Limit of Acceptable Change (LAC) and Amount of Primitive Wilderness Resource Spectrum (WRS)	CP/FE	•	•		The Forest has an ongoing need to complete the LAC process.
66	38	**E. Range** Allotment Planning	AP	•			Completed adjustment of AMP schedule. Slow development of AMPs; other processes have reduced the Forests ability to complete AMPs.
67	39	Range Outputs	CM				Continue monitoring. Future Forest Plan Adjustment may affect outputs.
67	40	Range Improvement	CM				Continue monitoring.
	41	**F. Timber** Identification of Lands Suitable for Timber Management	CM				Not monitored during FY '96. Continue monitoring.
	42	Timber – Yield Projection	FE		•		Not monitored during FY '96. Adjust empirical and managed yield table as needed.
68	43	Timber Offered for Sale	FE/AP		•	•	Timber offered continued well below Forest Plan projections. Need to adjust Plan when ICBEMP process and EISs completed.
69	44	Availability of Firewood	CM				Continue monitoring.
70	45	**G. Lands and Minerals** Mineral Development and Rehabilitation (MDR) Accessibility	CM				Continue monitoring.
71	46	**H. Transportation** Forest Road System	CP	•			Focus monitoring on addressing resource objectives. Road status information needs to be continuously updated.
72	47	Open Road Density	CP	•			Focus monitoring to address management area and other objectives.
	48	Trails	CP	•			Monitoring of the trail system was not summarized and reported for FY '96.

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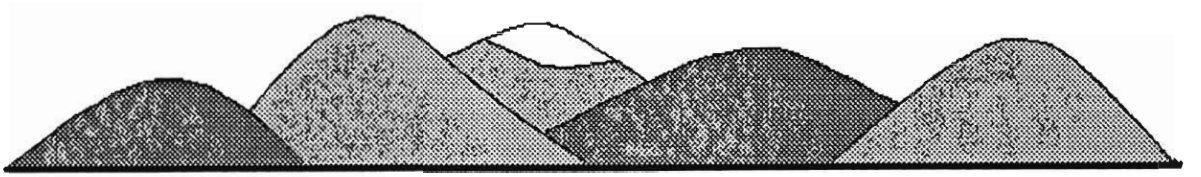
Summary of Recommended Action (Continued)
– 1996 Monitoring Report –

PG#	MI#	Monitoring Item (MI)	1995 Action	Change Practice	Further Eval.	Amend Forest Plan	Remarks
73	49	**I. Fire Protection** Fire - Program Effectiveness	CM	•	•		Review fire program for possible adjustment.
75	50	**J. Cultural and Historic Resources** Cultural Properties/Sites	CP	•			Monitoring reviews were not reported by all districts, hindering evaluation.
	51	**K. Special Interest Areas** Effects of Forest Management Activities on SIA's	CM	•			No monitoring conducted in FY '96.
76	52	**L. Research Natuarl Areas** Research Natural Areas (RNAs)	CP	•			No monitoring conducted in FY '96.
77	53	**M. Administrative** National Environmental Policy Act (NEPA)/National Forest Management Act (NFMA)	CP	•			No formal monitoring was done in FY '95. Forest operating under Recission Act. Increased NEPA application for 1997 suggests increased need for process monitoring.
IV. SOCIAL AND ECONOMIC							
78	54	**A. Population, Income, Employment, Payments, Social, and Forest Products** Changes in Income Levels, Populations, and Employment	FE/AP		•	•	Forest related employment and personal income thresholds continue to be exceeded. Further analysis of data is needed, as part of the Forest Plan adjustment.
82	55	Payments to Counties	AP			•	Payments to counties less than Plan projections; threshold has been exceeded. Adjust the Forest Plan based on results from the ICBEMP process and EISs.
83	56	Lifestyles, Attitudes, Beliefs, Values, and Social Organizations	FE		•		Further evaluation is needed. ICBEMP issues and findings similar to Forest received comment.
	57	Forest Contributions to the Local Timber Supply	FE/AP		•	•	No monitoring reported for FY '96 (see MI 43).
84	58	**B. Forest Budget and Costs** Forest Budget	FE/AP		•	•	Continued Forest budget decline. Further evaluation is needed when ICBEMP completed and adjustment of Forest Plan occurs.
86	59	Costs/Values of Forest Plan	AP			•	Threshold has been exceeded. Adjust costs/values when Forest Plan adjusted.

CM = Continue Monitoring CP = Change Practices FE = Further Evaluation AP = Amend Plan

Monitoring Items Not Done and/or Reported
for the FY '96 Forest Plan Monitoring & Evaluation Report

MI No.	Description
6	Stream Sediment
7	Stream Channel/Morphological Features
9	Riparian Vegetation
11	Range Condition and Trend
22	Anadromous and Resident Fisheries
27	Pine Marten
32	Recreation - Off Highway Use
34	Wild and Scenic Rivers
35	Existing Visual Condition
41	Land Suitable for Timber Management
42	Timber Yield Projections
48	Trails
51	Effects of Forest Management Activities on SIAs
57	Changes in Forest Contribution to Forest Products Industry



I. Physical Resources

A. AIR

MONITORING ITEM (MI) 1: Air Quality

Forest Goals, Desired Future Condition, and Outputs: Maintain air quality at a level adequate for protection and use of natural forest resources and meet or exceed applicable federal and state standards and regulations. Manage prescribed fire smoke to minimize impacts to population centers, highways, and Class I airsheds.

Monitoring Question(s): 1. What mitigation measures were used to reduce smoke emissions from prescribed burning, and how well did the measures work? 2. Are management activities meeting State Implementation Plans (IMP's) and Forest Plan standards and guidelines? 3. What is the amount of fuel (tons) consumed by prescribed burning? 4. What are the total emissions from prescribed burning annually for all management activities?

Threshold of Variability: Deviation above State Implementation Plans.

Results/Findings:

In CY 1996, a variety of prescribed burning activities were used to accomplish management objectives including hazard reduction, site preparation, range improvement, and wildlife enhancement. Based on averaged fuel moistures, fuel types, and acres burned, total tons of consumed and tons of total suspended particulate have been estimated (see Table I-1). All prescribed burning was done in compliance with state smoke management plans.

The Forest reporting of air quality is consistent with the reporting requirements and memorandum of understanding between the Region and both states (Oregon and Washington).

Table I-1
AIR QUALITY - CY 1991-1996
Umatilla National Forest

Year	Total Fuel Consumed (Tons)	Particulate Produced (Tons)
1996	53,720	779
1995	35,002	507
1994	96,235	1,396
1993	66,852	969
1992	165,436	2,268
1991	178,811	2,593

Evaluation:

As seen in Table I-1, the amount of prescribed burning and particulates produced was relatively low due to several situations. The moist spring in 1996 produced few good burning opportunities. Also, the transition of the burning program to fewer acres of "activity fuels" burning continued. Activity fuels burning is in more concentrated fuel beds after a harvest operation, producing more tons of fuel consumed per acre.

The particulates produced from the major wildfires on the Forest during 1996 have not been estimated but had a substantial impact on air quality during this period in which they were active.

B. SOIL

MONITORING ITEM 2: Soil Productivity

Forest Goals, Desired Future Condition, and Outputs: Manage the soil resource of the Forest by using management practices that will maintain or enhance its productive properties.

Monitoring Question(s): 1. Are management practices/projects resulting in conditions that comply with Forest-wide Standards and Guidelines for the management of the soil resource? 2. Do Forest-wide Standards and Guidelines adequately protect long-term site productivity? 3. Is soil productivity maintained or enhanced over time?

Threshold of Variability: 1. Exceeding regional guidelines for soil compaction, displacement, puddling, and erosion. 2. Indication of long-term trends in reduction of site productivity due to nutrient or ocular measurement reductions.

Results/Findings:

Adoption of logging systems and operations to minimize detrimental soils impacts continues Forest-wide. Effectiveness of the use of mechanized harvest systems (for ground-based operations) remains variable depending on the particular combination of systems used and soil conditions. Observations that were done by the Forest Soils Specialist and others indicates that the cut-to-length systems generally are meeting objectives and staying within Plan standards (including compaction), especially minimizing exposed soil to erosion risk. Operational control by administrators remains a key component of achieving desired results. Sale administrators (and others) are doing monitoring during sale administration activities and are improving documentation of observations (also see MI 4, Water Quality, for discussion of BMP monitoring).

The Heppner Ranger District tested harvesting equipment on several sales in 1996 to see if impacts to soils would be reduced. A cut-to-length harvester and a forwarder were used on the Cold, Main, and 53 Roadside salvages. This required a closer spacing of trails (maximum of 40 feet apart) which did not meet the 100-foot spacing indicated in the contract. However, the equipment combination did not require landings or temporary roads, so areas of heaviest compaction and displacement were eliminated. The cut-to-length harvester resulted in very little soil displacement and had good control during felling (which made sensitive areas easier to avoid and minimized damage to residual trees). Also, since a cut-to-length harvester removes tree limbs on site, no slash was piled, resulting in two benefits: no whole tree yarding occurred (which typically causes substantial soil displacement) and large piles of slash were avoided (when burned, large piles of slash often sterilize underlying soil). This particular combination also appeared to have less compaction than traditional felling and skidding, but no quantitative studies were conducted.

A feller buncher was also tested on Cold, Main, 53 Roadside, and Lone Star sales, but did not perform as well as the cut-to-length harvester. Results indicated that additional soil displacement occurred, especially on slopes, because this machine is bigger and has a D6 carriage. The feller buncher was not used with a forwarder, so landings and temporary roads were necessary and whole tree yarding resulted in additional soil displacement with large slash piles at the landings.

On the North Fork John Day Ranger District, monitoring consisted of maintaining contractual administration of timber sale harvest operations with the timber sale purchaser for the protection and maintenance of long-term soil productivity. Timber Sale Administrators conducted on-site inspections in the administration of the timber sale contract. Physical inspections consisted of soil sampling with spade/shovel during timber shearing/cutting with ground based equipment and tractor skidding operations as well as observing/inspecting soil subsoiling and other soil rehabilitation work (i.e., cross ditching/waterbarring and barricading) accomplished by the timber sale purchaser. Monitoring observations/inspections occurred on temporary roads, tractor skid trails, tractor/hand fireline and log landings.

On the Spleen Salvage Timber Sale, soil productivity/protection monitoring by the Timber Sale Administrator was accomplished through visual inspections of each temporary road, tractor skid trail and log landing location before, during and after their use. All ground disturbing activities on this timber sale were well within the Forest Plan standards/requirements.

On the Walla Walla Ranger District, the South Cabin Timber Sale was harvested using three different logging systems; helicopter, skyline and tractor. Field reviews determined the following results:

The helicopter portion of the sale covered 212 acres. No ground based disturbance was observed in the units. All logs were flown downhill to five landings, totaling 5 acres in size, or approximately 2 percent of the exposed mineral soil/ground disturbance on the helicopter portion of the sale. All landings were scarified to a depth of 12 inches, waterbarred and seeded within one week of log removal, to prevent erosion.

The skyline portion of the sale, harvested this year, covered 40 acres. A modification was made to log the unit with minor changes, which limited yarding logs across streams, riparian or wet areas. Tail holds that were across these areas were used, but no trees were cut or removed. Except during lateral movement, one end of the logs was suspended above ground during inhaul. Skyline roads were approximately 300 feet apart and approximately 350 feet of temporary road was constructed in two locations for logging. Approximately 4 percent exposed soil/ground disturbance was estimated to occur on the skyline portion of this sale. Temporary roads were scarified to a depth of 12 inches and all material that was side cast was brought back across the roads to cover and reclaim them. All skyline roads with exposed soil were hand waterbarred and all exposed areas were seeded to prevent erosion.

The tractor portion of the sale covered 125 acres. Parallel skid trails were used with tractors restricted to the trails. Timber was directional felled and line was pulled to reach pieces that did not reach skid trails. All units were stage logged to prevent breakage. Landings were placed only along existing roads and kept to a minimum size due to "hot loading". The largest landing was approximately 100 by 200 feet. The tractor logging exposed soil/ground disturbance was calculated at 15 percent, with tractor fire lines increasing the total to 16 percent. All landings, skid trails, and tractor fire lines were scarified, waterbarred and seeded to prevent erosion.

For the Andies Timber Sale on the Walla Walla Ranger District, a cut-to-length system was utilized but without an articulated harvester. A log processor was used on designated trails and a log forwarder brought logs to existing openings adjacent to haul roads. No landing construction was needed. Landing use with this system caused only light compaction of the landing area, very little soil exposure and a light slash loading. In most cases, no extra landing slash treatment is needed and vegetation will spring right back naturally.

Field review by the Sale Administrator determined that less than 1 percent of the sale area had exposed soil following harvest operations. Approximately 5,000 feet of harvester trails or 1.37 acres were exposed during harvest on 205 acres. To mitigate any potential erosion to the exposed areas, brush and logs were scattered at recommended intervals. All harvester routes were directed away from dry draws, and no streams were crossed. During the processing of logs, some limbs and tops were placed into the harvester route in front of the harvester to help create a mat to buffer and reduce potential compaction.

Measurements by the Sale Administrator indicated that 20 percent of the unit acres were used for harvester and forwarder trails. By ocular estimate, about 30 percent of the trails have visible molding of the soil (rutting); however, rutting to a 6-inch depth is very rare except on main arterial trails, at trail junctions, and where machines needed to maneuver around obstacles. An estimated 6 percent of the unit acres have been detrimentally compacted. Overall, the cut-to-lenght logging system was evaluated to have less ground disturbing tendencies than skidder/tractor logging.

The overall objective of reduced soil disturbance was met. Ground disturbance was attributed to the ash derived soil type, which easily breaks apart, areas of short skidding distance requiring many turns, and the amount of traffic a trail received. The turning action of the equipment on soft soils broke through the duff layers exposing the soil. The tracked harvester exposes and displaces more soil than a wheeled, articulated harvester. Exposed soils occur on long skids and main trails where lateral trails converge. The trails did not create sediment delivery problems to streams. The trails roll with the land to disperse water, and slash is usually scattered on them to act as a filter.

Unit 99, a roadside hazard tree removal unit, was forwarder logged. Line logging is generally used on roadside sales and was proposed for this sale; however, it was agreed to test the forwarder and harvester off the road. Forwardering appeared to cause less roadside soil disturbance and better visual protection than line logging. Disturbance occurred where the equipment left and reentered the road. Line logging would have multiple disturbance sites along the road; both the vegetation and ground would be disturbed when the logs were lined to the road. Forwardering may extend the amount of compaction beyond the road width to an additional forwarder trail width on each side of the road.

On the Pomeroy Ranger District, five active timber sales were monitored for compliance with Forest-wide "Standards and Guidelines" for soil disturbing activities. Sales included Big Springs, Driveway, Teal, West Patit, and Wickiup. Four sales, Big Springs, Driveway, Teal, and Wickiup, have decision notices predating the Forest Plan. During modifications to these sales in 1994 and 1995, soil resource protection measures were added, such as designated skidtrails and preapproval of trail locations.

In 1996, the Big Springs Timber Sale had both skyline and ground based logging completed on approximately half of the sale area. Skyline operations complied with the standards and guidelines for soil and resource protection by reducing the number of skyline corridors and laterally yarding a longer distance. Ground based logging included mechanical as well as conventional systems. The conventional system was well within the standards and guidelines for soil protection. The mechanical system was out of compliance during a short period when skidder operators changed. Correction of deficiencies and compliance with the requirements was achieved throughout the rest of the systems operations. Areas on the sale required tractor fireline; many areas were changed to hand fireline and/or no fireline needed to reduce soil impacts.

Both the Driveway and Teal timber sales were completed in 1996. Skyline and ground based systems were used on both sales. Observations during sale inspections on the Driveway Timber Sale indicated that both systems more than met the requirements for compliance with the standards and guidelines. On the Teal Timber Sale operations met soil standards and guidelines based on sale inspections during operations. Both the West Patit and Wickiup timber sales were partially completed and had skyline operations only during 1996. The skyline logging done to date on these two sales more than met Forest Plan requirements.

To better meet soil standards and guidelines on all sales, tractor fireline is only being built where absolutely necessary, and is either replaced with handline or is being deleted altogether. Generally, meeting standards and guidelines is not difficult with skyline logging systems. Ground based systems, especially the mechanical systems are the most likely to exceed standards and guidelines. Using contractual controls and spacing guidelines developed during 1995 on the West Patit and Wickiup timber sales, the District has been able to control soil impacts by mechanical systems to meet Standards and Guidelines. Additional intensive surveys are needed to determine how well the controls are working and to confirm observations that standards are being met.

Restoration of damaged soils continues to be monitored. On the Davis 31 harvest unit on the Heppner Ranger District, a monitoring/demonstration project began in 1990, was continued in 1996. The project intent is to assess the benefits of site preparation with a subsoiler to reduce compaction and vegetation competition. Soils of the project area were compacted by multiple, ground-based harvesting operations to a degree that exceeded standards and guidelines subsequently adopted by the Forest. Areas with compacted soils presented major problems in artificial reforestion. The monitoring project has been an ongoing cooperative effort between the District, Forest Supervisor's Office and PNW Research Station, La Grande.

The effectiveness of site preparation was assessed in 1996 (the 5th growing season) by comparing planted tree survival. Plot areas on three soil types within the unit were subsoiled or received no treatment. Subsoiling was done in 1991. In 1992 seedlings of 2/0 ponderosa pine were planted and part of the tree seedlings on the ash soil type were fertilized. Monitoring data obtained in 1996 are shown in the tables below.

Monitoring of planted trees after five growing seasons on three soil types showed a 20-40 percent higher survival associated with subsoiling compared against no subsoiling (Table I-2). Little or no decline in survival has occurred in 1996. Tree survival percentages on the residual soil type was slightly higher than the other soil types.

Table I-2
PLANTED TREE SURVIVAL (%) WITH AND WITHOUT SUBSOILING TREATMENTS
1996 (Fifth season) Results
Umatilla NF

Location	Not Subsoiled (%)	Subsoiled (%)
Transition Soil Type	28	68
Ash Soil Type	47	70
Residual Soil Type	58	78

Results of using a starter fertilizer on the ash soil continued to show an overall suppression effect on tree survival since 1992, whether with or without subsoiling (Table I-3). Additional decline in tree survival since the 1996 growing season were 5 percent or less in all treatment combinations.

Table I-3
PLANTED TREE SURVIVAL (%)
WITH AND WITHOUT FERTILIZER AND SUBSOILING TREATMENTS
1996 (Fifth season) Results, Ash Soil Type Only
Umatilla National Forest

Treatment	Not Subsoiled (%)	Subsoiled (%)
No Fertilizer	47	70
Fertilizer Packet Added	32	48

Over five growing seasons, a substantially higher tree survival was consistently associated with site preparation using a self-drafting, winged subsoiler. If the survival advantage is large enough to avoid replanting, the subsoiling practice would be considered cost effective. A tree growth analysis and 5-season summary report of this monitoring/demonstration project will be prepared at a later date and submitted for formal publication.

Evaluation:

Monitoring of planning and implementation of transportation and logging systems to minimize detrimental soil impacts shows generally good results, well within Forest Plan standards and guidelines. Present procedures and control of operations appear to be working well and progress towards limiting detrimental impacts continues. Adjustments to logging practices continue to help minimize negative soil impacts. Districts continue to improve monitoring and documentation of implementation activities and make useful general effectiveness observations. Districts and the Forest need to continue building on documentation of methods planned, how well implementation went operationally, and as much observation of effects as time allows.

Implementation and extensive effectiveness monitoring needs are generally being met. The planned intensive effectiveness monitoring as outlined in the Forest's Monitoring Strategy continues to be difficult for a variety of reasons. However, additional attention and priority to effectiveness monitoring continues to be a need.

Some ambiguity exists about appropriate sampling methods to use for effectiveness monitoring on this and other Forests. This is being discussed Regionally. Protocols for evaluation of long-term trends in productivity and assessment of adequacy of Forest standards still needs to be developed.

C. WATER

MONITORING ITEM 3: Water Quantity

Forest Goals, Desired Future Condition, and Outputs: Maintain favorable conditions of water flow. Provide high quantities of water to off-Forest users while maintaining or enhancing water quality. Do not substantially change the level of water discharge from the National Forest during the May 1 through September 30 period where detrimental to instream or off-Forest uses.

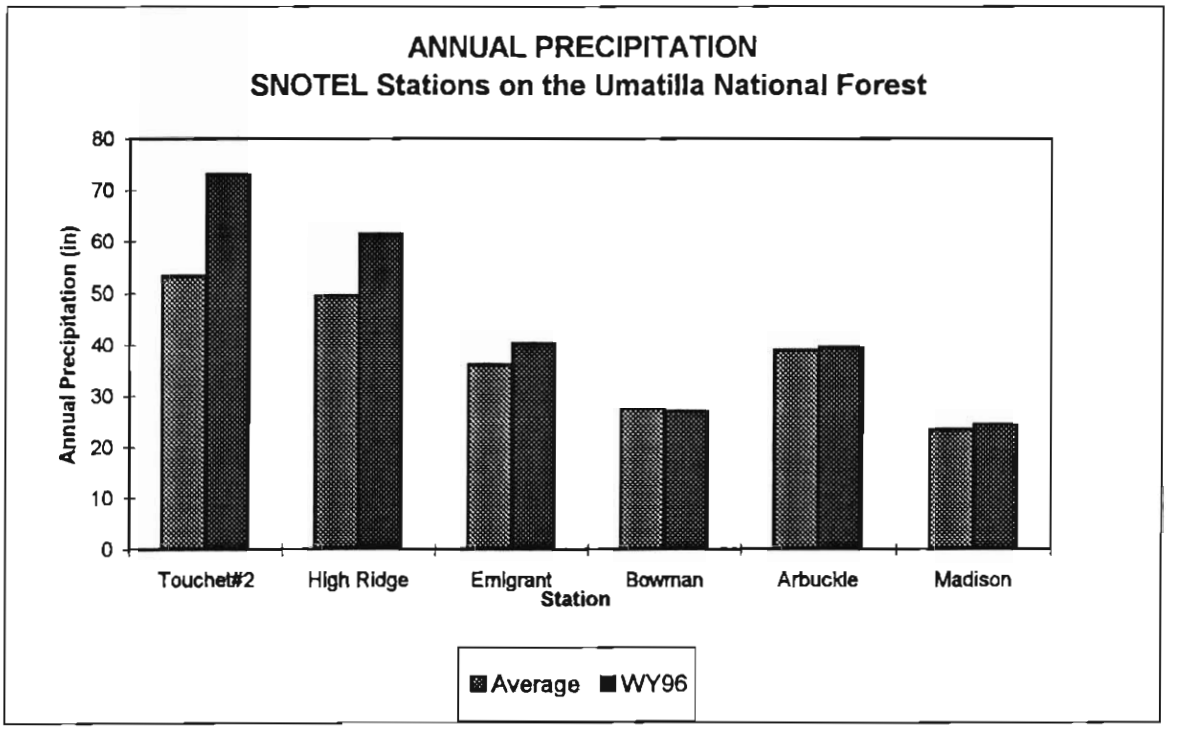
Monitoring Question(s): 1. What is the water yield from the Forest and key watersheds? 2. Are management activities significantly affecting the volume of water yields from Forest watersheds? 3. Are management activities significantly affecting the timing of water yield from Forest watersheds? 4. Are management activities significantly affecting the magnitude of summer low flows from Forest watersheds?

Threshold of Variability: 1. Decline in water yield in critical drainages not attributable to natural causes. 2. Decline in water yield or flow rate during critical late season periods not attributable to natural causes. 3. Change in timing of spring snowmelt which would cause detrimental impact to stream channel stability or harmful effects to downstream water users.

Results/Findings:

Water year 1996 (October 1, 1995 - September 30, 1996) was again above-average for precipitation on the north half of the Forest (Figure A). High elevation SNOTEL (cooperative snow survey) stations recorded above-average precipitation from 112 percent (Emigrant Springs) to 137 percent (Touchet#2). Total annual precipitation on the south half of the Forest tended to be about average.

Figure A



Two major storm and flooding episodes occurred in the northern Blue Mountains; the first in late November 1995, and the second in early February 1996. Higher than average fall rains, followed by heavy wet snowfall in late November, and rapid warming caused localized flooding in the foothills of the Blue Mountains. On November 28, 1995, the highest recorded flood on the upper Umatilla River caused localized damage to Forest roads, trails, and campgrounds.

Precipitation continued above average in January with heavy snow accumulations in the mountains and foothills. A week of intense cold at the end of January was followed by a series of warm subtropical storm surges bringing more rain and snow and leading to Region-wide flooding by the week of February 5th (Figure B). Record floods were again observed on the upper Umatilla, and other streams and rivers including the Walla Walla, Mill Creek, Touchet, Tucannon, Asotin, Grande Ronde, Lookingglass, and Phillips Creek. Figure C illustrates the winter flood pattern and causes of peak flows.

Figure B

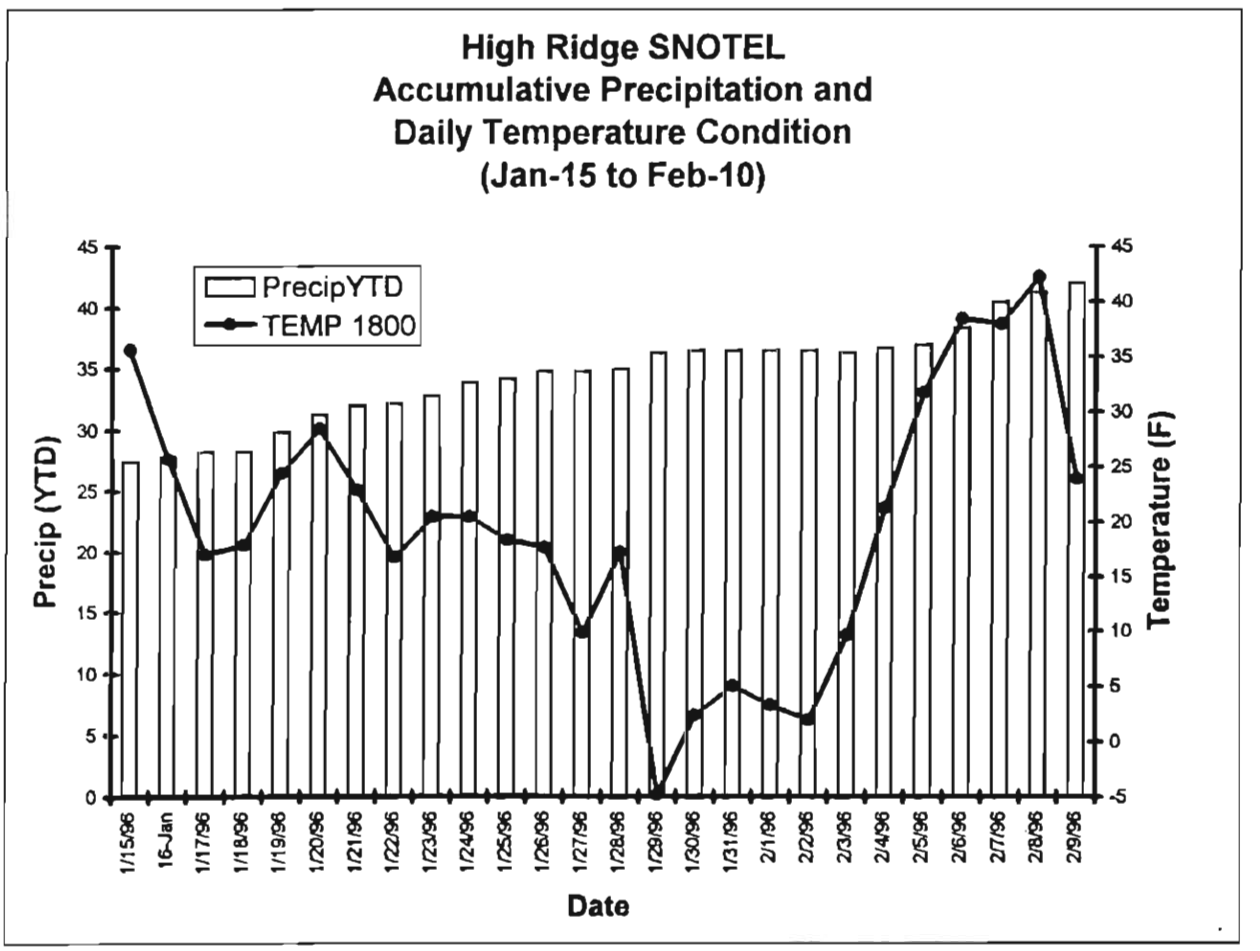


Figure C

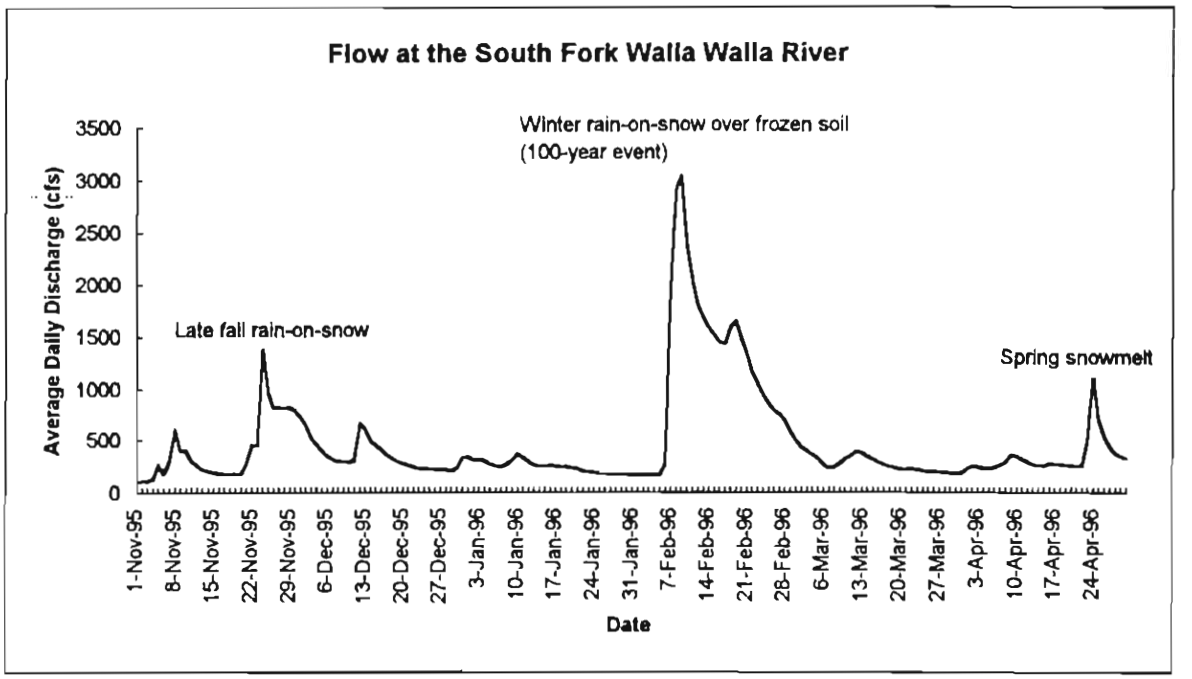
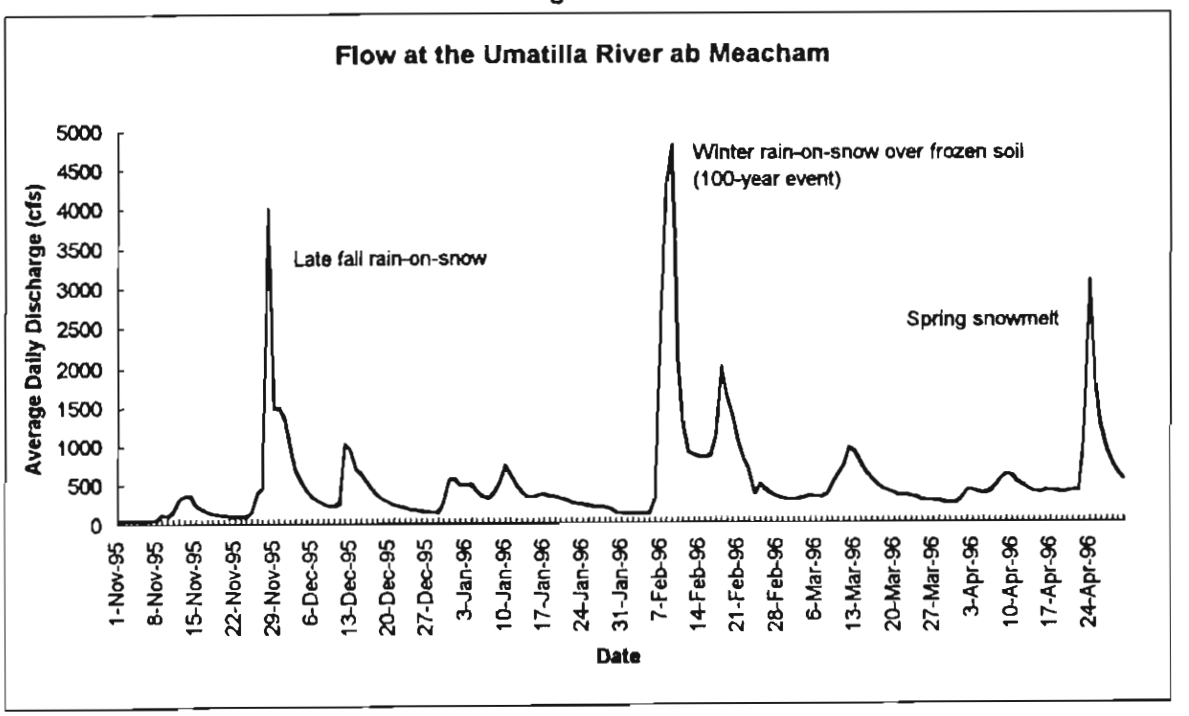


Figure D



Record streamflows were observed on five gaged streams as seen in Table I-4 below.

Table I-4
Peak Discharge at Selected Stations
(source: USGS)

Station	Drainage Area (mi2)	Date	Discharge (cfs)	Gage Height (ft)	Frequency
Lookingglass	78.3	11-28-95	1640	6.92	
		02-09-96	2270	7.41	
Grande Ronde @ Troy	3275	02-09-96	51,800	13.76	>100
Umatilla ab Meacham	131	11-28-95	6220	9.40	100
		02-09-96	5890	9.19	100
Meacham Creek	176	11-28-95	5890	7.67	100
		02-08-96	5530	7.50	100
Mill Creek	59.6	02-09-96	4930	20.43	100

Flooding caused considerable damage to Forest roads, recreation facilities (campgrounds and trails), and monitoring stations. Flooding also resulted in numerous landslides and stream channel changes in lower elevation rivers and streams. Field assessment of flood effects, and repairs of flood damage began in May 1995, and continued to the end of the fiscal year.

Streams reach their lowest levels in August and September and were generally above-average this year, a result of a fall and winter precipitation conditions (Table I-5).

Table I-5
Low flows at Selected Stations, WY96 vs Average
(source: USGS)

Station	Years of Record	96 Annual 7-Day Minimum (cfs)	Record 7-Day Minimum
North Fork John Day at Monument	67	105	29
Meacham Creek	11	11	7.7
Umatilla ab Meacham	63	40	31
Lookingglass	14	43	35

Evaluation:

Water Year 1996 saw record winter flooding on the north half of the Forest resulting in landslides, stream channels changes, and damage to Forest investments. Flood resulted from a combination of above-average fall rain followed by snow, freezing conditions, and a series of warm, subtropical storms. Assessment of flood conditions and effects is ongoing with findings and reports expected to be released in FY '97.

Currently, the precipitation and stream flow monitoring sites only provide information for addressing water yields and long term trends from the Forest (Question 1). The stations and resulting information do not lend themselves to addressing the impacts to water yields from Forest management activities (Questions 2-4).

Progress continued on schedule towards a final report on the Umatilla Barometer Watershed Program "High Ridge Evaluation Area". A final report is expected early in FY '97. The report should help to evaluate the effects of harvest activities on water yields and quality for small forested watersheds. However, longer term monitoring emphasis is shifting from the High Ridge catchments, as that study nears completion, to the "Baseline Stations" near the Forest boundary.

MONITORING ITEM 4: Water Quality

Forest Goals, Desired Future Condition, and Outputs: Maintain or improve water quality in streams to meet or exceed demand for beneficial uses.

Monitoring Question(s): 1. Are Forest management activities or other factors affecting water quality parameters in Forest streams? 2. Has the Forest met its designated obligations and responsibility with respect to management of non-point source pollution? Did the Forest comply with the Clean Water Act as outlined in memorandum of understandings (MOU's) with the States of Oregon and Washington? 3. What is the long-term trend in water quality? 4. Are Best Management Practices and other measures implemented as designed to protect water quality? 5. Are Best Management Practices and other practices effective in meeting water quality goals?

Threshold of Variability: Not meeting or non-attainment of Forest Plan standards and guidelines for water quality.

Oregon recently updated water quality standards and adopted changes include: adding E. coli to bacteria standard; changing the temperature standard (see MI 5 Stream Temperature) and changing Dissolved Oxygen standard units from percent saturation to concentration (mg/l). The Forest Plan requires that the Forest meet the revised state standards.

Results/Findings:

Water quality monitoring describes baseline conditions, long term trends, and compliance with state water quality standards. Methods include quantitative measurement of instream physical, chemical, and biological constituents, and a combination of quantitative and qualitative assessments of upland erosion, stream channel conditions, and aquatic biology.

Baseline instream water quality monitoring continued during the FY. The Forest operated 30 automated pumping samplers on streams within most of the major watersheds, including Tucannon, Mill, Walla Walla, Umatilla, Lookinglass, Willow, and tributaries of the North Fork John Day (Desolation and Wall). The Forest reduced the number of instream samplers to streamline monitoring and shift emphasis to upslope activities and tributaries. Daily composite samples were analyzed for suspended sediment (mg/l), turbidity (NTU)*, total dissolved solids (mg/l)*, and conductivity (mmhos). All data are entered into STORET, EPA's national water quality databank. (* indicates state standard is established for this parameter)

"Grab samples" were also collected on selected streams to evaluate baseflow and high water characteristics. Low flow samples were analyzed for dissolved oxygen (mg/l)*, colliform bacteria (total and fecal)*, and pH*. High flow samples were analyzed for total dissolved solids, conductivity, and suspended sediment. All analyses were conducted at the Forest laboratory in Pendleton.

Short term sediment concentrations in streams downstream of the Forest (roads leading into the Forest were not accessable at the time) were much higher in February than normally observed during winter high flows. Values are typically in the 100's of mg/l (Table I-6). Unusual winter weather conditions (rapid snowmelt over frozen soils) produced sediment-laden runoff in upland areas (from surface gullying, shallow rapid landslides, and tributary debris flows), delivered sediment to streams, causing high sediment loads and extensive lateral channel migration (erosion and deposition).

Table I-6
High Flow Suspended Sediment Concentrations
Downstream of the Umatilla Forest, February 7, 1996

Sample Location	Sediment Concentration (mg/l)
Pataha Cr. at Pomeroy	23,390
Pataha Cr. at Columbia Center	13,558
Asotin Cr. at mouth	1,923
Charley Cr. at mouth	6,363
Lick Cr. at mouth	8,235
NF Asotin above Lick	616

Low flow water quality was also a concern in 1996 with grab samples showing dissolved oxygen at less than desired levels (Table I-7). Water quality standards vary between Washington and Oregon: Washington's standard for Class AA waters is "dissolved oxygen shall exceed 9.5 mg/l"; whereas Oregon's standard reads "During times and in waters that support salmonid spawning until fry emergence...dissolved oxygen shall not be less than 11 mg/l" and "For waters identified as providing cold water resources, the dissolved oxygen shall not fall below 8.0 mg/l". Oregon's standard also allows for site conditions and considers intergravel DO. Where conditions preclude attainment, dissolved oxygen shall not be less than 90 percent saturation. Examination of the two Oregon samples (and accounting for elevation and water temperature) indicate that both Crooked Creek and the Wenaha are below the 90 percent saturation level (80 and 75 percent, respectively). However, information on intergravel DO is needed to fully characterize dissolved oxygen conditions.

Table I-7
Low Flow Dissolved Oxygen (DO) and Temperatures
of Umatilla Forest streams, September 23 & 25, 1996

Sample Location	State	Date	Time	DO (mg/l)	Temperature (deg.C) Water	Air
Cummings Cr	WA	9/23/96	1345	8.7	9.5	17.0
Panjab Creek	WA	9/23/96	1600	9.5	8.5	15.0
Tucannon ab Panj	WA	9/23/96	1600	8.2	8.0	15.0
Little Tucannon	WA	9/23/96	1630	9.1	8.0	15.0
Crooked @ mouth	OR	9/25/96	0915	8.6	8.0	12.0
Wenaha ab Crook	OR	9/25/96	0930	9.6	6.5	12.0

A number of project related monitoring of water quality was initiated or continued during the year. Highlights include:

* Willow Creek road reconstruction project (Federal Highway Administration): pre-project monitoring to establish baseline conditions began in February at six locations on Willow Creek and tributaries. Monitoring is focused on suspended sediment, water temperature, and pH. A complete report is on file at the Heppner District Office.

* Sediment sampling on the North Fork Touchet River (1991 Ski Bluewood expansion) continued. However, severe winter conditions cause sampling problems at two of the three stations. Bitter cold in January caused freezing of intake lines, and high water in early February dislodged the control sampler, resulting in data gaps. For the remainder of the year, the turbidity standard was exceeded (more than 5 NTU increase from the control) on 1 day at the middle site and 2 days at the lower site. Generally, the trend reported in 1995, continued with recovery to pre-expansion sediment levels.

* Clear Creek mining (active, abandoned and reclaimed): no sampling occurred in 1996.

* Restoration projects: Monitoring of the North Fork John Day River dredge tailings restoration project (2nd phase of project began) continued. Results were not reported.

* Road obliteration on Walla Walla District: 2 miles (5 segments) were inspected in 1996, with no evidence of vehicle trespass or erosion found. Restoration seeding was becoming established although effectiveness as ground cover was not apparent.

* Road cut-bank stabilization work on Walla Walla and Pomeroy Districts that was implemented in 1995 and 1996 was inspected. Work consisted of planting hardwood cuttings. The following observations were recorded and summarized: low (5%) survival of plantings on the Tucannon project and high survival (50%) on the North Fork Touchet road.

BMP implementation and effectiveness monitoring was done on eight active timber sales across the Forest. The Forest Plan Monitoring Strategy (1994) calls for a "minimum sample size of two timber sales per District per year". Although an established sampling strategy has yet to be developed within the sale area, the Forest has initiated a BMP checklist as a monitoring tool. The BMP checklist is an approach to document **observed** compliance with standards such as timber sale provisions, R-6 General Water Quality BMP's, and specific requirements in EA's, and was used in a non-random approach to evaluate **representative** BMP's within each project area. Practices that were reviewed depended on project status, with a focus on recent activity or areas of concern.

Table I-8
Timber Sales in 1996 BMP Review

Ranger District	Sale Name	Unit#	Road#	Decision Date
Heppner	Black T.S. Dry Swale/Ditch Cold	1,3,4,7 8 48	040,045	1991 1990 1993
North Fork John Day	Indianberry Windy Springs	14,30 13	082	1993 1992
Walla Walla	South Cabin Jack Straw	9,10,11,34	082,092	1990 1995 (CE)
Pomeroy	West Patit Teal	 24,25	015,017 196,248	1991 1990

* A field checklist to record BMP implementation and effectiveness observations was developed and "field tested".

Field reviews were conducted in July 1996, on areas as seen in Table I-8. Practices that were reviewed included: Subsoiling, Riparian areas and Wetlands, Road Maintenance, Logging Equipment, Road Construction, Erosion Control, Road Closure/Obliteration and Mitigation.

For the field reviews, several general observations and conclusions could be developed including:

* Sale administrators understand and have implemented BMPs. Newer projects incorporate additional mitigation and appear more direct and related to the BMPs of concern. Erosion control measures were current.

* Monitoring reviews suggest mixed effectiveness of BMP applications but problems were not pin pointed. Effectiveness of erosion control needs to be more fully addressed.

* Cumulative watershed effects are causing some problems that projects were not designed to address. A primary example is compaction resulting from previous harvest practices that is not being "treated" under current projects.

* Monitoring required in project EAs has increased in complexity, but may not address stream temperatures, the parameter most sensitive to the activity. RHCA's directions may be unrelated to practices.

* Some projects are pre-PACFISH; conflicts occurred with current direction for RHCA's. Adjustments had been made on several projects to comply with Section 7 consultation on Snake River chinook salmon under the Endangered Species Act.

BMP implementation monitoring also occurred on other timber sales. The Heppner District reviewed inspection reports for six of their active timber sales and found proper implementation of erosion control measures such as delineating riparian areas, skid trails, monitoring soil moisture, installing erosion control structures, and subsoiling temporary roads.

Evaluation:

Sampling and testing of stream water quality continued at numerous locations on the Forest in 1996. However, a long standing need still exists to improve data analysis and interpretation. Abundant baseline data has been collected for many years and most is stored in the national databank STORET. The Forest needs to summarize and interpret past data to help focus monitoring on the most sensitive water quality parameters.

Improvements were made in Timber Sale BMP monitoring. Scheduled field reviews involving Hydrologists, Sale Administrators, and the Forest Contracting Officer provided the opportunity to review a variety of harvest and associated practices, and document BMP compliance.

Project monitoring continued on several restoration projects completed in FY96, and past years. As emphasis on restoration grows, so will need to evaluate effectiveness of various techniques to improve practices.

Sampling of abandoned and active mines in the North Fork John Day River did not occur in FY96. The Forest plans to reestablish sampling for metals and nitrates in FY97.

Unusual storm and runoff conditions caused short term increases in stream sediment loads. A monitoring program that is focused on the physical and biological effects of flooding was initiated in 1996 with summary reports expected in 1997.

MONITORING ITEM 5: Stream Temperature

Forest Goals, Desired Future Condition, and Outputs: "Meet or exceed state water quality standards for stream temperature. Summer stream regimes are well moderated with limited day to night variation and are well within tolerance of aquatic organisms historically found in the systems.

Monitoring Question(s): 1. Is project implementation in riparian areas resulting in attainment of desired future conditions for stream surface shading and/or in-stream water temperatures? 2. What are the long-term changes and trends in stream temperatures? Are the long-term changes meeting Forest Plan objectives? 3. What are the cumulative effects of Forest management activities on stream temperatures?

Threshold of Variability: Non-attainment of Forest Plan standards and guidelines for stream surface shade and/or in-stream water temperatures. The numeric objective represents optimal temperature range for both bull trout and chinook salmon. Maintain the following temperatures for third to fifth order streams (interim objectives).

Oregon - New standards established in 1996 are: 64 general, 55 spawning, and 50 Bull Trout streams, degrees; Washington - 61 degrees; PACFISH - 64 migration and rearing, and 60 spawning, all degrees Fahrenheit (based on 7-day moving avg. of Daily Maximum Temperatures (deg. F).

Results/Findings:

Water temperatures were measured at 130 locations on the Forest streams in 1996. Daily peak temperatures for the summer season on four representative, mid-size streams show the warm season conditions across the Forest (Figure E). Stream temperatures peaked several periods in mid July, with cooler periods in-between, a result of cooler-wetter than average summer. Generally water temperatures peak in late July to early August, the balance of declining streamflows and summer air temperature maximum. Overall, stream temperatures recorded in 1996 were average or below, reflecting the climatic conditions during the year (above average precipitation, above-average streamflow, and below average air temperature).

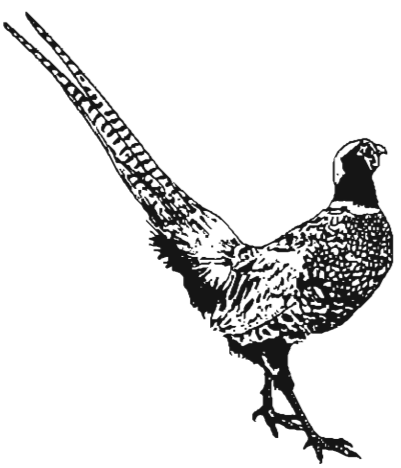
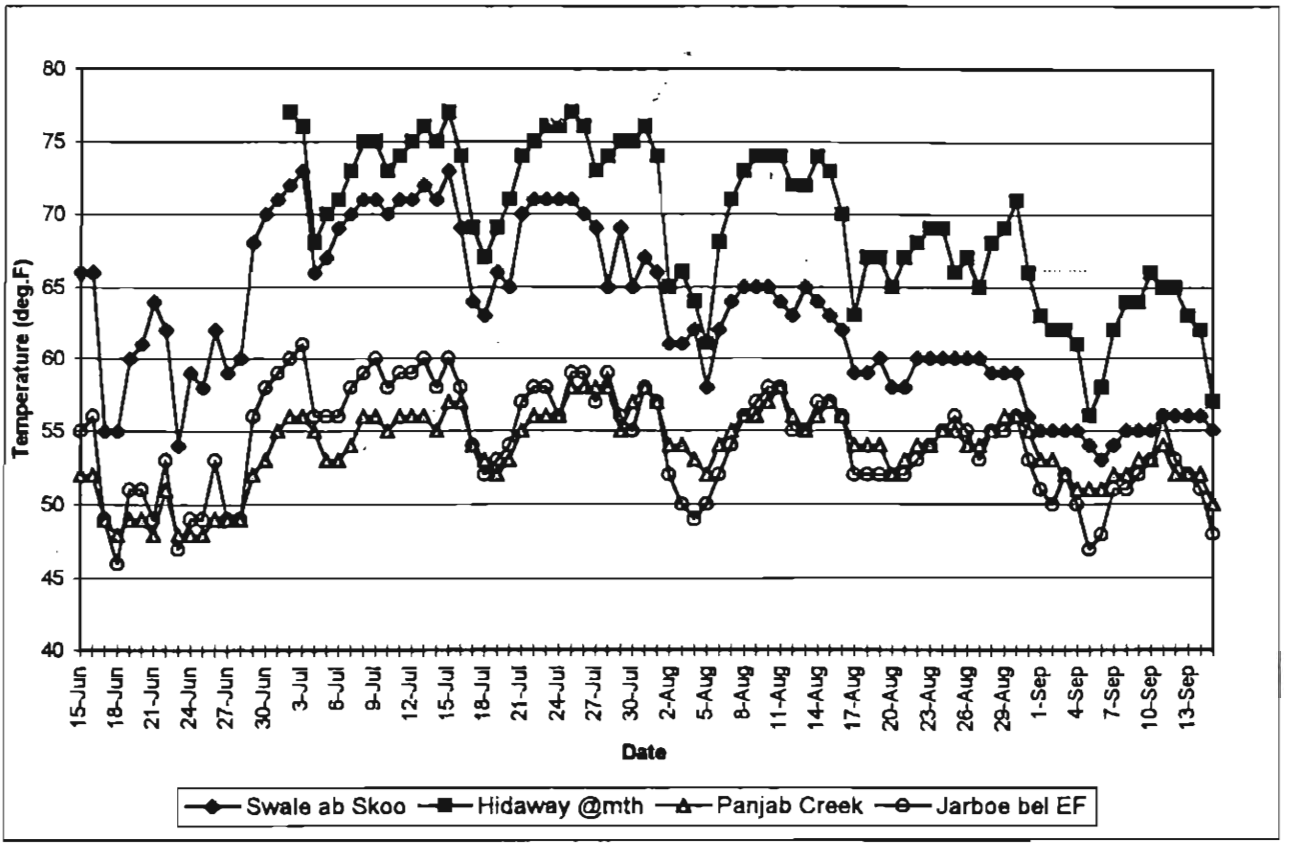


Figure E
STREAM TEMPERATURE



A comparison of streams across the Forest shows the effects of a climatic "gradient" from north to south. Streams are generally cooler on the north half of the forest which has lower average air temperatures and higher base flows, a reflection of the marine influence penetrating into the Columbia River basin. In contrast, streams on the southern half of the Forest reflect a harsh continental climate, typically warmer and drier in the summer months, and colder in winter (Table I-9).

Table I-9
1996 WATER TEMPERATURE SUMMARY
Selected Sites

		7 Day Moving Average of the Daily Maximum (deg. F)						
Stream/Location	Basin	1992	1993	1994	1995	1996	Temp Standard	No. days above standard
Henry Cr. @ FB[1]	John Day	ND	74	72	72	71	64	58
Herren Cr @ FB	Willow	62	56	63	58	61	64	0
Wall Cr. @ FB	NF John Day	76	76	80	77	68	64	17
Hidaway @ mouth		76	72	ND	78	75	50	90
Oriental @ mouth		65	60	63	58	61	64	0
Desolation Cr. @ NFJD		ND	70	77	ND	67	50	80
Umatilla River @ Corp	Umatilla	65	63	63	64	63	50	83
N. Meacham @ FB		68	65	72	68	67	50	124
NF Umatilla River		60	58	60	57	59	50	76
SF Umatilla River		69	68	70	66	67	50	145
NF Walla Walla R	Walla Walla	ND	ND	ND	64	63	50	89
SF Walla Walla R		ND	ND	ND	54	54	50	62
Lookingglass @ FB	Grande Ronde	ND	54	56	56	56	50	ND
Jarboe Cr. below E.F.		ND	60	65	59	59	64	0
Wenaha R. below Crooked Cr.		71	67	ND	ND	66	50	132
NF Asotin Cr. @ FB	Snake River	68	62	66	62	66	61	12
SF Asotin Cr. @ FB	(WA)	62	58	63	57	56	61	0
Panjab (Tucannon)		63	59	63	59	57	61	0

1 FB = Forest Boundary
ND = No data collected

Evaluation:

Evaluation of stream temperature results is becoming more complex as state and Forest Service standards evolve. Each stream now needs to be evaluated against "tighter", more biologically based requirements and other fisheries considerations. Temperatures recorded in 1996 were in the same range as 1993 and 1995, both wetter-than-average years, and lower compared to 1992 and 1994. The stream temperature data suggests that few of the reported streams are meeting the new standards. As longer records accumulate, comparisons with "long-term" averages will be possible.

The Forest has a strong foundation of water temperature monitoring in place. Additional interpretation of existing data and further investigation of the relative roles of climate, topography, riparian vegetation (shade), and management in influencing the extremes and variability of water temperature are needed to adress the monitoring questions.

MONITORING ITEM 7: Stream Channel Morphological Features

Forest Goals, Desired Future Condition, and Outputs: Inherent (historic) channel forming/maintenance processes continue to operate without substantial long-term or watershed-wide modifications. Relatively large pools, persistent during the lowest of flows, are frequent and well distributed. Large woody debris is available to the channel to achieve or maintain the stream potential for fish habitat capability.

Monitoring Question(s): 1. Are management activities allowing channel forming processes to operate resulting in relatively large, well-distributed pools, and meeting stream potential for the fisheries habitat desired future conditions? 2. What are the trends in pool formations and large wood additions to stream complexity? 3. Is sufficient wood being produced or available to meet DFC's?

Threshold of Variability: 1. Non-attainment of expected stream channel pool frequency. The thresholds are (PACFISH interim criteria):

Pools per mile for low-gradient, unconstrained wide valley floor channels

Wetted Width	10	20	25	50	75	100	200
Pools/mile	96	56	47	26	23	18	9

2. Non-attainment of expected in-stream large wood levels.

Large Woody Material
Frequency of large wood debris material

>20 pieces per mile; >12 inches diameter; >35 foot length

Results/Findings:

The Region 6 Stream Survey protocol is used to gather data on large woody debris abundance and pool frequency on Forest streams. Each year selected stream reaches are surveyed or resurveyed to add to the stream database. In addition, benchmark reaches are established to quantify stream channel changes over time. The FY '96 stream survey results were not reported.

Flooding in the winter of 1995-1996 in the northern Blue Mountains resulted in extensive soil erosion in uplands (landslides and debris flows), delivering sediment and debris to stream channels. On the Pomeroy Ranger District, post flood surveys were conducted in the summer to evaluate flood effects. The presence of wood, pool frequency, and channel characteristics (including sediment) were re-checked on streams that had been previously surveyed.

Stream survey measurement sites (Level 3) were established in the North Fork Asotin, Panjab Creek, Little Tucannon River, and Tucannon River in 1995, and resurveyed, after the flooding, in 1996 (Table I-10). The floods resulted in a redistribution of wood, including the large wood component. Some areas had a net wood gain while others had a net loss. Pool habitat increased in all surveyed reaches. The substrate generally increased in size as smaller particles were mobilized.

Table I-10
Pool and Large Wood Frequencies in Level 3 Survey Reaches,
pre and post-floods of 1996

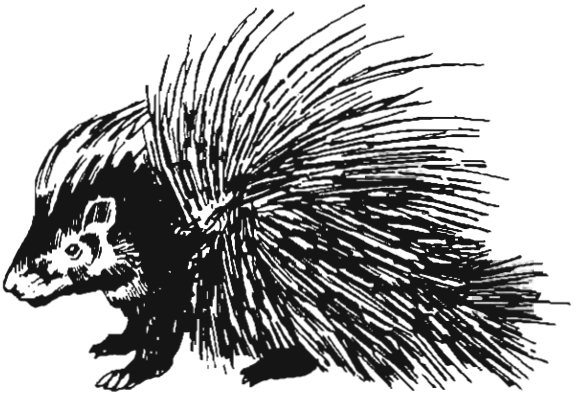
Stream Name	Reach Length	Large Wood (#/mi) 1995	1996	Pools (#/mi) 1995	1996	Substrate (Dom/Sub) 1995	1996
NF Asotin	1.5	11.6	21.3	0.4	14.0	CO/GR	CO/GR
Panjab	1.4	41.3	45.0	4.6	16.4	CO/GR	GR/CO
L Tucannon	1.1	11.6	0.9	16.5	20.9	GR/CO	CO/GR
Tucannon	1.3	22.0	10.0	2.1	15.4	GR/CO	CO/GR

Stream channel references reaches which are sites established for surveying additional channel characteristics were established at 29 sites on 6 stream systems (Umatilla, SF Walla Walla, Mill Creek, NF Touchet, Tucannon, and Wenaha River). Each site was benchmarked for repeat survey, and measurements were made of the channel cross section, longitudinal profile, and channel bed material. In addition, each site was mapped and photographed. Surveys will be used to estimate stream discharge at flood stage using high water markings, and to monitor changes in channel form over time. Management interactions such as incluence of streamside roads on flood effects is also part of the assessment.

Evaluation:

Unusual flooding had major impacts on Forest streams in the winter of 1996. Repeated stream surveys shows changes in habitat features (pools and wood) and channel morphology (width, depth, substrate) as a result of flooding. Initial surveys showed that large wood was redistributed with some areas gaining and others losing large wood. Pools increased in all surveyed areas. Long-term channel reference sites were established to evaluate stream channel and riparian recovery in the next 5 to 10 years (or until the next major event).

Analysis of data and preparation of reports are planned for 1997.



MONITORING ITEM 8: Fire Effects – Wildfire on Water and Soils

Forest Goals, Desired Future Condition, and Outputs: "Provide and execute a fire use program that is responsive to land and resource management goals and objectives. Maintain or enhance ecosystem functions to provide for the long-term integrity (stability) and productivity of biological and physical communities."

Monitoring Question(s): 1. How many acres (percentage) of each subwatershed has sustained high intensity burns per 3-year period? 2. Is visiblity accelerated erosion occurring within a subwatershed because of past burns?

Threshold of Variability: Five percent of subwatershed impacted by high intensity fires within 3-year period.

NEED ACRES BY SUBWATERSHED OF HIGH INTENSITY

Results/Findings:

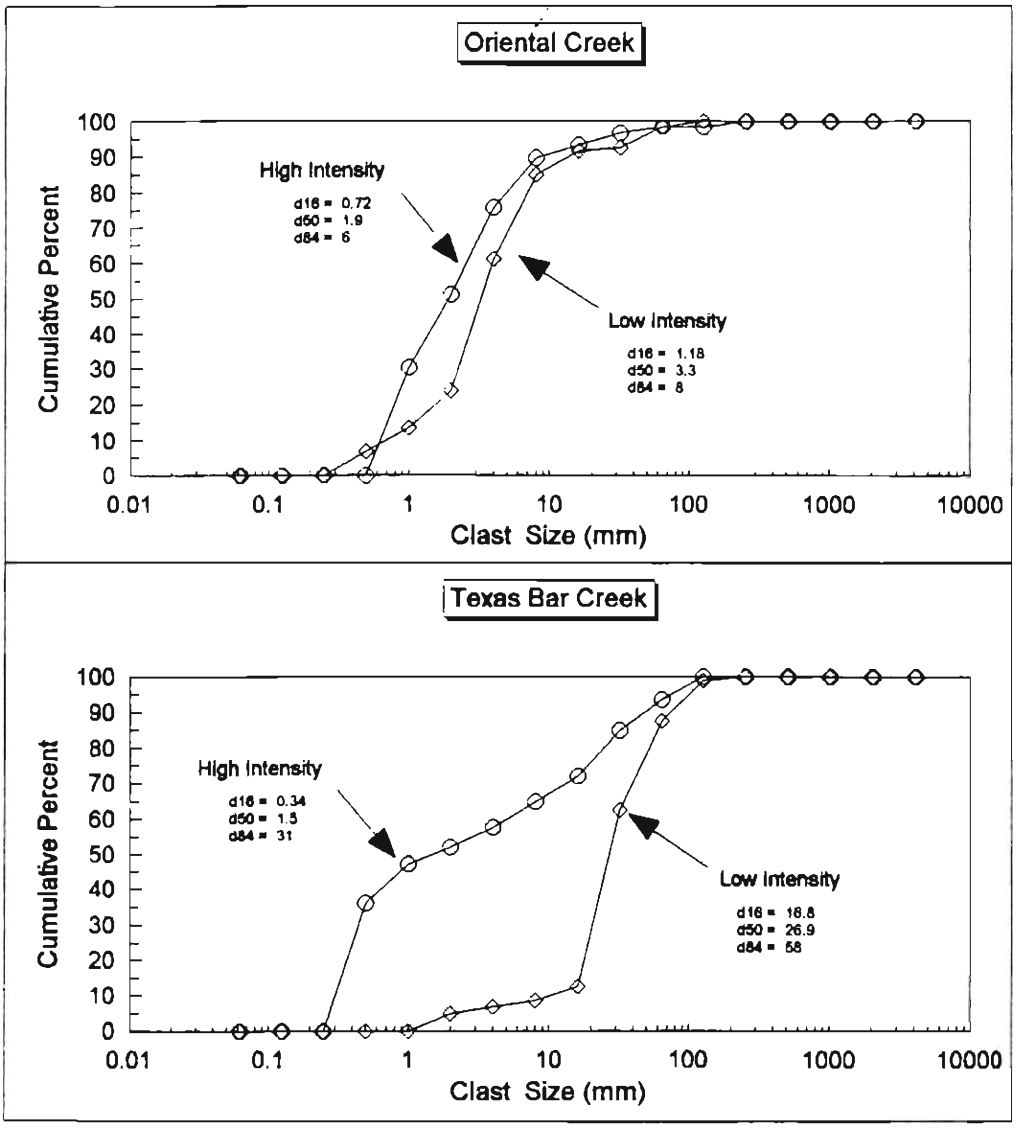
Four large fires with areas of high intensity occurred during the summer of 1996. The Wheeler Point Fire burned 7,506 acres in the lower John Day subbasin, in portions of the Alder Creek watershed. In the North Fork John Day subbasin, the Tower Fire burned approximately 50,818 acres in portions of five watersheds (Cable Creek, Bridge-Pine Creek, North Fork John Day River, Big Creek, Hidaway Creek, and the Upper Grande Ronde River). The Ecosystem Analysis completed on the Tower Fire area indicated that burn intensity acres were: 5,943 (11.7%) high; 15,632 (30.8%) moderate; and 29,243 (57.5%) low intensity. The Bull Fire burned 9,533 acres in portions of the Desolation, Lake, and North Fork John Day watersheds. And, the Summit Fire burned 8,068 acres on the Umatilla (this fire also burned on the Malheur National Forest) in portions of the Desolation and Lake Creek watersheds.

Burned Area Emergency Rehabilitation (BAER) surveys were conducted on all four fires, and included recommendations for emergency erosion control measures (seeding, waterbarring). These measures were implemented in the fall of 1996.

Watershed effects as a result of these large fires are anticipated and include elevated runoff and erosion, increased sedimentation in streams, and possibly channel adjustments. Stream channel reference reaches were established on streams in the Wheeler Point and Tower fires to monitor channel changes over time, inventory sediment and large woody debris distribution, monitor riparian recovery, evaluate BAER treatment effectiveness, and assess effects to aquatic habitat. On the Wheeler Point Fire, channel reference reaches were established on Wheeler Creek and West Alder Creek, at the Forest boundary, both high intensity burned watersheds.

On the Tower Fire, Texas Bar Creek and Oriental Creek are being monitored using the same approach, however, the burn pattern allowed a contrast in burn intensity. Each stream has two sites, the upper sites are located in high intensity burned areas, and lower sites are located in low intensity burn areas. These sites were surveyed in September 1996, after several rains storms had occurred. Field personnel noted at the time of the survey evidence of upland and instream erosion and sedimentation in the fire zone indicating what may be a rapid, measurable response to the fire. Fines in the uplands are mobilized entering the stream system as evidenced by finer materials in the burned areas (Figure F)

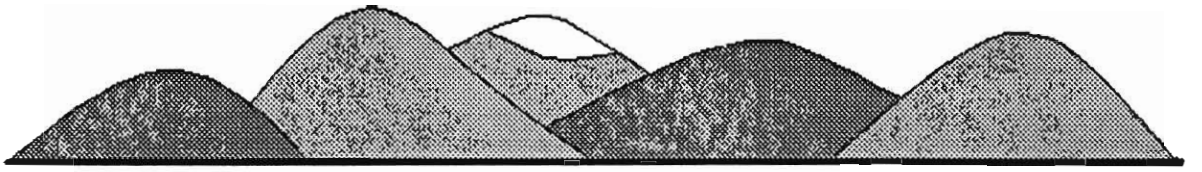
Figure F
PARTICLE SIZE DISTRIBUTION FOR ORIENTAL AND TEXAS BAR CREEK
(note: high intensity distribution shift towards
finer particles indicating mobilization of fines)



Follow-up monitoring of the effects of a riparian burn and recovery of stream temperatures on White Creek in the 1994 Boundary Fire was not done. This monitoring needs to continue.

Evaluation:

A number of commitments for monitoring fire effects and recovery have been made for the Tower and Wheeler Point fire areas. Baseline monitoring has been initiated for a number of soil and water parameters. The Forest needs to continue these remeasurement efforts. In addition, the Area Ecologist needs to begin reporting on the effects of and recovery from wildfires on forest and range plant communities. Studies have been ongoing on the Forest during the last 10 years (also see MI 18, Fire Effects and MI 20, T, E & S Plants).



II. Biologic Resources

A. VEGETATION MANAGEMENT

MONITORING ITEM 10: Level of Utilization

Forest Goals, Desired Future Condition, and Outputs: All allotments implement the Forest Plan utilization standards through Allotment Management Plans (AMPs) or Allotment Operating Plans (AOP's).

Monitoring Question(s): 1. Are Forest Plan utilization standards being implemented through the AMPs (AOP's) and are they being enforced on the ground? 2. Are actual use levels within the Forest Plan utilization standards for riparian zones, for uplands, and for transitory range?
h)
Threshold of Variability: More than 10 percent of the allotments reviewed experience utilization by any species of animal exceeding the Forest Plan or Allotment Plan standards by more than five percent as average of use in key areas of an allotment.

Results/Findings:

Currently, Forest Plan utilization standards are incorporated into the Annual Operating Plans (AOP's) for each allotment, as per Regional direction. Some modifications to the standards has occurred to reflect updated information. The Forest Plan standards have been adjusted to comply with Endangered Species Act consultation requirements or other mitigation requirements designed to protect and enhance riparian resources.

Utilization monitoring, complete with documentation and at levels adequate to make a determination as to meeting or not meeting standards, occurred on a total of 76 pastures. The total area managed for livestock amounted to 34 active allotments and approximately 137 active pastures. A total of 546 separate monitoring data collections were made during 1996 for forage and browse utilization with a total of 394 of these occurring within riparian areas. The following table shows results of forage and browse utilization monitoring.

Table II-1
FY '96 FORAGE UTILIZATION SUMMARY
Umatilla National Forest

Total Pastures grazed by Permitted Livestock	137
Total Pastures Monitored	76
Percent of Monitored Pastures Exceeding Threshold	40%
Percent of Monitored Pastures Meeting Threshold	60%

Approximately 1 percent of the pastures that were monitored had pre and/or during livestock utilization monitoring but it is unknown whether by the end of the season the pastures stayed within the allowable use of available forage.

It should be noted that on the North Fork John Day Ranger District, seven of the pastures that exceed utilization standards did so only because of utilization on riparian shrubs. Much of this use is documented to occur by big game rather than by livestock. When looking only at the use on the herbaceous species (usually a better indication of livestock effects), the seven pastures met standards. In addition, two other pastures were within 5 percent of the standard.

The Threshold of Variability was exceeded for FY '96. Achieving Forest Plan utilization standards for riparian zones continues to be of critical concern.

MONITORING ITEM 12: Noxious Weeds: Invasive Vegetation

Forest Goals, Desired Future Condition, and Outputs: Noxious weed infestations are controlled according to the managing competing and unwanted vegetation EIS, the Forest Plan, and applicable state laws and regulations.

Monitoring Question(s): 1. Are noxious weed infestations being treated in accordance with the Managing Unwanted or Competing Vegetation EIS, Forest Plan direction, and applicable State/Forest Service Memorandums of Understandings? 2. How much is the Forest using herbicides and prescribed fires (Regional Guide) to reduce noxious weeds? 3. Are noxious weed populations decreasing or remaining stable, and are they being prevented from infesting adjacent private lands? 4. Are the acres identified as infected by noxious weeds meeting the Forest target?

Threshold of Variability: Accomplished targets are at least 25 percent of identified infested areas.

Results/Findings:

Under the Forest's Noxious Weed Management Environmental Assessment (EA, 1995), 773 noxious weed sites and associated (i.e., the most appropriate) treatments were "cleared" for implementation including 1,390 acres for chemical treatment, 1,339 acres for biological treatment, and 41 acres for manual treatment. 1996 was the first full season for treating noxious weeds under the provisions of the EA. Whenever feasible, manual treatment of new noxious weed populations is employed to minimize the spread rate and to prevent increases in populations of new-invader noxious weed species.

Table II-2
NOXIOUS WEED TREATMENT - FY '96
Umatilla National Forest

District	Number of Sites Treated	Total Acres Treated
Pomeroy	68	465.8
Walla Walla	326	441.9
North Fork John Day	182	238.1
Heppner	700	591.2

Noxious weed species composition and abundance varies from district to district. On some districts, a noxious weed species has become so abundant that tracking in the database nor active treatment is no longer done. Table II-3 shows the acreages of various noxious weed species that were actively treated under the provisions of the EA during 1996.

During 1996, Pomeroy Ranger District treated 68 of the 116 sites cleared for treatment under the Forest's Environmental Assessment of 1995. A total of 88.2 acres were treated chemically, 150 acres were treated with biological agents, and 227 acres were treated manually. Several large patches of yellow starthistle were initially inventoried during the year.

Walla Walla Ranger District focused on KV-eligible treatment sites during 1996. As a result, some sites of more aggressive species (i.e., yellow starthistle) were not treated. Three-hundred twenty-six of the three-hundred sixty-eight "cleared" sites were treated by the District during 1996. On the District, a total of 79.9 acres were treated chemically. The remaining acres (362) were principally treated with manual methods.

Table II-3
ACRES OF SPECIES TREATED BY DISTRICT
Umatilla National Forest

Noxious Weed Species	Pomeroy	Walla Walla	NFJD	Heppner
Diffuse Knapweed	64	142.5	158.9	463
Canada Thistle	NT	92.7	5.4	0
Scotch Thistle	0	0.2	2.3	2
Tansy Ragwort	1.2	11.0	3.6	1
Spotted Knapweed	1.8	2.7	14	33
Bull Thistle	NT	76.5	NT	0
Dalmatian Toadflax	2.5	0	1.6	.1
Musk Thistle	0	.1	.6	0
Yellow Starthistle	382.1	0	.4	0
Hound's Tongue	3.2	8.35	48.8	5
St. John's Wort	11	8.9	NT	9
Scotch Broom	0	0	0.3	2
Medusa Head	0	0	0	0

*NT indicates the species is no longer tracked by the District either because of budgetary constraints or because the infestation is established and widespread and is no longer feasible to control.

North Fork John Day Ranger District used herbicides on 43 of the 99 noxious weed sites approved for chemical treatment. The District has relinquished tracking two species, bull thistle and St. John's wort, since the EA went into effect. Beetles continue to reduce the St. John's wort populations. District personnel are confident that they are achieving 100 percent treatment but remain vigilant for new invasions and new sites.

Heppner Ranger District continued to treat numerous small noxious weed infestations during the summer of 1996. A total of 13 acres of knapweed were treated chemically. This acreage is well below the 356 acreage of chemical treatment allowed in the Forest's Noxious Weed EA (1995). District personnel aggressively pursued the reduction of both new and existing infestations by treating 578 acres manually. Heppner Ranger District is experiencing invasions of yellow and Dalmatian toadflax along its western boundary and Scotch broom along its southern boundary. Portions of the Wheeler Point Fire area are expected to be invaded by both diffuse and spotted knapweed.

Evaluation:

With the exception of North Fork John Day Ranger District, all districts have opportunities to either treat additional cleared sites or to use more aggressive treatment methods allowable under the Environmental Assessment. Continued documentation of new sites and constant surveillance for new-invader species are needed in order to keep pace with actual noxious weed problem on the Forest. Continued monitoring is also needed to determine trends in noxious weed populations and effectiveness of control measures.

Approximately 44 percent of the active pastures did not receive adequate utilization monitoring. This situation is usually limited to small allotments consisting predominantly of private lands, or other lower priority allotments or pastures. This situation is a direct result of continued insufficient funding for range monitoring.

Evaluation:

Forage and browse utilization monitoring will continue to be emphasized as funding and priorities permit. The Forest needs to ensure that organizational skills and priorities provide for adequate monitoring with current (and anticipated) funding limitations.

Due to funding and skill limitations, emphasis will continue to be placed on monitoring of high priority pastures. Permittees will be strongly encouraged to provide assistance in ensuring that timely monitoring is completed and reported. The Forest Service will provide training to the permittees and will check this monitoring on a sample basis to ensure accuracy.

Continue to emphasize follow-up actions necessary to prevent further utilization once the standard is reached.

Effectiveness monitoring is needed to ensure that utilization standards being applied are in fact resulting in resource conditions and trends consistent with Forest Plan standards, with special emphasis on riparian conditions. During the last several years (see Monitoring Reports for FY 1993 and '94), the Forest has noted problems with riparian shrub utilization monitoring processes. A Regional team, led by Dr. Fred Hall (RO Ecologist), has determined that monitoring utilization of shrubs is currently not feasible within acceptable sampling intensities and errors. In the short term, the Forest proposes to apply protocols from "Herbaceous Stubble Height as a Warning of Impending Cattle Grazing Damage to Riparian Areas" (PNW-GTR 362, Sept. 1995) by Fredrick C. Hall and Larry Bryant.

MONITORING ITEM 13: Silviculture Harvest Method

Forest Goals, Desired Future Condition, and Outputs: Ensure that Forest silvicultural treatments comply with management objectives contained in the Plan; evaluate assumptions used in Forest Plan.

Monitoring Question(s): 1. Are the harvest methods implemented on the ground as portrayed in the Plan? (Reported by silvicultural method and acres treated.) How much clearcutting is occurring? 2. Do silvicultural prescriptions and processes follow Forest Plan standards and guidelines?

Threshold of Variability: Variance from planned method of more than 25 percent on an annual basis, 15 percent on a decade basis. Compare actual levels by method to Table 4-1 of the Plan.

Results/Findings:

Table II-4
HARVEST METHODS - 1996
Umatilla National Forest

Silviculture Method	Planned Output (Acres)	Actual '96 Output (Acres)	Percentage (Actual/Planned)
Clearcut	4,000	895	22%
Shelterwood/Seedtree	2,600	1,099	42%
Overwood Removal	1,500	216	14%
Uneven-age	900	293	33%
Salvage/Other		1,767	
Total	9,000	4,270	47%

Clearcutting was up in 1996, compared to 1995, as a result of salvage harvest. Total clear cut acres are well below levels established in the Forest Plan. The change meets Chief of the Forest Service direction (1992) to reduce clearcut acres on National Forests.

Silvicultural practices currently being applied no longer reflect the Forest Plan expected harvest method levels. In response to the 1995 Rescission Bill and on-going forest health concerns, most stand management is directed toward the following objectives:

- Control of tree density and species composition.
- Salvage of dead or dying trees to reduce the amount of carbon (biomass) on the site, thereby reducing the potential for unplanned fires or reburns.
- Re-establishment of vegetation structures that represent the historical range of variation, so that forest ecosystems are resilient and ecologically sustainable.
- Productivity enhancement through fertilization or fire-induced nutrient cycling, which also contributes to tree resistance to insects and diseases.

Regeneration harvests and application of even-aged management scenarios are not widely used right now, although such practices may increase in the future as sites with catastrophic insect damage are eventually restored. Silvicultural treatments are currently designed to meet the above objectives which emphasize salvage harvests, commercial and precommercial thinnings, understory removals, and a variety of other practices. Salvage harvest prescriptions are generally clearcuts because of the extensive areas of forest mortality resulting from large scale insect infestations. Clearcut acres can be expected to be below the threshold of variability until the Forest Plan is amended to reflect the policy change regarding clearcutting.

Acres of uneven-aged management projected in the Forest Plan were clearly not met within the last 5 years (though they were in 1991). The reduction in uneven-aged practices is also related to the recent forest health problem since uneven-aged management is often not successful in stands with high levels of insects and diseases. This will need to be re-evaluated to determine if the decade goal will be met. In the longer run, uneven-aged management may play a large role as the Forest moves into ecosystem management and focuses on reducing stand densities and increasing late old structure.

Upon comparing harvest methods to the Forest Plans for the last 5 years (1992 to 1996), the total accomplished acres (5-year average) is 31 percent below planned output acres (Table II-5).

Table II-5
HARVEST METHODS 1992-1996
Percent of 5 Year Average (Actual/Planned)
Umatilla National Forests

Silviculture Method	Planned Output (Acres)	1992	1993	1994	1995	1996	Actual Output 5 Year Average	Percentage (Actual/Planned) 5 Year Average
Clearcut	4,000	3,119	1,470	195	109	895	1,158	30%
Shelterwood/Seedtree	2,600	3,684	3,040	3,999	520	1,099	2,468	95%
Overwood Removal	1,500	5,693	2,770	1,635	504	216	2,162	144%
Uneven-age	900	142	327	342	944	293	410	46%
Salvage/Other	–	–	1,139	0	458	1,620	–	–
Total	9,000	12,628	7,607	6,171	2,077	2,503	6,198	69%

Evaluation:

Recent history of large scale insect infestations and large fires continues to influence the types of silvicultural methods used on the Forest. Silvicultural methods are likely to continue to deviate from Forest Plan expectations. The difference will remain until the Forest Plan is adjusted, sometime after completion of the Interior Columbia Basin Ecosystem Management Project (ICBEMP).

MONITORING ITEM 14: Created Openings

Forest Goals, Desired Future Condition, and Outputs: Achieve unit sizes that fall within the acceptable legal and desired ranges.

Monitoring question(s): Are unit sizes complying with direction in the Forest Plan, National Forest Management Act (NFMA), and Regional Standards?

Threshold of Variability: Maximum unit size exceeds size standard by more than 10 percent. Where exceptions allowed, unit sizes meet EA (Regional) requirements. Forest Plan standards and guidelines for dispersion.

Results/Findings:

The Forest Plan allows the 40-acre created opening size limitation to be exceeded when natural catastrophic situations occur. Currently, on the southern half of the Forest, extensive areas of insect mortality and damage are being harvested through salvage and other means. During 1996, some harvest units exceeded the 40-acre limit on four salvage timber sale areas, resulting from the high insect infestation mortality as follows: Three units in the Hollywood Salvage, five units on Hitching Post Salvage, and 17 units in the Lonestar Salvage (Heppner Ranger District); one unit on Spleen Salvage (North Fork John Day Ranger District). Respective environmental assessments and decision notices fully disclosed the need and justification to exceed Forest Plan requirements. On the remainder of the Forest, no other harvest area activity was found to exceed Forest Plan created opening standards.

Evaluation:

Forest Plan standards and guidelines were exceeded on a few areas on the Forest. Where the 40-acre limit was exceeded, salvage of insect-killed stands occurred and rationale for treating the entire damaged area was provided in environmental documents. In these cases, appropriate procedures and documentation were used for approving the exceptions.

The need for larger openings can be expected to continue into the near future. Planning for salvage of dead and dying trees is on-going for the large, destructive wildfires that occurred on the Forest during 1996. In addition, some of the large-scale insect mortality may still be salvageable.

MONITORING ITEM 15: Stand Management – Regeneration

Forest Goals, Desired Future Condition, and Outputs: Ensure successful reforestation to at least minimal stocking consistent with Forest Plan standards and guidelines. Determine if level of planting with genetically improved stock is consistent with level assumed in the Plan and managed yield tables.

Monitoring Question(s): 1. How many acres and what percentage were successfully reforested using natural and artificial regeneration practices. 2. How many acres were stocked at least to minimum levels within three growing seasons after reforestations period begin as required by NFMA? How many reforested acres (and %) are certified as established? 3. How many acres have been reforested with genetic stock with a stocking certification level "SB" or higher?

Threshold of Variability: 1. Greater than a 15 percent deviation from Forest Plan levels (Table 4-1) for acres regeneration harvested during a 5-year period. 2. Greater than a 10-year lag between time of harvest and attainment of at least minimum stocking levels. 3. For genetically improved tree stock, more than 10 percent reduction from levels assumed in the Forest Plan over a 5-year periods.

Results/Findings:

Natural and planted regeneration acres for FY '96 are displayed in the following table. For reporting purposes, natural regeneration includes the acres of site preparation for natural regeneration and acres of certified natural regeneration without site preparation (National and Regional procedures).

Table II-6
NATURAL AND ARTIFICIAL REGENERATION ACRES - FY 1996
Umatilla National Forest

Activity	Heppner	NFJD	Pomeroy	Walla Walla	Forest Total
Site Preparation for Regeneration – Natural – Artificial (planting/seeding)	 44 19	 0 692	 35 83	 54 744	 133 926
Natural Regeneration Without Site Preparation	1,197	3,469	253	548	5,467
Artificial Regeneration (planting)	1,474	1,067	254	381	3,176

Certification of regeneration is based on a site-specific determination; units must meet minimum stocking guidelines prior to certification. Currently the Forest performs regeneration examinations after the first and third growing season following regeneration. A staked row method is used to determine survival and growth of each seedling and overall area success. By using this method, the Forest certified a total of 9,022 acres (planted and natural regeneration) in FY 1996 as meeting or exceeding minimum stocking standards after 3 years. Certification represents acres which were reforested in 1993 and before.

The following table displays natural and artificial regeneration over the last 5 years. On average, the Forest plants 4,824 acres and naturally reforests about 4,134 acres per year. The 5-year average planting acres are also slightly higher (+10%) than the Forest Plan projection of 4,375 acres annually. In addition, the natural regeneration 5-year average acres are also slightly higher (+7%) than dispayed in the Plan (3,145 acres).

Table II-7
NATURAL AND ARTIFICIAL REGENERATION ACRES - FY 1992 TO 1996
Umatilla Naitonal Forest

Activity	1992	1993	1994	1995	1996	5 Year Average
Site Preparation for Regeneration						
– Natural	655	754	1,540	788	133	774
– Artificial (planting/seeding)	4,351	3,079	3,428	1,868	926	2,730
Natural Regeneration without Site Preparation	1,733	2,752	3,468	3,378	5,467	3,360
Artificial Regeneration (planting)	5,826	4,960	5,997	4,159	3,176	4,824

In FY 1996, the Forest planted 804 acres of genetically improved tree stock which met a certification level "SB" (SB signifies Subclass B. B means the female parent is known) or higher. The total represents 25 percent of the artificial regeneration acres (3,176) in 1996. Accomplishment is somewhat higher than levels assumed in the Forest Plan, but is within Plan levels for the decade.

For all species combined, the survival was approximately 69 percent. The following table shows survival by individual tree species in 1996 .

Species	Percent Survival
Ponderosa Pine	64%
Western Larch	75%
Douglas-fir	67%
Western White Pine	85%
Lodgepole Pine	95%
Engelmann Spruce	70%

The following table depicts the first and third year survival over the last 16 years. Upon comparing the first and third year survival (1996) against the 16-year average, first year was 22 percent below average and third year was 31 percent below average. Many factors are contributing to the low survival rates. Most notably weather, animals (domestic livestock trampling), big game, small mammals, i.e., gophers, porcupines, etc., competing vegetation, and site conditions.

Table II-8
TREE SURVIVAL - 16 YEAR AVERAGE
(1980 thru 1995)

Calendar Year	First Year Survival (%)	Third Year Survival (%)
1996	69	53
16 Year Average (1980-1995)	88	77
16 Year Range (1980-1995)	74-93	56-84

Evaluation:

Planned output for natural regeneration is 3,145 acres (Table 4-1, Forest Plan). In FY 1996, the Forest exceeded the Plan projection by 78 percent. For the second time since the inception of the Forest Plan, thresholds have been exceeded for natural regeneration for a given year. The increase is partly attributed to the catastrophic insect infestations of lodgepole pine areas (in the late 1970's and 1980's) which had delayed natural regeneration. The areas are only now being certified as stocked. The Forest anticipates that the threshold may continue to be exceeded until lodgepole areas are certified as regenerated. However, as noted in the findings, the 5-year natural regeneration average (1992 thru 96) is about 7 percent higher than the annual Forest Plan projections.

The planned planting levels is 4,375 acres (Forest Plan Table 4-1). In 1996, the Forest was 27 percent below the Plan output level. Findings described earlier indicate that the 5-year average (1992 to 1996) for artifical regeneration is within the Forest Plan threshold. However, the Forest expects that for the next several years, the reforestation program should substantially increase to reforest the Tower, Wheeler Point, and other large fires.

The first year survival percentages for 1996 were the lowest in 16 years. The third year survival rates for 1995 and 1996 were substantially below the long-term rates. In order to overcome the low survival, the Forest needs to have a thorough review of the program and investigate alternatives to increase survival success. For example, competing vegetation is very difficult to control using current techniques, such as scalping. One alternative would be the use of herbicides.

Recommendation is continue monitoring, with a change in practices to increase first and third year survival.

MONITORING ITEM 16: Stand Management – Ponderosa Pine Regeneration

Forest Goals, Desired Future Condition, and Outputs: Increase the relative amount of ponderosa pine on the Forest; re-establish or change to more seral species on the Forest.

Monitoring question(s): How many acres were reforested with ponderosa pine by either natural or artifical regeneration practices?

Threshold of Variability: If after 10 years pine is reforested on less than 35 percent of the acres regenerated.

Results/Findings:

In 1996, the total ponderosa pine planting on the Forest amounted to 1,510 acres, which represents 48 percent of the total acres planted. However, since the amount of ponderosa pine natural regeneration is unknown, an effective method for measuring the total amount of ponderosa pine regeneration is still not available.

The Forest plants a variety of species in the units, which may vary from 1 to 6 species per unit according to plant community and site conditions. The estimated acres of ponderosa pine regeneration is based on average number of seedlings planted by species and total acres planted, and then an estimate of how many acres would have been planted if a single species were planted.

Evaluation:

The threshold states at least 35 percent of the total acres regenerated on the Forest shall be planted with ponderosa pine within 10 years. It appears the threshold will not be exceeded. Recommendation is to continue monitoring.

The Forest has an ongoing need to develop a process which determines how much ponderosa pine is being naturally regenerated. The process should be included in the certification procedures currently being used. The need to identify ponderosa pine and other seral species regeneration levels (tied to appropriate site conditions) will likely become increasingly important as the Forest continues to move into Ecosystem Management.

MONITORING ITEM 17: Stand Management – Precommercial Thinning

Forest Goals, Desired Future Condition, and Outputs: Accomplish the planned amount of stocking level control on the Forest.

Monitoring Question(s): 1. How many acres were treated with stocking level control? 2. How many acres needing stocking level control were treated? (Relates to managed stand assumptions, and forest health questions.)

Threshold of Variability: 1. Greater than a 20 percent deviation from planned levels as indicated in the Forest Plan Table 4-1. 2. Fewer than 80 percent of the acres needing stocking level control actually received it.

Results/Findings:

Precommercial thinning accomplishment on the Forest in 1996 amounted to 4,127 acres. The planned amount is 2,900 acres (Forest Plan, Table 4-1). Thus, the 1996 accomplishment represents approximately 142 percent of planned output, which exceeds the threshold of variability for this item (20% deviation). The following table shows the actual output from 1992 to 1996 and the percentage of the actual output measured against planned output.

Table II-9
PRECOMMERCIAL THINNING ACRES
FY 1992-1996

Activity	1992	1993	1994	1995	1996	5-Year Average	Percentage of Forest Plan (Actual/Planned) 5-Year Average
PCT Acres	2,326	3,178	2,301	3,132	4,127	3,012	103%

All of the acres needing stocking level control, as reported in the NEEDS Report (reporting system identifies projects in need of management action), were treated in FY 1996.

The Heppner District initiated a mechanical thinning project by completing approximately 480 acres with a winged sub-soiler in 1996. The sub-soiler has a duel function of stocking level control and reducing soil compaction. As a result, four monitoring demonstration sites were established to determine the effects of this operation. The mechanical/sub-soil project was conducted in lodgepole stands that were killed by bark beetles in the 1970's. The District expects to complete the project in 1997.

Evaluation:

Thinning results exceeded the thresholds for 1996. However, when comparing the Forest Plan projection against the 5-year average, the Forest is within the threshold.

As a result of Ecosystem Management direction and restoration needs, the Forest anticipates an increase in thinning during the next several years: 1) to reduce stand densities in over stocked stands, 2) to reduce fire hazards, and 3) to emphasize the proportion of seral species in mixed stands with an overall goal of improving forest health. Oregon State Governor John Kitzhaber's "Proposed Consensus - Approach to Eastside Ecosystem Health Restoration" has identified 11 major points. Of the major points, one specifically addresses the use of thinning to restore forest ecosystems.

For the last several years, appropriated funding for thinning has declined. This is a result of the large reforestation program to restore fire-damaged areas within the United States. Unless priorities change, i.e., shifts from reforestation to thinning, the Forest may see the backlog of thinning acres increase. Changes in funding practices (how funds are allocated at the national level) is needed to ensure funds are allocated to priority areas (reforestation vs. thinning).

MONITORING ITEM 18: Fire Effects – Prescribed Fire

Forest Goals, Desired Future Condition, and Outputs: Maintain or enhance ecosystem functions to provide for the long-term integrity (stability) and productivity of biological communities. Provide and execute a fire use program that is responsive to land and resource management goals and objectives. Use of prescribed fire will be expanding in project activities of all types and in reduction of natural fuels. Fire will be allowed to play a more natural role in the wildernesses.

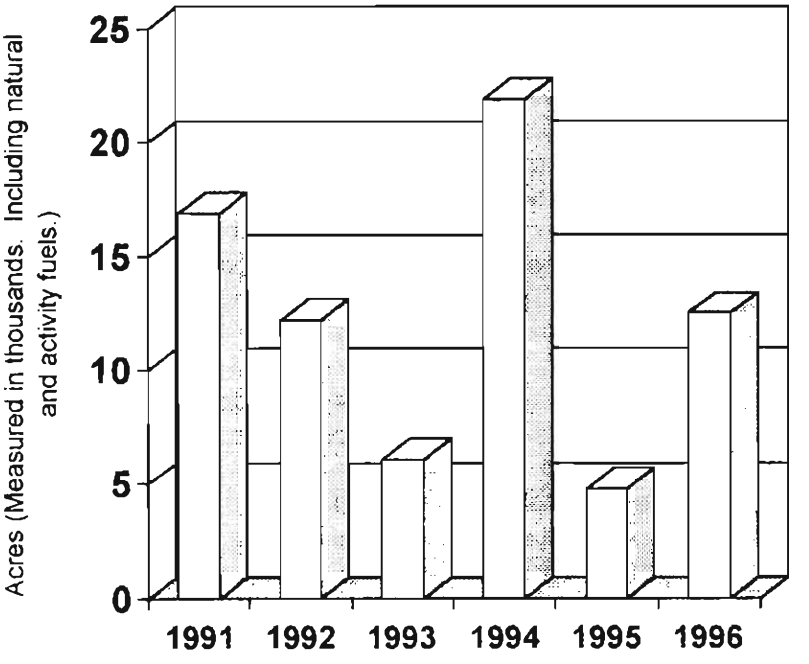
Monitoring Question(s): 1. Are the prescribed fire treatments meeting Forest Plan residue (materials left on site) and resource objectives? 2. What are the stand structure (overstory and understory) and species responses in the prescribed burned area?

Threshold of Variability: Prescriptions not being met by 20 percent or more of areas. Five percent of subwatershed impacted by high intensity fires within a 3-year period.

Results/Findings:

The prescribed fire program continues to be used to accomplish management objectives such as fuels reduction, site preparation, range improvement, and wildlife enhancement. Figure G shows the evolving prescribed fire program.

Figure G
PRESCRIBED FIRE PROGRAM - ACRES
1991 to 1996



During FY '96, monitoring was initiated and/or conducted on several prescribed burn projects on the Forest. The following are some of the results reported by the Districts:

The Heppner Ranger District tested the impact of burning on overstory trees left in units. During the spring of 1994, 54 regeneration harvest units from the FY 1994 burning program were selected to be monitored for leave tree mortality. Monitoring was done one growing season after burning (fall 1994) and two growing seasons after burning (1995). Cause of mortality was categorized into three general causes; (1) fire, (2) insects, and (3) blowdown. Total acreage of the monitored units is 1,338. The following table summarizes tree mortality (numbers of trees) by general cause (no numbers were available with regards to the number of live trees to start with):

Table II-10
TREE MORTALITY FOLLOWING PRESCRIBED BURNING
Heppner RD, Umatilla National Forest

	Fire	Insects	Blowdown
Fall 1994	49	71	16
Fall 1995	22	75	54
Grand Total	71	146	70
Avg. Trees/Unit	1.3	2.7	1.3
Avg. Trees/Acre	0.05	0.11	0.05

On the North Fork John Day Ranger District, two different burns were analyzed to determine if objectives were met. On the OJ #4, a spring prescribed underburn, about 2,260 acres, was conducted with the objective of reducing fuel levels, thinning overstocked stands and promoting ponderosa pine. Results are seen in Table II-11 below.

Table II-11
OJ #4 PRESCRIBED UNDERBURN
North Fork John Day RD, Umatilla National Forest

	Results	
Burn Objectives	Prescribed	Observed
Reduce 0 to 3 inch fuels	30 to 50%	25% Overall
Reduce 3 inch and larger fuels	15 to 25%	10%
Expose Mineral Soil	10% of area	5%
Retain down woody material	2 logs/acre	2+ logs/acre
Retain standing snags/WL trees	85 to 90%	98%
Retain overstory trees	85 to 90%	99%
Initial fuel loading was estimated at 11.3 tons/acre Post Burn Fuel Loading was estimated at 9.0 tons/acre		

In general, the underburn area lower slopes tended to burn well and full reduction objectives were exceeded. On the higher slopes, the burn was not clean and objectives were not met. Mortality was light across the unit. Re-entry with another burn was suggested for the upper part to further reduce fuel loadings but was not needed on the remaining area for another 10 years.

The Howard Again #7 was a 35-acre prescribed broadcast burn in a lodgepole clearcut with the burn intent of creating planting spots, reducing fuel loads, and reduce competing vegetation. Results are summarized in Table II-12, below.

Table II-12
HOWARD AGAIN #7
North Fork John Day RD, Umatilla NF

	Results	
Burn Objectives	Prescribed	Observed
Reduce 0 to 3 inch fuels	15 to 45%	75%
Reduce 3 inch and larger fuels	15 to 40%	50%
Create Planting Spots	250 to 400	500+
Retain standing snags/WL trees	80 to 90%	80%
Initial fuel loading was estimated at 8.0 tons/acre Post Burn Fuel Loading was estimated at 3.0 tons/acre		

The Howard Again #7 prescribed fire met residual material standards as well as site preparation objectives. However, 20 percent of the wildlife snag trees were lost to fire and prefire site preparations.

On the Walla Walla Ranger District, 16 photo "transect" plots were revisited at the Spout Summer Homes Fuels Reduction Project after prescribed burning was completed. These photo plots were used in conjunction with photo series for quantifying forest residue to determine fuel loadings. The project objectives were to reduce the total fuel loading to a level equivalent to a Fire Behavior Prediction System Fuel Model 8, characterized by low fire intensities and low resistance to control. The table below exhibits the reduction in surface fuel loading accomplished through a combination of salvage activities and prescribed burning.

Table II-13
CHANGES IN FUEL LOADING
Spout Summer Homes Fuels Reduction Project
Walla Walla RD, Umatilla NF

Size Class	Pre-Salvage	Post-Salvage	Post-Burn
0 to 3 inch	5	7	3
3+ inch	35	14	12
Total	40	21	15

Overall, fuels were reduced to a level which will exhibit a low intensity flame with low resistance to control. Project objectives were achieved.

Concern has been expressed about mortality to thin barked species, such as Engleman spruce and lodgepole pine by the project. Initial stand examination results have shown cambium kill to Engleman spruce and lodgepole pine. Needles are still green so mortality has not been recorded. Damage caused by the prescribed fire to Engleman spruce showed 20.2 trees per acre having minor damage and 9.3 trees per acre with severe. Follow-up surveys in October 1996 showed 18.9 trees per acre with minor damage and 11.2 with severe. Plots are to be remeasured in the future to continue tracking effects of the burn.

Data documenting vegetative responses to prescribed fire have been collected on the Heppner Ranger District since 1993. Parameters summarized from the raw data include percent exposed substrate, percent vegetative cover, floristic biodiversity, undesirable non-native species, undesirable native species, annual non-native species, perennial non-native species, annual native species, and perennial native species. These parameters reflect issues assocated with prescribed burning and its long-term effects on vegetation. Macroplot summaries for these parameters are given in the tables below.

Table II-14
THREE-TROUGH PLOT 1993-1
Umatilla National Forest

Parameters	Pre-burn (1993)	Post-burn (1994)	Post-burn (1995)	Post-burn (1996)
Exposed Substrate (Av. %)	54	71	62	89
Vegetative Cover (Av. %)	46	29	38	11
Floristic Biodiversity (No. Sp.)	5	11	13	21
Undesirable Non-Native Species	0	0	1	0
Undesirable Native Species	0	0	0	0
Annual, Non-Native Species	0	0	1	1
Perennial, Non-Native Species	0	0	0	1
Annual, Native Species	0	5	5	6
Perennial, Native Species	5	6	6	13

Table II-15
THREE-TROUGH PLOT 1993-2
Umatilla National Forest

Parameters	Pre-burn (1993)	Post-burn (1994)	Post-burn (1995)	Post-burn (1996)
Exposed Substrate (Av. %)	39	48	41	64
Vegetative Cover (Av. %)	61	52	59	36
Floristic Biodiversity (No. Sp.)	9	14	16	14
Undesirable Non-Native Species	0	0	0	0
Undesirable Native Species	0	0	0	0
Annual, Non-Native Species	0	0	1	1
Perennial, Non-Native Species	0	0	1	0
Annual, Native Species	0	1	1	0
Perennial, Native Species	9	13	14	12

Table II-16
BIG ROCK FLAT PLOT 1993-4
Umatilla National Forest

Parameters	Pre-burn (1993)	Post-burn (1994)	Post-burn (1995)	Post-burn (1996)
Exposed Substrate (Av. %)	50	58	40	76
Vegetative Cover (Av. %)	50	42	60	24
Floristic Biodiversity (No. Sp.)	12	13	15	19
Undesirable Non-Native Species	0	0	1	1
Undesirable Native Species	0	0	0	0
Annual, Non-Native Species	0	0	1	0
Perennial, Non-Native Species	1	1	1	2
Annual, Native Species	1	2	3	2
Perennial, Native Species	10	8	9	15

From the information gathered to date, several general observations can be made, including:

• Vegetative Cover. The vegetative cover decreased on all plots in response to the prescribed burning. In following years, the vegetative cover increased and then decreased (in 1996). The post burn increase has moved toward or exceeded pre-burn cover levels. The decline in vegetative cover for 1996 may be attributed to differences in the timing of the reading of the plots or to different estimating methods or interpretations of vegetative cover.

• Floristic Biodiversity. The floristic richness on all prescribed burn plots has increased since the initial burning.

• Undesirable Native and Non-native Species. Non-native, undesirable species have appeared in some plots but do not appear to be persistent. For example on Big Rock Flat - Plot 4, a single undesirable species (Canada thistle) is beginning to invade this burn plot. This species produces wind-dispersed seeds and is probably invading the burn plot from adjacent areas. However, the general trend shows that prescribed fire did not trigger an invasion of exotic species into burned areas.

• Native Annual and Perennial Plant Species. Generally, both annual and perennial species are showing an increase in number on the plots. The one exception may indicate that vegetation may not have stabilized on the plot. The overall increase may indicate residual seed bank expression or the invasion of the burned area by propagules originating in areas adjacent to the burn.

Evaluation:

The recommendation is to continue monitoring with emphasis of standardizing the vegetative data collection procedures (also see recommendation for MI 8 Fire Effects - Wildfire on Water and Soil).

B. PLANTS

MONITORING ITEM 20: Threatened, Endangered, and Sensitive Species

Forest Goals, Desired Future Condition, and Outputs: Conserve existing populations and habitats for sensitive plant species. Ensure that T/E/S plant species are protected and management standards are met.

Monitoring Question(s): Is adequate protection afforded the documented sensitive plant species of the Forest?

Threshold of Variability: Any deviation from recommended mitigation provided on the Biological Evaluation for the T/E/S survey site.

Results/Findings:

During Fiscal Year 1996, the Forest completed sensitive plant surveys on 158,443 acres. The cumulative Forest total amounts to more than 1 million acres. Notable gaps in plant data occur in two of the three wilderness areas of the Forest. Special survey emphasis was placed on areas scheduled for timber harvest during 1997, 1998, and 1999. With the exception of Heppner Ranger District, surveys were completed on all districts with 18,375 acres surveyed on Pomeroy District, 78,268 acres surveyed on North Fork John Day District, and 61,800 acres surveyed on Walla Walla District.

Two new-to-forest sensitive species were found during the summer of 1996. Three small populations of long-bearded mariposa lily (Calochortus longebarbatus longebarbatus) were found on North Fork John Day Ranger District within temporary livestock exclosures. One population of Snake River daisy (Erigeron disparipilus) was found on Walla Walla Ranger District. The total number of sensitive plant species with documented occurrences on the Forest now stands at 28. A total of 47 new sensitive plant populations were added to the Forest's TEPO (Threatened, Endangered, Plant Occurrence) database and GIS layer during 1996. This brings the total number of sensitive plant populations known to occur on the Umatilla to 679. Changes in the Regional Forester's Sensitive Plant Species List or in the Washington Natural Heritage Program or Oregon Natural Heritage Program lists 1 and 2 will cause this number to fluctuate over the next few years (the WNHP listed two species known to occur on Pomeroy Ranger District in December of 1996).

During 1996 a total of 96 Biological Evaluations for plant species listed as "sensitive" on the Regional Forester's Sensitive Plant Species were issued. Twenty Biological Evaluations were issued for Pomeroy Ranger District projects; 17 for Walla Walla Ranger District; 33 for North Fork John Day Ranger District; 25 evaluations for Heppner Ranger District; and 1 forest-wide Biological Evaluation was issued.

Monitoring activities for sensitive plant populations focused on Pomeroy, Heppner, and North Fork John Day ranger districts during 1996. Two populations of clustered lady's slipper orchid (Cypripedium fasciculatum) were monitored on Pomeroy Ranger District. Mitigation measures for both populations had been written in 1995. Neither population showed declines in numbers during 1996. The only population of Douglas clover (Trifolium douglasii) extant in the State of Washington was also monitored on Pomeroy Ranger District. The Douglas clover population was stable for 1996. However, this population is impacted by recreational traffic and grazing and is also situated proximal to a noxious weed population.

On Heppner Ranger District, district crews coordinated completion of a 10-acre fencing project to exclude livestock from the Forest's only known population of arrow-leaved thelypody (Thelypodium eucosmum). Two partners, the Blue Mountain Chapter of the Native Plant Society of Oregon and the Heppner Probing Terrans 4-H club, were part of this challenge cost share project. The 4-H club will be used in monitoring the arrow-leaved thelypody populations in 1997. The arrow-leaved thelypody population was monitored prior to fence construction and appears to be stable. The District has maintained temporary electric fences to protect this species during grazing periods since the discovery of the populations in 1993.

A single population of Douglas clover was monitored on the North Fork John Day Ranger District during 1996. This population, which was subjected to grazing during 1995, showed a stable population trend. Efforts to relocate the Forest's only populations of two sensitive species–one each of two-spiked moonwort (Botrychium paradoxum) and crenulate moonwort (Botrychium crenulatum)–were unsuccessful. A report from a U.S. Fish & Wildlife employee early in the season indicated that the Botrychium paradoxum plant was present but it had been removed at the time the site was monitored (August, 1996).

Evaluation:

Continue monitoring with "at risk" populations prioritized for monitoring activities. Other populations should be monitored as time and budget allow, particularly if such populations are subjects of mitigation measures written into biological evaluations. Continued monitoring efforts should be directed at those species that are least likely to be dropped from the Regional Forester's Sensitive Plant Species List.

Permanent fencing projects on North Fork John Day Ranger District should afford protection for the long-bearded mariposa lily (Calochortus longebarbatus longebarbatus) and one population of Douglas clover (Trifolium douglasii).

C. INSECT AND DISEASE

MONITORING ITEM 21: Insect and Disease Control

Forest Goals, Desired Future Condition, and Outputs: "Protect resources and values from unacceptable losses due to destructive pests . . . Monitor levels and activity of forest pests . . . identify or predict when and where they will hinder the attainment of management area objectives."

Monitoring Question(s): 1. What are the current levels and activities and their trends of key insects and diseases? Are insect and disease organisms threatening land management objectives? 2. Are management practices mitigating the adverse effects of insects and diseases? Are they effective?

Threshold of Variability: Evidence of insect or disease populations at or above epidemic levels. (Note: Evaluated by Forest Pest Specialists given the agent's intensity and magnitude).

Results/Findings:

The Regional Office (Pacific Northwest Region) conducted the annual aerial surveys to determine the extent and trend of forest pest damage. The following table exhibits the annual pest survey results since 1992 along with the 5-year average. The information shows the total acres containing trees which have had some level of defoliation or acres with some trees killed by forest insects (note: surveys are cumulative, which means wherever a tree is defoliated or killed by insects, the area containing the tree is delineated and mapped. Areas mapped may either be localized to a specific area or spread across a vast area or region).

Table II-17
ANNUAL PEST SURVEY ACRES 1991 to 1995
Umatilla National Forest

Insect	District	1992	1993	1994	1995	1996	5 YR AVG
Budworm (very low/low) impact levels	HP	6,046	0	0	0	0	1,209
	NF	7,437	0	0	0	0	1,487
	PM	51,670	0	0	0	0	10,334
	WW	241,992	0	0	0	0	48,398
	Total	307,145	0	0	0	0	61,428
Budworm (moderate/high)	HP	17,581	0	0	0	0	3,516
	NF	11,087	0	0	0	0	2,217
	PM	2,044	0	0	0	0	408
	WW	3,725	0	0	0	0	745
	Total	34,437	0	0	0	0	6,886
Douglas-fir Beetle	HP	6,468	197	20,090	5,453	89	6,459
	NF	19,321	723	4,373	9,005	50	6,694
	PM	862	87	243	32	106	266
	WW	3,116	1,255	2,081	3,049	451	1,990
	Total	29,767	2,262	26,787	17,539	696	15,409
Fir Engraver	HP	1,975	48	28	379	37	493
	NF	1,483	38	10	1,640	535	741
	PM	0	0	0	85	165	50
	WW	775	794	1,306	745	112	746
	Total	4,233	880	1,344	2,849	849	2,031
Mountain Pine Beetle	HP	414	604	36	810	26	378
	NF	96	1,035	71	200	0	280
	PM	3	14	115	63	173	74
	WW	37	184	0	507	0	146
	Total	550	1,837	222	1,580	199	878

HP - Heppner, NF - North Fork John Day, PM - Pomeroy, WW - Walla Walla

Results from the aerial survey show that insect activity was down from last year. For the fourth year in a row, Western Spruce Budworm populations have no new reported acres detected. The Douglas-fir bark beetle continues to have an impact on forest stands. However, as compared to previous years, acres impacted have dropped significantly. Other insects causing damage in 1995 included pine engraver beetle and western balsam bark beetle.

Tussock moth pheromone sampling continued on the Forest in 1996. The trapping of the Douglas-fir Tussock Moth is part of a Regional early warning system to alert resource managers of possible outbreaks. Twenty-six sites were located across the Forest with 5-traps/per site. Of the total traps monitored and reported, only 15 moths were found (data from the Walla Walla Ranger District was not available for this report). The Tower fire destroyed traps in the Cable Creek area (North Fork John Day Ranger District) and data is unavailable from this site. At this time, population levels are well below the regional epidemic threshold of 40 moths per trap. However, the 1996 level is an increase over 1994 and 1995, as no moths were reported as trapped in previous years.

In September 1996, Forest Service specialists from the Blue Mountains Pest Management Zone, La Grande, conducted an insect and disease evaluation of the Tower (50,800 acres) and Bull (9,500 acres) fires. The objectives of the evaluation was to assess current insect and disease conditions and potential risks to fire-injured stands as part of the rehabilitation program for the burned areas. Most of the focus was on trees and stands that were injured but not killed by the fires. Fire killed trees offer little or no risk of being attacked by bark beetles because these trees are unsuitable for brood development. The Forest, in conjunction with the Pest Management Specialist, is planning to install monitoring plots throughout the Tower Fire area in 1997 to evaluate the post-fire insect and disease activity and concerns raised by the Forest.

A series of other surveys was conducted on the Forest by Pest Specialists. Highlights include:

Table II-18
PEST SURVEY FINDINGS
Umatilla National Forest

District	Project/Site Evaluation	Summary of Findings
Heppner	Shaw Planning Area	High levels of existing insect and disease.
North Fork John Day	Olive Lake Recreation Site	High incidence of decay in true fir.
	Lane Creek Recreation Site	Numerous killed firs. Trees with dead tops warrant removal.
	Bear Wallow Recreation Site	Healthy conditions exist within this site.
	Divide Well Recreation Site	Some trees have Indian paint, within the campground. Annosus root disease confirmed in some recently killed fir. Douglas-fir beetles have killed a few trees. Douglas-fir mistletoe poses threat of tree mortality.
	Noname Planning Area	Mixed conifer stands in poor condition due to dwarf mistletoe, budworm and bark beetles. Stands heavily stocked with shade tolerant species.
Pomeroy	Petty Timber Sale	Established shade-tolerant grand fir are succumbing to beetles and Amarillaria root disease.
	Triple Ridge Timber Sale	Forest quite variable in species composition and stand types. Fir species have increased on the site.
	Charlie Creek Area Evaluation	Douglas-fir mortality apparent thorughout due to Douglas-fir beetle; Douglas-fir dwarf mistletoe noted as severe.
	Round Prairie Area Evaluation	Douglas-fir and larch dwarf mistletoe present in varying degrees of severity. Infected Douglas-fir understory is unmanageable. Infected older Douglas-fir will eventually be killed by mistletoe or Douglas-fir beetles.
	Lick Timber Sale	Area partially surveyed. Grand fir component affected or threatened by fir engraver beetle and annosus root disease. Many of the grand fir are dead on parts of area. Most Douglas-fir is infected with dwarf mistletoe.

District	Project/Site Evaluation	Summary of Findings
	Gobbler Timber Sale	Blackstain root disease noted, due to the stressed, off site trees and severe soil compaction. Recent pine engraver activity observed, mostly associated with trees infected with Armillaria root disease found throughout the area. Dwarf mistletoe located throughout the area.
Walla Walla	Buzzard Planning Area	Substantial changes from initial 1989 site review. Increased subalpine fir decline and mortality due to secondary insects and diseases. Other species impacted by tree diseases and insects.
	Grande Ronde Salvage Unit #2	Significant insect and disease occurrence and activity within the stand. Such conditions could result in imminent tree mortality.

In summary, observations made by field personnel and insect/disease specialists continue to indicate that many different diseases and insects are affecting the forest resources. Many are increasing in severity as a result of fire exclusion, increased stand densities of shade-tolerant species and reduction of larger ponderosa pine and other seral species. Indian paint fungus is prevalent across the Forest with varying degrees of severity. Root diseases continue to be found throughout the Umatilla including Armillaria, Annsous, and laminated. Armillaria and annsous root disease is both increasing in severity and distribution. Dwarf mistletoe are also increasing in severity, particularly in Douglas-fir and western larch. The on-the-ground reviews show that insects, in combination with diseases, are damaging or killing a substantial amount of trees throughout the Forest.

Evaluation:

In summary, serial pest survey show no new reported acres for the Western Spruce Budworm. Of the pheromone traps collected for the Douglas-fir Tussock Moth, a marked increase from the past 2 years was noted but numbers are below Regional criteria. The Forest needs to monitor this increase closely to determine if an outbreak trend is developing. Findings for bark beetles (Douglas-fir and Mountain Pine) and fir engraver show a decrease from the last several years.

Current methods to track forest diseases is through observation and surveys conducted by Forest Service and Pest Management personnel. In order to obtain actual acres infected with disease, an intensive inventory is needed. However, the surveys and observations continue to suggest major forest health problems related to insects and diseases. The Forest needs to begin effectively addressing Monitoring Question 2. A number of observations (and research) indicates that the current level of forest health is directly related to several key past practices. Improvement in the insect and disease impact levels can only be accomplished through adjustments in practices (and possibly changes to Forest Plans).

E. WILDLIFE

MONITORING ITEM 23: Elk/Deer Habitat and Estimated Populations

Forest Goals, Desired Future Condition, and Outputs: Maintain habitat capability to support potential big game populations identified in the Forest Plan.

Monitoring Question(s): 1. Are the populations being maintained as predicted in the Plan? 2. Are the standards and guidelines being followed as required to meet habitat effectiveness index levels established for the subwatershed and (aggregated to the) management area? 3. Are the assumptions pertaining to the prediction of cover resulting from harvest and silvicultural activity valid? Are the assumed interrelationships between cover spacing, cover quality, open roads valid? 4. Are the assumptions relating elk habitat effectiveness to elk populations valid?

Threshold of Variability: 1. Elk habitat effectiveness indices, including discounts for open roads, is more than 10 percent below the objective in any given management area (by subwatershed) at any point in time. 2. Populations of a herd unit or winter range unit is more than 20 percent below state population index values as measured by total populations, bull/buck component, and cow/calf or doe/fawn ratios for a 3-year period.

Results/Findings:

Post season elk and deer data was derived from the Oregon Department of Fish and Wildlife and the Washington Department of Fish and Wildlife surveys. Table II-19 and II-20 contain elk and deer management objectives, population estimates, bull or buck ratios, and calf/fawn survival rates for each management unit occurring on the Forest. Management units are separated by state and aggregated into groups for evaluation.

Table II-19
ROCKY MOUNTAIN ELK
MANAGEMENT OBJECTIVES AND WINTER POPULATION ESTIMATES FOR 1994-1996
Umatilla National Forest

Management Unit	Population Estimates				Bulls Per 100 Cows				Calves Per 100 Cows		
Washington** 'North'	Mgmt. Object.	1994	1995	1996	Mgmt. Object.	1994	1995	1996	1994	1995	1996
Watershed	400	375	375	375	15	15	19	26	19	13	24
Dayton	800	690	725	719	15	17	13	9	18	18	25
Tucannon	1,200	610	410	376	15	10	12	13	21	16	23
Wenaha	1,200	700	700	600	15	27	27	19	19	6	13
Lick Cr.	1,000	760	650	600	15	5	6	5	17	14	23
Mt. View	1,100	345	520	475	15	19	25	14	18	21	27
Washington Total	5,700	3480	3,380	3,145	15#	16#	17#	14#	19#	15#	23#

Oregon*	Mgmt. Object.	1994	1995	1996	Mgmt. Object.	1994	1995	1996	1994	1995	1996
'North'											
Wenaha	4,250	1,700	1,900	1,700	10	13	17	14	23	23	14
Walla Walla	1,800	2,150	2,000	1,900	10	13	11	14	18	29	21
Mt. Emily	5,700	5,700	6,000	6,000	10	5	7	6	26	35	17
'South'											
Ukiah	5,000	6,000	5,800	5,500	10	6	2	8	33	31	25
Desolation	1,300	1,550	1,400	1,400	10	6	6	10	27	48	27
Heppner	2,800	2,900	2,950	2,900	10	5	5	6	41	39	43
Fossil	700	1,250	850	800	10	14	6	12	37	46	53
Oregon Total	21,550	21,250	20,900	20,200	10#	9#	8#	10#	29#	36#	29#
'North' Total/Avg.	17,450	13,030	13,280	12,745	13#	14#	15#	13#	20#	19#	21#
'South' Total/Avg.	9,800	11,700	11,000	10,600	10#	8#	5#	9#	35#	41#	37#
Forest Total/Avg.	27,250	24,730	24,280	23,345	12#	12#	12#	12#	24#	26#	26#

* Source: Big Game, Oregon Department of Fish and Wildlife, 1996
**Source: Pat Fowler, Wildlife Biologist, Washington Department of Wildlife.
Average for the area.

Elk populations for combined management units (MU) on the "north" half of the Forest (Watershed, Dayton, Tucannon, Wenaha (WA), Lick Creek, Mountain View, Wenaha (OR), Walla Walla, and Mt. Emily), were estimated at about 12,750 animals for 1996. The estimate is about 27 percent below the objective and the lowest total for the "north" end of the Forest in the last 3 years. Five of the nine management units in the area, including the Tucannon, Wenaha(WA), Lick Creek, Mountain View, and Wenaha(OR), are 40 percent or more below the SMO. The remaining units are estimated to be within 10 percent (+ or -) of the SMO. Bull/cow ratios have improved in these management units over the last few years and most tend to be "near" the SMO in 1996. The average bull/cow ratio for the "north" section of the Forest in 1996 was 13 bulls per/100 cows. Calf/cow ratios in the "north" have been consistently low in all the management units for the last 3 years with ratios averaging about 20 calves per 100 cows. In 1996, calf/cow ratios ranged from a low of 13 calves/100 cows in the Wenaha (WA) unit to a high of 27 calves/100 cows in the Mountain View (WA) management unit. When compared to calf/cow ratios in 1995, the six management units in Washington increased and the three units in Oregon decreased.

1996 elk population estimates on the "south" half of the Forest (Ukiah, Desolation, Heppner, and Fossil) are about 8 percent above the objective, but show the lowest population in the area for the last 3 years. Populations in each of the management units have decreased in the last 3 years to meet management objectives for the unit. In 1996, population estimates for the four units are all above SMO, ranging from 14 percent (Fossil) to 4 percent (Heppner). Bull/cow ratios in 1996 improved for all the management units on the "south" end when compared to 1995 estimates and was near the objective. Calf/cow ratios in the area have generally been stable across all management units for the last 3 years with estimates averaging about 38 calves per 100 cows. In 1996, calf/cow ratios ranged from a low of 25 calves/100 cows in the Ukiah unit, to a high of 53 calves/100 cows in the Fossil unit. When compared to calf/cow ratios in 1995, two units increased and two units decreased.

As seen in Table II-20, deer populations on the "north" end of the Forest (Watershed, Dayton, Tucannon, Wenaha(WA), Lick Creek, Mountain View, Wenaha(OR), Walla Walla, and Mt. Emily) collectively were estimated at 8,850 animals in 1996. This estimate is about 24 percent below the objective and the lowest total for the area in the last 3 years. In general, populations have been consistently low in Oregon and declining in Washington for the last 3 years. Buck/doe estimates tend to be below SMO for many of the management units on the "north" end. Averaged buck/doe ratios was estimated at 14 bucks per 100 does. In 1996, fawn/doe estimates on the "north" portion of the Forest ranged from a low of 39 (Wenaha (OR)), to a high of 72 (Walla Walla), and a average of 58 fawns/100 does. The average for the area increased when compared to the 1995 estimates.

The 1996 combined deer estimates on the "south" half of the Forest (Ukiah, Desolation, Heppner, and Fossil Big Game Management Units) show a population of about 33,600 animals or about 79 percent of the Forest-wide population. The Heppner and Fossil units account for about 65 percent of the "south" end estimates and 61 percent of the Forest wide estimates. However, total deer populations on the "south" end of the Forest are about 8 percent below the SMO. Over the past few years, the Heppner unit has been within 5 percent of the SMO, the Ukiah and Fossil units have been within 20 percent of the SMO, and the Desolation unit has been within 40 percent of the management objective. The buck/doe estimates had a tendency to be above SMO in most of the management units for the past 3 years. The buck/doe ratio averaged for this area in 1996 was estimated at 17 buck/100 does. In 1996, fawn/doe estimates on the "south" portion of the Forest ranged from a low of 37 fawns/100 does (Desolation), to a high of 52 fawns/100 does (Ukiah), and a average of 46 fawns/100 does. The average for the area increased slightly when compared to the 1995 average fawn/doe estimates.

Table II-20
DEER (Mule and White-tailed)
MANAGEMENT OBJECTIVES AND WINTER POPULATION ESTIMATES FOR 1994-1996
Umatilla National Forest

Management Unit	Population Estimates				Bucks Per 100 Does				Fawns Per 100 Does (Fall)		
Washington**	Mgmt. Object.	1994	1995	1996	Mgmt. Object.	1994	1995	1996	1994	1995	1996
"North"											
Watershed	N/I	200	150	100	16	–	–	20	–	–	40
Dayton		1,800	1,200	1,500	16	17	16	15	88	38	70
Tucannon		600	400	400	16	26	10	10	45	50	70
Wenaha		600	350	300	16	12	7	10	57	65	39
Lick Cr.		300	150	150	16	11	16	20	20	30	66
Mt. View		400	300	200	16	10	14	10	46	27	65
Washington Total		3,900	2,550	2,650	16#	15#	13#	14#	51#	42#	58#

Oregon*	Mgmt. Object.	1994	1995	1996	Mgmt. Object.	1994	1995	1996	1994	1995	1996
"North"											
Wenaha	1,500	1,350	1,200	1,000	12	12	7	11	57	65	39
Walla Walla	1,900	1,235	1,330	1,200	15	9	13	11	83	60	72
Mt. Emily	5,000	4,000	4,000	4,000	15	22	14	17	62	67	63
"South"											
Uklah	6,700	6,000	6,000	6,000	15	26	18	24	75	57	52
Desolation	2,500	1,750	1,750	1,500	12	21	14	32	52	0	37
Heppner	13,500	12,825	14,175	13,500	12	17	16	12	75	63	49
Fossil	14,000	11,200	12,600	12,600	12	10	13	11	33	53	44
Oregon Total	45,100	38,360	41,055	39,800	13#	17#	14#	17#	62#	61#	51#
"North" Total/Avg.	11,630	10,485	9,080	8,850	15	15	12	14	57	50	58
"South" Total/Avg.	36,700	31,775	34,525	33,600	13#	19#	15#	20#	59#	43#	46#
Forest Total/Avg.	48,330	42,260	43,605	42,450	15#	16#	13#	16#	58#	48#	54#

* Source: Big Game, Oregon Department of Fish and Wildlife, 1996
**Source: Pat Fowler, Wildlife Biologist, Washington Department of Wildlife.
Average for the area.
N/I No information Available
Dayton - Formally Touchet and Eckler Units

Habitat Effectiveness Index (HEI) estimates are developed and applied by projects. The estimates are valid at the subwatershed (and management area) scale on the Forest. However, HEI analysis on the south end of the Forest was not conducted at the project level in 1996 because timber sale preparation focused primarily on salvage operations within stands of dead and dying trees. The potential cover provided by these stands was lost previously through insect and disease outbreaks as described in earlier monitoring reports. On the Pomeroy Ranger District, HEI calculations were done for the Tucannon and Gobbler timber sales, both of which lie within big game winter range. Currently, the winter range HEI of 64 does not meet Forest Plan management area HEI requireemnts of 70; the project areas are presently at 58. Analysis showed the Tucannon Sale proposal didn't change HEI levels and the Gobbler Sale reduced the current situation by 1 point, considered to be a minor reduction by the District Wildlife Biologist.

In 1996, a Forest-wide HEI determination was conducted for the Timber Sale Program Information Reporting System (TSPIRS) report. Harvest activities reduced the total cover on the Forest by approximately 4,300 acres resulting in about 530,700 acres of cover habitat across the Forest. New roads were not constructed and no roads were reconstructed in 1996. Approximately, 3.3 miles of road were closed by gate or barricade. The analysis resulted in a HEI index of 0.63 for the entire Forest or essentially no change from 1995. However, many biologistss consider that the Forest-wide HEI estimate to be at too large a scale to be meaningful.

The Districts have essentially completed implementation of Access and Travel Management (ATM) Plans. Monitoring element #47 discusses some aspects of Access and Travel Management (ATM) implementation. Implementation of ATM plans on the Districts should help raise the Habitat Effectiveness Index (HEI) across the Forest.

The Washington Department of Wildlife, through a cooperative effort with the Blue Mountains Elk Initiative, is conducting an elk calf mortality study on the north end of the Forest. This study was conceived in 1993 with the intent to answer the questions dealing with the consistent low calf survival/recruitment in the Washington portion of the Blue Mountains. Preliminary results indicate that a large portion of elk calves are being preyed upon by black bears and mountain lions. The study and will continue through 1997.

Evaluation:

The estimated elk population as a whole, has declined across the Forest for the last 3 years. The decrease is not wide spread but specific to a portion of the Forest and individual management units. In 1996, the estimated total for the Forest was about 14 percent below state management objectives (SMO). This is 3 percent lower than the previous year and the lowest estimate for the Forest in the last 3 years. During this period, "north" half populations continue to be low while "south" half populations remain stable, near the SMO. Overall, the Forest-wide elk population total is within the 20 percent threshold of variability identified in the Forest Plan. However, concern exists about the Tucannon, Wenaha (WA), Lick Creek, Mountain View, and Wenaha (OR) management units which continue to be far below the 20 percent threshold of variability. Speculation about low elk populations in Washington and northern Oregon centers around a probable high rate of natural mortality on elk and elk calves and the continued low trend in calf survival. The remaining management units on the Forest are within the 20 percent threshold identified in the Forest Plan. Bull/cow ratios tend to be near the management objective for the Forest and most management units in 1996. Calf/cow ratios have been generally low in most management units on the Forest.

The estimated deer population across the Forest has remained stable but below management objectives for the last 3 years. In 1996, the estimated Forest-wide population was about 12 percent below management objectives (MO). This is 2 percent lower than the previous year, with the estimates in 1994 being the lowest for the last 3 years. The reduction primarily occcurs in the "north" portion of the Forest and individual management units. During this period, "north" half populations continue to be below SMO and "south" half populations remain stable yet below SMO. The Forest-wide deer population total is within the 20 percent threshold of variability identified in the Forest Plan. Low deer populations on the "north" end is similar to those for elk with the potential high rate of natural mortality. Buck/doe ratios tend to be near the management objective for the Forest and management units in 1996. Fawn/doe ratios have been generally good over most of the Forest.

Both State wildlife agencies continue to adjust and arrange hunting seasons to change herd structure and to manipulate populations of deer and elk on the Forest. Improvements in bull/cow ratios for elk have occurred over the years in units where "spike only" hunting seasons have been instituted. Proposed changes in 1996 include spike only hunts, second seasons, and limited entry hunts.

Limited monitoring suggests that HEI models used by the Forest have not shown to provide good correlations with big game populations or to be sensitive to habitat changes. HEI models may not be used as extensively in the future on the Forest as changes are made to the habitat models (see previous monitoring reports 1994/1995). The Forest expects to test and evaluate new models for their potential use. In the interim, standards and guidelines in the Forest Plan for cover and open road densities will be used to supplement analysis of habitat effectiveness for elk and deer at the smaller scale (subwatershed).

MONITORING ITEM 24: Old Growth Tree Habitat

Forest Goals, Desired Future Condition, and Outputs: Maintain the number, size, and distribution of old growth tree habitat to support viable populations of mature/old growth associated wildlife species, and to provide for diversity of vegetative conditions. Provide sufficient dedicated mature/old growth tree habitat to maintain no less than 149 pairs of pileated woodpeckers, 101 pairs of pine marten, and 53 pairs of northern three-toed woodpeckers.

Monitoring Question(s): 1. Are the dedicated old growth units suitable for pine marten, pileated and northern three-toed woodpecker habitat? Are the units being occupied/used by management indicator species as predicted? 2. Are the dedicated old growth habitat units identified as "capable" habitat progressing as predicated toward "suitable" old growth tree habitat? 3. Are the standards and guidelines (including the number, size, and spacing of units) being followed as required to meet habitat levels established for the management area? 4. Are sufficient numbers and diameter classes being left adjacent to the designated old growth habitat units as feeding habitat for pileated woodpeckers? 5. Are the dedicated old growth units being used by the indicator species, if they are suitable?

Threshold of Variability: 1. All designated sites meet the specifications identified in the Plan and the components that provide effective habitat fall below desired levels. 2. Estimated populations are more than 10 percent below the Plan objective for a 5-year period. 3. The inventoried old growth acreage remaining or the amount being converted in a 5-year period deviates from the planned amount by more than 10 percent.

Results/Findings:

Districts on the Forest did not formally inventory dedicated old growth units to determine suitability or the movement of capable stands toward suitability. Occupancy or use by management indicator species was not determined for the management units. In general, analysis was limited to meeting the standards and guidelines in the Forest Plan (including number, size, and spacing of units) and those identified in the Regional Forester's Forest Plan Amendment #2 (6/95 "Eastside Screens"), during the project evaluation phase.

In 1996, old growth habitat in the Umatilla and Meacham watersheds was analyzed based on satellite data. Overall, this analysis indicated that mature and old structures have declined within the watershed since the turn of the century, particularly in the ponderosa pine communities. The analysis identified the subwatersheds with the greatest reduction of old/mature structural stages within the last 40 years (Umatilla Meacham Watershed, Ecosystem Assessment 1996). However, analysis based on existing vegetation (photo interpretation) and stand exam data suggests that late-old Forest structure is within the Historic Range of Variability (HRV). Additional analysis is needed to clarify the "true" picture of old growth in the Umatilla-Meacham area.

Eight of the fifteen dedicated old growth management areas (C1) within the Umatilla-Meacham watersheds were surveyed in 1992 by Audubon Society volunteers. Two of the sites were smaller than 300 acres in size and four of the areas contained less than 300 acres of old growth. Seven of the blocks were noted as being "fragmented" or "linear", reflective of the general vegetative pattern in the area and the limited amount of interior habitat within these stands.

Numerous dedicated old growth units were burned extensively by wild fires in the summer of 1996. In the Wheeler Point fire, approximately 345 acres of dedicated old growth was destroyed. On the Tower fire, approximately 1,150 acres of C1 and C2 habitat were burned at high and moderate intensities. The amount of dedicated or managed old growth habitat burned in the Summit fire has not been determined at this time but is estimated to be less than 300 acres.

Evaluation

With past insect and disease outbreaks across the Forest, habitat suitability in dedicated old growth units has been reduced over the past few years. In addition, previous surveys indicate that stands initially selected as dedicated old growth units do not fully meet all of the suitability criteria identified in the LRMP and/or may lack

the capability of meeting the criteria in the short term (20-50 years). A more complete inventory and analysis of dedicated old growth units should be conducted on the Forest.

Inventories for management indicator species were insufficient to determine population levels or any degree of population trend. Currently, with declining budgets in the wildlife program area, the Forest has not been capable of determining population levels and changes over time. However, some monitoring for management indicator species should occur through the project analysis and implementation process when dedicated old growth units occur within the analysis area.

As identified in the LRMP (p 4-145 and 4-148), in the event of catastrophic loss (fire, insect or disease infestation, etc.) of existing C1 or C2 management areas, units will be replaced in close proximity to the original location. The units lost as a result of wild fires on the Forest in 1996 have been replaced or are in the process of being replaced.

MONITORING ITEM 25: Dead and/or Defective Tree Habitat

Forest Goals, Desired Future Condition, and Outputs: "Protect and maintain the number, size, and distribution of dead and/or defective trees (snags and logs) to meet habitat capability objectives . . ."

Monitoring Question(s): 1. Are dead and defective trees being left in appropriate numbers and sizes with proper distribution following timber sales, firewood cutting activities, post sale treatments, and other management activities as outlined in the standards and guidelines? 2. Are sufficient numbers, size classes and distribution of green replacement trees and down logs being left following all management activities? 3. Are the management indicator species (primary cavity excavators) occupying the habitat as predicated and in the anticipated numbers? 4. Do current standards and guidelines meet the needs of the species?

Threshold of Variability: 1. More than 10 percent of the surveyed areas have less than 90 percent of the prescribed trees, snags, and logs present. 2. Expected primary cavity excavators are absent from more than 10 percent of the surveyed sites, or are 80 percent or less of predicted numbers.

Results/Findings:

Dead standing and down wood surveys are conducted at the project level on all Districts on the Forest. Generally, results from inventories show that snag standards and guides from the "Eastside Screens" (Regional Forester's Forest Plan Amendment #2, June 1995) and Interim Snag Guidance for Salvage Operation (Umatilla NF 4/14/94) would be met at the project level.

An example of snag survey results is provided in the table below for the Umatilla Breaks Timber Sale on the Walla Walla Ranger District. The intent of this monitoring effort was to identify the level of snag retention after marking the stand and after harvest.

Table II-21
PRE AND POST MARKING SNAG LEVELS IN THE UMATILLA BREAKS TIMBER SALE
Umatilla National Forest

	Existing (snags per acres)		Post Marking (snags per acre)	
Timber Sale Unit	Total	>20" dbh	Total	>20" dbh
#13	68.5	13.9	8.1	3.5
#14	47.7	12.4	9.3	6.2
#25	42.8	2.4	4.0	1.6
#29	71.4	3.5	8.7	1.7
#32	48.8	3.5	9.6	2.6
#38	80.1	8.4	8.4	0.0

This table shows that after marking, snag levels met or exceeded the "Eastside Screens" and the current guidelines for the Umatilla National Forest. The bulk of snags marked on this sale for retention were generally less than 20" in diameter.

"Green" replacement trees and down wood requirements are also analyzed during the project development phase. Standards and guidelines from the Forest Plan ("Eastside Screens") and Interim Snag Guidance for Salvage Operation were generally met.

An ongoing effort of monitoring snags and down material in fuelwood areas is occurring on the Walla Walla District. Essentially, results indicate the loss of all standing and down dead tree habitat within 100 feet of the road and most of the habitat between 100-300 feet of the road. As a result of fuelwood harvesting along roads, the density of large snags (>20"d.b.h.) continues to be below desired levels in the woodcutting areas.

On the Pomeroy Ranger District, monitoring of snags along roads (15.6 mi. of 771 ac.) indicated that for the grand fir biophysical group was at or above snag densities required by the Forest Plan.

A dead standing tree and dead down wood analysis was conducted for the Umatilla-Meacham Watershed Analysis Area. This was a "pilot" effort using the Current Vegetative Survey (CVS) data base. On average, total standing dead trees in the Analysis AREa meets or exceeds the current snag density objectives. However, an examination of habitat components indicates some potential distribution shortages. As one might expect, the Grass-tree mosaic (GTM) type (mix of ponderosa pine, mixed conifer and grasslands) had low snag densities.

For down wood, on average objectives were met across the area. However, the plot data indicated potential distribution problems since more than half the subwatersheds did not meet current standards. The lower amounts of down wood in GTM had an influence and shortages appeared in upper elevation communities.

Inventories for management indicator species were not conducted to determine occupancy or numbers of primary cavity excavators in this habitat.

Evaluation:

Applying the current standards and guidelines for dead standing trees, down wood, and "green" tree replacement should meet the needs of primary cavity excavators in the short term. Generally, 90 percent of the required retention level is being meet. However, additional post harvest monitoring is needed to confirm snag levels remain after implementation. Most Districts have noted a concern with maintaining sufficient densities and size classes of dead standing and down wood within fuelwood areas. Adjustments to the fuelwood program are needed to fully meet dead standing and down wood standards and guidelines within each fuelwood harvest unit.

The use of CVS data to identify areas with low or limited snag and down wood densities appear to have some use at the landscape level. However, concern exists with the number of sample plots, the extrapolation of data, and the application of data at different scales. The analysis method will continue to be used and refined in 1997 for watershed analysis. In addition, a Forest-wide analysis will be conducted in 1997 to provide a baseline for comparison and analysis.

Inventories were not conducted to determine occupancy or numbers of primary cavity excavators in this habitat. With current and projected budget declines, a determination of occupancy and numbers on any sites has not been completed. However, monitoring of management indicator species should occur during the project evaluation and implementation process.

MONITORING ITEM 26: Pileated and Northern Three-toed Woodpecker Populations

Forest Goals, Desired Future Condition, and Outputs: Maintain sufficient mature/old growth tree habitat and adjacent feeding areas to provide for viable populations of pileated woodpeckers.

Monitoring Question(s): 1. Are pileated and three-toed woodpeckers using the provided C1 and C2 habitats and adjacent feeding areas as projected? 2. Are the "dedicated" old growth and "managed" old growth lodgepole pine concept providing suitable habitat, with snag sizes and distribution adequate to provide for viable populations of pileated and three-toed woodpeckers? 3. What are the trends in populations for each species?

Threshold of Variability: 1. Greater than a 10 percent variance from expectations in woodpecker occupancy, use, or production within a 5-year average. 2. The number of larger diameter dead lodgepole (over 12") is more than 10 percent below the objective in any given allocation zone at any point in time. 3. Populations are on a downward trend.

Results/Findings:

Formal inventories and monitoring using the established protocol for pileated woodpecker or northern three-toed woodpecker in dedicated old growth units (C1 and C2 habitats) were not conducted in 1996.

Habitat surveys were conducted on the Pearson, Fremont, and Ten Cent timber sales on the North Fork John Day Ranger District. No nest trees or foraging sign was observed within the Pearson sale area prior to the Tower fire. Foraging sign of pileated and black-backed woodpeckers was observed within both the Fremont and Ten Cent sale areas. Both species were observed within the two proposed areas. Nest trees were not observed. Northern three-toed woodpeckers were not observed.

Evaluation:

Systematic monitoring for pileated woodpeckers, three-toed woodpeckers, and old growth habitat has not been conducted to the extent intended in the past few years to determine the variance of occupancy, production, or trend within dedicated or managed old growth units. With current and projected budget declines in numerous program areas, it is beyond the capability of the Forest to fully determine occupancy and numbers on selected sites. Limited inventory should occur during the project evaluation and analysis and implementation process when C1 and C2 management units occur within the project area.

MONITORING ITEM 28: Threatened/Endangered/Sensitive Wildlife and Fish Species

Forest Goals, Desired Future Condition, Outputs: Protect, provide, and/or manage suitable habitat for the perpetuation and recovery of bald eagles, Snake River Chinook Salmon, and peregrine falcons. Participate in the re-establishment of four pairs of bald eagles, four pairs of peregrines in the Blue Mountain zone, and join in the multi-agency effort for the Snake River Chinook Salmon Recovery Plan, including any species listed in the future. Identify and manage any winter roosts sites for bald eagle or potential nest sites for peregrine falcon of bald eagles on National Forest lands. Identify and manage all winter feeding areas and food sources on Forest lands for use by bald eagles. Protect, provide, and/or maintain suitable habitat for all sensitive species occurring on the Forest.

Monitoring Question(s): Bald Eagles: 1. Are potential habitats, including nest sites, communal roosts, and associated foraging habitats being identified and planned to assure species recovery as specified in the Recovery Plans and in the Plan? 2. Are wintering populations stable or increasing? Peregrine Falcons: 3. Are nesting and associated foraging habitats being identified? 4. Are potential nest habitats identified and being managed to maintain suitability? Chinook Salmon: 5. Are terms and conditions as identified by NFMS being followed? Sensitive Species: 6. Are potential habitats being identified and/or protected to maintain identified species and to insure management standards are being met? 7. Are raptor nest sites being protected as outlined in the Forest Plan?

Threshold of Variability: 1. Any nest or roosting sites compromise as a result of Forest Service management activities. 2. Any delays in developing individual site management plans for reintroduction sites or for active nests. 3. Any T/E/S populations compromised as a result of Forest Service management activities.

Results/Findings:

Bald Eagles
Formal surveys for bald eagle nest sites were not conducted on the Forest in 1996. The Dry Creek (Rail Canyon) bald eagle nest (discovered in 1994) was visited only once in 1996. The observation in mid-summer noted two young fledged from the nest in 1996.

Winter bald eagle surveys were conducted bi-weekly in 1995-1996. The same routes and methods were used as in the original study with Frank Issacs (1991-1992). Overall, numbers of wintering bald eagles were consistent with past surveys. No evidence of new night roosts were found. No birds were detected after the end of March. No evidence of nesting or attempted nesting eagles was observed.

Peregrine Falcon
Aerial surveys for peregrine falcons were not conducted on the Forest in 1996. However, incidental sightings occurred during the summer in the Indian Rock-Vinegar Hill Scenic Area and the Troy area. None of these observations were verified. Potential nesting habitat for peregrine falcon was identified and rated on the Forest in 1991-1992. Inventory/monitoring of identified habitat, with the established protocol, has not been conducted on the Forest.

Sensitive Species
Sensitive species analysis for Biological Evaluations requires a pre-field review of existing information, field reconnaissance, habitat capability evaluation, and the determination of direct, indirect and cumulative effects of the proposed project on sensitive species and their habitat. Biological evaluations have been prepared on all Districts for proposed activities with the potential to affect sensitive species and the habitat. Results, findings, and mitigating measures are documented in the project Biological Evaluation and or "Specialist Report" as part of the NEPA process.

Ferruginous hawk: Inventory or monitoring for ferruginous hawks was not conducted on the Forest in 1996.

Prebles's shrew: Inventory or monitoring for Prebles's shrew was not conducted on the Forest in 1996.

Townsend's big-eared bat: The only inventory for Townsend's bat on the Forest was conducted on the North Fork John Day District. The proposed Fremont and Ten Cent salvage and fuel reduction areas were surveyed for bat habitat - primarily large broken top hollow snags and trees, and mine adits. Few of these structures were found within the proposed Fremont area and none were observed within the proposed Ten Cent area. Structures within the proposed Fremont area will be marked for retention as the planning process proceeds. No mine adits were observed in either proposed sale area.

Wolverine: Wolverine inventories are normally performed in conjunction with Forest Carnivore Surveys. Carnivore surveys were not conducted on the Forest in 1996.

Raptor Nest Sites

Habitat surveys to locate potentially suitable habitat were conducted within proposed salvage sale areas. As outlined in the LRMP, all raptor nest sites were protected from all management activities and disturbance around the nest through the breeding season. The nest and associated roost tree(s) were also identified and protected from (all) management activities.

New raptor nest sites identified in 1996 include northern goshawk nest sites on the Pomeroy and North Fork John Day Ranger District and barred owl and golden eagle nest sites on the Pomeroy District.

Blue Mountain Cryptochia

Habitat surveys for the Blue Mountain Cryptochia were conducted in 1992. These surveys accompanied a larger survey project that was lead by the Wallowa-Whitman National Forest. The known range of the Blue Mountain Cryptochia, formerly known from only one siting in the 1950's, was expanded considerably as a result of these surveys. This new information was considered by Betts and Wisseman (1995) in their recommendation that the species be delisted.

Evaluation:

Raptor nests or roost sites on the Forest were not compromised as a result of management activities on the Forest. Raptor nests identified in 1996 were documented and potential management activities will be avoided in those areas during the breeding season. Identified nest and roost sites will be marked on the ground. Sites will be monitored through the project implementation process.

A site management plan for the Dry Creek (Rail Canyon) bald eagle nest site was not accomplished in 1996. This was because of limited funding in the Threatened, Endangered and Sensitive species program area. The plan is scheduled to be accomplished in FY 1997.

TES populations were not compromised as a result of management activities on the Forest. This is documented in the project Biological Evaluation and or "Specialist Report". TES species and their habitats will continue to be analyzed on the Forest through the project evaluation and analysis process. Protocols for Biological Evaluations and Biological Assessments will be followed and findings will be documented as described in FSM 2670 (Region 6).

F. DIVERSITY

MONITORING ITEM 29: Plant and Animal Diversity

Forest Goals, Desired Future Condition, and Outputs: Maintain native and desirable introduced or historic plant and animal species and communities. Provide all successional stages of terrestrial, aquatic, and edaphic plant associations in a distribution and abundance to assure species diversity and viability. A desired future condition is to establish the local needs of management indicator species, rate species, and the proportion of seral stages that allows for natural diversity. Continued long-term monitoring will be necessary to establish critical relationships and thresholds for the abundance of the various successional stages, their distribution, and specific species requirements for sensitive species.

Monitoring Question(s): 1. What is the present distribution and proportion of successional stages by plant associations? a) How do they compare to past distributions? b) What distribution and proportion is expected in the future? c) What are the long-term trends? d) Does the distribution, proportion, and absolute amount provide viable habitat for management indicator species, rare species, and biological diversity? 2. How has habitat capability been changed? 3. What is the present status of sensitive species? 4. What are the trends in overall species diversity on the Forest?

Threshold of Variability: There is no established thresholds for plant and animal diversity on the Forest. However, thresholds and requirements of individual management indicator species (pileated woodpeckers, pine martens, northern three-toed woodpeckers) have been established and will be monitored. Present proportions or acreages by successional stages can also be used to compare changes in plant diversity with the implementation of the Forest Plan. As monitoring activities accumulate information and data by individual planning basins (watersheds), trends in animal and plant diversity can be developed and evaluated.

Results/Findings:

Results of Ecosystem Analysis (at the Watershed Scale) and additional sensitive plant monitoring were not developed for the Monitoring Report.

Animals:

The Monitoring Avian Productivity and Survivorship (MAPS) program continued during 1996. The Program is a cooperative effort between public and private agencies and individuals across North America and is coordinated in Region 6 by the Institute for Bird Populations at Point Reyes Station, California. The purpose of the MAPS program is to provide annual regional indices and estimates of adult populations size, post-fledgling productivity, adult survivorship, and recruitment into the adult population for various landbirds species. The Umatilla has 6 MAPS stations with 10 mist net sites and 9 point count sites at each station. The program was initiated in 1992 and is expected to conclude in 2001. The results of the effort collected in 1995 and previous years can be found in the Annual Report for 1995 (1996, B.L. Walker, D.F. DeSante (The Monitoring Avian Productivity and Survivorship (MAPS) Program in Region 6 of the USDA Forest Service)).

Stations were selected to represent plant communities and successional stages in the Northwest region of the United States. Table II-22 lists the stations and habitats monitored on the Umatilla.

Table II-22
PLANT COMMUNITIES AND SUCCESSIONAL STAGES
for the six MAPS Stations
Umatilla National Forest

Station #	General Habitat Type	Successional Stage
BUCR 151	Disturbed coniferous forest, successional alder scrub	PM
BRME 152	Montane meadow, coniferous forest, riparian willows	PM
FRME 153	Montane meadow, coniferous forest	M
CORI 154	Successional disturbed mixed coniferous forest	PS
BMME 155	Montane meadow, dense coniferous forest	PM
PHCR 156	Riparian willow/alder, dry chaparral, open mixed conifer/oak forest	PM

In 1995, a total of 2,951.0 net-hours (net-hr.) were accumulated on 6 MAPS stations on the Forest. This resulted in 1,051 birds banded and 362 birds recaptured on the six MAPS stations on the Forest. In addition, 83 birds (including 44 hummingbirds) were captured but released unbanded; thus a total of 1,496 captures of 48 species were recorded in 1995. This total is down from the 1,701 captures of 43 species in 1994, the 1,620 captures of 47 species in 1993, and the 2,420 captures of 49 species in 1992. A summary of mist-net captures for 1992 through 1995 can be found in Table II-23.

Table II-23
RESULTS OF MIST-NET CAPTURES
at the six MAPS Stations
Umatilla National Forest.

	1992				1993				1994				1995			
Station #	Total Net Hours	Captures* Adult	Captures* Young	Total # Species	Total Net Hours	Captures* Adult	Captures* Young	Total # Species	Total Net Hours	Captures* Adult	Captures* Young	Total # Species	Total Net Hours	Captures* Adult	Captures* Young	Total # Species
BUCR 151	487.6	124	267	28	426.2	107	94	20	415.7	103	113	24	454	110	87	21
BRME 152	283.6	241	444	27	283.6	208	90	25	424.0	193	131	25	474	195	106	27
FRME 153	384.5	106	282	23	376.5	115	54	25	455.0	97	37	24	501	93	87	19
CORI 154	480.0	151	182	31	466.5	157	105	29	482.3	176	72	30	530	139	103	28
BMME 155	412.2	277	445	29	365.6	242	184	27	410.7	203	239	34	501	153	156	28
PHCR 156	390.1	249	111	32	326.2	192	73	26	444.5	138	80	29	491	141	50	28

* /600 Net-Hr

Recent trends continued. Stations with the greatest amount of meadow habitat (BMME 155 and BRME 152) generally supported the greatest number of breeding adults (195 & 153 adult captures). The stations with the most coniferous trees and least meadow (BUCR 151) habitat seemed to support the lowest number of adults (110 adult captures). The exception to these generalizations was Fry Meadow (FRME 153) with 93 captures in 1995.

The capture rates (per 600 net-hours) of adults in 1995 suggest that the total adult population size of all species varied among the six stations and was greatest at Brock Meadow. As was the case between 1993 and 1994, the capture rates of adults in 1995 were significantly correlated (Walker & et al, 1996) with adult capture rates at these same stations in 1994, reinforcing the idea that the relative total abundance of breeding birds at the various stations on the Umatilla remained stable over all 3 years. Overall, the adult capture rates were slightly lower than in 1994, but this was primarily due to moderate declines at Coyote Ridge and Buck Mountain Meadow.

The most abundant breeding species (in decreasing order) at the Umatilla MAPS stations combined were Mac Gillivray's warbler, Swainsons thrush, ruby-crowned kinglet, Townsend's warbler, Lincoln's sparrow, dark-eyed junco, golden-crowned kinglet, yellow-rumped warbler, Wilson's warbler, and warbling vireo. The five most common breeding species for each year are listed in Table II-24.

Table II-24
FIVE MOST COMMON SPECIES CAPTURED
at SIX MAPS Stations on the Umatilla
(Species are Listed in Decreasing Order)

1992	1993
Townsend's warbler Mac Gillivray's warbler Swainson's thrush dark-eyed junco yellow-rumped warbler	Mac Gillivray's warbler dark-eyed junco golder-crowned kinglet Townsend's warbler Swainson's thrush
1994	1995
golden-crowned kinglet Mac Gillivray's warbler dark-eyed junco Townsend's warbler ruby-crowned kinglet	Mac Gillivray's warbler Swainson's thrush ruby-crowned kinglet Townsend's warbler Lincoln's sparrow

The capture rate of young birds of all species combined at the various stations generally followed a similar sequence to the capture rates of adults, with the exception of Philips Creek. Unlike the highly significant comparison between 1993 and 1994, correlation of the capture rates of young between 1994 and 1995 at the six stations on the Umatilla were only marginally significant (Walker & et al, 1996). This resulted in part from a wide range in changes between the years, varying from a decrease of -37 percent at Philips Creek to a dramatic increase of +137 percent at Fry Meadow.

The index of productivity for all species pooled as determined by the proportion of young in the catch, was highest at Buck Mountain Meadow. As in the past, productivity indices in 1995 at the six stations on the Forest were not at all correlated (Walker & et al, 1996) with the 1994 productivity indices. The overall proportion of young in the catch for all species pooled at all stations combined was 42 percent in 1995, slightly lower than 1994 (43%), and slightly higher than 1993 (37%), but much lower than the 60 percent productivity figure in 1992. It apears that productivity was again fairly low in 1995 on the Umatilla, although it was high in certain localized areas.

Three replication of nine 10-minute point count surveys are also conducted at the six MAPS stations on the Umatilla. Point count surveys in 1995 indicate that the number of individual adult birds counted for all species decreased slightly (-5.3%). Decreases were recorded in 33 of 62 species. As with last year, large changes occurred in a number of species detected, with 13 species decreasing and 4 species increasing. Differences from 1994 between stations did not vary substantially (Walker & et al, 1996), ranging from -16.6 percent at Buck Mountain Meadow to +21.7 percent at Coyote Ridge. A summary of point count results for 1992 through 1995 can be found in Table II-25.

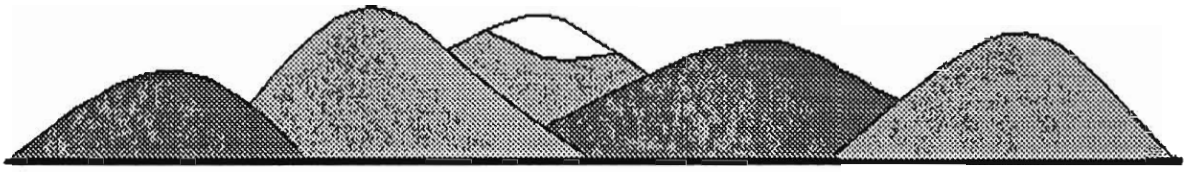
Table II-25
RESULTS OF POINT COUNT SURVEY
at the six MAPS Stations
Umatilla National Forest

		All Species Pooled			Number of Species			
Station #	Year	< 0m	All	Fly-Over	<50m	All	Fly-Over	Total Number of Species
BUCR 151	1994 1995	162 289	370	18	26 27	35	6	35 27
BRME 152	1994 1995	186 324	413	17	28 36	37	8	39 38
FRME 153	1994 1995	173 288	415	20	28 31	38	10	41 32
CORI 154	1994 1995	145 366	354	24	30 34	39	16	41 36
BMME 155	1994 1995	149 170	375	35	24 31	39	11	39 31
PHCR 156	1994 1995	140 159	320	16	21 30	31	7	32 31

Level II monitoring of Neotropical Migratory Bird (NTMB) use of grand fir old growth forest in the Blue Mountains continued during 1996. The purpose of this program is to identify which NTMB species use the grand fir type, monitor their population trends, examine the relationships between NTMB species and the grand fir type, and refine the Regional approach for monitoring NTMB species. The Umatilla and the Wallowa-Whitman National Forest inventoried four stands of 50 acres of old growth grand fir with 5-6 point-count plots in each stand. Data collection was initiated in 1992 and is expected to continue through 1997. Formal results have not been tallied for the past few years of effort.

Evaluation:

Ecosystem Analysis at the watershed scale and (possible) results from ICBEMP are the primary means for addressing the monitoring questions. Neither was reported this year. The Forest expects to continue monitoring sensitive plant, NTMB, and landbird populations as opportunity and funding allows.



III. Resources and Services to People

A. FOREST PLAN IMPLEMENTATION

MONITORING ITEM 30: Management Areas/Standards and Guidelines

Forest Goals, Desired Future Condition, and Outputs: The future condition of the Forest will reflect the results achieved through implementation of the Forest Plan in meeting management goals and objectives. The Forest will continue its fundamental stewardship role in multiple use management by providing a balanced variety of natural resource based products and services to the public. The Umatilla will continue to feature a mosaic of large grasslands and forested areas containing elements of both the natural and human influenced forest conditions. A diversity of recreation opportunities in a variety of forest settings will continue to be provided.

Monitoring Question(s): 1. Are project plans and their implementation consistent with the intent of Forest Plan management area direction (standards and guidelines)? 2. Are the management areas, through project implementation, bringing about the desired future condition on those areas of land where they are applied? 3. Are Forest Plan standards and guidelines being implemented as designed? 4. Do the Forest Plan standards and guidelines achieve the stated goals, objectives, and DFC's of the Plan?

Threshold of Variability: Noncompliance or (identified needs for) changes to the management areas and associated standards and guidelines.

Results/Findings:

During the FY, only limited Forest Plan consistency monitoring took place. Some monitoring centered around implementation of one interim Forest Plan amendment: Interim Strategies for Managing Anadromous Fish Producing Watersheds on Federal Lands in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH). In October 1995, a PACFISH Field Review Team comprised of Technical Staff and Line Officers from the Forest Service, Bureau of Land Management, Fish and Wildlife Service and National Marine Fisheries Service spent several days visiting the Umatilla National Forest, reviewing implementation of PACFISH direction.

As a result of that review, two problem areas were noted related to management areas and S&Gs. In the Forest funding, riparian management objectives (RMOs) and riparian habitat conservation areas (RHCAs) delineations were consistent with the PACFISH strategy. However, watershed analysis was not used to adjust RMOs or RHCAs; the Forest used "default" values without modification. It was noted that some of the RMOs and RHCA widths may not fit the Forests ecological context. The second finding indicated that implementation monitoring needed to improve, particularly related to grazing in riparian areas and documenting progress of long term riparian recovery. End of grazing season conditions were having continued carry over effects, into the following year, which did not meet PACFISH intent. The Forest has developed a strategy to respond to the deficiencies; implementation began in FY 1996.

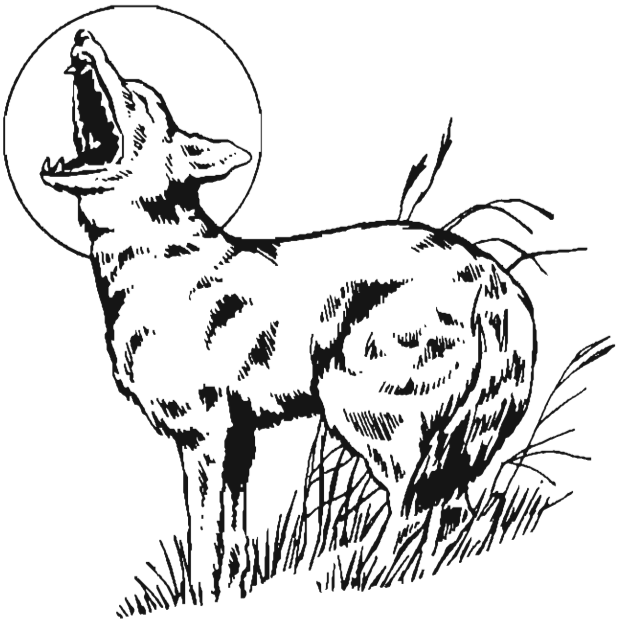
There were no formal implementation reviews made by the Forest Leadership Team during FY 1996. Several Districts reported informal monitoring reviews by District Teams and in all instances, no problems were noted. Only one District reported making use of the Forest Plan Implementation Checklist as part of these reviews.

In responding to this monitoring item, Districts have noted that the recent fire and insect epidemics have made it impossible to meet certain Forest Plan standards and guidelines, resulting in the use of "catastrophic" exceptions identified in the Forest Plan or site specific Forest Plan Amendments. All Districts are dealing with the same kind of situation. The question was raised about the anticipated use of exceptions on such a large scale when the Plan was developed; the Plan generally assumed healthy Forest conditions. The net result of the change will be that in many areas, the desired future conditions may not even be met within 50 years for resources such as wildlife cover, mature/old growth habitat, tree age class distribution and riparian habitat. Site specific changes to deal with large scale mortality are being made to Forest Plan standards and guidelines, allowing deviations from current direction (see Section VI, Forest Plan Amendments). Principal areas of adjustment include Habitat Effectiveness Indices (HEI) and cover, dispersion of openings, successional stage (for C4/E2) and large trees (21" dbh) in the screens.

They further pointed out the PACFISH and the EcoScreens seem to have changed the focus of Forest Plan implementation in some of the management areas. Both Regional amendments blur the distinction between management areas with over-riding requirements for leave trees and harvest restrictions. Most management areas are now effectively managed for a high level of wildlife habitat (or at least there is no conscious effort at managing differently). For instance, E-1's goal is to manage forest lands to emphasize production of wood fiber (timber) and encourage production of forage and the desired future condition emphasizes commodity production. However, in several instances harvest proposed in this management area has been greatly modified or dropped because of requirements in the EcoScreens amendment. The Heppner Ranger District also found in Lone Star Salvage Sale that because of the EcoScreens and PACFISH, there was no difference in the management intensity or wildlife habitat protection among the key Management Areas (C4, E2, E1).

Evaluation:

The results of the Heppner evaluation as well as other informal monitoring on the Forest indicate that, in some cases, the intent of current Forest Plan management area direction and Forest-wide S&G's is probably not being met. The deviations and adjustments suggest that broader scale Forest Plan amendments are probably needed. However, until the Interior Columbia Basin Ecosystem Management project is done, monitoring will generally focus on the planning, implementation and effectiveness of individual projects. Questions addressing progress toward meeting Forest Plan Desired Future Conditions will generally be deferred until the ICBEMP FEIS and ROD provide the information necessary to re-define these objectives.



B. RECREATION

MONITORING ITEM 31: Primitive/Semi-Primitive Recreation and Roadless Areas

Forest Goals, Desired Future Condition, and Outputs: Nearly 30 percent of the Forest remains available in an unroaded status to provide smi-primitive and primitive opportunities (DFC). The Forest will continue to meet demand for primitive and semi-primitive opportunities found in wildernesses, unroaded, and other areas (50 yr. DFC).

Monitoring Question(s): 1. Are the identified roadless areas or parts thereof managed as the Forest Plan allocated or prescribed? 2. Are the primitive and semi-primitive recreation opportunities available as shown in the Plan?

Threshold of Variability: Greater than 10 percent of management area acres (of primitive/semi-primitive recreation opportunity) not in compliance with Forest Plan direction.

Results/Findings:

During FY '96, planned timber harvest was conducted under two timber sales in two Roadless Areas on the Pomeroy Ranger District. Seventy-two acres were harvested under the Teal Timber Sale in the Upper Tucannon roadless area. All harvest acres were in Management Area E2. Thirty-seven acres were harvested in the Driveway Timber Sale within the Wenatchee Roadless Area. In both cases, sale harvest acreages were reduced as a result of ESA Section 7 Consultation to meet Fisheries protection requirements.

Although not specifically addressed by the monitoring questions, changes in roadless area acreages have occurred on the Umatilla National Forest since the Forest Plan was signed. In the first five cases, reductions were necessitated by timber harvest. The reduction in Jaussaud Corral Roadless area was necessitated by road construction. Each of the changes was completed within Forest Plan allocations, which permitted timber harvest.

Table III-1
ROADLESS AREA CHANGES 1990-96
Umatilla National Forest

Roadless Area	Number	Acre Change
Upper Tucannon	14014	-667
Willow Springs	14015	-1,871
Asotin Creek	14016	-226
Meadow Creek	14018	-5,000
Wenatchee	14020	-37
Jaussaud Corral	14023	-975
Total Change		-8,776
Total Remaining Roadless		302,924*

* See Appendix C, Forest Plan FEIS (total includes acres from adjacent Forests)

Two salvage sales, Hollywood Salvage and Lone Star Salvage, were planned in the Texas Butte Roadless Area, totaling about 299 acres on the Heppner Ranger District. The salvage sales were intended to remove dead trees primarily in Management Areas C4 and same in C1 (old growth that had been lost). The Secretary of Agriculture directed that documentation of sales with a roadless component was prohibited under the Rescission Act on July 2, 1996. Roadless units were withdrawn for the Lone Star salvage sale and a new decision notice for Hollywood salvage is planned for FY '97.

Large wildfires also impacted roadless areas during the year. The Tower fire burned most of the South Fork Tower Roadless Area. The area contained 17,000 acres and about 16,305 (or 96%) burned. The Summit fire burned about 2 acres of Jump-off Joe and 6,070 acres (or 72%) of the Greenhorn Mountain Roadless areas (Umatilla NF portions only).

Evaluation:

Recommendation is to continue monitoring. Further evaluation will be needed to determine impacts to roadless areas primitive and semi-primitive character for those Management Areas specifically designed to remain Roadless under the Forest Plan.

MONITORING ITEM 33: Recreation – Developed Sites

Forest Goals, Desired Future Condition, and Outputs: "Manage for a broad spectrum of recreation opportunities and experiences on the Umatilla National Forest . . . Winter sports, growing in popularity, will be accommodated . . ."

Monitoring Question(s): 1. How much use and what occupancy rate is occurring at each recreation site? 2. How much overnight camping capacity is available at Forest campgrounds managed at different development Levels 1 through 5? 3. Are recreation sites adequate to meet demand and to provide customer satisfaction? How much recreation use is occurring on the Forest and in which categories?

Threshold of Variability: 1. Greater than 60 percent occupancy rate at any site for three consecutive years. 2. Frequent or recurring customer complaints at given recreation sites. 3. Significant damage to site facilities and environment due to heavy use.

Results/Findings:

Total recreation use on the Forest in FY '96 declined by nearly 7 percent from the previous year. Recreation visitor days (RVDs) amounted to 915,542. About half of the decline was attributed to a reduced ski season: late opening, poor snow conditions due to rain on snow event in February (and flooding), and lost access to Ski Bluewood due to the flooding. Other developed sites also experienced less use during the year, in part due to fire closures.

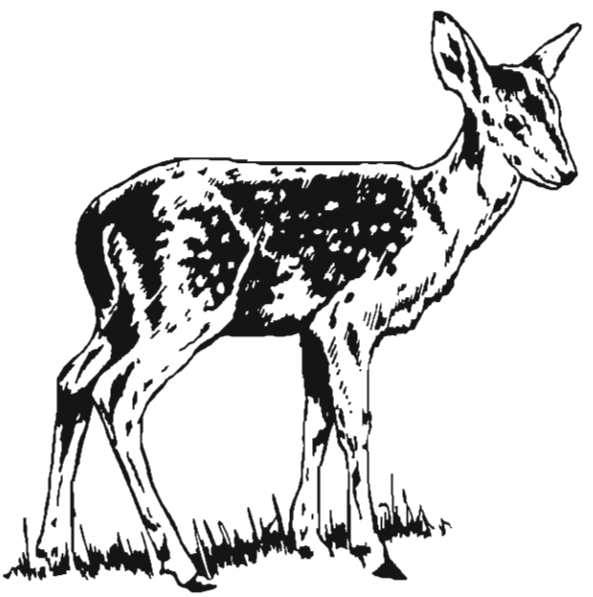
Table III-2
RECREATION VISITOR DAYS (RVD) 1996
Umatilla National Forest

Site or Area	Heppner	North Fork John Day	Pomeroy	Walla Walla	Forest Total
General Forest	85,416	86,671	262,269	107,269	541,625
Wilderness	0	7,607	86,124	7,101	100,832
W&S River S.A.	0	8,738	9,764	16,991	35,493
Trailhead	75	13,544	59,563	3,955	77,137
Subtotal Undeveloped	85,491	116,560	417,720	135,316	755,087
Campgrounds	11,196	40,437	42,140	19,609	113,382
Rec. Residences	0	6,429	2,414	17,703	26,546
Ski Areas	0	0	0	13,578	13,578
Cabin Rental	22	0	1,514	4,772	6,308
Interpretive Site	0	190	0	271	461
Subtotal Developed Sites	11,218	47,056	46,068	56,113	160,455
Total RVD	96,709	163,616	463,788	191,429	915,542

About 21 percent of the Forests use or 191,429 RVDs, were recorded for developed sites. Campground occupancy rates varied from a low of 18 percent to a high approaching 100 percent. Bull Prairie, Penland Lake, Bear Wallow, Tollbridge, Welch Creek, Big Creek, Jubilee Lake, Tucannon, Teal Springs, and Godman experienced occupancy rates at or above levels which warrant expansion (or improvement). Most of these sites have been identified as receiving heavy use in the past. Many of the heavier used sites are showing evidence of wear. A number of maintenance and improvement needs have been identified for developed sites across the Forest; facilities to meet accessibility standards need to be added at a number of identified sites. However, limited budgets have constrained the Forests ability to make appropriate improvements.

Evaluation:

Forest data continues to show high use levels at certain sites that exceed thresholds and facilities that are substandard. With limited funding into the forseeable future, the Forest needs to determine what adjustments can be made while meeting recreationist needs.



D. WILDERNESS

MONITORING ITEM 36: Wilderness — Nonconforming Uses

Forest Goals, Desired Future Condition, and Outputs: ". . . measures to increase the amount of primitive recreation opportunity to desired levels . . ."

Monitoring Question(s): 1. Is the location, kind and amount of nonconforming uses acceptable and are wilderness standards being met? 2. What is the effect of grazing by wild and domestic animals? What is the effect of mining on the wilderness resource? 3. Are the effects of prior existing rights (mining, grazing, water rights, etc) minimized?

Threshold of Variability: 1. Refer to LAC standards and guidelines for each wilderness. 2. Any increase of nonconforming uses.

Results/Findings:

Results from administrative trips in the Wenaha-Tucannon Wilderness indicate that some incidences continue to occur including chainsaw use, leaving garbage and trash, and constructing structures. However, the violations appear to be less than in the recent past, in part because wilderness use was down due to early snows and flooding impacts to the trail system. In addition, no evidence of unauthorized grazing by domestic livestock was found in the wilderness. Noxious weed control was not done during 1996; observations indicate that noxious weeds continue to spread.

On the North Fork Umatilla Wilderness, only three isolated, non-conforming use incidents were reported including: chainsaw, mountain bike and ATV use. All grazing, by sheep, was permitted and utilization met standards.

District reports for the North Fork John Day Wilderness show that non-conforming uses exist but are minimal. Domestic livestock grazing has been reduced in the Wilderness; grazing adjacent to the Wilderness boundary is permitted and utilization standards are being met. All mining operations are also authorized and reclamation activities are meeting requirements (see MI 45, Mineral Development).

Evaluation:

In 1996, monitoring results indicate some reduction in nonconforming uses with overall minor impacts. Permitted uses are meeting standards. Documentation and reporting baseline conditions and incidents continues to need attention.

MONITORING ITEM 37: Limit of Acceptable Change (LAC) and Amount of Primitive Wilderness Resource Spectrum (WRS)

Forest Goals, Desired Future Condition, and Outputs: "...measures to increase the amount of primitive recreation opportunity to desired levels." The Forest continues to meet demand for primitive and semi-primitive opportunities. (50 yr DFC)

Monitoring Question(s): 1. What is the general condition of the wildernesses? 2. What effect is visitor use having on the wilderness resource? 3. Are standards being met for the WRS classes designated for each wilderness? 4. Is fire allowed to play its natural role? What effect is prescribed fire having on the wilderness values?

Threshold of Variability: 1. Refer to LAC standards and guidelines for each wilderness. 2. Any reduction of amount of planned primitive WRS.

Results/Findings:

During February 1996, flooding damaged numerous trails on the Forests northern wildernesses. Major damage occurred in Crooked Creek (3100), Slick Ear (3104), Smooth Ridge (3105) and Wenaha River (3106) trails in the Wenaha-Tucannon, and the North Fork Umatilla (3083) and Buck Creek (3073) trails in the North Fork Umatilla Wilderness. Some immediate repair work was accomplished but most damage will be repaired through trail reconstruction contracts expected in FY '97. Numerous channel changes also occurred on streams in both wildernesses.

About 4 miles of NF Umatilla Wilderness boundary was surveyed in 1996. The survey showed that approximately 200 feet of road, constructed prior to wilderness establishment, was inside the wilderness boundary and that a portion of one timber sale (4.8 acres) that was harvested in 1987 was also inside the boundary.

The Districts reported that wilderness conditions are generally good for the Forests three wildernesses, but no specific monitoring was done. All wildernesses have prescribed natural fire plans but no prescribed fires were managed under the plans during the year. However, the North Fork John Day Wilderness was substantially affected by the Tower, Bull and Summit wildfires (totaling about 18,700 acres).

Evaluation:

The monitoring item continues to be inadequately addressed. The Forest still has a need to use and report LAC information and analysis to help define use, condition and trends and begin actions on substandard conditions.

E. RANGE

MONITORING ITEM 38: Allotment Planning

Forest Goals, Desired Future Condition, and Outputs: All allotments have developed and implemented Allotment Management Plans that fully meet the standards and guidelines of the Forest Plan by the end of the first decade.

Monitoring Question(s): 1. Are allotments containing significant areas of unsatisfactory condition range and/or allotments, classified as PC or PD, receiving priority emphasis for development and implementation of Allotment Management Plans? 2. Do AMP's fully meet Forest Plan standards and guidelines? 3. Are AMP's being implemented on the ground in a manner that meets Forest Plan direction?

Threshold of Variability: 1. AMP planning schedule as developed (and amended) by the Forest Supervisor, varies by more than 2 years for 10 percent or more of the plans. 2. Any approved AMP's that fail to contain objectives and standards that fully implement the Forest Plan. 3. More than 5 percent of the Annual Operating Plans and annual budget requests, KV Sale Area Improvement Plans, etc., are not supported by standards or development schedules from Allotment Management Plans.

Results/Findings:

The Pacific Northwest Region developed a program in FY '91 to emphasize allotment management planning on the high priority allotments in the Region. The Forest Plan had already developed and implemented a prioritization process that has been used to generate a planning schedule. This process and planning schedule had been the basis for determining which allotments are most in need of analysis and planning, according to resource concerns. The allotments targeted for planning efforts are, with limited exceptions, those identified as highest resource priorities. The few exceptions are generally those allotments where planning had already been started or those where an opportunity has occurred that makes it reasonable to include the allotment in the schedule. The recent Rescission Bill (PL104-19) required the Forests to develop a schedule to complete all AMP NEPA within a 15-year timeframe. This schedule was completed and replaces the previous Forest Plan schedule.

Forest wide, allotment management planning was completed on two allotments in 1996 but decision notices have not been published. Two additional AMP's are in progress and are scheduled for completion in 1997.

Although the results show very slow progress in moving toward the accomplishment of analysis and planning, significant changes in Regional and National priorities, insufficient funding, and large increases in appeals and litigation continues to ensure that the level of final accomplishment remains too low to maintain up to date management plans on all allotments as scheduled. Additionally this shortfall is due in part to placing the highest priority on on-the-ground administration to achieve the Forest Plan standards and guidelines or ESA consultation mitigation requirements on the ground. Actual accomplishments continue to vary by Ranger District.

Evaluation:

Continue to update the Allotment Management Planning schedule to reflect the requirements of PL104-19 as well as actual budgets and accomplishments.

Continue to pursue adequate funding to accomplish allotment management planning in a timely manner.

MONITORING ITEM 39: Range Outputs

Forest Goals, Desired Future Condition, and Outputs: After meeting basic plant and soil requirements, provide forage for utilization by wildlife and permitted domestic livestock.

Monitoring Question(s): Are the outputs for permitted domestic livestock (Animal Unit Months [AUM's]) being achieved as projected in the Forest Plan?

Threshold of Variability: Annual outputs (AUM's) for permitted domestic livestock increase more than 3 percent above or fall more than 10 percent below Forest Plan levels.

Results/Findings:

In the Forest Plan, forage levels were estimated to continue to increase in quality and quantity as a result of wildlife, rangeland improvement projects, and range and timber management. Projected resource output within the first decade of the plan is estimated at 62,800 AUM's and permitted level was 58,000 AUMs.

In 1996, 51,323 AUM's were under Term Grazing Permit and an additional 1,093 AUM's under Term Private Land Permit (which authorize use on private land waived to the government for management within an established allotment) on the Forest. Authorized non-use for personal convenience and resource protection was approved for 5,016 AUM's. Actual use is about 82 percent of the Forest Plan predicted level and permitted use is about 89 percent of the Forest Plan level of 58,000 AUM's.

Evaluation:

This level of permitted grazing is currently at about the threshold of variability. Continue to monitor.

MONITORING ITEM 40: Range Improvements

Forest Goals, Desired Future Condition, and Outputs: Allotment Management Plans, based on the Forest Plan, provide for a full development schedule (using all available funding sources) that contributes to satisfactory range conditions.

Monitoring Question(s): 1. Are range Improvements planned in Allotment Management Plans, or other development plans such as Sale Area Improvement Plans or Annual Operating Plans, being accomplished? Are these improvements contributing to meeting Forest Plan objectives?

Threshold of Variability: Accomplishment of annual range improvement targets falls more than 10 percent below the assigned output.

Results/Findings:

In 1996, 46 structures were accomplished from all funding sources (a structure is defined as one water source, one-half mile of fence, one cattleguard, etc.). For non-structural improvements, no acres were accomplished from all funding sources, including seeding and prescribed fire. The contribution of the improvements towards objectives has not been addressed.

Evaluation:

This is a very low priority item but is monitored through the Forest Service Management Attainment Reporting system. Continue to monitor.

F. TIMBER

MONITORING ITEM 43: Timber Offered for Sale

Forest Goals, Desired Future Condition, and Outputs: Provide for production of wood fiber consistent with Forest Plan objectives.

Monitoring Question(s): 1. Is the Forest offering the volume of timber necessary to achieve the estimated TSPQ stated in the Plan? 2. Is the Forest offering the volume of chargeable timber established by the Plan's ASQ? 3. What is the level of ponderosa pine sawlog timber being offered?

Threshold of Variability: 1. Greater than a 10 percent +/- deviation from planned volume of Total Sale Plan Quantity. 2. Deviation greater than +5 percent or -20 percent of planned Allowable Sale Quantity. The 5 percent threshold mentioned above applies only to the running average measured annually. 3. Greater than 25 percent +/- deviation from planned volume of ponderosa pine sawlogs.

Results/Findings:

In FY '96, the amount of timber offered for sale was increased above recent FY totals but remained substantially below Forest Plan projections. About 28 percent of the Total Sale Program Quantity and 15 percent of the Allowable Sale Quantity was offered for bid. Table III-3 shows the timber offered for sale for FY 1996.

Table III-3
TIMBER OFFERED - FY 1996
Umatilla National Forest

	Planned Output (MMBF)	Actual Output (MMBF)	Planned Output (MMCF)	Actual Output (MMCF)
Allowable Sale Quantity	124	18.8	22.2	3.5
Ponderosa Pine (included in ASQ)	(24)	0.6	(4.2)	0.1
Chip Material	20	20.0	3.6	3.8
Firewood	15	5.9	2.6	7.0
Timber Sale Program Quantity	159	44.7	28.4	8.0

Refer to Table 4-1 of the Forest Plan, p. 4-17; planned output is based on the first decade after Plan implementation.

Timber offered for sale during FY '96 was strongly influenced by the Rescission Act (July 1995). The Forest was able to respond to the Act, which was defined an emergency period during which the Forest Service was directed to expedite the preparation of salvage sales. The Forest has potential salvage from the large scale insect damage and mortality of the early 1990s, but opportunities are declining as the dead material deteriorates. The recent (1996) large wildfires on the Forest also provide additional opportunity for salvage.

Evaluation:

Adjustments are needed in the Forests Plan with regard to Total Program Quantity and Allowable Sale Quantities. Results from the ICBEMP can be expected to be a "driver" of change to the timber harvest levels. Forest Plan adjustments are expected upon completion of ICBEMP process and EISs. In the interim, the Forest expects timber outputs to be at a sustainable level near 50 MMBF.

MONITORING ITEM 44: Availability of Firewood

Forest Goals, Desired Future Condition, and Outputs: To provide fuelwood necessary to meet local demand.

Monitoring Question(s): 1. How much firewood is being provided? 2. Is sufficient fuelwood being offered to the interested public?

Threshold of Variability: Estimated demand exceeds supply by more than 10 percent.

Results/Findings:

The Forest Plan predicted an annual average firewood output of 15 mmbf (Million Board Feed). In 1996, actual output was 5.9 mmbf, about 39 percent of Forest Plan projection. Trends since the late 1980s show a slowly declining "demand" for fire wood, with strong year to year variation. 1996 seemed to continue the general trend; 1996 also had the fewest number of permits issued in the last 8 years. Table III-4 shows the firewood program from 1989 to 1996.

Table III-4
FIREWOOD PROGRAM - CHARGE PERMITS ISSUED 1989-96
Umatilla National Forest

Year	Number	MMBF
1989	4,794	12.4
1990	3,871	8.0
1991	3,792	8.7
1992	2,838	6.8
1993	3,786	9.5
1994	2,373	5.5
1995	3,214	9.2
1996	2,115	5.9

Evaluation:

Current demands for firewood appear to be met across the Forest. Firewood demand is projected to continue to be near the average levels for the next few years. The Forest still anticipates a surplus of firewood for the next several years due to the high level of insect-killed timber, particularly on the south-end districts. However, the quality and quantity of the trees for firewood has been declining as the dead material deteriorates and some is removed in salvage sales. Recommend continue monitoring.

G. LANDS AND MINERALS

MONITORING ITEM 45: Mineral Development and Rehabilitation (MDR) Accessibility

Forest Goals, Desired Future Condition, and Outputs: To provide for exploration, development, and production of a variety of minerals in coordination with other resources.

Monitoring Question(s): 1. Are the standards and guidelines being implemented correctly? 2. Are the standards and guidelines for mineral operations "reasonable" and effective in meeting Forest Plan goals? 3. Is vehicle (potential) access to mineral (mining claims) or energy (gas and oil) lease sites being restricted?

Threshold of Variability: Projects judged to have unacceptable deviation from stated objectives, or projects not in compliance with standards and guidelines. Reduction in lands open to mineral activities is greater than 2 percent.

Results/Findings:

The Forests mineral activities occur primarily on the North Fork John Day Ranger District with little occurring on the other three Districts.

During 1996, the North Fork John Day Ranger District had 38 claims under Plans of Operation or Notices of Intent for the season. Thirty-two claimants filed Notices to Operate during the 1996 field season. Of the claimants who filed Notices to Operate, 24 actually conducted mining operations. The District received two new Plans of Operation during 1996 field season, which will be processed in 1997.

All 38 claims were monitored for compliance. Reclamation monitoring was completed on all active claims. Monitoring findings show that all of the claimants followed their Plan of Operation. Results are as follows:

- Total acres disturbed from active mining operations amounted to an estimated 2.4 acres.
- All 2.4 acres were reclaimed and all met objectives for reclamation.
- All 32 claimants were found to have completed their seasonal reclamation.

In 1996, none of the other Districts processed any Notices of Intent nor did they have any active Plans of Operation for locatable mineral exploration. None of the Districts had any active sites which required access during fiscal year 1996.

Evaluation:

The mineral inspections and reclamation reviews indicate standards and guidelines are being met. Continue monitoring active claims and permits for compliance with operating plans (the North Fork John Day Ranger District has proposed five sites for reclamation during the 1997 field season). Continue monitoring access to mineral claims.

H. TRANSPORTATION

MONITORING ITEM 46: Forest Road System

Forest Goals, Desired Future Condition, and Outputs: Provide and manage the road system needed to accomplish the land and resource management and protection objectives of the Forest.

Monitoring Question(s): 1. Are the total miles and those useable by passenger cars and high clearance vehicles within Forest Plan projections? 2. Is the Forest providing and managing the Forest road system to accomplish land and resource management objectives as outlined in the Forest Plan?

Threshold of Variability: Any variance from existing standards and guidelines and MATM Plans.

Results/Findings:

The Forest has been implementing the Forest Transportation Management System, a data base that provides basic transportation information and road use status. Unfortunately, the 1995 Monitoring Report included some non-national forest roads (county miles); data has been corrected and updated for other problems. Corrected data is shown in Table III-5, below, along with last years reported mileage.

Table III-5
FOREST ROAD SYSTEM
Umatilla National Forest

Road System	Maintenance Level	95 Miles	96 Miles
Closed Road	1	2,500	2,643
High Clearance	2	2,075	1,733
Passenger Car	3	558	491
Passenger Car	4	180	177
Passenger Car	5	147	78
Total Open		2,960	2,479
Total Road		5,460	5,122

Currently the total passenger car mileage amounts to 746 miles or about 83 percent of the Forest Plan projection (900 miles); high clearance miles totals 1,733 miles or about 68 percent of the Forest Plan estimate (2,530 miles). When compared with road mileage data shown in the FEIS (1990 baseline), the Forest has reduced total open miles and increased closures by about 30 percent. The changes in mileage (compared with Forest Plan expectations) is primarily due to a relatively assertive road closure program resulting from implementation of District Motorized Access and Travel Management Plans and in part to more accurate information about the road system. The Forest Plan also projects an increase in newly constructed mileage (mostly local roads) to meet planned resource objectives. The projection has never materialized.

Implementation of Motorized Access and Travel Management Plans has been essentially completed on the Forest. Minor adjustments are being made. During 1996, only about 3 miles were reported as closed and no roads were obliterated.

Evaluation:

Although total miles, specific road use types, and road construction levels are less than Forest Plan projections, the current road system appears to be meeting public and resource management needs. The changes in the road system have been developed and implemented with public input; present level of resource management and project activities appear to be occurring satisfactorily within the "new" road management framework. Monitoring of the Forest road system in the future could place more focus on addressing all of the resource objectives (see Question 2)

MONITORING ITEM 47: Open Road Density

Forest Goals, Desired Future Condition, and Outputs: Maintain the densities of roads and access that meet the objectives to serve the public and for integrated resource management on the Umatilla National Forest.

Monitoring Question(s): 1. Are open road densities within planned access and travel management levels? 2. Are standards and guidelines being met for management areas where motorized use is (or may be) a concern?

Threshold of Variability: +/- 10 percent of planned access and travel management direction (by district) on an area basis.

Results/Findings:

All of the Districts have completed or nearly completed implementation of Motorized Access and Travel Management plans (MATM); Pomeroy Ranger District indicated that a few local roads need to be evaluated for closure or obliteration to complete implementation. As a result of implementation of their plans, all districts have substantially reduced Open Road Densities to be within established targets and below Forest Plan expectations. All Districts have reported current Open Road Densities below to substantially below the Forest average of 2.0 miles/sq. mile, anticipated from implementation of the Forest Plan. (Also see MI 46, Forest Road System, for information about road closures.) Effects of the current densities on attainment of individual management area standards and guidelines still needs to be addressed (Question 2).

Some minor modifications have been made to MATM Plans and current road system status based on annual reviews, project planning or Environmental Analysis at the watershed scale. Changes included opening roads to dispersed campsites or closing roads to sensitive sites for resource protection. The net effect was little change to overall open road densities.

The Heppner and Pomeroy Ranger Districts have continued to monitor use on closed roads. During 1996, Pomeroy RD reported issuing only one permit for road use outside of area management objectives. The Heppner Ranger District issued 221 permits with 91 closed roads receiving traffic; travel on closed roads involved access for a variety of activities including administrative use, commercial activities and special use permittees.

Evaluation:

Implementation and management of District MATM plans has reduced open road densities on a Forest-wide basis. Current open road densities are less than Forest Plan projections, with the closures (and obliteration) providing many benefits. Future monitoring needs to focus on attainment of Management Area standards and guidelines (Question 2). The permit system for allowing use on closed roads and monitoring that use continues to be inconsistently applied and reported between Districts.

I. FIRE PROTECTION

MONITORING ITEM 49: Fire Protection — Program Effectiveness

Forest Goals, Desired Future Condition, and Outputs: Provide and execute a fire use and protection program that is cost efficient and responsive to land and resource management goals and objectives. The use of confine and contain strategies will result in a more cost-effective fire management program. The general fuel hazard level is slowly being reduced through the combination of activities.

Monitoring Question(s): 1. Are fire programs (i.e. prevention, detection, suppression) meeting the standards as required by the National Forest Management Act? Are these programs being effective? 2. What is the number of fires, by cause and acres burned, plus the actual expenditure of EFFS dollars.

Threshold of Variability: Cost effective plans for the prevention of human caused fires will be aimed at specific risks. +25% increase in Most Efficient Level (MEL) in any year; or greater than 10 percent increase in MEL of 5-year average. 20% departure from the Fire Management Action Plan.

Results/Findings:

The number of wildfires during the 1996 fire season (Calendar Year) was actually below the recent average, but the acres burned was the highest in the Forest's recorded history. The season was also highly unusual in the fact that the winter of 1995-96 brought with it 300 percent of normal precipitation, as measured in Pendleton, OR. But the flooding of early 1996 removed a large amount of the snow cover very early in the year. The large majority of acres burned were associated with multiple lightning start situations with limited suppression resource availability due to other wildfires burning within the Region. Table III-6 exhibits the total number of human and lightning caused fires and acres burned on the Forest. Table III-7 shows actual expenditures of WFSU (Wildfire Suppression and Rehabilitation Funds) in FY 1996; this is still an estimate with final payments still being resolved.

Table III-6
LIGHTNING, HUMAN-CAUSED FIRES AND ACRES BURNED 1991-1996
Umatilla National Forest

Fire Cause	1991	1992	1993	1994	1995	1996
Human Caused:						
Total Number of Fires	52	53	71	45	16	32
Total Acres Burned	29	156	635	153	7	8,289
Lightning-Caused:						
Total Number of Fires	93	137	20	201	82	97
Total Acres Burned	49	278	3	5,637	131	64,228
Forest Totals:						
Number of Fires	145	190	91	246	98	129
Acres Burned	78	435	638	5,793	138	72,517