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United States  
Department of  
Agriculture

Forest Service

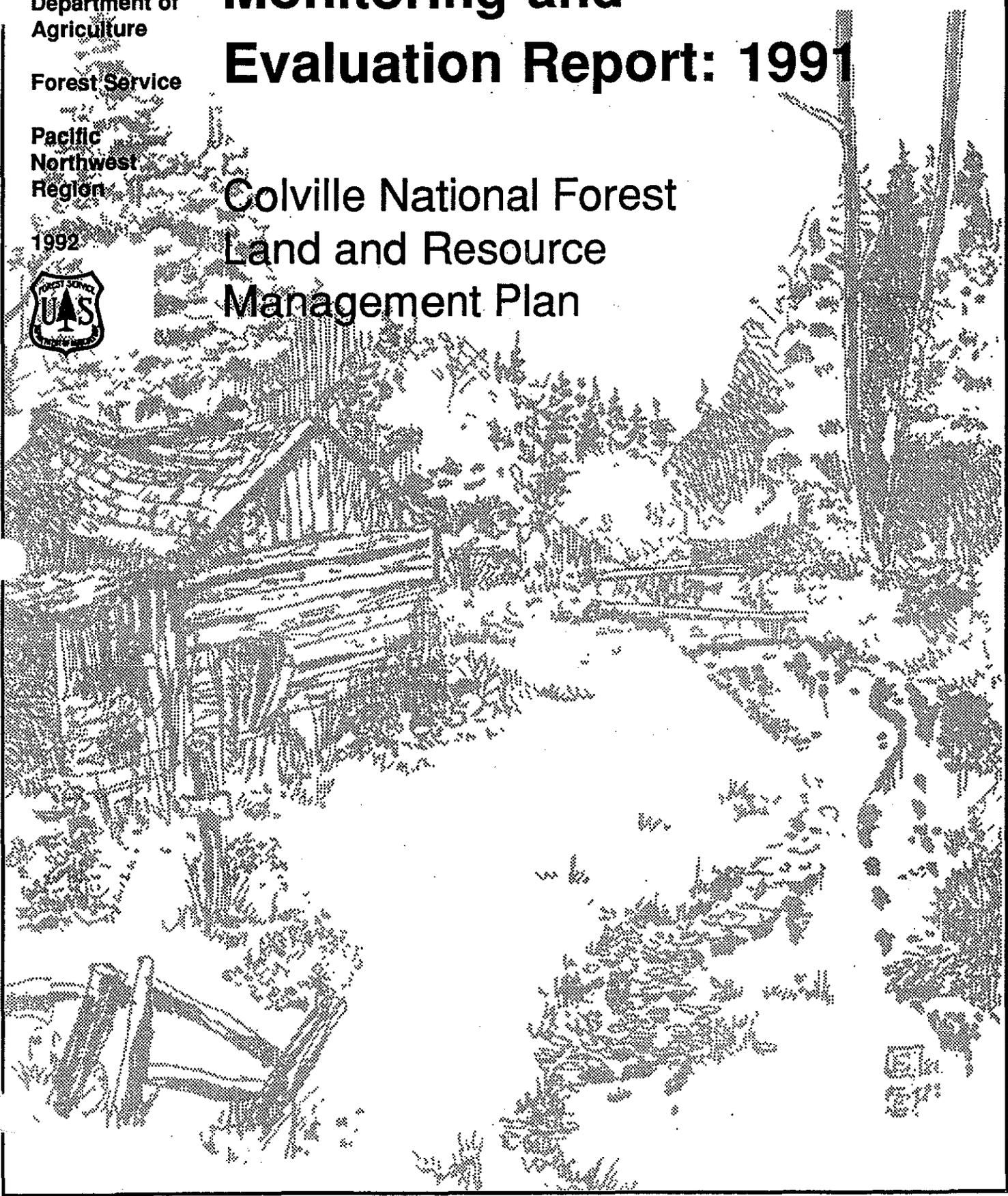
Pacific  
Northwest  
Region

1992



# Monitoring and Evaluation Report: 1991

## Colville National Forest Land and Resource Management Plan





United States  
Department of  
Agriculture

Forest  
Service

Colville  
National  
Forest

765 South Main  
Federal Building  
Colville, WA 99114

Reply To: 1920

Date: October 23, 1992

Dear Colville Forest Planning Participant:

Enclosed is the Colville National Forest's Fiscal Year 1991 Monitoring and Evaluation Report.

For the past 3 years, Colville National Forest staff have planned and carried out projects on the 1.1 million acre Forest under the guidelines of the Colville Land and Resource Management Plan, known as the Forest Plan.

Chapter 2 of this monitoring report presents the Forest's accomplishments in each of eleven resource areas. Highlights of those accomplishments include:

- 25 miles of recreation trails constructed and 5 trailheads constructed;
- 2,694 acres of wildlife habitat improvements and 520 wildlife habitat improvement structures completed;
- 152 miles of streams surveyed and 116 fish habitat improvement projects completed;
- 104 million board feet of timber (gross volume) offered for sale and 10,800 acres harvested; and
- \$2.49 million dollars in payments to the states of Washington and Idaho.

Monitoring determines if Forest Plan projections of outputs of goods and services are being met. Chapter 3 of this report presents the sources and uses of the Forest's budget and compares the budget needs projected in the Forest Plan, with the actual budget received.

One of the actions called for in the Forest Plan is the monitoring of projects on a sample basis, to determine if timber sales and other activities are being developed and implemented according the guidelines in the Forest Plan, which are designed to protect all resource values on the Forest.

Chapter 4 presents the results of 36 monitoring items, including information about acres of timber harvest, levels of wilderness use, big game winter range, and watershed best management practices.



Caring for the Land and Serving People

FS-6200-28b(4/88)



I also want to share with you the status of Forest Plan appeals and litigation.

In August 1991, the three remaining appeals on the Colville Forest Plan were decided. The reviewing officer for the Chief of the Forest Service concluded the Colville Forest Plan and accompanying environmental impact statement were consistent with all applicable laws and regulations.

In February 1992, seven organizations (Inland Empire Public Lands Council; Kettle Range Conservation Group; Spokane Audubon Society; Inland Northwest Wildlife Council; Washington Wilderness Coalition, Sierra Club, and The Wilderness Society) filed a lawsuit challenging the Colville Forest Plan in U.S. District Court in Spokane. The lawsuit included six claims for relief involving: water quality and fisheries habitat; forest biodiversity and old growth forests; sustained yield; clearcut logging; wildlife and wildlife habitat; and administrative (appeal) procedures. The Department of Justice is representing the Forest in the lawsuit.

We welcome your comments regarding the information presented in this year's Monitoring and Evaluation Report and thank you for your interest in the management of a very special area...the Colville National Forest.

Sincerely,

EDWARD L. SCHULTZ  
Forest Supervisor

Enclosure



**Colville National Forest  
Monitoring and Evaluation Report: 1991  
Errata**

**Page 2-5, Table 2.1 should read:**

**Nonstructural Fish habitat Improvement: 36 acres**

**Page 4-9, second column, second sentence should read:**

**(By the end) of the year, 36 acres and 116 structures had been completed.**

**Colville National Forest  
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# 1. OVERVIEW

The Land and Resource Management Plan (Forest Plan) for the Colville National Forest was approved by the Regional Forester on December 29, 1988 and became effective on February 13, 1989. The Forest Plan defines management emphases for different areas of the Forest, sets standards and guidelines for management activities, projects expected levels of goods and services, and sets monitoring requirements.

There are roughly 1.1 million acres of the Colville National Forest. Under the Forest Plan, the Forest was allocated to eleven management areas, which reflect different management emphases. The following table displays the acres of each management area, rounded to the nearest 100 acres.

Colville National Forest Management Areas

MA	Management Area Description	Acres
1	Old Growth Dependent Species	30,700
2	Caribou Habitat	29,500
3A	Recreation	37,200
3B	Recreation/Wildlife	12,000
3C	Downhill Skiing	2,000
4	Research Natural Areas	3,600
5	Scenic/Timber	222,200
6	Scenic/Winter Range	76,100
7	Wood/Forage	427,700
8	Big Game Winter Range	125,000
9	Wilderness	30,600
10	Semiprimitive Motorized Recreation	14,000
11	Semiprimitive Nonmotorized Recreation	85,300

Monitoring is used to determine if the Forest Plan is being implemented as intended, how effective Forest Plan implementation is toward achieving the desired future condition of the Forest, and to verify that the various assumptions made during planning are still valid. Monitoring results are then evaluated to determine whether the Forest Plan should be revised or amended.

This report summarizes results of Forest Plan implementation, monitoring, and evaluation for

fiscal year (FY) 1991, which ran from October 1, 1990 to September 30, 1991. The purpose of this report is to provide information to the Forest Service and the public about how well Forest Plan objectives are being met. This and subsequent reports will be used to provide information for the Forest Plan review called for in the forest planning regulations. Those regulations require the Forest Supervisor to "review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have changed significantly."

**Chapter 2, Accomplishments**, summarizes the individual resource program accomplishments and provides a tabular comparison of planned versus actual outputs and activities.

**Chapter 3, Financial and Economic Review**, contains summaries and tables that describe the Colville National Forest and the surrounding counties in financial and economic terms.

**Chapter 4, Forest Plan Monitoring**, identifies the various activities, costs and/or outputs that were monitored and provides results and evaluation of the monitoring process.

Although we have made some conclusions with respect to Forest Plan implementation, several more years of monitoring will be necessary to allow meaningful evaluation and conclusions to be made. As monitoring continues during the next few years, trends will be established that will provide valuable information for shaping the future management of the Forest.

We welcome your feedback regarding the information found in our second Monitoring and Evaluation Report. Thank you for your interest in the management of a very special area...the Colville National Forest.

## 2. ACCOMPLISHMENTS

This chapter summarizes the accomplishments of each resource program area for fiscal year 1991. Table 2.2, at the end of the chapter, compares actual levels of various outputs, effects, activities and costs for fiscal years 1991, 1990, and 1989 with those projected in the Forest Plan.

### Recreation Program

#### 1991 Accomplishments

##### *Trails*

Twenty five miles of trail construction/reconstruction were completed this year; one mile less than the Forest Plan average annual projection for trails. Construction/reconstruction was completed on the Gillette Ridge Trail and the trails at the Big Meadow Lake Recreation Area, Colville Ranger District and the Lambert and Old Stage trails, Republic Ranger District.

Trailhead construction was completed for the Gillette Ridge, Lambert Creek, Old Stage, White Mountain and Batey Boulder trails. Development plans and designs have been completed for the Kings Lake Snowmobile and Geophysical snow park parking areas.

The new offroad vehicle (ORV) trail ranger hired by the Colville Ranger District provided ORV assistance and information services.

Approximately 470 miles of trails were available to horseback riders, 500 miles of trails were available to hikers, and 200 miles of trails were available to ORV users in the Forest.

##### *Winter Sports Opportunities*

The Sullivan Lake District coordinated a meeting and an informal agreement with the Spokane Recreation Department, Tri-County Trail Groomers Association, other local trail groomers, and other ranger districts to designate road closures and snowmobile routes for grooming for the 1990-91 snowmobile season.

Approximately 300 miles of snowmobile trails and 140 miles of cross country ski trails were available for use across the Forest.

##### *Partnerships*

Several partnerships with civic groups, agencies, individuals, and businesses were created during the year to help complete a variety of projects.

The Kettle Falls and Republic ranger districts began establishing partnerships for projects associated with the Sherman Pass Scenic Byway. Partners assisted with the development of a video describing the project, an interpretive kiosk to be constructed at the top of Sherman Pass in 1992, and the improvement of campground facilities. Those partners include: Anderson Grocery, Coulee Dam Credit Union, Ferry County P.U.D., Fogle Pump, LaDuke and Fogle Motors and Equipment, Les Schwab, Ferry and Stevens County Commissioners, Double H Motel, Backcountry Horsemen, Design Experience, Northwest Alloys, Tri-County Houndsmen, Marlin Video Production, Dawson Trucking, CPC Building Supply, Ferry County Historical Society, Fred Bremner, Republic Chamber of Commerce, Alistone Productions.

The Colville Ranger District, Meadow Magic environmental education program task force introduced the Big Meadow Lake Recreation Area to the public by hosting a field trip in May 1991. Partnerships with the Lions Club, Dennis Smith, Mountain Gear of Spokane, the Curlew Job Corp Center, and McDonalds of Colville were instrumental in helping to put together the environment education program at Big Meadow Lake and to help host the field trip.

The Washington State Parks and Recreation Department assisted with the Kings Lake and Geophysical snow park projects. The Interagency Committee for Outdoor Recreation assisted with the Batey Boulder Trail, Divide Trail and Pioneer Park projects.

The Backcountry Horsemen of Washington, Kettle Ridge Riders constructed the Lambert Creek Trailhead. The Backcountry Horsemen of Washington, Inland Empire Chapter, constructed the Old Stage Trailhead. The Backcountry Horsemen of Idaho assisted with the Divide Trail project.

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## Accomplishments

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The Kalispel Indian Tribe, U.S. Air Force and others assisted with the Pioneer Park project.

Grooming of the cross-country ski trails on the Republic District was accomplished through a partnership with the Kettle Range Ski Club. The Kettle Range Conservation Group adopted the Big Lick Trail on the Republic Ranger District for maintenance. Eastern Washington State University Outdoor Program adopted the Mount Leona Trail on the Republic Ranger District for maintenance and assisted with site planning on several interpretive stops throughout the Newport Ranger District.

### *Monitoring*

Forestwide, a total of 400 days of recreation monitoring took place during the year. A new, national data base system for recreation sites and trails was tested, which will be used as the recreation/trails data reporting system in the future.

## **Cultural Resources Program**

### **1991 Accomplishments**

#### *Surveys*

Approximately 490 person-days were spent conducting archaeological surveys on approximately 78,000 acres; 146 new cultural properties were documented through those surveys.

#### *Evaluation and Mitigation*

An evaluation and mitigation contract for a number of logging-related cultural properties within the LeClerc Creek drainage, Sullivan Lake Ranger District was completed this year. From this study, management criteria are currently being developed for all logging-related properties in the Forest. A product of the mitigation contract was a publishable manuscript that describes the history of logging in the Pend Oreille Valley from 1880 to 1940.

#### *Education*

Cultural resource development projects begun during the year include the renovation of the homestead cabin at Big Meadow Lake Recreation Area, which is 95 percent complete, and the planning and design of the Pioneer Park Interpretive Trail.

The Forest completed, or was involved with, a variety of educational projects during the year. The Forest and the Spokane District of the Bureau

of Land Management sponsored the "Journey Past", a historical exhibition and portrayal of the Inland Northwest. Approximately 10,000 people, including 4,500 school children, visited the exhibition in the Spokane International Agriculture Trade Center.

Interpretive brochures, describing the surrounding cultural resources, are available to the public at Big Meadow Lake Recreation Area.

#### *Protection*

An agreement with the State Historic Preservation Office provides for the protection of 14 new cultural sites.

## **Wilderness Program**

### **1991 Accomplishments**

A wilderness implementation schedule, including development of Limits of Acceptable Change, was developed for the Salmo-Priest Wilderness Area and is waiting for final approval.

Trail counters were installed on two Salmo-Priest Wilderness Area trails.

## **Wildlife, Fisheries, and Threatened, Endangered and Sensitive (TES) Species Program**

### **1991 Accomplishments:**

#### **Wildlife and TES Program**

Table 2-1 displays FY 1991 wildlife and TES species accomplishments.

Wildlife, fisheries, and threatened and endangered species accomplishments are presented on Table 2.1. The outputs shown on Table 2.2 are calculated from the total accomplishments.

#### *Analysis*

To aid in the comparison of alternatives for management of big game winter range, a computer model was tested by biologists on the ranger districts in 1991.

#### *Surveys*

Habitat "score cards" were developed for evaluating habitat quality for pine marten, pileated woodpecker, and barred owl management indicator species. The evaluation system is being used on a trial

basis by district resource crews under supervision of district wildlife biologists.

The condition of 11 old growth habitat dependent species management areas (MA 1) were reviewed. Recommendations for adjusting the location of MA 1s were made to include the most suitable habitat for old growth dependent species, within requirements of the forestwide habitat grid system. The actual adjustment of the MA 1 boundaries will be documented in project decision notices. Barred owls were called in 11 MA 1s and 5 responses were recorded.

The condition of 50 pine marten and 9 pileated woodpecker habitat units were reviewed. Again, habitat unit locations were adjusted to provide for the most suitable habitat within the forestwide habitat grid system. The objective of the grid system is to provide habitat linkages for maintaining species viability with 600 acres of old growth every 5 to 10 miles; 300 acres of old growth or mature forest every 5 miles; and 160 acres of old growth and mature forest every 2 to 2.5 miles.

Fifteen wolf howling transects were conducted throughout the Forest. Only one unconfirmed response was reported. However, track casts and scat collected from two areas were sent to the national wolf recovery coordinator for analysis resulting in a "probable" determination, the best that can be concluded from that type of evidence.

Midwinter bald eagle surveys covered approximately 40,000 acres on three districts. Two bald eagle nests were checked for activity (refer to chapter 4, monitoring item 14).

Forty-one project areas, covering 212,094 acres, were surveyed for sensitive plants. Fourteen species were located on 169 new sites. The Forest is continuing to coordinate surveys of project areas for sensitive plants with the U.S. Fish and Wildlife Service.

*Threatened, Endangered, and Sensitive Species* Endangered Species Act activities included informally consulting with the U.S. Fish and Wildlife Service and Washington Department of Wildlife, as well as evaluating and writing biological evaluations. Forty three biological evaluations were developed in FY 1991, which analyze and

disclose the potential effects of proposed projects on threatened, endangered, and sensitive species. Caribou habitat in the proposed Leola-Sullivan and White Man project areas on the Sullivan Lake Ranger District, continued to be evaluated by the district wildlife biologist and silviculturist. Adjustments were made to proposed harvest units and prescriptions following on-the-ground reviews. Caribou and grizzly bear habitat evaluations were begun on the Noisy Divide project area.

A proposal to reintroduce peregrine falcons onto the Forest was developed in cooperation with the Washington Department of Wildlife and the Peregrine Fund. The environmental analysis for this project is continuing into 1992.

To contribute toward meeting recovery objectives for threatened or endangered species, Forest biologists, administrators, and silviculturists attended caribou and grizzly bear technical meetings. Three biologists from the Forest attended training on wolf surveys and provided that training to the other biologists on the Forest. The Forest Biologist participated as a member of the Caribou Recovery Team, which worked on revising the Caribou Recovery Plan during 1991.

#### *Partnerships*

A number of partnerships were created with organizations to help accomplish wildlife projects. Ducks Unlimited and the Inland Northwest Wildlife Council provided support and help with the Woodward Meadow wetlands impoundment project. The U.S. Air Force survival school constructed a number of wood duck boxes for placement throughout the Forest.

#### *Monitoring*

Approximately 100 person days of wildlife monitoring took place on the Forest during the year.

#### *Staffing*

The Forest hired a full time botanist in 1991 to coordinate the sensitive plants program on the Forest and provide input for other botany related issues.

In 1991, there was a forestwide total of 12 permanent staff and 2 temporary staff working on the wildlife, fish, and botany programs.

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## Accomplishments

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### **1991 Accomplishments: Fisheries Program**

Table 2-1 displays FY 1991 fisheries accomplishments.

#### *Surveys*

Four fisheries field crews surveyed approximately 152 miles of stream for fish habitat conditions in 1991. Stream habitat surveys collect information on: riparian vegetation; stream gradient; pool:riffle ratio; stream temperature; instream woody material; stream substrate; stream width and depth; and species of fish found in the stream. During those surveys, a native trout population was discovered in Robbins Creek.

#### *Analysis*

The Forest began to use a regional computer program to document and analyze the findings of the stream surveys. All information from stream surveys on the Forest will be entered into the program for analysis. In addition, a forestwide fisheries computer database was developed to track all current and proposed fisheries-related activities on the Forest.

During 1991, forestwide guidelines were developed for managing hardwood tree and shrub species in riparian areas. A forestwide method for analyzing and documenting potential impacts of timber harvest and related activities on fish bearing streams was also developed.

#### *Habitat Improvement*

Fisheries habitat improvement projects included the installation of 116 improvement structures in streams and habitat improvement on 30 acres.

#### *Partnerships*

Two partnerships were created to help with fish habitat improvement projects. A group of juvenile offenders called the "Impact Group" helped with habitat improvement projects on the North Fork of Chewelah Creek on eight different weekends. The Spokane Fly Fishers also assisted with fish habitat improvement projects. The Forest sponsored five fishing derbies in 1991, which included 190 participants and 15 sponsors from the local communities.

**Table 2.1 Wildlife, Fisheries, and Threatened and Endangered Species Accomplishments**

Accomplishments	Plan Avg Annual Accomplishments 1st Decade	FY 1989	FY 1990	FY 1991	
<b>Nonstructural T&amp;E Habitat Administration (acres)</b>					
Grizzly Bear Habitat Protection/Mgmt. 1/	150,000		90,000	20,000	
Caribou 1/	84,000		90,000	30,000	
Sensitive Wildlife Surveys/Mgmt. 2/	10,000		0	64,000	
Sensitive Plants Surveys/Mgmt. 2/	10,000		3,965	212,094	
Bald Eagle & Peregrine Falcon Surveys	0		46,330	40,000	
<b>Nonstructural Wildlife Habitat Improvements (acres)</b>					
Browse Planting and Seeding	505	} 876	315	} 2,694	
Prescribed Burning	1,250		760		
Slashing/Pruning	40		72		
<b>Nonstructural Fish Habitat Improvement (acres)</b>					
Beaver/Trout Habitat Rehabilitation	12	} 17	10	} 30	
Lake Rehabilitation	2		0		
Riparian Vegetation Rehabilitation	7		115		
Spawning Gravel Placement/Cleaning	2		0		
<b>Nonstructural T&amp;E Habitat Improvement (acres)</b>	120	910	0	13	
<b>Structural Wildlife Habitat Improvement (structures)</b>					
Fence to Protect Improvements	1	} 182	0	} 520	
Waterfowl Nests	40		2		
Songbird Nest Boxes	200		75		
Raptor Nest Structures	12		5		
Marten Den Boxes	30		60		
Snag Development:					
Top Girdling	400		0		
Top Blasting	400		0		
Top Cutting	0		388		
Pole Erection (20 ft.)	20		15		
Pot Holes Development	5		4		
Spring Developments	3		0		
Wildlife Escape Ramp	10		0		
Wildlife Cover (Brush Piles)	20		0		
Road Closures	0		71		
Mountain Goat Viewing Site	0		N/C		
<b>Structural Fish Habitat Improvement (structures)</b>					
Boulder Placement	10	} 75	0	} 116	
Check Dams	50		163		
Log Deflectors	10		0		
Spawning Facilities	2		0		
Lake Plug	1		0		
Stream Barrier Removal	20		0		
Culvert Replacement	1		0		
Powerline for Aerator 3/	0		7		
<b>Structural T&amp;E Habitat Improvement (structures)</b>					
T&E Species Road Closures	2	} 0	10	} 8	
Floating Loon Nests	0		4		
Bear-proof Garbage Containers	0		68		
<b>Maintenance of Habitat Structures (structures)</b>					
Wildlife Structures	200	} 0	0	} 0	
Fish Habitat Structures	20		3		
T&E Species Structures	20		0		

1/ Forest Plan level is total habitat on forest; accomplishment is amount of acres modeled for environmental assessments.

2/ Acres of project areas analyzed for sensitive species habitat.

3/ Powerline is 3.5 miles long; lineal structures are reported as one structure per 1/2 mile.

N/C Not complete

## **Range Program**

### **1991 Accomplishments**

#### *Allotments*

The grazing schedule on the North Fork Chewelah Creek allotment was revised to reflect Management Area 3A recreation objectives and desired future conditions. The LeClerc Creek allotment permit was amended to comply with Interagency Grizzly Bear management guidelines. Several conflicts between competing resource uses were resolved by restricting livestock from riparian areas around Scatter Creek, Swan Lake, and Ferry Lake. The North Fork of St. Peters Creek and Tonata Creek allotments were upgraded by installing fencing and cattle guards.

#### *Noxious Weeds*

Efforts to eradicate and/or control the spread of noxious weeds included the treatment of 340 acres and the development of a Memorandum of Understanding between the Sullivan Lake Ranger District and Pend Orielle County to identify, control and eradicate noxious weeds.

## **Timber Program**

### **1991 Accomplishments**

#### *Sale Program*

As shown in Table 2.2 at the end of this chapter, 96 million board feet (MMBF) of Allowable Sale Quantity (referred to as ASQ, which is sawtimber volume) was offered for sale in FY 1991. This includes 7 MMBF offered for sale in 1990 that was actually awarded (sold) in 1991, and about 30 MMBF that was offered in 1991, but not awarded.

Due to the increased focus on products other than sawlogs, the Forest is now being funded to offer total or gross volume, rather than ASQ volume, as in the past. In 1991, 104 MMBF of gross volume was offered for sale. This includes the 6,900 cords of fuelwood displayed in Table 2.2.

Harvest treatments are beginning to change as the focus on meeting Forest Plan objectives are more clearly understood. Clearcuts, in particular, are changing in character. Large live trees, mainly western larch, are retained to provide future snag habitat. Hardwood tree and shrub vegetation

is retained for visual and wildlife objectives, along with advanced conifer reproduction. More woody debris is also left on site both for habitat and long term site productivity. The Colville Ranger District has offered several public tours to view changing harvesting methods, along with other emphasis items the district is working on.

#### *Regeneration*

Approximately 5,000 acres of planting and 300 acres of site preparation for natural regeneration occurred in 1991.

#### *Hardwoods*

The Forest has three species of deciduous trees and numerous shrub species. Maintaining a healthy hardwood component is important to meet visual, wildlife, fisheries, and riparian objectives. Training in managing hardwood tree species was provided to silviculturists, wildlife biologists, and other resource personnel in 1991. A workshop on managing hardwood shrubs is being planned for 1992.

#### *Analysis*

The Forest completed the procedure for documenting lands identified during the environmental analysis for a project that are not suited for timber management. The lands will be mapped and a layer within the Geographic Information System, a computerized mapping system, will be developed to retain that information.

#### *Forest Health*

With the amount of spruce budworm activity increasing from 11,000 to about 129,800 acres in the last year, maintaining forest health is an issue. A forest health assessment and accompanying action plan was begun in 1991 and is scheduled to be completed in 1992. Adjacent landowners and agencies will be involved in the development of the health assessment and action plan, since insect and disease activity does not recognize ownership boundaries.

#### *Small Diameter Stands*

A special program entitled "Creating Opportunities" - CROP - began to analyze the 150,000 acres on the forest of small diameter stands of trees generally less than 7 inches in diameter, that occur within management areas where timber harvest is an appropriate activity. Those primarily

lodgepole pine and larch stands were created by the forest fires of the 1920s and 1930s. The Forest Plan provides for the harvest of those stands as marketing opportunities develop. With increasing demand for pulpwood and small diameter wood for milling, three teams were created on the Forest to address the management issues associated with these stands. A six person analysis team works out of the Forest Supervisor's Office in Colville; the other two implementation teams work at the Colville and Newport ranger districts.

#### *Partnerships*

In addition to the standard firewood program on the Forest, the Colville Ranger District, in partnership with Stevens County, Northeast Rural Resources Energy Program, Colville Job Services, and Vaagen Bothers Lumber continued Project HEAT, a firewood program for low income senior and disabled citizens. Under this program, local youth fulfilling their community service time cut and deliver firewood to recipients.

Another Colville Ranger District partnership involved Boy Scout Troup 459, which removed tags from seedlings at the Pal Moore Seed Orchard.

## **Soil and Water Resources Program**

### **1991 Accomplishments**

#### *Expanded Analysis Procedures*

Interdisciplinary teams were used during project planning to ensure soil and water protection objectives, as outlined in the Forest Plan, were met.

In response to the reversal of six timber sale decisions on watershed issues, the Forest adopted a more complex analysis for determining potential cumulative effects on watersheds from timber harvest and road building.

To develop the expanded procedures, hydrology, fisheries, engineering, and planning staffs on the Forest: (1) communicated with resource professionals in Washington, Idaho, Oregon, and Montana; (2) reviewed current scientific literature on watershed issues; (3) conducted internal reviews on the expanded procedures; and (4)

trained Forest staff on the use and application of the procedures. Forest staff met with appellants to clarify their concerns and answer questions regarding the expanded procedures.

The expanded procedures examine the three major components of a watershed: (1) stream channel morphology; (2) water yield; and (3) water quality/sedimentation. The expanded procedures included the development or revision of computer models to aid in the analysis of potential watershed effects from timber harvest, site preparation for planting, and road building. A brief explanation of the expanded analysis follows.

For stream channel morphology, stream surveys are now used to assess the current condition and stability of stream channels, as well as the amount and condition of large organic debris in stream channels.

To assess potential effects on water yield from timber harvest and road building, the Forest uses the Equivalent Clearcut Acreage (ECA) methodology. The Forest's ECA methodology has been adapted to local conditions. One component of the ECA methodology is hydrologic recovery. Hydrologic recovery is the period of time it takes for the hydrologic condition of a watershed to return to a predisturbance condition. Under the expanded procedures, the recovery period is based on the projected age and height of trees planted on a site after harvest. The Forest has instituted a monitoring program designed to validate those age and height projections.

To establish preharvest water quality conditions, the Forest uses data from 75 water quality monitoring sites located across the Forest.

The new watershed cumulative effects analysis uses a sediment production model adapted to local conditions, SEDCOMP, to predict the amount of erosion and sediment delivery to streams from timber harvest and road building activities. The SEDCOMP model is based on the modified universal soil loss equation and provides a relative index of changes in predicted sediment production in response to timber harvest and road building.

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## Accomplishments

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The Forest also developed expanded procedures for documenting the selection of Best Management Practices. Best Management Practices (BMPs) are the primary mechanism used to achieve water quality standards set by the State of Washington and the Environmental Protection Agency.

### *Improvement Projects*

Fifteen acres of watershed improvement (erosion control seeding) work were accomplished as part of the road maintenance program this year. Watershed stabilization and rehabilitation projects were completed in the Lonely and Karamip timber sales, on Lambert Mountain and along the Kettle Crest trail.

### *Coordination*

The Forest coordinated with the Washington State Department of Ecology, the Department of Natural Resources and Plum Creek Lumber Company on various watershed protection and management issues during 1991.

## **Air Quality and Fire Protection and Use Program**

### **1991 Accomplishments**

In 1991, there were a total of 22 wildland fires on the Forest, which burned 17 acres. All fires caused minimal resource damage.

A total of 4,497 acres of prescribed burning occurred on the Forest for hazard reduction, site preparation, and wildlife habitat enhancement. That figure represents a 26 percent reduction in acres burned from 1990 and highlights the Forest's efforts to reduce particulate (PM-10) production through non-burn alternatives.

In addition to the reduction in acres burned, PM-10 material production was also significantly decreased through the use of cooler fire prescriptions, such as higher fuel moistures, relative humidity and duff moisture and lower temperatures.

The Washington State Clean Air Act of 1991 established new air quality standards that affect prescribed fire programs on federal land. Part of the new air quality standards includes a reduction in the production of particulate matter 10 ug/m<sup>3</sup>

or smaller (PM-10). Most of the smoke from prescribed forest burns and wildland fires consist of PM-10 material. The new Clean Air Act regulates PM-10 production from prescribed fires and recognizes that wildland fire PM-10 production is beyond the normal control of land managers; therefore, PM-10 smoke production from wildland fires is not regulated under the 1991 act.

Prescribed fire is used to prepare harvest sites for tree regeneration to reduce fire hazard, and to improve certain wildlife habitat. Progress is being made on the Forest to reduce the amount of particulate matter from prescribed fires, by reducing the number of acres burned, burning with cooler prescriptions, choosing alternative treatment methods, and increasing fiber utilization.

Alternative treatment options included grapple piling rather than broadcast burning and to a minor extent selective use of mechanical treatment, rather than any burning. An increase in acceptable fuel profile loadings and changing logging systems has effectively reduced the number of acres requiring site preparation or hazard reduction treatment. Some increase in fire hazard risk resulting from heavier fuel profiles is unavoidable.

Efforts are underway to improve pre- and post-burn monitoring, by better documentation of pre-burn weather and fuel conditions and post-burn effects.

All prescribed fires received smoke approval from Washington Department of Natural Resources prior to ignition to assure smoke dispersion and to minimize smoke intrusion into the Spokane area and local population centers.

An air quality monitoring program is planned for the Forest. Program standards must be compatible with the Regional Air Quality Monitoring program which is in the early stages of development.

A draft of the Forest's *Fire Management Action Plan* was developed in 1991. An appropriate fire suppression strategy by management area will be included in the final action plan scheduled for 1992.

## **Lands Program**

### **1991 Accomplishments**

Two land exchanges were completed in 1991. The Forest acquired 10,277 acres and granted 10,600 acres, primarily on the Newport and Sullivan Lake ranger districts. Work is continuing on two smaller exchanges.

The Forest continued ongoing efforts in acquiring and granting necessary rights of way

## **Facilities Program**

### **1991 Accomplishments**

The Forest Plan stipulates maintaining 849 miles of road open to passenger cars and 2,500 miles of road open to high clearance vehicles. In FY 1991, the Forest had 801 miles of road open to passenger cars and 2405 miles open to high clearance vehicles. In 1991, 5 miles of collector roads were constructed and 79 miles of timber purchaser were constructed or reconstructed.

Coordination between the facilities program and other resource management activities begins during preliminary project planning through the participation of a transportation planner on project

interdisciplinary teams. Design teams incorporate the project interdisciplinary teams input into contract provisions for construction.

## **Minerals Program**

### **1991 Accomplishments**

A total of 69 "operating plans" were administered in 1991. These included 20 Plans of Operation and 12 Notices of Intent for locatable minerals, about a 60 percent increase over 1990. Much of this exploration activity was in the western half of the Forest.

Gold production at Echo Bay Mines Overlook Project during their first full year of operation included over 29,000 ounces recovered from forest system lands.

Eleven salable or mineral material sales and free use permits involving 17,672 cubic yards, and 25 in-house disposals, involving 6,300 cubic yards were administered. Total estimated value of salable minerals produced was \$9,544.

No leasable mineral activity occurred during 1991.

## Accomplishments

**Table 2.2 Resource Outputs, Environmental Effects, Activities And Costs. Comparison of Actual and Planned.**

Outputs, Effects, Activities, and Costs	Unit of Measure	Forest Plan Ann. Average	FY 1989	FY 1990	FY 1991
Developed Recreation Use	M RVD 1/	365	357	341	398
Non Wilderness Dispersed Rec (Includes WFUDs 2/)					
Roaded	M RVD	725	782	282	609
Unroaded	M RVD	119	194	68	169
Wilderness Use	M RVD	2.4	5.9	2.8	2.9
Trail Construction/Reconstruction	Miles	26	23	22	25
Developed Site Construction/Reconstruction	PAOT 3/	354	240	220	270
Management Indicator Species 4/					
Grizzly Bear	Number	6	6	6	6
Caribou	Number	33	33	33	33
Mule & White-tailed Deer	Number	18,800	20,267	18,401	18,031
Barred Owl	Pairs	73	84	81	78
Pileated Woodpecker	Pairs	319	368	359	348
Northern Three-toed Woodpecker	Number	1,149	1,327	1,308	1,281
Elk	Number	540	506	336	356
Marten	Number	431	497	490	480
Wildlife Habitat Improvement					
Acres	Acres	1,925	496	1,147	2,707
Structures	Structures	1,140	38	703	520
Fish Habitat Improvement					
Acres	Acres	11	7	125	36
Structures	Structures	84	30	170	116
Range-Permitted Grazing	M AUMs 5/	35	35.1	34.8	33.9
Range-Structural Improvements/Fences	Miles	5	10	6	9
Range-Structural Improvements/Water Developments	Number	10	5	12	10
Range-Nonstructural Improvements	Acres	1,127	300	235	556
Timber-Allowable Sale Quantity (offered for sale)	MMBF 6/	123.4	121	127	96
Timber-Allowable Sale Quantity (offered for sale)	MMCF 7/	28.7	28.1	29.5	22.3
Timber Harvested (excludes fuelwood)	MMBF	N/A	129.0	88.9	111.8
Fuelwood 8/	M CORDS 9/	17.9	12.8	12.6	6.9

**Notes:**

1/ Thousand recreation visitor days.

2/ Wildlife and fish user days.

Recreation use for FY 1990 was estimated using a new sampling and recording system. For FY 1991, the new system produced use data that was, upon review, considered to be invalid. Therefore, recreation use for FY 1991 was estimated based on past trends. This produced RVD and WFUD counts and subsequent employment and income impact estimates which can not be compared to previous years.

3/ Persons at one time.

4/ Figures for grizzly bear and caribou are estimates of animals; figures for other species represent habitat capability.

5/ Thousand animal unit months.

6/ Million board feet.

7/ Million cubic feet.

8/ Figures from Plan represent estimates of supply available and does not represent amount demanded or collected.

9/ Thousand cords.

N/A Not available.

Table 2.2 (Continued)

Outputs, Effects, Activities, and Costs	Unit of Measure	Forest Plan Ann. Average	FY 1989	FY 1990	FY 1991
Reforestation: 10/ Planted	M ACRES	4.2	4.0	5.2	5.0
Natural	M ACRES	2.8	0.1	0.7	0.3
Timber Stand Improvement	M ACRES	2.7	1.4	1.7	2.2
Water Yield	M ACRE FEET	981	853	810	835
Sediment	TONS/YR INDEX	10,279	10,279	8,533	8,000
Improved Watershed Condition	ACRES	12	23	30	15
Minerals (operating plans) 11/ Energy Minerals 12/ Nonenergy Minerals (1990 dollars) 12/	NUMBER	150	74	76	69
Arterial and Collector Road Reconstruction	BILLION BTUs 13/	0	0.013	0	0
Bridges	MM\$	6.53	0.01	4.53	10.75
Timber Purchaser Road Construction/ Reconstruction	MILES	10	5	4.3	5
Roads Suitable for Public Use 14/ Passenger Car	STRUCTURES	1	0	1	0
High Clearance Vehicle Only	MILES	98	94	119	79
Roads Closed to Public Use	MILES	849	899	866	801
Total Forest Roads 15/ Total Forest Budget (1982 dollars) 16/ Returns to Government (1982 dollars)	MILES	2,500	2,528	2,671	2,405
Human Resource Program	MILES	1,126	339	360	736
Change in Jobs 17/ Change in Income (1982 dollars) 17/ Payments to States (1982 dollars) 18/ Acres Harvested by Prescription 19/ Clearcut	MILES	3,745	3,938	3,898	3,941
Shelterwood	MM\$	17.5	11.4	11.7	13.4
Uneven-aged Management	MM\$	12.6	10	6.6	7.4
	M PERSON YRS	225	na	238	249
	NUMBER	598	734	(73)	378
	MM\$	9.0	10.7	(0.2)	5.9
	MM\$	3.3	1.9	1.4	1.7
	M ACRES	4.6	3.6	2.7	3.0
	M ACRES	2.3	2.6	1.6	1.8
	M ACRES	1.7	0	0.1	0.8

**Notes:**

10/ Acres of reforestation also includes natural regeneration that occurs after scarification of site by timber sale operators during logging and subsequent slash disposal.

11/ Includes operating plans, notices of intent, prospecting permits, material sales, free-use permits, and leases involving locatable, leasable, and salable minerals.

12/ The figures are relative values based upon minerals accessibility and are not intended to be accurate estimates of mineral production.

13/ British thermal units

14/ The days available for public use would vary even though the miles do not.

15/ The figure of 3,745 miles is correction of a typographical error in the Plan. The mileage stated in the Plan was 4,745.

16/ Does not include budget for Job Corps Center.

17/ Changes in number of jobs and income are presented as change from BASE scenario to the first decade of Plan implementation or to the current fiscal year. Figures in parenthesis indicate a negative value.

18/ Does not include portion of Kaniksu National Forest administered by Idaho Panhandle National Forest that is in Washington state.

19/ Does not include the final removal cut of shelterwood prescriptions or the overstory removal on remove now and remove next condition classes.

### 3. FINANCIAL AND ECONOMIC REPORT

This section of the Monitoring and Evaluation Report describes the impacts of fiscal year (FY) 1991 accomplishments in financial and economic terms. There are three separate sections to this chapter: 1) a **"Financial Report"** that includes a description of the sources and uses of Forest's funds and a comparison of the proposed Forest Plan budget (described in the Environmental Impact Statement) to actual fiscal year expenditures, 2) a **"Socioeconomic Report"** which describes some social, economic and demographic characteristics for counties closest to the Colville National Forest, and 3) a **"Regional Economic Analysis Report"** which is an estimate of changes in employment and income due to Plan implementation. These three sections provide useful information toward evaluating the effectiveness of management programs implemented during fiscal year 1991.

Over the next 3 to 5 years the usefulness of this information will increase as the correlation between the monitoring data and the implemented Forest Plan increases. This relationship is currently weak because the Forest may be monitoring effects of actions taken previous to Plan implementation. In the future, the Forest will be able to make stronger conclusions regarding changes that must be made to program implementation in order to achieve intended objectives.

#### FINANCIAL REPORT

Table 3.1a presents the sources and uses of funds, for each program, by the Forest for FY 1991. An annual summary (FY 1989-91) of the same information is provided in Table 3.1b.

Operations/maintenance costs, capital improvements, general administration, and payments to states are subtracted from the revenue to give the

net cash flow. The net cash flow for the Forest for FY 1991 was negative 3.5 million dollars; an accumulation of a negative net cash flow for all programs administered by the Forest.

Total Forest revenue increased by 19 percent from FY 1990 to FY 1991. Revenues are collected through such things as the sale of timber, grazing permits, recreation use fees, and special-use permits. The increase in total Forest revenue was mostly due to the increased harvest of Allowable Sale Quantity timber. ASQ timber harvested during FY 1991 was up by 23 million board feet from the previous year (see Table 2.2 in Chapter 2). Total Forest funds used for capital improvements increased by 31 percent from FY 1990 to FY 1991. The increase in capital improvement expenditures was mostly due to increases in road construction and recreational structural improvements.

Timber revenues reflect current commercial market prices. Revenues from the recreation, wildlife, and fish, and range programs are collected from user and permit fees which are determined by policy and not by the market. User and permit fees such as these do not cover the full costs of program management. The revenues collected from the water and soil, minerals, and land stewardship programs are also not intended to cover costs. Therefore, the timber program is the only program that is expected to produce a positive net cash flow.

However, FY 1989 was the last year that timber did produce a positive net cash flow. The timber program produced a positive net cash flow of over 2 million dollars in FY 1989. During FY90 and FY91, the net cash flows for the timber program were approximately negative 200,000 dollars each year.

**Financial and Economic Report**

**Table 3.1a Sources and Uses of Funds for Fiscal Year 1991 (1991 Dollars), Colville National Forest.**

	Timber	Recreation	Wildlife	Water & Soil	Minerals	Range	Lands	Total
<b>REVENUE 1/ Regular Program Reimb./Co-op Work</b>	10,429,872	74,850			120	48,485	8,470	10,561,797 0
<b>OPERATIONS/ MAINTENANCE COSTS</b>	6,081,116	639,731	233,893	102,765	92,638	197,728	461,230	7,809,101
<b>ALLOCATION OF CAPITAL IMPROVEMENTS</b>								
Structural Improvements		98,382	146,912	41,750		38,580		325,624
Nonstructural Improvements			132,278			1,559		133,837
Roads	686,271	148,862					80,164	915,297
Trails		231,024						231,024
Buldings & Facilities								
Other Improvements								
<b>TOTAL IMPROVEMENTS</b>	705,474	482,250	279,826	42,017	362	40,682	80,348	1,630,959
<b>TOTAL OPER, MAINT, IMP</b>	6,786,590	1,121,981	513,719	144,782	93,000	238,410	541,578	9,440,060
<b>GENERAL ADMINISTRATION 2/ CASH FLOW</b>	1,457,528 2,185,754	312,452 (1,359,583)	72,259 (585,978)	3,111 (147,893)	11,558 (104,438)	32,616 (222,541)	48,569 (581,677)	2,203,800 (1,030,167)
<b>PAYMENT TO STATES 3/ NET CASH FLOW</b>	2,458,465 (272,711)	18,713 (1,378,296)	(585,978)	(147,893)	30 (104,468)	12,121 (234,662)	2,118 (583,795)	2,491,446 (3,521,613)

**Notes:**

The TSPIRS report does not include the cost of Law Enforcement or Land Management Planning, so it is not included.

The 25% fund is based on regular collection.

Figures in parenthesis indicate negative values.

1/ Revenues also include monies from special-use permits.

2/ Total Forest general administration and cash flows are greater than the sum of the individual program general administration costs and cash flows. General administration costs which could not be allocated to the various resource programs plus Human Resource program costs were added to the Forest Total Gen Admin.

3/ All timber data is from TSPIRS.

4/ General administration expenditures for all non-timber programs are estimates based on individual program proportions of total non-general administration expenditures.

**Table 3.1b** Annual Summary of Sources and Uses of Funds, Colville National Forest (1991 dollars).

	Timber	Recreation	Wildlife	Water & Soil	Minerals	Range	Lands	Total
<b>REVENUE</b>								
1989	12,883,108	88,198	13,098	0	1,990	43,195	5,530	13,035,120
1990	8,799,895	71,256	3,678	0	120	45,954	6,825	8,927,728
1991	10,429,872	74,850	0	0	120	48,485	8,470	10,561,797
<b>OPERATIONS/ MAINTENANCE COSTS</b>								
1989	6,124,472	636,892	228,618	79,721	67,433	178,770	645,742	7,961,548
1990	4,991,950	641,194	266,517	24,220	82,375	189,151	452,570	6,647,977
1991	6,081,116	639,731	233,893	102,765	92,638	197,728	461,230	7,809,101
<b>CAPITAL IMPROVEMENTS</b>								
1989	579,795	384,481	231,150	36,192	1,968	117,749	1,417	1,352,751
1990	382,938	427,261	341,034	46,529	857	47,838	1,073	1,247,530
1991	705,474	482,250	279,826	42,017	362	40,682	80,348	1,630,959
<b>GENERAL ADMINISTRATION</b>								
1989	1,247,805	155,596	72,352	17,717	10,569	45,493	96,607	1,998,814
1990	1,429,582	151,684	83,773	9,987	11,918	34,693	64,608	2,121,580
1991	1,457,528	312,452	72,259	3,111	11,558	32,616	48,569	2,203,800
<b>PAYMENTS TO STATES</b>								
1989	2,895,533	22,050	0	0	580	10,799	1,383	2,930,344
1990	2,165,570	17,814	0	0	0	11,488	1,615	2,196,487
1991	2,458,465	18,713	0	0	30	12,121	2,118	2,491,446
<b>NET CASH FLOW</b>								
1989	2,035,503	(1,110,820)	(532,120)	(133,629)	(78,560)	(309,615)	(739,619)	(1,221,536)
1990	(170,146)	(1,166,697)	(691,324)	(80,736)	(95,030)	(237,217)	(513,405)	(3,289,889)
1991	(272,711)	(1,378,296)	(585,978)	(147,893)	(104,468)	(234,662)	(583,795)	(3,521,613)

During FY 1990, the decrease in the cash flow for the timber program was mostly due to the drop in demand for timber which produced a drop in timber harvest volumes and thereby reducing revenues. To determine what produced the sudden decrease in cash flow for the timber program during FY 1991, an evaluation of operations and maintenance expenses is helpful. Operations and maintenance costs (O&M) of timber, includes, among other things, the costs of timber harvest administration, reforestation, silvicultural and stand exams, prescription development, timber sale planning, coordination with other resource specialist (i.e., wildlife, recreation, watershed etc.), and timber sale preparation costs. Some of these cost components vary directly with the level of harvest while some vary with the amount of timber being offered for sale.

When compared to FY 1989, total O&M offering expenses per volume of timber being offered increased on slightly in FY 1990. However, comparing FY 1991 to FY 1989, O&M offering expenses per volume offered increased by approximately 140 percent. It is costing more money, on a per unit basis, to prepare and offer timber for sale.

The increase costs of offering timber for sale reflects the increase in timber sale appeals during the last year. The increase in timber sale appeals has caused the costs of offering timber for sale to increase in two ways: 1) the Forest has expanded the procedures used to analyze and disclose the potential effects of timber sales and related activities; and 2) the Forest has experienced a significant increase in work load to resolve current or outstanding appeals. The new small diameter timber program, Creating Opportunities, or better

known as CROP, plus an increased emphasis in timber stand examination and data collection, also resulted in a significant portion of the increase in O&M cost in FY 1991.

A comparison of total expenditures by the Colville National Forest, for FY 1989-91, in constant 1982 and 1991 dollars, is presented in Table 3.2. The intent is to compare the proposed Forest Plan budget with actual funding allocations. If actual budget expenditures deviate from the Plan budget, then an evaluation should be made with respect to why the deviation is occurring, to what extent the deviation is preventing appropriate Plan implementation, and then what can be done to correct the problem. However, this evaluation can only truly be valid if unit or activity costs in the Forest Plan were estimated accurately. If the actual

cost of doing business on the Colville National Forest were much different than those assumed by the Forest Plan, then it would not be possible to make any strong conclusions regarding Plan implementation based solely on funding levels.

No comparison between actual unit or activity costs and those assumed in the Forest Plan have been made. However, it is generally assumed that activity costs have not decreased. It is more likely that the real costs (costs minus inflation) have probably increased since 1982. Most of the activity or unit costs associated with the Plan were estimated in 1982. Therefore, it seems reasonable to state that any funding level less than that proposed by the Forest Plan is not sufficient to fully implement the Forest Plan.

**Table 3.2** Colville National Forest Expenditures by Program Level (1991 Dollars).

Program	Forest Plan	Actual FY 1989	Actual FY 1990	Actual FY 1991
Timber	11,723,778	6,832,894	7,756,693	9,957,399
Facilities	4,579,964	2,448,655	2,250,048	2,599,356
General Administration	2,400,948	2,092,216	2,169,496	2,127,893
Protection	1,636,958	1,392,229	1,486,837	1,391,816
Wildlife & Fish	1,499,315	463,309	605,852	522,306
Recreation	1,066,095	978,121	954,745	943,034
Lands	719,575	747,409	554,456	547,715
Range	542,768	292,825	238,579	242,077
Water/Soils/Air	408,530	309,976	77,949	145,300
Minerals	230,304	69,401	84,247	92,715
Wilderness	25,116	13,107	18,858	16,280
Planning 1/ Human Resources 2/	-----	359,513	295,951	242,406
Forest Total 1991 \$	24,833,351	15,999,656	16,493,712	18,828,297
Forest Total 1982 \$	17,500,600	11,275,304	11,623,476	13,268,708

**Notes:**

1/ Planning expenditures are included in various program level budgets.

2/ Human resources programs and working capital have been excluded from this data base.

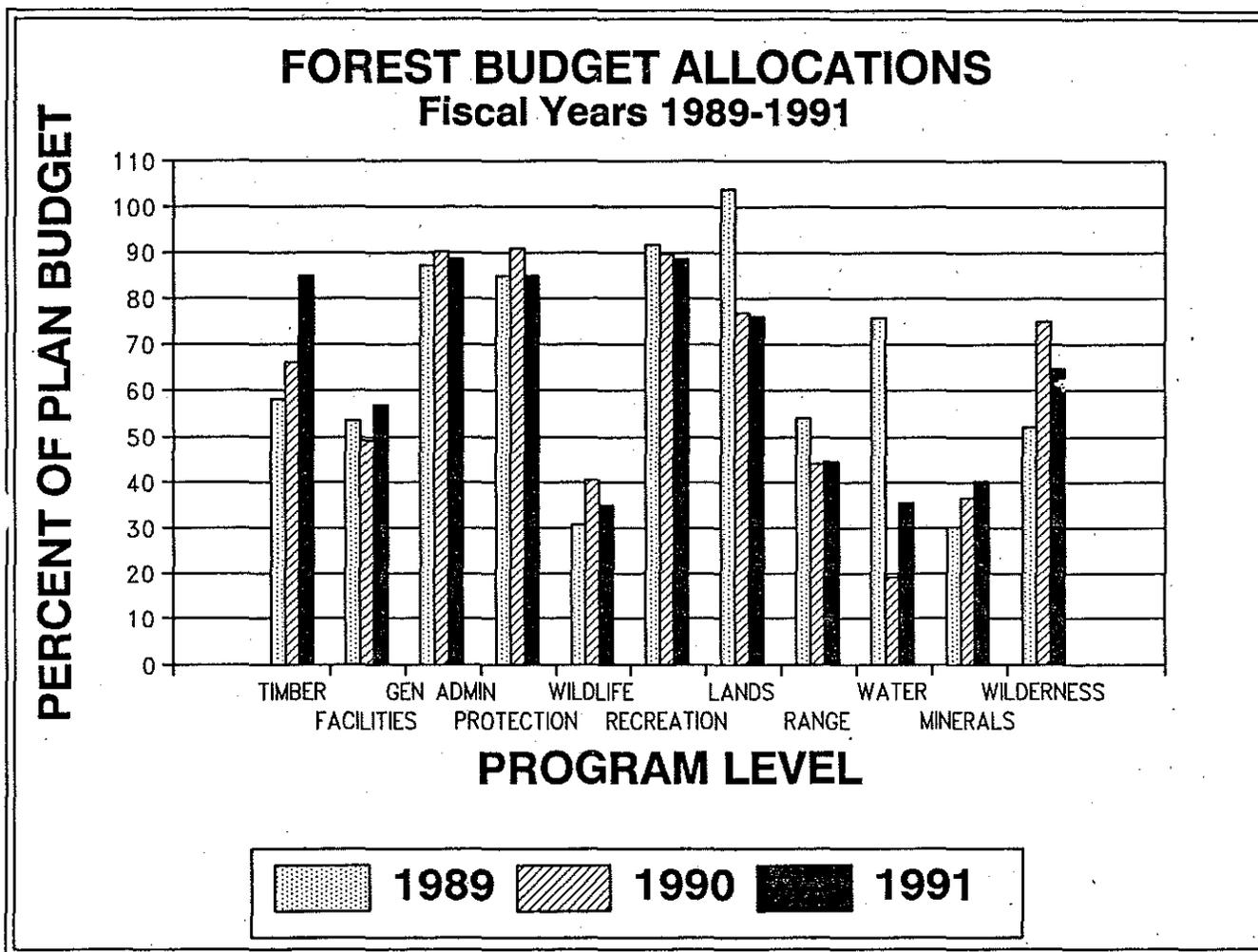
Funding for the human resource program is provided through agencies other than US Department of Agriculture. And, forecasts of working capital budgets were not incorporated into the proposed Forest Plan budget.

Forest expenditures for FY 1991 totaled 13.4 million dollars (1982 dollars), a 4.1 million dollar shortfall (24 percent), when compared to the Plan budget. However, the FY 1991 budget was 14 percent higher than that of the previous year and almost 18 percent higher than the FY 1989 budget. Therefore, if we were to assume that unit costs were estimated accurately in the Plan and that the average annual real price increase rate was no more than 1 percent, then the trend over the last 3 years would indicate that the Forest is slowly closing the gap between actual total Forest budgets and the Forest Plan budget.

Figure 3.1 displays actual funding levels for the individual programs in terms of percent of Plan budget. Figure 3.1 shows, during the past 3 years

there was only one instance where a program was funded above the proposed Plan budget while all other programs were funded below the Plan level. Trends of funding levels for the individual program are also shown in Figure 3.1. The recreation and lands programs exhibit downward trends in funding while the timber and minerals programs are exhibiting upward trends in funding. The wildlife and fisheries, range, water/soils/air and minerals programs were all funded below 50 percent of the Plan level during FY 1991. The wildlife and fisheries and minerals programs have been funded below the 50 percentile since Plan implementation. Given the trends and current funding level shown in Table 3.2 and Figure 3.1, it appears that only the timber program will soon be funded at or near the level proposed by the Forest Plan.

**Figure 3.1** Forest Budget Allocations as Percent of Plan Budget, Colville National Forest, Fiscal Years 1989 to 1991.



## SOCIOECONOMIC REPORT

This section describes some of the social and economic characteristics of the area most influenced by the Colville National Forest, specifically Ferry, Stevens, and Pend Oreille counties, the Tri-County area. Data from Spokane and King counties and Washington State was included for comparison purposes. Spokane was included because it is the closest metropolitan area; King County because of its considerable influence on the state's economy.

Tables 3.3, 3.4 and 3.5 displays annual calendar year averages of actual population, labor force, total employment, total covered employment by industry, unemployment, housing and income changes over time. Tracking these various indicators on an annual basis will be useful for identifying trends and cycles that occur over time. Movements in these indicators can then be evaluated with respect to Forest management activities. It will not be possible to ascertain the exact causes of any movement in indicator levels without exclusive research. However, with the use of the Forest Service regional economic impact analysis model,

IMPLAN, it may be possible to make some conclusions, in the next few years, regarding the changes in employment and income which are related to Forest Service activities. This information, collected annually over a 5 to 10 year period, may be useful to the Forest Service in validating results obtained from the IMPLAN model.

Whenever possible, data is provided for 1984 and/or 1985 because the socioeconomic data reported in the EIS is for 1985. To notice possible impacts on the local economy due to Plan implementation, data was collected for years 1987 to the present (the Forest Plan was implemented in February 1989). The most current information was provided whenever possible.

Table 3.3 displays, for the Tri-County area, that Ferry County experienced the highest rate of growth in population, 3.3 percent, during 1991. While the population increased in each of the three counties, each county experienced a labor force reduction. A simultaneous increase in population and decrease in the labor force was also recorded for other counties and the state of Washington during 1991.

## Financial and Economic Report

**Table 3.3 Socioeconomic and Demographic Characteristics for Selected Counties and State. Annual Averages by Calendar Year.**

County	Ferry		Pend Oreille		Stevens		Spokane		King		State	
	Amount	% Change	Amount	% Change	Amount	% Change	Amount	% Change	Amount	% Change	Amount	% Change
<b>Population 1/</b>												
1985	6,000		8,900		30,100		354,300		1,346,400		4,384,100	
1987	6,000	0.0	8,900	0.0	30,200	0.3	355,900	0.5	1,384,600	2.8	4,481,100	2.2
1988	6,100	1.7	8,800	-1.1	30,200	0.0	354,100	-0.5	1,413,900	2.1	4,565,000	1.9
1989	6,100	0.0	8,900	1.1	30,500	1.0	358,000	1.1	1,446,000	2.3	4,660,700	2.1
1990	6,295	3.2	8,915	0.2	30,948	1.5	361,364	0.9	1,507,319	4.2	4,866,692	4.4
1991	6,500	3.3	9,200	3.2	31,500	1.8	366,000	1.3	1,542,300	2.3	5,000,400	2.7
<b>Labor Force 2/</b>												
1985	2,570		3,670		11,110		159,000		722,800		2,091,000	
1987	2,650	3.1	3,090	-15.8	11,420	2.8	165,700	4.2	787,600	9.0	2,255,000	7.8
1988	2,870	8.3	4,230	36.9	11,710	2.5	164,800	-0.5	815,500	3.5	2,315,000	2.7
1989	3,168	10.4	4,441	5.0	12,195	4.1	169,925	3.1	867,250	6.3	2,434,342	5.2
1990	3,321	4.8	3,299	-25.7	12,229	0.3	172,217	1.3	895,817	3.3	2,517,008	3.4
1991	3,197	-3.7	3,249	-1.5	11,684	-4.5	171,280	-0.5	885,580	-1.1	2,502,470	-0.6
<b>Employment 2/</b>												
1985	2,210		3,080		9,580		146,400		676,900		1,921,000	
1987	2,360	6.8	2,550	-17.2	10,100	5.4	153,100	4.6	741,800	9.6	2,085,000	8.5
1988	2,540	7.6	3,810	49.4	10,700	5.9	154,600	1.0	776,900	4.7	2,173,000	4.2
1989	2,799	10.2	3,990	4.7	11,085	3.6	159,150	2.9	828,683	6.7	2,286,425	5.2
1990	3,008	7.5	2,831	-29.0	11,038	-0.4	162,217	1.9	863,175	4.2	2,383,358	4.2
1991	2,880	-4.3	2,803	-1.0	10,419	-5.6	160,900	-0.8	845,530	-2.0	2,348,580	-1.5
<b>Unemployment Rate 2/</b>												
1985	14.0		16.1		13.8		7.9		6.4		8.1	
1987	10.9	-22.1	17.5	8.7	11.6	-15.9	7.6	-3.8	5.8	-9.4	7.6	-6.2
1988	11.5	5.5	9.9	-43.4	8.6	-25.9	6.2	-18.4	4.7	-19.0	6.2	-18.4
1989	11.7	1.7	10.5	6.1	9.1	5.8	6.3	1.6	4.5	-4.3	6.1	-1.6
1990	9.4	-19.7	14.1	34.3	9.7	6.6	5.8	-7.9	3.7	-17.8	5.3	-13.1
1991	9.9	5.3	13.6	-3.5	10.8	11.3	6.1	5.2	4.5	21.6	6.2	17.0
<b>Income (1991 Dollars)</b>												
<b>Median Family 3/</b>												
1985	21,616		19,200		24,159		27,337		37,255		32,678	
1986	22,327	3.3	20,963	9.2	24,808	2.7	27,909	2.1	38,080	2.2	33,304	1.9
1987	21,321	-4.5	20,373	-2.8	23,689	-4.5	27,243	-2.4	37,666	-1.1	32,691	-1.8
1988	21,086	-1.1	20,231	-0.7	23,935	1.0	27,354	0.4	37,954	0.8	32,825	0.4
1989**												
<b>Per Capita 4/</b>												
1985	10,902		11,572		12,479		15,631		22,106		17,894	
1986	11,479	5.3	12,179	5.2	12,589	0.9	15,955	2.1	22,759	3.0	18,430	3.0
1987	12,167	6.0	11,912	-2.2	12,599	0.1	15,987	0.2	22,870	0.5	18,402	-0.2
1988	11,787	-3.1	12,048	1.1	13,016	3.3	16,292	1.9	23,381	2.2	18,710	1.7
1989	13,045	10.7	14,304	18.7	13,509	3.8	16,926	3.9	24,150	3.3	19,316	3.2

**Source:**

1/ Washington State Office of Financial Management, "Population Trends for Washington State," 1985-1991.

Washington State Employment Security Department, "Annual Demographic Information," 1988-1991.

2/ Employment includes agricultural and nonagricultural. Source is monthly Washington State Employment Security "Labor Market" publications, 1989-1991. All employment related data is from revised reports unless otherwise noted.

3/ Washington State Office of Financial Management, "Population Trends for Washington State", 1985-1991.

4/ Washington State Employment Security Office, "Annual Demographic Information", 1988-1991.

\*\* Not available until 1992.

According to the 1990 census, the population in the Tri-County area has increased by 6 percent over the last 10 years. However, the population in the 16-21 year old age group has decreased by 15 percent while the population in the 65 plus year old age group had increase by 28 percent (Washington State Employment Security Department, Annual Demographic Information 1991). For comparison, the total state population has increased by 18 percent over the last 10 years, the 16-21 year old age group has decreased by 11 percent, and the 65 plus year old age group has increased by 32 percent (Washington Office Financial Management, 1991 Population Trends). These statistics show that, overall, the population is aging, and help to explain why the labor force is decreasing while the total population is increasing.

Total employment decreased in all three counties of the Tri-County area during 1991, with Stevens County experiencing the greatest decline, almost 6 percent. For comparison, total state employment dropped by only 1.5 percent. The average unemployment rate for the Tri-County area, during 1991, was 11.4 percent, with Pend Oreille county continuing to exhibit the highest unemployment rate. Oddly enough, of the Tri-County area, only Pend Oreille County showed a decrease in the unemployment rate from 1990 to 1991, 14.1 to 13.6 percent. However, this occurred because the labor force decreased, not because more people found jobs.

The income information provided last year in in the Monitoring and Evaluation Report: 1989 and 1990, was incorrect. A systematic error was made in applying price deflators. Table 3.3 includes corrected income data plus per capita income for 1989. Median income data for 1989 will not be available until 1992.

The average per capita income for the Tri-County area for 1989 was \$13,619. Pend Oreille County experienced the highest per capita income for 1989, \$14,304, and also exhibited the greatest gain in per capita income from 1988 to 1989 (18.7 percent). For comparison, the state average per capita income was \$19,316. Out of 39 counties, the rankings of Pend Oreille, Stevens, and Ferry counties with respect to per capita income are 36th, 38th, and 39th, respectively. Ferry County is considered the poorest county in the state of Washington. An encouraging note for the Tri-County area for 1989 is the fact that the average increase in per capita income from 1988 to 1989 was 10.9 percent, compared to the average increase for the state of 3.2 percent.

Table 3.4 provides information regarding the number of existing housing units and the number of privately owned housing units authorized in permit-issuing places. Within the Tri-County area, Ferry County had the greatest increase (24 percent) in housing units from 1985 to 1991. Pend Oreille and Stevens counties had equal increases (8 percent) during the same time period.

Ferry County also recorded the greatest per capita increase in building permits (privately owned and single family) issued from 1985 to 1990 for the Tri-County area. Pend Oreille County was second and Stevens County was third with respect to per capita increases in building permits from 1985 to 1990. It is interesting to note that, within the Tri-County area, Ferry County also recorded the greatest percentage gains in employment from 1985 to 1991. This information will become more useful as more data is collected. It will be easier to determine possible relationships between housing activity, employment, population changes and timber harvest activity.

**Table 3.4 Housing Unit Information: Existing and New Permits**

**Estimates of Existing Housing Units**

County	1985	1988	1989	1990	1991
Ferry	2,661	2,806	2,904	3,239	3,289
Pend Oreille	5,104	5,342	5,412	5,404	5,519
Stevens	13,777	14,191	14,338	14,601	14,863
Spokane	145,388	150,796	152,157	150,105	152,566
King	578,906	621,554	638,307	647,343	666,580
State Total	1,850,778	1,967,119	2,011,903	2,032,378	2,094,857

**New Privately Owned Housing Units Authorized in Permit-Issuing Places**

County	1985	1987	1988	1989	1990	1991 1/
Ferry	32	16	38	50	30	na
Pend Oreille	58	31	26	39	70	na
Stevens	88	81	63	80	124	na
Spokane	1,906	1,210	1,091	1,610	1,778	na
King	14,347	17,888	18,709	18,999	15,789	na
State Total	35,474	38,341	45,055	48,210	48,447	35,267
US Total 2/	1,741,000	1,631,000	1,488,000	1,381,000	1,203,000	1,001,000

**Notes:**

1/ Housing units authorized for 1991 are forecasted estimates.

2/ The data for the U.S. is in terms of housing starts, which are slightly different than housing permits.

**Source:**

Number of Housing Units provided by Washington State Office Financial Management, "Population Trends for Washington State", publications 1984-1991.

Housing permit information...U.S. Department of Commerce, Bureau of the Census.

"Current Construction Reports, Housing Units Authorized by Building Permits", 1985-1991.

Housing starts for the nation...Washington State Office of Financial Management, Office of the Forecast Council, "Economic and Revenue Forecast", 1989-1991.

Table 3.5 displays annual average covered employment by industry and by county for the Tri-County area. The industry which produced the greatest increase in jobs in Ferry County, during 1990, was mining (114). The industry with the greatest decrease in jobs in Ferry County was manufacturing (54).

For Pend Oreille County, the greatest gain in jobs, during 1990, occurred in government sector (36), while the largest decline in employment was within the construction industry (855). The loss of construction jobs in Pend Oreille County was due to the completion of construction of the newsprint plant.

In Stevens County, during 1990, manufacturing was the big loser in jobs (187), while the greatest gain in jobs was in agriculture, forestry and fishing (95).

For the Tri-County area overall, the largest average increase in employment occurred in the government sector (152) while the construction industry experienced the greatest loss of jobs (865). The second greatest loss of jobs, overall, occurred within the manufacturing sector (209).

For comparison, the services sector gained the most number of jobs in Spokane and King counties, (1,565 and 17,559 respectively). In Spokane County, the industry which lost the most jobs was mining (29). In King County, the industry which lost the most jobs was finance/insurance/real estate (524). Overall, for the state of Washington, the services sector came in first with the highest employment gained (33,801), agriculture/forestry/fishing took second in the employment race (21,453), and the sector which lost the most jobs was mining (106).

Table 3.5 Annual Average Covered Employment by Industry and County

County	Agr. Forestry Fishing	Mining	Const.	Manu- factur.	Trans. & Public Utilities	Trade	Finance Insur. & Real Estate	Services	Gov't	Other	Total
<b>Ferry</b>											
1984 1/	**	**	23	258	10	172	15	114	419	106	1,123
1988	**	153	41	287	14	220	15	226	489	18	1,463
1989	**	253	25	283	16	267	15	251	533	39	1,682
1990	29	367	0	229	13	273	22	227	595	43	1,798
<b>Pend Oreille</b>											
1984	15	na	50	936	25	220	30	214	667	17	2,174
1988	23	na	73	257	41	264	37	249	724	15	1,683
1989	14	na	931	363	60	283	35	214	724	20	2,644
1990	23	0	76	394	75	310	44	160	760	14	1,857
<b>Stevens</b>											
1984	48	184	210	1,979	161	1,241	152	1,194	1,598	na	6,767
1988	22	119	212	2,178	241	1,363	169	1,325	1,876	na	7,505
1989	45	109	242	2,132	291	1,391	183	1,343	1,932	na	7,668
1990	140	124	258	1,945	325	1,314	190	1,410	1,986	0	7,691
<b>Spokane</b>											
1984	472	245	6,311	17,464	5,784	35,764	7,571	29,763	20,937	na	124,311
1988	803	357	5,808	18,776	6,402	38,584	7,797	34,880	22,809	na	136,216
1989	752	372	6,283	18,803	6,699	39,134	7,649	36,823	23,354	0	139,869
1990	1,001	346	6,831	19,344	6,912	40,321	8,617	38,388	24,530	0	146,289
<b>King</b>											
1984	na	na	na	na	na	na	na	na	na	na	na
1988	7,321	423	41,888	154,500	53,127	202,255	63,983	193,345	107,833	na	824,675
1989	7,906	338	45,288	166,223	56,937	215,458	66,320	210,559	111,025	na	880,054
1990	9,119	393	48,488	171,349	60,481	222,313	65,796	228,118	117,303	0	923,360
<b>State</b>											
1984	na	na	na	na	na	na	na	na	na	na	na
1988	56,065	3,179	91,611	336,813	94,541	466,369	107,007	408,887	347,010		1,911,482
1989	61,027	3,777	101,878	358,867	100,948	493,376	110,278	438,192	357,586		2,025,929
1990	82,480	3,671	112,400	365,954	105,879	511,904	114,092	471,993	375,145		2,143,518

**Notes:**

1/ Information provided in Forest Plan Environmental Impact Statement.

\*\* Not reported to avoid disclosure of information about single (or a few) firms.

na Not available.

**Source:**

Washington State Employment Security Department, "Employment and Payrolls in Washington State by County and Industry", Annual Averages and Quarterly Reports, 1985-1990.

Covered employment is recorded for those firms etc. whose employees are covered by the Washington Employment Security Act.

**Regional Economic Analysis**

In preparation of the Forest Plan, a regional economic analysis was performed. The results of the analysis estimated how the economy would be affected by implementation of the Forest Plan

and subsequent changes from BASE levels of production of the various forest commodities. The BASE scenario was defined as the 10 year average, 1977-86, of the various outputs listed in Table 3.6. The final environmental impact statement states that implementation of the Forest Plan, the production of recreation, timber, and grazing

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## Financial and Economic Report

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oriented commodities, will cause the BASE level of employment and income, within Ferry, Pend Oreille and Stevens counties to increase by 671 jobs and \$9.7 million (1982 dollars).

The estimated changes in employment and income that would occur from production of individual commodities (Please refer to Table 2.2, Chapter 2, for a listing of the annual fiscal year outputs for recreation, timber and grazing) by the Colville National Forest during FY 1989-91 are shown in Table 3.6. Table 3.6 also presents a comparison of these fiscal year estimates of employment and income impacts with those which were predicted to occur due to Forest Plan implementation.

Table 3.6 shows that Forest Plan implementation would result in an increase of 598 jobs and \$8.986 million dollars. This is different than what was stated in the Forest Plan EIS. The values stated in the EIS may be in error due to double counting of wildlife related affects; once in the wildlife use estimates themselves and again under motorized and non-motorized recreation. For example, the impacts from hunting may be included under motorized recreational use as well as the category call hunting. Table 3.6 reflects a regional impact analysis which does not double count wildlife related effects on jobs and income. The differences between results of the Plan level impact analysis for this report and the EIS analysis will be reconciled during the next year.

Recreation use during the last 3 years has been sampled and recorded using a different methodology each year. The RIM system was used for FY 1989. The R6RIM system was used during FY 1990, and the RRIS system was used during FY 1991. Each system required activities to be classified somewhat differently. Also, operational problems were encountered each year during the implementation of the new systems. Therefore, the precision and accuracy of the recreation use

estimates have varied a great deal from year to year. Due to the inconsistent precision and accuracy, the estimated recreation use impacts on the economy from year to year are not comparable. However, according to the recreation specialist on the Forest, who is most familiar with these systems and related problems, the recreation use estimates for FY 1991 are more accurate than those for FY 1989 or FY 1990 and are more comparable to usage estimates stated in the Forest Plan EIS.

The estimated changes in employment and income due to timber and grazing outputs are the only impacts that should be compared from year to year and to changes estimated by the Forest Plan. Comparisons involving impacts related to recreation outputs during FY 1989 and FY 1990 should not be made. Any comparison involving recreation related impacts for FY 1991 would be very tenuous.

The slight reduction in grazing (see Table 2.2) in FY 1991 produced insignificant estimated impacts to the economy. However, results of the impact analysis show that the less than Plan level of harvested timber volume in FY 1991, 111.8 MMBF, produced less than expected gains in employment and income. A timber harvest of 123.4 MMBF, as projected by the Plan, would produce an increase, from the BASE level, of 480 jobs and \$7.7 million. The estimated impacts associated with FY91 timber harvest represent a shortfall of 122 jobs and \$2 million of income (1982 dollars). The drop in timber harvests in FY 1991 is a result of the downturn in the demand for lumber. The November 1991 issue of the "Economic and Revenue Forecast" published by the Washington State Office of the Forecast Council in Olympia stated a decrease of 13,180 state-wide housing permits issued in 1991 compared to 1990. Their estimate of nation-wide housing starts for the same time period was 202,000 less.

**Table 3.6** Estimated Employment and Income Changes by Commodity. Comparison of Changes from Base to the Forest Plan and from Base to Each Fiscal Year.

OUTPUTS	CHANGES IN JOBS			
	Forest Plan	FY 1989	FY 1990	FY 1991
Fishing 1000 WFUDs 1/	4.70	9.76	7.39	26.90
Hunting 1000 WFUDs	11.82	24.36	9.68	40.34
Nonconsumptive Wildlife 1000 WFUDs	35.57	73.03	(67.92)	(63.74)
Camping 1000 RVDs 2/	1.70	1.43	0.89	2.12
Picnicing 1000 RVDs	0.34	0.29	0.18	2.25
Motorized Rec 1000 RVDs	60.23	55.30	(128.88)	(17.65)
Nonmotorized 1000 RVDs	3.29	30.17	(10.39)	29.85
Timber MMBF 3/	480.17	539.14	116.36	358.02
Grazing 1000 AUMs 4/	0.00	0.05	(0.11)	(0.52)
<b>TOTAL</b>	<b>598</b>	<b>734</b>	<b>(73)</b>	<b>378</b>
	CHANGES IN INCOME (1982 dollars)			
Fishing 1000 WFUDs	49,882	103,547	78,327	285,320
Hunting 1000 WFUDs	141,332	291,304	115,770	482,306
Nonconsumptive Wildlife 1000 WFUDs	397,812	816,721	(759,585)	(712,826)
Camping 1000 RVDs	21,243	17,845	11,095	26,504
Picnicing 1000 RVDs	4,189	3,521	2,196	27,805
Motorized Rec 1000 RVDs	670,476	615,582	(1,434,682)	(196,488)
Nonmotorized 1000 RVDs	30,788	282,011	(97,144)	279,049
Timber MMBF	7,669,920	8,611,840	1,858,610	5,718,800
Grazing 1000 AUMs	0	420	(1,016)	(4,620)
<b>TOTAL</b>	<b>8,985,643</b>	<b>10,742,792</b>	<b>(226,430)</b>	<b>5,905,849</b>

**Notes:**

The Base scenario is represented by the 10 year average, 1977-86, of the various outputs listed in Table 3.5. These estimates of changes in the economy were derived by using the IMPLAN model.

Recreation use for FY 1990 was estimated using a new sampling and recording system. Recreation use for FY 1991 was estimated based on past trends. This produced RVD and WFUD counts and subsequent employment and income impact estimates that can not be compared to previous years.

1/ Wildlife and fish user days.

2/ Recreation visitor days.

3/ Million board feet

4/ Animal unit months.

Values in parenthesis indicate negative values.

## 4. FOREST PLAN MONITORING

The Forest Plan for the Colville National Forest became effective February 13, 1989. Implementation of the Forest Plan occurs through identification, selection, scheduling, and implementation of activities to meet direction provided in the Forest Plan.

An important part of implementing the Forest Plan is monitoring. Monitoring consists of gathering information about various activities, costs, outputs and effects of management. That information provides a basis for evaluating Forest Plan implementation and achievement of Forest Plan goals and objectives. The information and data collected during the monitoring process is evaluated to determine if the procedures used to implement the Forest Plan should be changed or if revisions or amendments to the Forest Plan itself are necessary.

The regulations for implementing the National Forest Management Act describe the purposes for periodic evaluation of a forest plan:

- to determine if conditions or demands in the area covered by the Forest Plan have changed significantly enough to require any revision to the Forest Plan {36 CFR 219.10(g)},
- to determine if budgets have significantly changed the long-term relationship between levels of multiple-use goods and services enough to create a need for a "significant amendment" {36 CFR 219.10(e)},
- to determine how well the stated objectives of the Forest Plan are being met {36 CFR 219.12(k)},
- to determine how closely forestwide management standards in chapter IV of the Forest Plan have been followed {36 CFR 219.12(k)}, and
- to determine how the Forest is satisfying the requirements for monitoring and evaluation {36 CFR 219.12(k)}.

This chapter summarizes the results of monitoring and evaluation conducted during fiscal year 1991, which ran from October 1, 1990 to September 30, 1991. In 1990, the Forest developed a detailed *Forest Plan Monitoring Guide* consisting of monitoring instructions and a monitoring schedule. Not all monitoring items identified in the Forest Plan are scheduled to be monitored every year. This chapter addresses only those items monitored during FY 1991.

### Monitoring Item 1: Project Compliance With NEPA

#### Forestwide Goal

The analysis and documentation developed for all projects will meet the requirements of the National Environmental Policy Act (NEPA).

#### Purpose of Monitoring

To ensure the conditions of NEPA are being met.

#### Results and Evaluation

Nine forest supervisor authority decisions for timber sales were signed in FY 1991; seven were appealed. The Forest Service's administrative appeals process provides an avenue by which individuals or organizations can request that certain agency decisions be reviewed at the next higher administrative level. Five timber sale decisions were overturned in the appeal review process: Gatorson, Calispell, Boulder, Deer, and Elbow. Reversal of those decisions was based on watershed and hydrology issues. Two timber sale decisions, Tom/Roes and Kelard were withdrawn by the Forest Supervisor after being appealed.

Two district ranger authority decisions on timber sales, Cooked Timber Sale and Delaney Heights Salvage Sale were appealed to the Forest Supervisor. The Cooked Timber Sale decision was reversed based on review of the watershed issues. The Delaney Heights Salvage Sale was upheld in December 1991 in a second level review by the Forest Service Regional Office in Portland.

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## Forest Plan Monitoring

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In response to the reversal of the six timber sale decisions, the Forest adopted a more complex analysis for determining potential cumulative effects on watersheds from timber harvesting and road building. Those expanded analysis procedures are being used to reanalyze the reversed timber sale decisions, as well as all new timber sale projects on the Forest.

Other project NEPA documents, such as special use permit decisions, were reviewed and found to be in compliance with NEPA.

In addition to NEPA office reviews, field reviews were conducted. The objective of monitoring in the field was to determine if the management direction and mitigation measures described in the NEPA document were carried out as described. The field reviews indicated that projects were implemented as planned, i.e. unit size, location, road locations, miles, prescriptions, marking. Some needed improvements were noted. These include more coordination with transportation planners on road design, and familiarization of sale administrators with NEPA intent and objectives. The cost and applicability of green replacement snags, as well as access for firewood cutting, were issues on certain sites. District management and planning teams are incorporating the review input into their future planning and mitigation documentation.

Three of the five NEPA documents that were monitored in the field by the forestwide monitoring cadre analyzed and described environmental effects in relation to the issues identified for the project, rather than all affected resources. In the future, emphasis should be placed on following the outline provided in FSH Supplement 11, to ensure a complete analysis and description of environmental consequences to all affected resources.

### **Monitoring Item 2: Forest Plan Standards and Guidelines**

#### **Forestwide Goal**

Forest Plan standards and guidelines are implemented where appropriate and result in the desired future condition described in the Forest Plan.

### **Purpose of Monitoring**

To determine if the Forest Plan standards and guidelines are implemented at the project level and meet the objective of protecting the resource values identified in the Forest Plan.

### **Results and Evaluation**

Fifteen projects were reviewed on the ranger districts to monitor the application of Forest Plan standards and guidelines. Over the Forest, timber harvest activities were found to generally meet standards and guidelines.

Included in the fifteen projects were five projects monitored in the field by the forest monitoring cadre. The monitoring cadre was composed of eight employees, with members from each district and the Supervisor's Office. The monitoring cadre reviewed a district ranger authority project on each district to assess how effective the project was in meeting Forest Plan standards and guidelines.

The field reviews by the monitoring cadre established that, in general, Forest Plan standards and guidelines were being properly applied in project development and implementation. Areas identified where improvement is needed in the application of standards and guides included: width of big game cover units; biological evaluations; and accomplishing retention visual quality objectives.

Regional Office review team conducted a week long Forest Plan implementation review of 11 projects on the Forest. The thirteen member review team found that forest staff demonstrated a high degree of understanding of the Forest Plan and of the resources they manage. The review indicated that biological evaluations needed to be more complete.

### **Monitoring Item 3: Recreation User Experience and Physical Setting**

#### **Forestwide Goal**

To ensure a spectrum of dispersed and developed recreation opportunities are provided on the Forest, as described in the Forest Plan management area descriptions.

### **Purpose of Monitoring**

To determine if the Forest is meeting recreation opportunity spectrum guidelines regarding site conditions and user satisfaction.

### **Results and Evaluation**

The Forest identified 10 specific days for districts to collect visitor use information for developed recreation sites, and another 10 specific days for monitoring dispersed recreation sites. Forestwide, over 32 recreation sites were monitored during those sample days.

All site specific monitoring and recreation reports indicate this item remains within variability limits. The physical, social and managerial settings for each recreation opportunity spectrum class appears to meet guidelines and site conditions to provide a broad spectrum of recreation settings. The new recreation information reporting system was installed this year with updated facility condition assessments and use counts completed.

The nationwide campground reservation system "MISTIX" was implemented at Gillette Campground and was continued for a second year at Sullivan Lake Campground. This has resolved some use problems in these facilities and it is envisioned that as the public becomes more aware of the reservation system, which uses a toll free phone number, use of the system will increase.

Forestwide, the objective of bringing developed sites up to standard is moving slowly, which is attributed to lack of funding. Reports of deteriorating structures, water lines, and vault toilets are on the increase. The forestwide facility condition survey of developed sites was completed this year and the results should be available in FY 1992. Improvements to signing, host sites, accessibility, and interpretation have been made when opportunities and funding are available.

User satisfaction surveys through trail registration cards and personnel contacts were completed for most developed sites and trailheads on the Forest. Most comments were positive and indicated that use did not exceed the expectations of the user

## **Monitoring Item 4: Recreation Trail Use**

### **Forestwide Goal**

To provide for a spectrum of recreational experiences and trail development within each recreation opportunity spectrum class.

### **Purpose of Monitoring**

To determine if the Forest Plan standards and guidelines are being met and to assess the effects of trail use.

### **Results and Evaluation**

The Forest identified 10 specific days for districts to collect visitor use information for trails. Forestwide, 20 trails were monitored on those 10 sample days.

Monitoring consisted of visual inspections, trail counters and visitor contacts. It was found that actual trail use was within the recreation opportunity spectrum class criteria. Trail counters were located on a minimum of two trails on every district. Comments contained on trail registration cards indicated generally positive experiences. Only a small percentage contained comments such as "trail in need of brushing" or "tread is too steep". A large number of comments concerned motorbike trails and the positive efforts made in the Pend Oreille off-road vehicle trail system.

## **Monitoring Item 5: Semiprimitive Undeveloped Recreation Setting**

### **Forestwide Goal**

To manage these areas to protect the existing unroaded character and provide opportunities for dispersed, nonmotorized and motorized recreation experiences.

### **Purpose of Monitoring**

To ensure the desired physical, social, and managerial setting for each recreation opportunity spectrum class is achieved and that these areas remain in an unroaded condition.

## Results and Evaluation

Forestwide, 28 days of monitoring this item took place.

Observations and trail counts which were completed indicate that recreation opportunity spectrum class criteria is being met. Several trail counters were installed along various trails. Trail registration cards indicated visitor satisfaction with the recreation experience. The use in the area and trail maintenance met requirements for Semiprimitive Nonmotorized Recreation.

On the Colville Ranger District, snowmobile use was discovered in the Abercrombie area, which is a nonmotorized recreation area. Signs will be posted in the area in FY 1992 to educate users about motorized vehicle restrictions.

## Monitoring Item 6: Effects of Off Road Vehicle Use

### Forestwide Goal

To ensure off road vehicles (ORV) are used on the Forest in an appropriate manner, compatible with other forest uses, and as prescribed in management area objectives.

### Purpose of Monitoring

To determine if Forest Plan standards and guidelines are being met and to assess the effects of ORV use.

### Results and Evaluation

Forestwide, 23 total days of monitoring ORV trails and use were accomplished.

On the Colville Ranger District, ORV use within the Bestrom Timber Sale was noted. The area is expected to rehabilitate naturally but will be monitored in spring of 1992 to ensure evidence of use is gone.

The Colville Ranger District, through the State of Washington Interagency Committee for Outdoor Recreation program, hired a ORV trail ranger to promote the "Tread Lightly" program through

public education. This seemed to have been a very successful tool in informing the public, as well as decreasing unacceptable uses.

On Sullivan Lake Ranger District, ORV trails in the LeClerc Creek area and old West Branch Campground area are now considered in an acceptable condition for facilities dedicated to ORV use. Soil displacement is not excessive and seasonal closures have been implemented. Trails which appear off designated routes are being monitored; those that are considered unacceptable will be closed.

## Monitoring Item 7: Visual Quality Objectives

### Forestwide Goal

To maintain or enhance scenic qualities on the Forest, with emphasis on scenic viewsheds and foreground and middleground areas seen from sensitive view areas as prescribed by the Forest Plan.

### Purpose of Monitoring

To ensure the Forest Plan visual quality objectives are being met.

### Results and Evaluation

Observations on current timber sales found that visual quality objectives are, in general, being met. Within management areas with a visual emphasis (MA 3A and 5), monitoring indicates timber sale environmental analyses are not incorporating management area standards and guidelines consistently over the Forest and, in some cases, opportunities to meet visual management goals, are being forgone. In most cases, foreground areas are meeting or exceeding Forest Plan objectives.

The Forest monitoring cadre reviewed the Wolf Pup Timber Sale on Newport Ranger District which is located along immediately adjacent to Highway 20, north of Newport. The cadre estimated that evidence of harvest was not readily apparent to viewers along 90 percent of the viewing corridor.

## Monitoring Item 8: Protection of Wilderness Resource

### Forestwide Goal

To preserve the wilderness characteristics of the Salmo-Priest wilderness in conformance with existing legislation.

### Purpose of Monitoring

To ensure the wilderness is being protected or enhanced.

### Results and Evaluation

The Sullivan Lake Ranger District monitored one wilderness campsite and three trails within the Salmo Priest Wilderness Area on the 10 forestwide sample days.

A tally of registration data showed some concentration of user groups on Salmo Basin Trail #506 during the 4th of July and Labor Day weekends and the weekend of August 24th. Monitoring of the Thunder Creek Trail on the 10 forestwide sampling days indicated no users had registered.

A visual comparison was made between the current conditions of the wilderness campsite and those described in last year's monitoring report. There was no evidence of an increase in adverse impacts to the vegetation. Indications were the vegetation may be making a gradual recovery, which may be due to use of the site having stabilized or slightly declined.

Trail counters were installed on two wilderness area trails.

The Salmo-Priest Wilderness Implementation Schedule including Limits of Acceptable Change standards was prepared for approval. Wilderness boundaries were surveyed and posted in coordination with proposed timber activities.

## Monitoring Item 9: Potential Wild and Scenic Rivers

### Forestwide Goal

To protect the outstandingly remarkable values of the Kettle River that contribute to its eligibility as a potential Wild and Scenic River.

### Purpose of Monitoring

To determine if the Forest Plan standards and guidelines for protection the Kettle River are being met.

### Results and Evaluation

No management activities occurred or were planned during FY 91 within the Kettle River corridor.

## Monitoring Item 10: Deer and Elk Winter Range

### Forestwide Goal

To manage habitat to meet big game management objectives as described in the Forest Plan standards and guidelines for wildlife, as well as the Forest Plan desired future condition for Management Areas 6 and 8 and the specific standards and guidelines for those management areas.

### Purpose of Monitoring

To determine if cover objectives in these areas area being met and if open road densities are below the prescribed levels.

### Results and Evaluation

To accomplish this monitoring item, timber sales are reviewed for the following standards and guidelines: (1) quality of cover, (2) size of cover units is greater than 300 feet across, (3) distance between cover units is greater than 600 feet, (4) cover:forage ratio approaching 50:50, (5) road density less than 0.4 miles per square mile in elk and mule deer winter range; and less than 1.5 miles per square mile in white-tail deer winter range, (6) snow intercept thermal cover (SIT) composes 30 percent of winter range cover in areas west of the Kettle Crest and 20 percent of winter range cover in areas east of the Kettle Crest.

Two closed timber sales were reviewed. Most of the criteria were within standards and guidelines. However, road densities were generally too high, and on one sale area, cover units were not at least 300 feet wide. Cover-forage ratios were high to cover in the sale areas reviewed, however, based on some inconsistencies in reporting, there appears to be a misunderstanding in the methods established to measure cover:forage ratios. To remedy that situation, forestwide direction will be issued that clarifies how cover-forage ratios should be calculated.

Three districts assessed 17 project areas for the existing condition of the same criteria as above. On the Kettle Falls Ranger District, six project areas were evaluated for big game winter range. Of those six, four had less than the optimum 50 percent cover condition; all had less than 20 percent effective thermal cover; all had instances of distances greater than 300 feet between cover units; and four had a road density exceeding standards and guidelines. The district will be closing roads to meet the Forest Plan standard and guideline.

Two ranger districts ran browse utilization surveys on winter ranges. Republic Ranger District found 10 percent and 31 percent leader use on two different areas, and 18 deer days use per acre from a pellet group transect. Newport Ranger District found 27 percent use on redstem ceanothus in November and 52 percent in March, with 30 deer days and 14 elk days use per acre.

### **Monitoring Item 11: Primary Cavity Excavators**

#### **Forestwide Goal**

To maintain standing dead and defective trees and dead and down trees for habitat components as provided in the Forest Plan.

#### **Purpose of Monitoring**

To determine if snags or defective trees are being maintained during project implementation in compliance with the Forest Plan.

### **Results and Evaluation**

To accomplish this monitoring item, two separate timber sales on each district are to be surveyed. One of the evaluations is to be a presale survey and the other a postsale survey. Some ranger districts reported no timber sales designed under the terms of the Forest Plan were harvested yet, so no results were available for post sale surveys.

Forestwide, nine sales were surveyed. A total of 14 presale harvest units were monitored; 12 of the units met the Forest Plan standard and guideline of 2 snags per acre. A total of 14 post sale units were monitored; 6 met the standard and guideline. Two of the units that did not meet the standard and guideline had enough green trees remaining in the unit to provide the opportunity to create snags to meet the standard and guideline.

A concern was raised on some districts about the loss of snags to firewood cutters in some areas despite efforts to retain them during timber sale administration. This situation is being addressed in part by a Forest manual supplement that identifies insufficient cavity nester habitat as one of the overriding management considerations to warrant closure of completed harvest units to firewood cutters.

### **Monitoring Item 12: Old Growth Dependent Species**

#### **Forestwide Goal**

To ensure essential habitat is being provided for wildlife species that require old growth habitat components and the diversity of such wildlife habitats and plant communities is maintained.

#### **Purpose of Monitoring**

To determine if old growth habitat is being managed in sufficient quantity and quality to maintain viable populations for old growth dependent species and to meet management objectives for the barred owl management indicator species.

#### **Results and Evaluation**

To accomplish this monitoring item, 10 percent of the old growth dependent species management

areas (MA 1) on the Forest should be reviewed annually.

In 1991, 11 MA 1s were monitored; 17 percent of the old growth dependent species management areas on the Forest. For those areas that did not fully meet the management prescription for old growth dependent species, foraging areas were identified to complete the habitat requirements or recommendations were made to adjust the area's location to include the most suitable habitat available within the forestwide grid system.

Barred owls responded from 5 of 11 MA 1s within which calling surveys were done. This is the same rate of response as from last year. No nests were located. More of these types of surveys are needed throughout the Forest, in order to validate the habitat requirements of this management indicator species.

### Monitoring Item 13: Management Indicator Species

#### Forestwide Goal

To manage habitat in compliance with the Forest Plan for management indicator species which include: pileated woodpecker, northern three-toed woodpecker, Franklin's grouse, blue grouse, raptors and great blue heron, beaver, furbearers, northern bog lemming, and marten.

#### Purpose of Monitoring

To monitor the amount of management indicator species habitat and to evaluate the effectiveness of those habitats through utilization and population trends.

#### Results and Evaluation

##### *Marten*

A total of 50 pine marten units (or 16 percent of all marten units designated on the Forest) were inventoried and mapped. Where necessary, pine marten habitat unit locations were adjusted to provide the most suitable habitat within the forestwide habitat grid system.

The Kettle Falls Ranger District reported that all 24 units examined were placed in the best available habitat, much of which was in fair to good condition as determined by the habitat evaluation scorecard system. The Sullivan Lake Ranger District reported that the 5 units they examined exhibited low habitat suitability but were capable of producing higher quality habitat over time.

Numerous marten tracks were reported on one district during a lynx/marten track count transect.

##### *Pileated Woodpecker*

A total of nine pileated woodpecker units (or 18 percent of the total number of pileated woodpecker units designated on the Forest) were inventoried and mapped. Where necessary, pileated woodpecker habitat unit locations were adjusted to provide the most suitable habitat within the forestwide habitat grid system.

The Kettle Falls Ranger District reported that the five units examined on their district were in the best available habitat and that much of the habitat was in fair to good condition.

##### *Franklin's Grouse and Lynx*

Habitat was evaluated in nine project areas on three ranger districts. One area was found to lack sufficient density of lodgepole pine.

Road density checked on four lynx units on Republic Ranger District averaged 0.7 miles/square mile, well within the Forest Plan standard of 1 mile/square mile.

##### *Raptor/Great Blue Heron Nests*

Two osprey nests were revisited and activity was recorded at one. Two new goshawk nests were recorded that fledged two young; one nest was revisited and two adults were recorded in area. One golden eagle nest was revisited; two adults were present and young were heard in nest. One new great grey owl nest was recorded with two adults and one young. Eight great blue heron nests were recorded, a decrease of seven since 1990. The reason for the drop was undetermined.

## Monitoring Item 14: Threatened, Endangered, and Sensitive Species

### Forestwide Goal

Habitats of threatened, endangered, and sensitive species will be protected and managed as provided for in the Forest Plan standards and guidelines.

### Purpose of Monitoring

To determine whether habitat for threatened and endangered species is being managed as directed under their respective recovery plans, interagency guidelines, and Forest Plan standards and guidelines and if agency procedures related to sensitive species are being followed.

### Results and Evaluation

#### *Biological Evaluations*

Biological evaluations were developed for 43 projects to analyze and disclose the potential effects of proposed projects on threatened, endangered, and sensitive species.

#### *Bald Eagle: Threatened Species*

Midwinter interagency bald eagle surveys were done on approximately 40,000 acres on three districts. More people participated in the count this year which led to higher counts than in the past: 26 adult and 8 juvenile bald eagles, 4 adult and 2 juvenile golden eagles, and 2 unidentified eagles.

Two bald eagle nests were checked for activity. One of these on the Forest boundary, was inactive this year. There were no Forest Service activities in the vicinity of this nest that might have caused it to be abandoned. It is common for eagles to maintain more than one nest, but use only one in any given year. The other nest, on private land, fledged at least one young.

#### *Grizzly Bear: Threatened Species*

Results of field surveys of several project areas indicated that standards and guidelines regarding grizzly bear habitat are generally being met on the Sullivan Lake Ranger District.

#### *Caribou: Endangered Species*

Results of field surveys of several project areas indicated that standards and guidelines regarding caribou habitat are generally being met on the Sullivan Lake Ranger District. Caribou habitat in proposed project areas continued to be evaluated by the district wildlife biologist and silviculturist and adjustments made to prescriptions where the field review indicated a need.

#### *Wolf: Endangered Species*

Howling surveys were done on 15 transects across the Forest to evaluate the general status of the wolf in the area. One unconfirmed response was reported. Two probable wolf occurrences were documented from scat and track casts collected and sent to the national wolf recovery coordinator for evaluation.

#### *Lynx: Sensitive Species*

Lynx track count transects were run on two districts in conjunction with marten track count transects. No lynx tracks were encountered during these surveys. However, lynx tracks were encountered by resource crews during field evaluations of a proposed timber sale.

#### *Sensitive Plants*

Eleven sites of known sensitive plant locations were revisited to assess condition of species. A 20 acre area was monitored for effects of a closed timber sale on a population of *Platanthera orbiculata*. This species was downlisted from sensitive to the monitor list after the sale had been sold. The plants were found in the leave area designated for their protection, but could not be relocated within the harvested area. Monitoring of this population should continue to determine whether or not the leave area is large enough to sustain these plants over time.

Three biological technicians, a part time professional botanist and a volunteer worked on the districts surveying for sensitive plants. The addition of a full time botanist to the Forest in late FY 1991 will further enhance the sensitive plants program in the coming years.

## Monitoring Item 15: Fisheries

### Forestwide Goal

To manage habitat in compliance with Forest Plan standards and guidelines for fisheries.

### Purpose of Monitoring

To determine if fish habitat and populations are being managed as directed under the Forest standards and guidelines. To meet the projected desired future condition and projected habitat improvements.

### Results and Evaluation

During this field season, information was collected to determine the state of fisheries habitat management on the Forest. This included information on 1) The implementation of fisheries standards and guidelines in the Forest Plan, 2) Progress being made towards reaching the desired future condition for streams on the Forest, 3) Implementation of fish habitat improvement projects identified in the Forest Plan, and 4) Whether these habitat improvement projects are achieving the desired results.

#### *Standards and Guidelines*

Timber sales were monitored on four ranger districts and all of them were found to be in compliance with the Forest Plan standards and guidelines for fisheries habitat protection. The timber sales monitored were Hande Timber Sale on the Colville Ranger District, Echo Timber Sale on the Kettle Falls Ranger District, Ravishing Ruby Timber Sale on the Newport Ranger District, and Scatter Timber Sale on the Republic Ranger District.

#### *Desired Future Condition*

All timber sales monitored in FY 1991 were found to have been implemented in such a way as to bring the fish habitat closer to the desired future condition for such habitat.

#### *Habitat Improvement Projects*

The activity schedule in the Forest Plan projected the average annual fisheries program to include 23 acres and 94 structures of habitat improvement work. For FY 1991, the Forest requested funds for 23 acres and 91 structures of habitat improvement work. Funding was received for 136 acres and

151 structures during this fiscal year. By the end of the year, 36 acres and 118 structures had been completed. The only projects that were not completed were those funded by KV dollars due to time and manpower limitations, and they will be rescheduled for FY 1992 or FY 1993.

#### *Effectiveness of Habitat Improvement Projects*

Lack of pool habitat is believed to be the limiting factor for fish populations in many streams on the Forest. Most of the fish habitat improvement projects implemented during FY 1991 were designed to increase pool habitat and all of the improvement projects achieved that goal. Fish habitat capability was increased for all areas where fish habitat improvement projects were implemented this year.

## Monitoring Item 16: Range Improvements

### Forestwide Goal

All planned and financed improvements shall be constructed to Forest Service standards and shall be maintained per annual permittee plan instructions.

### Purpose of Monitoring

To ensure safety and aesthetic values are maintained in construction of improvements and that economic requirements are met and maintained through the system.

### Results and Evaluation

Structural improvements constructed in 1991 were monitored on the Colville, Republic and Sullivan Lake ranger districts. The improvements which were monitored include 1.5 miles of fence, a water development, and cattleguard. The fence met Forest Service standards. The cattleguard failed to meet standards due to failure to seed the disturbed area. The water development failed to meet standards due to poor quality fencing.

Monitoring indicates that project supervision of range improvement installation needs improvement on some districts. District staff need to become more familiar with the standards contained in the Range Improvement Handbook and the standards must be enforced. The funding level in this resource

area is below projected needs in the Forest Plan and is not adequate for maintenance nor monitoring.

### **Monitoring Item 17: Animal Unit Months of Livestock Use Permitted**

#### **Forestwide Goal**

The Forest will permit 35,000 animal unit months (AUMs) annually, plus or minus 10 percent.

#### **Purpose of Monitoring**

To determine the ability of the Forest and permit system to meet the output level projected by the Forest Plan.

#### **Results and Evaluation**

Monitoring of permitted livestock indicate that 33,878 AUMs of forage was permitted, which is within Forest Plan direction.

### **Monitoring Item 18: Utilization of Forage**

#### **Forestwide Goal**

The Forest's forage resource will be used according to Forest standards and guidelines depicted in tables 4.15 and 4.16 in the Forest Plan.

#### **Purpose of Monitoring**

Monitoring will provide information for maintaining or improving the Forest's forage resource, while providing for its proper use.

#### **Results and Evaluation**

Utilization monitoring was scheduled for 17 allotments in FY 1991 and was accomplished on 15 allotments. Forest Plan standards and guidelines for utilization were exceeded on 5 allotments. Each district will remedy the overuse through the annual plan of use. The allotment management plan will also be reviewed to see if it requires amendment. If overuse persists, the grazing levels will be adjusted to meet the utilization standards.

Additional funding will be necessary to completely document forage use. In the interim, efforts must be taken to streamline the monitoring process. Areas where improvement is needed include: accomplishing utilization monitoring in conjunction with other administrative activities; developing localized height-weight ratio curves to facilitate estimates of utilization; more complete documentation of monitoring information; and following standardized procedures for collecting information.

### **Monitoring Item 19: Condition of Riparian and Range Resources**

#### **Forestwide Goal**

To ensure all range ecosystem types within the range allotments are in at least fair condition and this condition continues to improve over time, especially with respect to potential.

#### **Purpose of Monitoring**

To provide evidence that management activities are effective and the resource is capable of producing forage on a sustained yield basis without deterioration of the resource.

#### **Results and Evaluation**

The goal for this monitoring item is to monitor all allotments on the Forest over a 10 year cycle. Due to lack of funding, monitoring goals for this item were not accomplished. Poor resource conditions are known to exist on the Forest but the extent and magnitude of the problem has not yet been quantified. An obstacle in evaluating condition and trend of the forage resource is the lack of a localized system for evaluating condition and trends of both vegetation and soils. Range and other resource scientists on the Forest can reduce some of the impact of the situation by applying professional skills to make good resource interpretation.

#### *Kettle Falls Ranger District*

Analysis of condition and trend of range and riparian resources was conducted on the Renner Lake Allotment through completion of paced transects. Although not completely analyzed in FY 1991, initial results appear to indicate good to excellent vegetative and soil conditions. Condition

and trend information from 1988 for the McKinley allotment was analyzed and the general condition was fair.

**Newport Ranger District**

Condition and trend information was gathered on one location on the Calispell Allotment. Initial evaluation indicates poor to fair condition with a possible upward trend occurring.

**Sullivan Lake Ranger District**

An intensive range condition and trend survey was done on the LeClerc Creek Allotment. The information has not been analyzed at the time of this report. There is some indication of some streambank damage in the Middle Fork of LeClerc Creek, however, the Forest Plan standard of 5 percent bare soil was not exceeded.

**Monitoring Item 20:  
Restocking of Lands**

**Forestwide Goal**

The National Forest Management Act requires regeneration of harvested units must occur within 5 years. Stocking should be sufficient to meet Forest Plan yield projections.

**Purpose of Monitoring**

To determine if harvested lands are being restocked with the proper number, type, and species of trees to meet National Forest Management Act requirements for restocking and Forest Plan projections for future yields.

**Results and Evaluation**

**Plantation Survival and Growth**

First Year	Acres	Percent
Total Area Planted	4,980	100
Average Survival		95
Survival by Species:		
Ponderosa pine		94
Western larch		90
Douglas fir		97
Engleman spruce		98
All others		96
Replanted Due to Failure	272	5

**Plantation Survival and Growth**

Third Year	Acres	Percent
Total Area Planted	3,926	100
Average Survival		85
Survival by Species:		
Ponderosa pine		84
Western larch		71
Douglas fir		87
Engleman spruce		85
All others		90
Certified as Restocked	3,527	94

The plantation survival and growth surveys indicate 94 percent of the acres in the third year were certified as stocked according to National Forest Management Act requirements. However, the yield projections used in the Forest Plan assumed higher stocking levels than those needed for stocking certification. The plantations represented by these third year survival figures were planted prior to the implementation of the Forest Plan and prior to the development of the Forest Plan stocking level guidelines.

**Monitoring Item 21:  
Timber Yields**

**Forestwide Goal**

To ensure yields are sufficient to meet Forest Plan projections.

**Purpose of Monitoring**

To validate whether actual yields resulting from even age and uneven age management systems are meeting Forest Plan projections.

**Results and Evaluation**

This item is scheduled to be monitored in FY 1993 on activity occurring since Forest Plan implementation began in February 1989.

**Monitoring Item 22:  
Land Suitability**

**Forestwide Goal**

To ensure harvest activities are scheduled only on lands meeting the timberland suitability criteria displayed in Appendix B of the Final EIS.

## Forest Plan Monitoring

### Purpose of Monitoring

To ensure programmed harvest activities are only taking place on suitable lands.

### Results and Evaluation

This item is scheduled to be monitored once per planning period prior to Plan revision.

### Monitoring Item 23: Size and Dispersal of Harvest Units

#### Forestwide Goal

Harvest unit layout, with respect to size and dispersal of openings, will adhere to the Forest Plan standards and guidelines.

### Purpose of Monitoring

To ensure projects are meeting Forest Plan standards and guidelines and that any proposals for exceptions to unit size limitations follow the notice and review requirements on the National Forest Management Act regulations.

### Results and Evaluation

Forest and district reviews of planned activities indicate that the Districts are adhering to Forest Plan standards and guidelines relating to size and dispersal of openings. No requests were made in 1991 to exceed the 40 acre size limitation for regeneration harvests.

### Monitoring Item 24: Acres of Silvicultural Practices by Management Area

#### Forestwide Goal

To ensure that areas treated on the Forest are consistent with the Forest Plan projections presented in table 4.10 of the Forest Plan.

### Purpose of Monitoring

To ensure that treatments are consistent with the Forest Plan.

### Results and Evaluation

Acres Harvested by Management Area (1,000 acres)

Mgmt Area	Forest Plan Projection	FY 1991	Average FY 1989-91
2	0.3	0.7	0.3
3A	0.1	0.8	0.5
5	2.8	1.5	1.7
6	0.9	0.5	0.4
7	5.2	5.8	4.5
8	1.6	1.5	0.9
Total	10.9	10.8	8.3

Harvest in all management areas are at or below Forest Plan projections for the 3 year average of 1989-91, with the exception of MA 3A, recreation. Total harvest within that management area has exceeded the 10 year acreage projection in the Forest Plan. This is attributed to harvest occurring in the management area that was planned prior to Forest Plan implementation. Those management area harvest projections were made in the Forest Planning model FORPLAN, and are considered guides, not hard targets.

Acres Harvested by Method (1,000 acres)

Harvest Method	Avg Annual Plan Projection	FY 1991
Clearcut	4.2	3.0
Seed Tree/Shelterwood	2.8	1.8
Overstory Removal	2.2	2.0
Commercial Thin	0	0.2
Sanitation/Salvage	0	2.3
Uneven age Mgmt	1.7	0.7
Other	0	0.7
Total	10.9	10.8

Harvest by silvicultural method is below Forest Plan projections for all methods. Sanitation/salvage and other, which includes rights-of-way clearing, improvement cutting, and special harvesting, had no acreage projections in the Forest Plan, only volume.

Even-aged management is still occurring within MA 3A, as sales sold prior to implementation of the Forest Plan in February 1989 are completed. Sales sold after February 1989 comply with Forest Plan direction for uneven-aged management in MA 3A.

Clearcut harvest units are changing noticeably within the last year or two in response to concerns about biological diversity and application of New Perspectives forestry. Hardwood trees and shrubs are being left on the units, as well as clumps of advanced regeneration, and green trees left as future snag replacements.

### **Monitoring Item 25A: Water Quality, Including Cumulative Effects**

#### **Forestwide Goal**

To ensure that current Forest water quality meets Washington State water quality goals.

#### **Purpose of Monitoring**

To determine if implementation of the Forest Plan results in maintaining or improving water quality within established standards and guidelines.

#### **Results and Evaluation**

Water quality data was collected on 75 monitoring sites across the Forest. In addition three locations adjacent to Bead Lake were sampled to determine baseline conditions. Water quality data collected included: fecal coliform levels; dissolved oxygen; temperature; pH; turbidity; and aesthetic values.

Monitoring indicated that water quality met Washington State Water Quality Criteria for Class AA waters. It was noted that sites North Fork of Chewelah, Smackout, East Fork Crown, Flat, and South Fork Lone Ranch creeks and the North Fork of San Poil River had elevated fecal coliform bacteria levels for some samples. Several increased fecal coliform readings were associated with rainstorms. The criteria for fecal coliform organisms for freshwater indicate that "fecal coliform organisms shall not exceed a geometric mean value of 50 organisms/100 ml, with no more than 10 percent of samples exceeding 100 organisms/100 ml."

Because some samples exceeded 100 organisms/100 ml and other samples were equal to or greater than 50 organisms/100 ml, those locations have been identified for increased sampling in 1992. The small number of samples taken (eight in 1991) makes determination of compliance with the state criteria uncertain.

Consultation with the range and recreation program managers will be made to determine if these management activities are related to elevated fecal coliform levels at those locations. Increasing the number of samples is expected to identify the source of the elevated levels.

During a normally scheduled monitoring visit to the North Fork San Poil River on August 6, 1991, investigation showed that an unnamed tributary leading from the Echo Bay Mine was found to have a suspended sediment level of 5,044 milligrams per liter and a turbidity level of 550 NTUs (nephelometric turbidity units). The sediment appeared to be traffic-pulverized mine waste rock or ore material eroding from the mine haul road and entering the North Fork San Poil River in several places during a rainstorm. The following day additional samples showed the turbidity and suspended sediment readings had returned to normal low levels. Forest hydrology and engineering staff visited the site, met with the mine operators, and determined appropriate corrective action.

### **Monitoring Item 25B: Watershed Best Management Practices**

#### **Forestwide Goal**

To ensure that watersheds will continue their natural functions of catching, absorbing, and releasing water in a clean controlled manner, while supporting the current level of beneficial uses.

#### **Purpose of Monitoring**

To ensure that Forest Plan standards and guidelines are being met during project implementation through application of appropriate best management practices.

#### **Results and Evaluation**

Best Management Practices (BMPs) are the primary mechanism used to achieve water quality standards set by the State of Washington and the Environmental Protection Agency. In response to the Gatorson Timber Sale appeal decision, Forest interdisciplinary teams identify and document the selection of appropriate, site specific Best Management Practices for projects, in accordance with the

procedures outlined in Appendix G of the Forest Plan. Those site specific BMPs are then included in the contract for the project and monitored for implementation and effectiveness. In addition, Forest hydrologists are working with the Pacific Northwest Experiment Station and the University of Washington to validate the effectiveness of certain BMPs for eastern Washington.

The forest monitoring cadre monitored the application of BMPs on the Timbrack Timber Sale on the Republic Ranger District. The implementation of the BMPs were considered to have protected riparian areas in the sale area. There was evidence that cattle activity on cut banks at a road crossing had caused erosion, but the displaced soil was not reaching the stream.

### Monitoring Item 26: Riparian Areas

#### Forestwide Goal

Provide and manage riparian plant communities that maintain a high level of riparian dependent resources.

#### Purpose of Monitoring

To determine if Forest Plan standards and guidelines are being followed to ensure riparian area characteristics are maintained or improved through the implementation of projects, thereby protecting the riparian ecosystem.

#### Results and Evaluation

Riparian areas were monitored at the same time as the Best Management Practices (Monitoring Item 25B). No detrimental effects of management activities on riparian areas were observed this year. The Standards and Guidelines on pages 4-53 and 4-54 of the Forest Plan appear to be providing the needed protection of riparian resources.

### Monitoring Item 27: Changes in Soil Productivity

#### Forestwide Goal

The total acreage of all detrimental soil conditions should not exceed 20 percent of the total acreage

within the activity area, including landings and system roads.

#### Purpose of Monitoring

To determine if the Forest is meeting standards and guidelines and to assess the effectiveness of soil management and conservation practices.

#### Results and Evaluation

The forest's monitoring cadre assessed the amount of detrimental soil conditions on four timber sales. Five timber harvest units were monitored on four ranger districts. One of the units was monitored by visually estimating the amount of detrimental soil conditions. In that unit, it appeared detrimental soil conditions were well below the Forest Plan standard of 20 percent.

In four harvest units, transects were run to determine the extent of detrimental soil conditions. Detrimental conditions ranged from 1 percent to 44 percent; three harvest units were within the Forest Plan standard and one harvest unit exceeded the standard. Mitigation was completed on the unit that exceeded the standard.

Two harvest units of the Dahl Buggy Timber Sale on the Colville Ranger District were monitored. Unit 1 was monitored using a transect across the unit; total detrimental soil condition was 18 percent, which meets the Forest Plan standard. A walk through visual inspection determined that in Unit 2, detrimental soil conditions did not appear to exceed the Forest Plan standard of 20 percent.

One harvest unit of Copper Salvage Timber Sale on the Kettle Falls Ranger District was partially monitored while yarding was taking place. Detrimental soil conditions on the portion of the unit that was monitored were 44 percent, which is above the Forest Plan standard. Operational and site constraints (jackstraw, blown down timber adjacent to a semiprimitive nonmotorized management area 11, where salvage logging is not normally allowed) limited the salvage activity to ground-based yarding systems and were considered to be the factors that led to the standard being exceeded. The district recognized the problem and tried a number of different yarding methods to correct it. Followup action was taken of scarifying and scattering slash over all the skid trails to facilitate their stabilization and revegetation.

One harvest unit of the Wolf Pup Salvage Sale on the Newport Ranger District was partially monitored using transects. Detrimental soil condition was 9 percent, which met the Forest Plan standard.

Unit 1 of the Timbrack Timber Sale on the Republic Ranger District was monitored using a transect. Monitoring indicated the total detrimental soil condition in the cable yarded unit was 1 percent, which met the Forest Plan standard and guideline.

### Monitoring Item 28: Transportation System Management

#### Forestwide Goal

To not exceed the open road mileages presented on page 4-30 of the Forest Plan.

#### Purpose of Monitoring

To measure the effectiveness of closing new roads.

#### Results and Evaluation

The Forest Plan directs that 849 miles of road will be open to passenger cars and 2500 miles of road open to high clearance vehicles, for a total of 3349 miles open. In FY 1991, the Forest had 801 miles of road open to passenger cars and 2405 miles of road open to high clearance vehicles, for a total of 3205 open miles.

In FY 1991, the Forest Travel map was issued, which displays where and when seasonal and long term road and area closures would be put into effect. The objective of the closures is to protect resources such as big game winter range or nonmotorized recreation areas. On-the-ground signing of the closures was completed by September 1991. With the issuance of the Travel Map, implementation of closures, and the on-the-ground posting of closures, Forest Plan open road standards within big game management areas have been met.

### Monitoring Item 29: Insect and Disease Population

#### Forestwide Goal

To prevent major losses to insect and disease pathogens.

#### Purpose of Monitoring

To prevent catastrophic losses to insect and disease outbreaks.

#### Results and Evaluation

Forest Insect Infestation (acres)

Insect	FY 1989	FY 1990	FY 1991
Douglas Fir Beetle	4,700	3,200	3,000
Fir Engraver	9,800	3,600	1,100
Mountain Pine Beetle:			
Lodgepole Pine	13,700	13,900	3,400
White Pine	2,000	600	600
Ponderosa Pine	1,800	300	300
Western Pine Beetle	1,200	700	100
Spruce Budworm	3,800	11,100	129,800

To establish the extent of insect infestations across the forest, aerial detection flights are flown, maps developed from those flights, and the maps computer analyzed. Data from 1989 and 1990 was reanalyzed this year using new computer software and data errors were discovered. This table reflects the corrected information.

Moderately elevated levels of fir engraver and Douglas-fir beetle activity are evident. Root disease is associated with all of this mortality.

The Colville Ranger District is continuing to monitor a major mortality center in the vicinity of Abercrombie Mountain. Mountain pine beetle is apparently killing all of the lodgepole pine in a several hundred acre area of 60-70 year old trees.

Larch needle cast and blight activity are continuing again this year in low lying areas due to wet spring weather. Seedling and sapling trees are the being hit the heaviest.

Newport Ranger District is reporting some increase in shootborer activity in 10 year old plantations of western white and ponderosa pine.

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## Forest Plan Monitoring

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Large areas on the western half of the Forest are infected with dwarf mistletoe. Acreage infected is not increasing, but damage due to reduced growth and mortality is. Douglas-fir and western larch are the most infected.

Spruce budworm activity has increased greatly over the western portion of the Forest in 1991. Affected acreage has increased from 11,500 acres in 1990 to 129,800 acres this year. With large contiguous areas of multistoried stands and host species, this insect is expected to cause major damage in the next few years. The Forest is currently developing a strategy for managing these pests.

### **Monitoring Item 30A: Cultural Resource Protection**

#### **Forestwide Goal**

To protect significant archaeological and historic sites.

#### **Purpose of Monitoring**

To ensure management prescriptions for cultural properties are being accomplished and to document instances of vandalism and site destruction.

#### **Results and Evaluation**

The required monitoring goal for the fiscal year was met. The majority of the sites monitored are located within or adjacent to proposed or on-going timber harvest project areas. Almost 80 previously documented cultural properties (approximately 10 percent of the total number of recorded sites on the Forest) were visited to ascertain changing site conditions due to vandalism, natural forces, and project effects, along with determining the need for protection. Site documentation records were updated with the resulting data. All monitoring actions were performed by cultural resource specialists on all units and compiled by the Forest archaeologist.

The general trend noted in last year's monitoring results were confirmed: cultural properties within areas of on-going or recently completed timber harvest frequently exhibit deterioration due to

minor vandalism. In many cases, this was due to the sale administrator not being made aware of the existence, or of the need, to protect the property. To address that situation, some districts will be sending sale administrators to cultural resource technician training. In addition, site monitoring is being increased, including monitoring by law enforcement officers. Project monitoring by cultural resource specialists will be used to ensure management prescriptions are being followed.

Other cultural properties monitored included those within areas receiving a fairly high level of public use (such as developed and dispersed campsites, along trails and roads, etc.) Sites within this category generally were found to have had noticeable levels of adverse change due to erosion, natural deterioration (of historic structures), along with a certain amount of vandalism.

FY 1991 was the first year this monitoring item became the responsibility of each district. The range of resulting reports makes it clear that there is a need to: 1) clarify importance and need for monitoring; 2) assign responsibility for performance; and 3) standardize reporting format. It is recommended that the Forest Archaeologist meet with responsible district personnel to rectify this situation.

The first steps toward the approach of mitigating adverse impacts on cultural resources through thematic studies were taken in FY 1991 with the completion of an evaluation and mitigation contract for a number of logging-related cultural properties within the LeClerc Creek drainage on the Sullivan Lake Ranger District. A product of this project was a publishable manuscript detailing the history of logging in the Pend Oreille Valley, 1880-1940. From this study, management criteria are currently being developed for all logging-related properties on the Forest.

### **Monitoring Item 30B: Cultural Resource Compliance**

#### **Forestwide Goal**

To protect cultural resources through compliance with established management guidelines.

### **Purpose of Monitoring**

To ensure all federal, state, agency, and Forest cultural resource compliance mandates are being met in a consistent and timely manner. To ensure that appropriate mitigation is incorporated into management activities.

### **Results and Evaluation**

Monitoring was performed by tracking all Forest project compliance activities through the use of established program procedures, documented on standardized forms. All monitoring actions were performed or overseen by the Forest archaeologist.

Approximately 490 person-days were spent conducting compliance-generated archaeological surveys on approximately 78,000 acres; 146 new cultural properties were documented.

The cultural resource program on the Forest during FY 1991 continued to be managed by the Forest Archaeologist. Kettle Falls, Newport, and Republic ranger districts each employed a professional archaeological to accomplish compliance objectives. In addition, Newport Ranger District employed two archaeological technicians and Kettle Falls ranger district employed one technician. Colville and Sullivan Lake ranger districts used cultural resource technicians on a part time basis to perform compliance activities.

Forestwide compliance timeline processes have been established that should allow for the timely completion of all National Environmental Policy Act and National Historic Preservation Act mandates for planned project activities. Compliance monitoring indicates those districts with personnel dedicated full time to cultural resource compliance work are achieving the compliance objectives.

### **Monitoring Item 31: Comparison of Actual and Planned Implementation Costs and Total Economic Value of Priced Outputs**

#### **Forestwide Goal**

To produce Forest goods and services in the most cost efficient way consistent with providing net public benefits.

### **Purpose of Monitoring**

To determine if actual funding allocations differ from proposed Forest Plan budgets.

To determine if Forest Plan activity/unit costs and actual activity/unit costs differ. To determine if actual funding allocations differ from proposed Forest Plan budgets.

### **Results and Evaluation**

The total budget for FY 1991 was \$18,960,492. The proposed budget as stated in the Forest Plan is \$24,833,351 in 1991 dollars. This budget represents a shortfall of \$5.8 million (see Table 3.2 in Chapter 3). For further explanation and detail regarding comparison of funding levels and activity/unit costs to those stated in the Forest Plan please refer to the "Financial Report", Chapter 3.

### **Monitoring Item 32: Economic Effects of Plan Implementation**

#### **Forestwide Goal**

To produce Forest goods and services in the most cost efficient way consistent with providing net public benefits.

### **Purpose of Monitoring**

To note significant changes in payments to counties and returns to the U.S. Treasury from Forest Plan projections.

### **Results and Evaluation**

The Forest Plan estimated that under full implementation of the Plan (including the harvest of 123.4 MMBF of allowable sale quantity), total revenue or total returns to government, would be \$12.6 million (1982 dollars). Actual returns to government for fiscal year 1991 was \$7.4 million (1982 dollars).

The Forest Plan also estimated that full implementation of the Plan would produce \$3.3 million in payments to states (1982 dollars). Table 2.2 shows that the less than full Plan implementation (which included a harvest of 111.8 MMBF) for fiscal year 1991 produced payments to states of \$1.7 million (1982 dollars). Payments to states is approximately

25 percent of the revenues received from timber, recreation, minerals, range, and land stewardship programs.

Given the information from the planning models used during the planning process, the Forest Plan estimate of total annual returns to government and payments to states should have been 12.4 and 3.1 million dollars (1982 dollars), respectively. The original estimates were not adjusted to reflect the reduction in harvest that will occur due to protection of riparian habitat.

According to the planning models used during the planning process, the returns to government related to timber would be roughly \$12.322 million (1982 dollars), which reflects an average stumpage value of \$98.25 per MBF (1982 dollars). Stumpage values used in the computer model used in the Forest Plan, FORPLAN, model were calculated based on 1977 to 1982 average values.

The actual average stumpage value from timber harvested on the Forest from 1977 to 1982 was \$81.81 per MBF (1982 dollars). The expectation that timber stumpage values would continue to increase at 1977 to 1982 rates has not yet developed. In fact, stumpage values are lower now than they were in 1977 to 1982. The average stumpage value from timber harvested on the Forest from 1983 to 1991 was \$42.90 per MBF (1982 dollars).

In summary, actual stumpage values from timber harvested on the Forest from 1977 to 1982 were not as high as corresponding values used in FORPLAN. In addition, actual stumpage values from timber harvested on the Forest from 1983 to 1991 are lower than they were from 1977 to 1982.

The portion of total returns related to all nontimber programs appears to have been underestimated by the planning models used during the planning process. The Plan's returns to government related to all nontimber programs was estimated to be \$70,700 (1982 dollars). According to the annual collections statements, the actual average annual revenue collected from all nontimber programs from 1980 to 1991 was \$95,244 (1982 dollars).

### **Monitoring Item 33: Coordination With Adjacent Landowners**

#### **Forestwide Goal**

To consider how Forest activities affect adjacent landowners when making project decisions.

#### **Purpose of Monitoring**

To meet the requirements of the National Forest Management Act by ensuring the effects of national forest management on land, resources, and communities adjacent to the national forest are considered.

#### **Results and Evaluation**

District staff are notifying landowners about proposed projects adjacent to their property and input received is used in the environmental analysis for the projects. As part of the Forest's effort to notify adjacent landowners, a forestwide project list has been mailed to the public which displays where the proposed project is located, the objectives of the project, and who to contact for more information. The objective of this forestwide effort is to notify and involve all potentially affected publics in project planning on the Colville National Forest.

### **Monitoring Item 34: Planning Modeling Assumptions (Primarily FORPLAN)**

#### **Forestwide Goal**

To produce Forest goods and services in the most cost efficient way consistent with providing net public benefits.

#### **Purpose of Monitoring**

To determine if FORPLAN modeling assumptions reflect actual Forest conditions.

#### **Results and Evaluation**

To determine if the FORPLAN modeling assumptions reflect actual Forest conditions, validation must proceed in a stepwise fashion. The first step is to determine if FORPLAN was modeled the way

it was intended. The FORPLAN solution must then be distributed across the Forest. Then it must be determined if that distribution (or spatial disaggregation) is feasible with respect to the various harvesting restrictions, such as unit dispersion; big game forage/cover/snow intercept thermal cover requirements; and management requirements for pine marten and pileated woodpecker.

During the first step of validation, it must be assumed that the input data related to timber yields, costs, acreages, etc is correct. Without that assumption, it would not be possible to know if Plan implementation problems were due to inaccurate input data, poorly modeled dispersion relationships, inappropriate implementation, or simply a misplaced decimal point. It would be impossible to simultaneously validate everything at once. Therefore, when one item is being validated, all other items are held constant by assuming they are correct. Once we determine that the spatial disaggregation solution is implementable, then we proceed with input and implementation validation.

Modeling validation performed during FY 1991 consisted of determining if the FORPLAN model was modeled the way it was intended to be modeled. Only one error was found. The forage, cover and snow intercept requirement constraints for winter range were not activated correctly in the FORPLAN model. The total Forest harvest from the corrected FORPLAN output is not different than the harvest from the previous FORPLAN output. Harvests only varied with respect to amounts by management area. The harvests within the winter range did increase by 7 percent the first decade in order to satisfy forage requirements.

Model validation planned for FY92 includes the following: 1) the new FORPLAN outputs will be

spatially disaggregated across the Forest; 2) the feasibility of the new spatial disaggregation will then be tested with respect to the various harvesting restrictions; and 3) a procedure for validating inputs and/or implementation will be developed.

## **Monitoring Item 35: Mineral Activities**

### **Forestwide Goal**

To provide opportunities for mineral exploration and development while integrating those activities with the planning and management of other forest resources, protecting surface resource values and meeting management area objectives.

### **Purpose of Monitoring**

To determine if Forest Plan standards and guidelines are being met.

### **Results and Evaluation**

#### *Reclamation Compliance*

In addition to district field reviews, the Forest mining geologist visited 11 sites on the Forest. Those reviews indicated 96 percent of the land disturbed by mineral operations has been reclaimed as prescribed within 2 years.

#### *Timeframes*

The Forest mining geologist reviewed all district mineral files and determined that 36 CFR 228(A) timeframes were met 97 percent of the time.

#### *Mitigation Measures*

Mitigation measures were generally accepted by mineral proponents. Although most measures were met voluntarily, a few requirements needed administrative presence to assure compliance. No appeals were received on mineral proposal decisions, from the proponents or otherwise.

**Monitoring Item 36:  
Community Effects**

**Forestwide Goal**

To produce Forest goods and services in the most cost efficient way consistent with providing net public benefits.

**Purpose of Monitoring**

To report various social and economic indicators.

**Results and Evaluation**

The results and analysis regarding this monitoring item are provided in Chapter 3, section titled "Socioeconomic Report."