

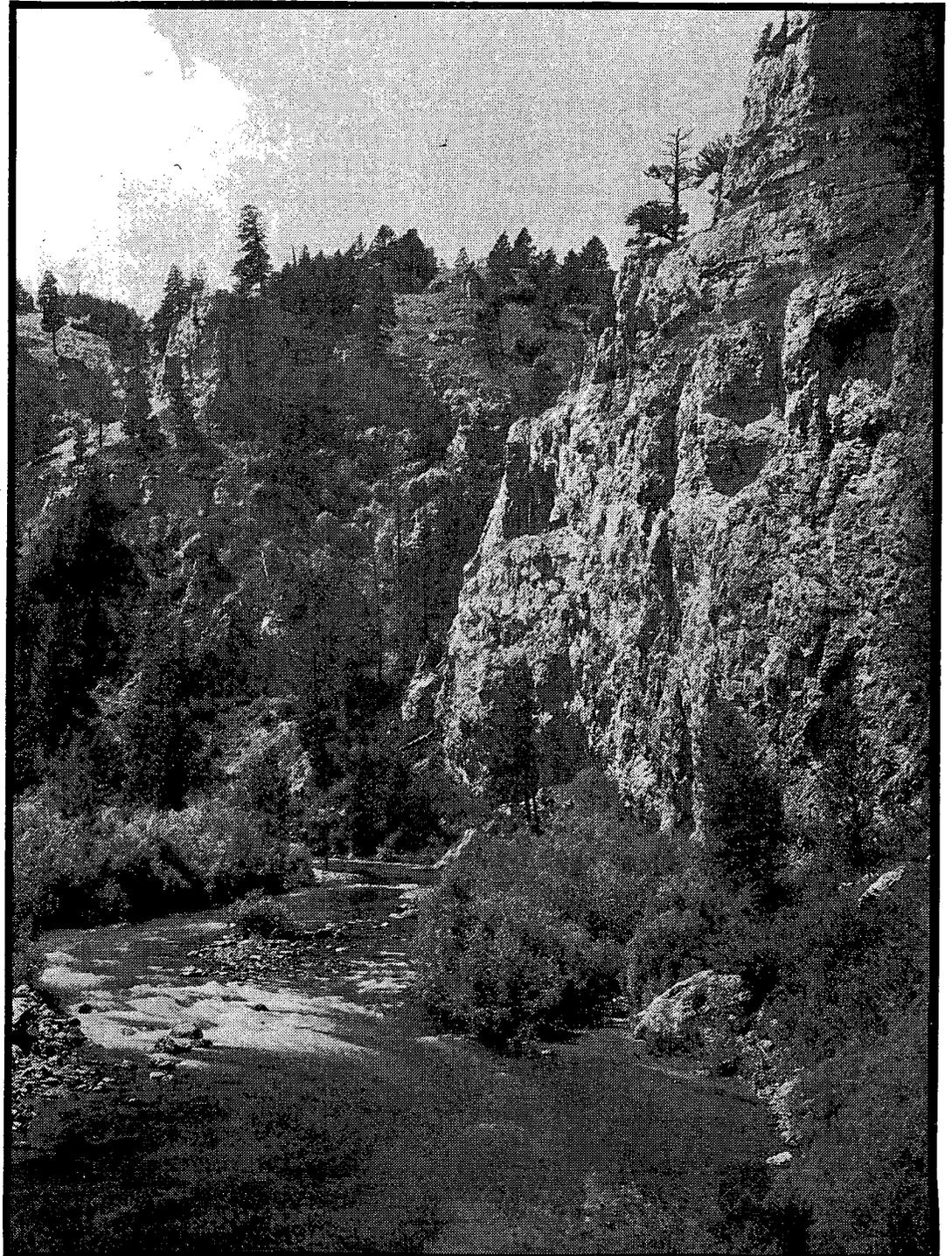


Lewis and Clark
National Forest
P.O. Box 869
Great Falls, MT.
59403



LEWIS AND CLARK NATIONAL FOREST PLAN

Monitoring and Evaluation Report



Belt Creek Canyon below Monarch in the Little Belt Mountains.



United States
Department of
Agriculture

Forest
Service

Lewis & Clark NF

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Date: September 1992

Dear Forest User:

I appreciate your continued interest in the management of your National Forest lands. As you recall, the **Lewis and Clark National Forest Land and Resource Management Plan** (Forest Plan) was approved in June 1986. To keep you apprised of our accomplishments and progress in implementing the Forest Plan, we have completed the Fiscal Year 1991 Monitoring and Evaluation Report. This report marks our fifth year of Forest Plan implementation documentation.

Within the last year, we have made some personnel adjustments and acquired several new faces on the Forest:

Robin Strathy has returned to the Lewis and Clark replacing Keith Sandifer as the Forest Geologist on the Forest Plan Implementation group. Robin worked on the Rocky Mountain Ranger District from 1984 to 1988; and most recently was employed as a Zone Mineral Examiner in Region 3, Arizona.

Karen Hoffman has joined our Forest Plan Implementation group, replacing Valdon Hancock as our Forest Hydrologist. Karen came to us from the Lake Tahoe Basin Management Unit where she was also a hydrologist.

Dana Field has been converted from a trainee to a career position as botanist. Dana is a member of the Forest Plan Implementation group.

Richard Saunders has joined the Forest Plan Implementation group for a three year time period. Richard, most recently from the Havre Soil Conservation Service Office, is a soil scientist working under an interagency agreement between the Lewis and Clark National Forest and the SCS.

Range conservationists, Tom Osen and Eldon Rash, most recently from the Judith Ranger District and Musselshell Ranger District, respectively, have formed a Forest Range Analysis Team and are now headquartered in our Forest Supervisor's Office.

Gary Allison, longtime engineering technician on the Forest, has shifted to the Hydrological Technician position on the Forest Plan Implementation group.

Kurt Teuber, most recently from the Beaverhead National Forest, replaced Butch Fitzpatrick as the Forest's Geographic Information System Coordinator.

Terri Marceron, formerly the NEPA coordinator for the Forest, became the Assistant District Ranger on the Rocky Mountain Ranger District.

I am pleased with my staff's commitment to implementing the direction in the Forest Plan. Despite my continued frustration with the lack of money to accomplish the level of activity I envisioned in the Forest Plan, we have made great strides in the quality of our analyses and decision-making. Three years ago, we



reorganized our specialists' group to ensure an integrated team approach in our on-the-ground project implementation. Effective coordination between the implementation group and the Ranger District personnel has resulted in more indepth analyses that have led to better decisions.

A description of our implementation efforts and evaluation of our results has been compiled in the SUMMARY in an abbreviated format. More detailed information appears in the complete Monitoring and Evaluation Report.

As part of the Forest Planning Process, we will conduct a five year review of the Forest Plan in 1992. We will be analyzing any shortcomings in our implementation of the Forest Plan, assessing new information and policies, and evaluating ways to improve our management of the Lewis and Clark National Forest. Again, I thank you for your interest in the Forest and encourage you to contact me if you have any questions.

Sincerely,



JOHN D. GORMAN
Forest Supervisor



Lewis & Clark National Forest Forest Plan Monitoring Report

Fiscal Year 1991 SUMMARY

This summary capsulizes the full report of the Forest Plan Monitoring and Evaluation for the Lewis and Clark National Forest during Fiscal Year 1991 (October 1990 through September 1991). Our monitoring items are listed in Chapter 5 of the **1986 Lewis and Clark National Forest Land and Resource Management Plan (Forest Plan)**. Forest specialists monitor and report on 69 individual monitoring items. They evaluate their findings and make recommendations to the Forest's Management Team.

Detailed information for each of the 69 items is disclosed in the 100-page full report.

In the full report, you will find three main sections. The Introduction includes a general discussion of the purpose of monitoring and the amendments that have been made to the 1986 Forest Plan. The second section outlines, in general terms, the decisions made in the Forest Plan. And the third section details each monitoring item, including the methods used in our monitoring, the findings from our monitoring efforts, and any recommendations for improving implementation of the Forest Plan direction.

FIVE YEAR REVIEW

Because 1991 was the fifth year that we have implemented the direction in the Forest Plan, we took this opportunity to analyze the monitoring information for our Five-Year Review of the plan. During the Review, we will be considering whether any additional changes to the Forest Plan or changes in our implementation methods are warranted. We will be examining in detail the information from five years of monitoring and evaluation and from other areas; for example, where new external factors affect our Forest Plan decisions, or where public demands have changed. We plan to complete the Five-Year Review sometime in fiscal year 1992.

MONITORING RESULTS

Recreation: Visitor expectations are generally being met. However, funding shortfalls in FY 1991 caused the closure of Cave Mountain Campground. The Forest is unable to respond to requests for some services, like improved toilet facilities and consideration for improved boat launching services due to our limited funding. Developed recreation use continues to rise, while Wilderness use appears to have stabilized. Limited recreation capital investment funds allowed several new trailhead facilities along Divide Road, but no other developments/improvements on the Forest. Recreation Opportunity Guides for the Musselshell and Judith Ranger Districts have yet to be completed. Travel Plan violations have not significantly increased. Several areas continue to experience repeat violations. Public information, improved signing, and increased patrolling would help if funding were available.

Cultural Resources: The Forest continues to concentrate its efforts on inventorying and assessing potential impacts to cultural resources on site-specific project proposals. Archaeologists prepared input on 37% of the identified projects with potential cultural considerations. Interpretation of cultural resources has received very little emphasis. A comprehensive cultural resource assessment is still needed, as well as, clarification of some of the cultural standards in the Forest Plan.

Wilderness: Wilderness use appears to have stabilized. The revised fire management plan went into effect in August 1991. Volunteer personnel on the fire patrol lookouts continue to provide effective fire coverage within the Wilderness. Illegal outfitting continues to cause degradation to the resource.

Wildlife: Emphasis on improved mapping and use of landsat technology is improving our data base on the Forest. Grizzly bear populations appear stable; five of six BMUs are showing females with cubs. Sightings indicate that one wolf is utilizing the Sun River drainage on the Rocky Mountain Division.

The MDFWP Statewide Elk Management Plan was released in FY 1991 and has some implications for our management of elk habitat. The Elk Plan highlights the question of elk vulnerability. We will be coordinating our management decisions with the MDFWP to maintain bull:cow ratios and still provide certain levels of hunting opportunity. In addressing the potential impacts to elk, timber management decisions within MA-B are resulting in less open miles of road per square mile than projected in the Forest Plan. The Forest is implementing a plan to adapt procedures for defining elk security.

Bighorn sheep and mountain goat populations are stable or increasing. Increased sightings of lynx and wolverine are occurring on the Rocky Mountain Division.

Inventories indicate that timber sale areas are meeting the 5% minimum old growth standard within compartments. Biologists feel the goshawk is a poor old growth management indicator species and that more suitable species should be identified.

Pileated woodpeckers have been sighted on both Divisions of the Forest. The Forest has more effectively implemented the snag management standards in timber sale areas. Snag retention during the post sale firewood activities needs more management attention.

Stream monitoring indicates no detectable differences between baseline data and 1990-1991 data in the Canyon Creek and Gates Park fire areas. Streambank damage and fish habitat damage can be attributed to livestock trampling.

Habitat improvements are meeting or exceeding Forest Plan projections. Programs for sensitive wildlife, fish and plants have been initiated on the Forest. Most surveys occur where known project proposals exist. More emphasis needs to be placed on management and protection of these species. Management guides need to be prepared on the most critical species.

Range: Grazing levels are within 1% of Forest Plan projections. Nonstructural range improvements are 30% of projections. In recent years the program emphasis has shifted to monitoring the spread/control of noxious weeds. Condition and trend data has not received adequate attention. Progress on the goal to analyze and update allotment management plans has improved with the initiation of a Range Task Force. FY 1991 analysis work concentrated in the Castle Mountains.

Timber: In FY 1991, the Forest Management team and timber staff jointly reviewed the Yogo Creek Timber sale. Review of this sale and other ongoing sales, indicates that the Forest's objectives for silvicultural management prescriptions are appropriate. No timber activities exceeded the 40-acre clearcut standard. Restocking of previously harvested areas are progressing well. The Forest continues to harvest less acres than projected in the Forest Plan. Thinning accomplishments continue to exceed our projections. The trend in both commercial and personal firewood removal appears to have stabilized.

Water and Soil: Monitoring results indicate that projects with a potential for impact on soil or water quality are being successfully reviewed assuring adequate protection of soil productivity and useability. Overall the Districts are meeting Forest Plan requirements to monitor at least 75% of the revegetation projects. Of the projects reviewed, the revegetation was described as successful and complete. Of the projects reviewed occurring in riparian areas, flood plains, and wetlands, results indicate that activities within these zones are being mitigated successfully to prevent impacts to soil and water resources. Of the 373 acres requiring restoration identified in the Forest Plan, 73% have been accomplished. This level of accomplishment indicates that the Forest Plan goal of 100% accomplished by 1995 should be met.

The post-fire monitoring generally indicated that fish populations were not measurably affected by the 1988 fires. Although monitoring of fish habitats throughout the Forest has not been extensive over the last five years, enough information has been collected to demonstrate a need to amend the Forest Plan to include more specific standards for fish habitat.

Analysis indicated that some of the special use sites failed to meet the established public health testing requirements. This matter will be discussed with Forest managers and special use permittees in an effort to redeem this management and public safety responsibility.

Minerals: The FY 1991 target for minerals management was 95 cases. A total of 94 cases were processed. No Forest Service projects were determined to have an adverse effect on mineral operations. There were no geophysical prospecting permits requested or issued during FY 1991. Statutory rights conferred with the General Mining Laws provide for access to mining claims for exploration and development. All mineral proposals complied with established Forest Plan standards and guidelines; therefore none were denied.

Lands: The condition of facilities authorized through special use permits is generally satisfactory. Ski area permits are regularly inspected before and during the ski season. The Lewis and Clark Forest issued several special use permits for a variety of activities. In addition to programmed rights-of-way easements, considerable work was done on five trail easement cases that unexpectedly presented themselves. Three of these are expected to be completed in FY 1992. The Forest Plan target for landline location is 26 miles per year. In FY 1991, the Forest was funded for and accomplished 23 miles or about 88% of the Forest Plan target.

Facilities: When considering the total miles constructed and reconstructed in both programs (Capital Investment Program and Purchaser Credit Program) during FY 1991, the output was 93% of that projected by the Forest Plan. This is within the variability tolerance. The Forest Plan, as amended, programs an average of 14.0 miles of trail construction and reconstruction annually. In FY 1991, the Forest replaced one trail bridge and accomplished 12.0 miles of reconstruction/Right-of-Way work. It is estimated that there are approximately 2,029 miles of roads open to use by some form of motorized vehicle on either a seasonal or yearlong basis. The Forest Plan does not establish any target miles to be open to public motorized traffic.

Protection: Over the first five years of the Forest Plan, high risk lodgepole pine had made up about 75% of the volume sold on the Forest. This percentage is slightly above the 70% level envisioned in the Forest Plan. Insect and disease surveys conducted during

the summer of 1991 showed no significant change in insect and disease infestation on the Forest. Insects and diseases continue at endemic levels. Post timber sale reviews showed that the Forest is meeting regional standards for slash disposal. There were no known complaints about any prescribed burning project affecting air quality. The under accomplishment in treating activity fuels is related to the backlog of timber sales not being offered. The under treatment of natural fuels was due to dry fall and spring burning conditions. In 1991, the Forest had 41 wildfires which burned 795 acres. The total cost of fire suppression and protection in 1991 was \$2,648,000. This figure is well above the 10-year average of \$590,000. During the first five years of the Forest Plan, acreage lost to wildfires and fire suppression and protection cost were substantially above those project by the Forest Plan.

Wild and Scenic Rivers: No project-level activities occurred along any of the nine eligible rivers or river segments which adversely impacted or degraded a river's qualifications and/or potential classification. Only two activities (resident permit #295 removed, and Trail #151 reconstructed) changed the existing condition along two eligible rivers this past year. These activities had a positive effect on the river's "outstandingly remarkable" recreation resource value (North Fork Sun River). Fish population estimates collected by the Montana Department of Fish, Wildlife, and Parks tentatively indicate that two eligible rivers, the North and South Forks of the Sun River, meet the "outstandingly remarkable" fish criteria.

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I. INTRODUCTION

The *Lewis and Clark National Forest Land and Resource Management Plan* (Forest Plan) was approved in June 1986. Each year we monitor management decisions that have been implemented on the ground and report our findings. This report summarizes the monitoring and evaluation findings for Fiscal Year 1991 (from October 1990 through September 1991).

The purpose of forest plan monitoring and evaluation is to determine how well we have met our Forest Plan objectives and how we have applied the management standards and guidelines in the Plan. Our monitoring and evaluation process is outlined in Chapter V of the 1986 Forest Plan. Using this process, resource specialists have reported on 69 individual monitoring items.

Within the last five years, eight amendments have been made to the 1986 Forest Plan. These changes have resulted from findings from our previous monitoring/evaluation reports and from several environmental analyses on site-specific projects.

These eight amendments include:

- Amendment 1: Incorporated recreation management for the Bob Marshall/Great Bear/Scapegoat Wilderness Management Complex. This amendment was implemented in 1987 by the adjoining Lewis and Clark, Lolo, Flathead, and Helena National Forests.

- Amendment 2: Verified those rivers meeting the two eligibility qualifications (free-flowing and containing at least one "outstandingly remarkable" resource value) under the Section 1(b) and 2(b) of the Wild and Scenic Rivers Act; assigned a potential classification to each eligible river as directed under Section 2(b) of the Act; and applied the appropriate standards to manage and protect each river. This amendment was implemented in 1989. Under this amendment, the following rivers met eligibility qualifications:

- Smith River - 11.8 miles scenic
- North Badger Creek - 7.3 miles scenic
- Dearborn River - 18.1 miles wild
- North Fork Sun River - 25.4 miles wild, 1.3 miles recreational
- South Fork Sun River - 25.5 miles wild
- North Fork Birch Creek - 6.6 miles wild
- Tenderfoot Creek - 4.6 miles scenic
- Green Fork of Straight Creek - 4.5 miles wild
- Middle Fork Judith River - 4.8 miles recreational

- Amendment 3: Made changes, adjustments and corrected typographical errors and omissions identified during the preparation and review of the FY 87 and FY 88 Monitoring and Evaluation Reports. This amendment was implemented in 1989.

- Amendment 4: Changed the Forest-wide Management Standard dealing with Reforestation (E-3) to comply with the Northern Region requirement for certification of regenerated timber stands. This amendment was implemented in 1991.

- Amendment 5: Changed the management area designation on 685 acres in the South Fork project area from MA-B to MA-C. This amendment was implemented in 1991.

Introduction/FP Decisions

- Amendment 6: Changed all eleven Region One Forest Plans to partition Allowable Sale Quantity (ASQ) into two non-interchangeable components - from inventoried roadless areas and from existing roaded areas. This amendment was vacated by the Secretary of Agriculture. He found that the Regional Forester had sufficient discretion to assure that Forest Plan direction is implemented in accordance with the standards and guidelines without resorting to the amendment process.
- Amendment 7: Changed the management area designation on 22,930 acres in the Spring Creek project area. Management Areas B,C, E, and G were affected. This amendment was implemented in 1991.
- Amendment 8: Recomputed the small business share governing the timber sale set-aside program in the Lewis and Clark Market area to 70% from 80%. This amendment was implemented in 1991.

Although the Forest Plans include management decisions that project well beyond the first decade of implementation, each Forest Plan will be thoroughly reviewed after 10 years. In preparation for this 10-year review and revision, we are analyzing our progress at the midway point of five years. Because Fiscal Year 1991 marks the fifth year of implementation of the Lewis and Clark National Forest Plan, we will use our five years of monitoring and evaluation findings as a starting point for our Five-Year Review process. Through the Five-Year Review, we will determine whether additional changes are needed now, before the end of the first decade. Completion of the Five-Year Review is anticipated by December 1992.

II. FOREST PLAN DECISIONS

The Forest Plan is a compilation of decisions that guide our management of the Forest. In general terms, it contains three types of decisions:

- **Goals, Objectives, and Desired Future Conditions** (pages 2-2 through 2-22 of the Plan) provide general direction for managing Forest resources.
- **Standards** (pages 2-23 through 2-73) and **Management Direction** (Chapter III of the Plan) tell us *how* to put the plan into practice or *what* conditions we must meet while we implement the Plan.
- **Management Areas** (described in Chapter III of the Plan) basically delineate the Forest into areas that are suitable and available for different types of management and resource production.

Given these major decisions, the Plan also includes a prediction of the average annual "outputs" produced by the Forest. These predictions are outlined in Table 2.1 (Plan page 2-10 and 11) and discussed in the Record of Decision.

The following pages contain reports for each monitoring item listed in the Lewis and Clark Forest Plan. The items are reported sequentially, as they appear in Chapter V of the Forest Plan.

RECREATION

A-1 Recreation Opportunity Spectrum Setting

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Recreation Opportunity Spectrum setting being implemented	Annually	+/- 10% of projected ROS setting

Since 1987 when the Forest Plan was implemented, about 3,000 acres of the Forest's 1,002,232 acres of inventoried roadless area have been affected by timber harvest and road construction. These activities result in a change to the Recreation Opportunity Spectrum setting from "semi-primitive" to "roaded natural." The Forest Plan projected that about 7,000 acres would be affected during the first decade of the Plan. The current amount of change (3,000 acres) is less than projected in the Forest Plan.

A-2 Recreation Direction Meets Visitor Expectation

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Direction meets expectation of visitor	Annually	Adverse comments or correspondence

FINDINGS

In implementing our recreation programs and from public comments received, the following recreation items surfaced:

1. Cave Mountain Campground was closed and lower levels of routine maintenance occurred across the Forest because of budget limitations. The campground closure generated numerous comments requesting reopening of the campground. The campground was closed because it was more physically separated from other existing campgrounds, making it more costly to maintain.
2. New campers continue to ask for garbage service but most become enthusiastic supporters once they understand the reasons for the pack-in/pack-out policy, namely grizzly bear concerns on the Rocky Mountain Ranger District and the lack of funding to provide garbage service.
3. At Spring Creek Campground late season user conflicts are occurring between day-use visitors, horse-using hunters and overnight campers. To resolve the conflict, a new trailhead is needed in the area.
4. Numerous favorable comments have been received about the evening program at Crystal Lake Campground. New signing on the highway has attracted more recreationists to the campground.

Recreation

5. Several complaints have been received about the lack of adequate road signing. This situation results in travellers being misdirected onto low-standard roads or unable to find recreation facilities. Lack of adequate signing is also apparent on the Forest trail system. These complaints were verified during a field review of the Forest signing program during the summer of 1991. As a result, the Forest is updating Forest manual direction on signing to meet new Regional standards and create uniformity in recreation site signing across the Forest. The Forest will conduct a training session on signing roads and trails during the winter of 1992.

6. Comments on foul-smelling toilets continue to be received. This problem will continue until we are funded to build new precast concrete toilets with the latest ventilation techniques. We anticipate funding within the next 5 years. We will continue to emphasize toilet pumping and cleaning procedures that will reduce odors in our existing toilets.

7. A number of people commented that our campground fees are too high. The Forest raised fees this year to \$6 for both Crystal Lake and Summit Campgrounds. The fees were also raised to \$5 for Thain Creek, Dry Wolf, and the four campgrounds along Highway 89 in the Little Belt Mountains. All other campgrounds have had a fee of \$5 since at least FY 1990. These fees are comparable to other fees charged within the Region and reflect charging a price that offsets some of the maintenance costs for the facility while not underpricing the private campground sector. The majority of these fees are returned to the Forest for recreation use.

8. A number of campers continue to ask that firewood be made available. This is especially a problem in the higher use campgrounds where wood is nonexistent or difficult to gather. The Forest needs to determine a means of providing firewood where economically possible and/or notifying the public, in advance, where this is not possible.

A-3 Recreation Use

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Actual use of developed & dispersed recreation compared with projected use levels	Annually	+/- 25% variance yearly or +/- 10% over a 5-year period

FINDINGS

This year past figures for FYs 1988 and 1990 have been changed to more accurately reflect actual campground use. Use at private facilities, like cabins and ski areas, had previously been reported in this monitoring item and artificially inflated the data. In this Monitoring Report the use data no longer includes recreation use on private developments within the Forest.

Developed recreation associated with picnicking and camping rose 12%, reflecting the increasing popularity of this activity, a trend that has occurred since Forest Plan monitoring began.

Non-wilderness dispersed recreation increased 28% over last year. This increase is largely a result of increased automobile travel reported on the Rocky Mountain District, which had underestimated travel associated with U.S. Highway 2 in the Marias Pass vicinity in previous Monitoring Reports.

Wilderness use remained nearly at the same level as the previous year and continues to be well below Forest Plan projected use. Limits of acceptable change standards are being exceeded in a few areas (see Appendix A).

Recreation

The above figures may reflect the decreasing amounts of recreation time available to the public, and the handiness of campgrounds for short vacations. It is difficult to see a trend with non-wilderness dispersed recreation, which has gone up and down over time but never reached the levels of FY 1987. Wilderness use has remained about the same for the last 3 years and has been averaging 72% of the Forest Plan projected usage.

Table A-3a RECREATION (Thousand Visitor Days)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Developed Recreation	169	145	179	205	241	271					
Non-Wilderness Dispersed Recreation	614	581	384	450	416	535					
Wilderness	86	54	42	60	64	63					

Table A-3b SUMMARY ACTUAL vs PROJECTED RECREATION USE

Activity	Unit*	Plan Projected (Annual Avg.)	Actual Average to date	Percent of Projected Use
Recreation Use - Developed	M RVD	169	208	123%
Recreation Use - Dispersed (non-Wilderness)	M RVD	614	473	77%
Recreation Use - Wilderness	M RVD	86	57	66%

A-4 Condition of Developed Sites

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Recreation condition of developed sites	Annually	Less than acceptable standards, public safety hazards not corrected by 1990, poor conditions not corrected by 2005

FINDINGS

The physical condition of developed sites is largely a reflection of funding available in Recreation Operation and Maintenance and in Recreation Capital Investment. The Forest Recreation Operation and Maintenance budget for FY 1991 was 10% less than the previous year. Existing funding is not adequate to provide needed maintenance.

No recreation capital investment funds were available except for construction of new trailheads along the Divide Road. Priorities will be the rehabilitation of existing facilities rather than new construction.

Recreation

A-5 Recreation Opportunity Guide

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Recreation Opportunity Guide	Annually	Failure to complete by 1986

FINDINGS

The status of the Recreation Opportunity Guides(ROG) has not changed since last year. Both the Musselshell and Judith Ranger Districts have been unable to complete these because of low funding levels.

The Forest has not received specific complaints about the incompleteness of the Recreation Opportunity Guides on the two remaining Ranger Districts. However, the public continues to request information about recreation opportunities throughout the Forest, in both non-wilderness and wilderness areas. Our ability to disperse the public use across the Forest would be greatly improved if ROG's were available and adequately publicized. Visitors could be encouraged to use little known areas and possibly relieve some more heavily used areas of the Forest.

RECOMMENDATIONS

- * The Forest should continue to seek creative means for completing the ROG's through partnerships with colleges, universities, youth, and volunteer programs.
- * Consider creating pocket guides of key areas of the Forest.

A-6 Off-road Vehicle Damage & Travel Plan

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Off-road vehicle damage & Travel Plan effectiveness	Annually	Conflicts with Forest Management Area goals. Increase of 20 or more situations or variances

FINDINGS

This standard is monitored by two items. The first item is the status of the Forest Travel Plan as it relates to Forest Plan goals. The Forest presently utilizes the Forest Travel Plan that was revised in FY 1988 specifically to implement the recreation settings in the Forest Plan. Revisions to the Travel Plan are done as conflicts with management area direction, user conflicts, changed conditions, or unacceptable resource damage is identified in site-specific project analyses. During FY 1991, new roads were authorized for construction in decisions to harvest timber in both the Mill-Lion and South Fork areas of the Jefferson Division of the Forest. In both of these decisions, new roads constructed to harvest timber were closed at the time of construction to avoid establishing public use. We anticipate that within the next five years, the Forest Travel Plan map will be revised to reflect the accumulation of travel planning decisions made on our site-specific projects since 1988 (when the last Travel Plan map was printed).

Recreation

The second item is the number of Forest Travel Plan incidents noted and the number of violations recorded annually. The Forest had 44 road and trail violations reported. Of this total, thirteen individuals were cited with a violation notice. Citations can only be issued when the violator is known. The number of incidents reported has risen. Situations on the districts are as follows:

Rocky Mountain Ranger District--11 violations were reported, compared with 34 in FY 1990. There was evidence of a number of travel plan violations in the vicinity of Sawmill Flat in the Badger-Two Medicine Area. However, the violators were not identified and no violation notices were issued. The Sawmill Flat area has historically been a problem area for travel plan violations because traditional use patterns have been difficult to change. Prior to the Travel Plan regulation, hunters accessed the Flat by vehicle to setup their hunting camps. Old seismic roads in the vicinity of the Flat provided hunter accessibility around Sawmill Flat. The 1988 travel plan regulations represented a significant change in the historic use of the Sawmill Flat area. Enforcement in this area has been difficult without regular Forest Service presence.

In the Willow Creek area, travel plan violations occurred in three locations. These three areas have historically seen violations and citations have been issued on several occasions in past years. District personnel observed one of the three violations experienced in FY 91 and issued a violation notice (citation).

Based on the questions received throughout the year, public awareness of the "B Area Restriction" is needed. Some hunters were amazed to learn that snowmobiles could be taken off-road and off-trail on non-wilderness land along the Front.

Judith Ranger District--In FY 1991, four violations were reported on the District, compared to 5 in FY 1990. In several instances, recreationists had discovered old trails that enabled them to bypass locked gates and travel on closed or restricted roads.

Musselshell Ranger District--15 violations reported, compared with 4 last year. Off road vehicle damage continues at the rate of \$2-3000 worth of damage annually, most of which is attributed to off-road use by 4x4 vehicles and trail damage by motorcycles.

Kings Hill Ranger District--14 violations reported, compared with 5 last year. The District had more funding for law enforcement and was able to do more weekend travel plan enforcement, resulting in this increase. Overall, compliance with the Travel Plan regulations is good. Some violations do occur in the Deep Creek Park area during the hunting seasons. No significant damage is occurring and no variances were granted.

The following table summarizes the Travel Plan Violation Notices issued on the Forest.

Table A-6a TRAVEL PLAN VIOLATION NOTICES ISSUED

Fiscal Year	Rocky Mt RD	Judith RD	Musselshell RD	Kings Hill RD	Total
1989	10	0	4	4	18
1990	0	4	4	4	12
1991	1	4	4	4	13

Recreation

Table A-6b TOTAL TRAVEL PLAN VIOLATIONS REPORTED

Fiscal Year	Rocky Mt RD	Judith RD	Musselshell RD	Kings Hill RD	Total
1989	13	0	4	10	27
1990	34	5	4	5	48
1991	11	4	15	14	44

The increase in violations reported is not an indication that off-road vehicle travel has become an enforcement problem. The sizeable increase is a result of increased Forest emphasis on enforcement of Travel Plan regulations. In the first years of the new Travel Plan regulations, the Forest emphasized an educational approach rather than an enforcement attitude in implementing the travel regulations. In more recent years, with better understanding of the Travel Plan regulations and improved signing, the Forest has recognized its responsibility to enforce the regulations.

RECOMMENDATIONS

To curb noncompliance in areas where repeated violations occur, the Forest should plan increased patrols during the time periods when violations have traditionally occurred. The Forest needs to begin assembling all previous Travel Planning decisions from the NEPA documents implemented over the last five years to prepare for the update of the Travel Plan Map.

- * Improve the Forest's signing and public information programs for Travel Planning.

A-7 Condition of Visual Resources

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Condition of the visual resource meets objectives in Forest Plan	Annually	Deviation from approved VQO's, ID Team review of environmental analyses

FINDINGS

Two timber sales were monitored for compliance with Visual Quality Objectives (VQOs): the Mill-Lion and Deadhorse/Bluff Timber Sale Analyses. VQOs were assessed and met from the major viewpoints of Road No. 487 and Trail No. 440 in the Deadhorse/Bluff Timber Sale. For Mill-Lion, VQOs were assessed and met from Spring Creek Road No. 274. No deviations from approved VQOs were noted.

The Forest continues to meet the visual resource objectives as described in the Forest Plan.

A-8 Cultural Resource Protection

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Cultural Resource Protection - selected sites once/5 years	Annually	Less than 10% accomplishment/year

FINDINGS

The objectives for the management of cultural resources were partially met during fiscal year 1991. During FY 1991, roughly 40% of the identified projects requiring cultural resource input, were completed on the Lewis and Clark National Forest. This percentage includes survey for cultural resources, input into the NEPA process on identified projects, and 36 CFR 800 compliance procedures. Twelve cultural resource sites were identified, inventoried, and evaluated during the fiscal year, but none of the eligible sites were nominated to the National Register of Historic Places, as specified in Management Standard A-7.

Although several cultural resource sites were inventoried, evaluated, and protected, none were interpreted. Discussions were held with several Blackfeet elders regarding the interpretation of several pictograph sites in the Gibson Reservoir area, but no cultural resource sites interpretive plans were developed in FY 1991.

The cultural resource program would be enhanced if several projects could be completed. First, an overview of the prehistory and history of the Forest has not been completed. Second, the Forest has not developed a schedule for visiting cultural resource sites every five years, as specified in the Forest Plan monitoring. And third, no list of sites (specified in Table 5.1 of the Plan) has ever been compiled on the Forest.

To date, no comprehensive cultural resource assessment on the evidence of man's activities and structures within the wilderness has been completed. One study, completed in 1990, documents the majority of the Forest Service administrative sites within the wilderness areas on the Forest.

The monitoring requirements for cultural resources were not met during FY 1991. No cultural resource sites were monitored during the year and no assessment of current conditions was made. Modifications to the existing cultural resource monitoring requirements are recommended to assess impacts to sites in project areas. Monitoring plans should also be established for cultural resource sites in high recreational use areas.

RECOMMENDATIONS

The monitoring item for cultural resource protection should be clarified in more specific terms to ensure the effectiveness of the Forest's cultural resource protection measures. A list of sites should be compiled and a rotation schedule should be developed to monitor these sites.

The requirement to nominate all eligible sites should be reassessed. Nomination of cultural resource sites to the National Register is a lengthy process which, if pursued for each eligible site, would greatly limit the management of cultural resources on the Forest.

The Forest should re-evaluate the management of cultural resources within the wilderness, considering factors like adaptive reuse, interpretation, maintenance of historic buildings, and site stabilization. Forest Plan standards should be clarified (paragraph 8 page 3-80 and paragraph 2 page 3-82).

WILDERNESS

B-1 Wilderness - Quality of Ecosystem

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Wilderness - maintenance of existing quality of ecosystem	Annually	Degradation of environment

This monitoring item was deleted from the Forest Plan under Amendment No. 3 because wilderness monitoring has been outlined in detail in the Bob Marshall, Great Bear, Scapegoat Wilderness Recreation Management Direction (Forest Plan Amendment No.1).

B-2 Bob Marshall-Great Bear-Scapegoat Management

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Bob Marshall-Great Bear-Scapegoat Management Direction	Annually	Failure to meet time table established in Appendix U of the Plan

FINDINGS

The monitoring results are presented in the annual Wilderness Report in Appendix A of this Monitoring Report.

B-3 Change in Roadless Inventory

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Change in Roadless Inventory	Annually	+ or - 10% projected change in roadless inventory

FINDINGS

During FY 1991, the Turkey Salvage Timber Sale was sold. This sale will affect 175 acres of the Tollgate-Sheep Roadless Area. Since the Forest Plan was implemented in 1986, 1270 acres of the 1,002,232 acres of inventoried roadless area have been affected by timber harvest or road construction. Another 1,730 roadless acres are in approved projects that will be implemented in later years.

By the end of the first decade, 0.3% of the roadless acres would be affected by management practices, well within the number of acres projected in the Forest Plan.

WILDLIFE

C-1 T&E Species: Grizzly Bear Habitat

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Grizzly Bear - maintain occupied habitat capacity	Annually	Any indication of downward trend in grizzly bear population

OBJECTIVES

- Monitor the maintenance of suitable and occupied grizzly bear habitat to detect any indication of a downward trend in population.
- Follow the goals and objectives set forth in the Wildlife/Fisheries Program Document for the Lewis and Clark National Forest.

METHODS

Biological evaluations were developed based on the goals, standards, and guidelines contained in the Forest Plan (pages 2-32 to 2-34 and Appendix H, I, J, K, and L). The grizzly bear cumulative effects model as described in the Forest Plan (Appendix L) was implemented.

Monitoring is conducted as recommended in the revised grizzly bear recovery plan. Population data collected includes females with young (2 or 3 year olds) and females with cubs of the year.

FINDINGS

Since 1987, monitoring efforts have been made to record sows with young (2 or 3 year olds) and sows with cubs of the year. Monitoring results from 1987 to 1991 have demonstrated occupancy by sows with cubs in all six Bear Management Units (BMU) on the Rocky Mountain Front.

Fiscal year 1991's survey sighted 3 sows with 6 cubs within three of the six BMUs, and 4 sows with 7 young within three of the six BMUs. For fiscal year 1991 (see Table C-1a) five of six BMU's have demonstrated occupancy by females with young if the sightings of females with cubs and females with young are combined. Five of six BMUs during a 3 year period (1989-1991) have had sightings of females with cubs. This data does not allow assessment of population size; but, it does indicate the beginning of a trend toward occupancy of each BMU by sows that reproduce during a three year period.

Two long-term monitoring transects were established in 1989 to acquire trend data for bear activity. These transects are located along the North Fork of the Sun River and in the Renshaw Mountain-Willow Creek area, and were monitored in June 1991. No grizzly tracks were found on either of these transects in FY91.

To date it appears that the Teton-Sun (TETSU) BMU is the most consistent in producing sows with cubs. However, this may be a function of our reporting system and not a true picture of the BMU to produce grizzly bears. The BMU that produces the least grizzly bears is the Dearborn-Elk Creek BMU (DEAEL). During the Rocky Mountain Front Studies, Keith Aune stated that grizzly bears were most difficult to trap within this BMU.

Wildlife

The reasons for these difficulties are unknown at this time. Table C-1a displays the trend information that has been gathered to date.

Table C-1a TREND MONITORING INFORMATION FOR SOWS WITH CUBS OR YOUNG GRIZZLY BEAR MANAGEMENT UNITS (BMU'S)

	BADTW (11)			BIRTE (15)			TETSU (18)			NORFO (17)			SOUFO (21)			DEAEL (23)		
YEAR	Fm	Cb	f/y															
1987	2	3	1/2	3	4	1/4	1	2	0/0	1	1	1/1	0	0	0/0	0	0	0/0
1988	0	0	0/0	3	8	0/0	1	3	1/2	0	0	0/0	1	2	0/0	0	0	0/0
1989	2	3	0/0	1	2	2/5	1	2	0/0	3	3	1/1	0	0	0/0	0	0	0/0
1990	2	3	0/0	0	0	2/4	1	1	1/2	1	2	1/1	1	2	1/2	0	0	0/0
1991	1	2	1/2	0	0	2/4	1	2	0/0	0	0	0/0	1	2	0/0	0	0	1/1

Fm=female grizzly

Cb=cub grizzly

f/y=female with young

BADTW = Badger Two Medicine

BIRTE = Birch/Teton

TETSU = Teton/Sun

NORFO = North Fork

SOUFO = South Fork

DEAEL = Dearborn/Elk Creek

To evaluate the effectiveness of a buffaloberry release project for grizzlies (Bear Tree Challenge), four transects were established in FY 1990 to monitor berry production; two within and two outside treated areas. The transects were monitored in August 1991 and preliminary results showed a lower berry production outside of the treatment areas than when they were established in 1990. Buffaloberry plants within the treatment areas have resprouted since the application of fire in the spring of 1991; however, they are not large enough at this time to produce berries. In 1991, two additional transects were established within the Bear Tree Challenge Project area, one was within the actual harvested area.

Law enforcement efforts were continued in order to deter the illegal take of grizzly bears on the Rocky Mountain District. As in 1990, the District's Law Enforcement Officer logged 24 patrol days that had grizzly poaching deterrence as a major focus. These patrols were in the North Fork Sun and Badger-Two Medicine BMUs.

Biological evaluations were completed in response to three Forest management activities within grizzly bear habitat (Management Situation 1). The activities were: 1) timber harvest in the Bear Tree Challenge; 2) Clarey Coulee Prescribed Fire for habitat improvement; and 3) Renshaw Electronic Sites. All three biological evaluations resulted in a no effect or beneficial effect to the grizzly bear.

As in 1990, there were again seven problem bear incidents handled under the Rocky Mountain District's "Problem Bear Policy." Four of these incidents involved grizzly bears. Actions taken included posting bear warning signs, notification of MDFWP personnel, and removal of attractants.

During the summer of 1991, activity layers, grazing layers, and winter range layers were drafted for the Teton-Sun and Dearborn-Elk BMUs. These will be scheduled for digitizing during the winter of 1992.

Classification of the south landsat scene for the Rocky Mountain Front was completed this fiscal year. This information will enable the Forest to prepare a vegetation map including lands south of the Teton River to Rogers Pass. However, the areas within the Canyon Creek and Gates Park fires have not been adjusted to reflect vegetation changes since these fires. As agreed by the managers of the Northern Continental Divide Ecosystem, remapping of the Rocky Mountain Front will begin in FY 1992 with thematic mapping landsat scenes in greater detail.

During 1991, the Forest supplied the Flathead National Forest with maps of all BMU boundaries and Management Situation (MS) boundaries on the Lewis and Clark National Forest. This information will be digitized and entered into a digital data base for the mapping of the entire Northern Continental Divide Ecosystem.

When one compares the Management Situations in the Badger-Two Medicine (BADTW) BMU with the adjacent Management Situations in Glacier National Park and the Flathead National Forest, there appears to be an error in the BADTW BMU. All the ground adjacent to the highway corridor is mapped as MS-1 with the exception of land on the Lewis and Clark National Forest, which is mapped as MS-2.

Using the Interagency Grizzly Bear Guidelines for mapping of Management Situations; the mapped situation does not match. MS-2 states "Current information indicates that the area lacks distinct population centers; highly suitable habitat does not generally occur...Habitat resources in Management Situation 2 either are unnecessary for survival and recovery of the species..."

During the analysis process for the Chevron/Fina EIS the area along US Highway 2 that borders Glacier National Park in the Badger-Two Medicine Bear Management Unit (designated MS-2) was discussed as an important travel corridor for grizzly bear as well as other ungulates. This area functions as a travel corridor for ingress and egress from the Park lands to National Forest System Lands.

RECOMMENDATIONS

- * Based on the analysis that was completed for Chevron/Fina, enough documentation exists to warrant a change in this area from MS-2 to MS-1. This modification will make the mapping and management direction consistent within this area.

C-2 Gray Wolf, Bald Eagle, Peregrine Falcon

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Gray Wolf, Bald Eagle, Peregrine habitat capacity	Annually	Deterioration or continuing disturbance on more than 5% of suitable unoccupied habitat

METHODS

Evaluate Forest compliance with the gray wolf recovery plan (USFWS 1987). Monitor suitable bald eagle nesting habitat for re-occupancy according to methods described by the Montana Bald Eagle Working Group, 1986; monitor the distribution of wintering bald eagles. Survey historic and potential peregrine eyries for occupancy.

Wildlife

WOLF FINDINGS

ROCKY MOUNTAIN DIVISION

To determine the status of wolves on the Rocky Mountain District, an intensive survey/monitoring project has been ongoing since December 1989 (FY 1990). The initial survey revealed a lone male wolf regularly using the Sun River drainage, and a pack of 5 wolves regularly using the Dupuyer Creek drainage during 1989 and 1990. The survey work completed in 1991 indicates that the lone wolf in the Sun River continues to use its established territory. The wolf pack in the Dupuyer Creek drainage has disbanded or lost at least two of its members. The remaining pack has shifted its territory north onto the Blackfeet Indian Reservation and adjacent Lewis and Clark National Forest lands.

The survey work confirmed 35 sightings of wolves on or adjacent to the Rocky Mountain District, including 6 multiple sightings (two or more wolves together). Over 35 miles of wolf tracks were followed and mapped. Analysis of 25 wolf scat collected in 1989 and 1990 was completed and documented in an annual report.

Biological evaluations were completed for the gray wolf in conjunction with the same projects discussed for the grizzly bear (Bear Tree Challenge, Clarey Coulee Burn, Renshaw Electronic Sites). Determinations of "no effect" on the wolf and its habitat were made in all three projects.

JEFFERSON DIVISION

There were four wolf sightings recorded on the Jefferson Division again this year. These four sightings were of individual wolves or a single track. These sightings were forwarded to the USFWS to incorporate into their data base in accordance with the Recovery Plan direction (USFWS, 1987). Only one of the sightings could be validated. Three of the sightings could not be followed up nor was any track information found to verify what was seen. One of these sightings reported a dead wolf along U.S. Highway 12. This sighting was dismissed after additional investigation verified that a large german shepherd dog had been seen feeding on a road kill in the vicinity of the dead wolf reported sighting.

Presently, it is hard to determine just what is taking place with wolves in the Jefferson Division. There is not enough factual information to determine if all sightings are valid. However, some of the sightings have been of tracks fitting the criteria for wolf. With this limited information, the evidence to date indicates the presence of a lone wolf or wolves moving about the Jefferson Division.

BALD EAGLE AND PEREGRINE FINDINGS

There are currently no known active nest sites of bald eagle or peregrine falcons on the Lewis and Clark National Forest. There were observations of 8 bald eagles on the Rocky Mountain District. Most observations were made during winter in the Teton and Sun River drainages. There were four summer observations indicating the possibility of one or more nest sites. Observations of bald eagles were recorded and added to the Forest data base. Management practices that could potentially affect wintering bald eagles (Bear Tree Challenge, Clarey Coulee Burn, Renshaw Electronic Sites) were reviewed in accordance with Forest Plan direction.

One reliable observation of a single peregrine falcon was reported in the Badger Creek drainage during July, 1991.

Forest Service biologists cooperated with USFWS and MDFWP biologists in completing bald eagle surveys during the month of January 1991. Participating in the National Bald Eagle survey, Forest Service biologists reported a total of 36 eagles observed on January 11, 1991 (Midwinter Bald Eagle Survey):

31 Bald Eagle (Adults 10, Immature 21)

1 Immature Golden Eagle

4 unknown bald or golden eagles were observed along the Missouri River (National Transect #4).

Another Forest Transect was completed on January 10, 1991 along the Musselshell River and Cottonwood Creek. This transect yielded 23 eagle sightings:

15 Bald Eagle (Adults 7, Immature 8)

5 Golden Eagles (Adults 2, Immature 3)

3 unknown eagles.

Two bald eagle nests are located on private lands between the Rocky Mountain and Jefferson Division. In 1991 the "Craig" bald eagle nest remained unoccupied and the "Cascade" nest had a single adult sighted within the nest territory.

A survey of historic peregrine falcon nest sites east of Great Falls was not conducted during FY 1991.

C-3 Elk Winter Range Capacity

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Elk: winter range capacity (population level), sex and age ratios	Annually	Decrease of 5% or more in winter range capacity as measured by a 3 year running mean of elk population level, sex, and age ratios.
Elk: habitat effectiveness	Annually	Decrease of 10% or more in habitat effectiveness in any timber compartment on the basis of a 100% annual sample. The goal is to complete habitat effectiveness calculations for all compartments prior to the Forest Plan Revision.

METHODS

Information on elk population levels and sex:age ratios were obtained from Montana Department of Fish, Wildlife, and Parks (MDFWP) progress reports, personal communications with MDFWP biologists, and research reports.

Elk habitat effectiveness ratings were calculated by the percent of the sub-compartment in cover and the road density (miles of open road per square mile).

FINDINGS FOR ELK POPULATION LEVEL

During FY 1991, the MDFWP developed a draft Statewide Elk Management Plan. The MDFWP assembled the most current data on elk populations, and developed goals and objectives to aid the State in managing the elk resource. The elk populations appear to be at an all time high in most areas. An emerging issue, elk vulnerability, was identified during the development of this statewide Elk Management Plan. Included in this issue is the question of habitat requirements to maintain a certain bull:cow ratio and provide for a designated

Wildlife

level of hunter opportunity. The Forest Service and the MDFWP are faced with the challenge of integrating this Elk Management Plan with the Forest Plan in order to achieve both agencies' goals.

The Elk Management Plan addresses the issue of maintaining security areas on the Forest to retain elk on public lands and simultaneously providing adequate escape cover to ensure a level of bull survival during the hunting season. The present Forest Plan contains no standard measuring elk security or monitoring items measuring how forest management practices affect security areas. The existing Forest Plan standard applies to road densities and effective cover, and cannot be applied to measure effects on habitat for elk during the hunting season.

RECOMMENDATIONS

Because the Statewide Elk Management Plan and the issue of elk vulnerability is new, its application will be considered in the Five Year Review of the Forest Plan.

FINDINGS FOR ELK HABITAT EFFECTIVENESS

On the Jefferson Division, monitoring activities were concentrated on timber compartments where road construction and timber harvest actions are proposed and where changes in elk habitat effectiveness values are most likely. The Forest released decisions (FEISs) on four timber sales in the Little Belt Mountains. These timber sales were located in Management Areas B and C. Road Management Direction specified for lands within Management Area C continues to be met. Decisions on lands within Management Area B have resulted in less miles of open road per square mile than anticipated in the Forest Plan direction. For example, analysis for elk habitat was documented in the Final EISs for the Moose Creek Timber Sales (20,800 acres) and Spring Creek Timber Sales (36,945 acres). The preferred alternative selected for each of these FEISs maintained effective cover for elk at or above the Forest Plan Standard. To ensure retention of effective cover, road closures or other travel restrictions were imposed to maintain or decrease open road densities. In both of these decisions, the imposed travel restrictions closed more road than anticipated in the Road Management direction described for Management Area B in the Forest Plan. The analysis indicates that Management Area B direction allowing 1.5-3.0 miles of open road per square mile of area cannot be met while providing habitat requirements for elk.

Effective elk cover was also analyzed and documented in the FEIS for the Turkey Salvage Timber Sale on the Judith Ranger District. The analysis revealed that the project area averaged 32% effective cover following the fire. Under the preferred alternative for harvest, this figure would be reduced to 31% effective cover. This reduction was above the 30% Forest-wide Standard. In addition, travel corridors and cover patches were retained in areas of special importance to elk.

In FY 1990, Forest personnel developed a model to electronically compute elk effective cover based on data contained in the Timber Stand Management Record System (TSMRS). This model was used in FY 1991 to compute elk effective cover for five timber compartments (53,000 acres) on the Kings Hill Ranger District. The preferred alternatives selected for the North Divide, O'Brien Creek and Slide Rock Timber sale EAs all maintained effective cover for elk at or above the Forest-wide Standard.

Elk effective cover was also computed for five timber compartments (45,755 acres) in the Castle Mountains on the Musselshell District. The computer model outputs indicate that effective cover levels on four of the five compartments do not meet the Forest Plan Management Direction of 40% for Management Area C (Wildlife/Timber Emphasis). The fifth compartment averages 43%, with one sub-compartment below the 35% Forest Plan minimum standard. Portions of two compartments allocated to Management Areas G and L have effective cover levels well above the Forest-wide Standard of 30%. However, scheduled timber harvest is not prescribed for Management Areas G and L.

Coordination involving proposed hard rock mining activities and elk habitat took place on two proposals for exploratory drilling on the Jefferson Division. Kennicott conducted drilling in the Newlan - Jumping Creek area on the Kings Hill District and Amax completed a project in the vicinity of Yogo Peak on the Judith District. Coordination measures included the regulation of timing and the location of drilling sites and access roads. The reclamation of drill pads and access roads was also required.

Elk habitat values were evaluated by the wildlife biologist on the Kings Hill Ranger District for the Givens Land Exchange proposal. This land transaction involved an exchange of National Forest parcels in Belt Park and Ditch Creek on the Kings Hill Ranger District for a private land parcel near the Haymaker Wildlife Management Area on the Musselshell Ranger District. The effects of this proposal were coordinated with personnel of the Montana Department of Fish, Wildlife and Parks (MDFWP) and the exchange was consummated (see Lands discussion J-3).

Mitigation measures designed to improve elk habitat security were required on the Divide Road reconstruction project on the Kings Hill Ranger District. The District wildlife biologist coordinated with Forest Engineering personnel on the installation of signs and road closures along several adjoining roads. These measures were included in the reconstruction contract for the portion of the Divide Road project between Logging Creek Campground and the Monument Peak Road.

The annual coordination meeting between the MDFWP and the Lewis and Clark National Forest was held at the Judith Wildlife Management Area. Personnel from both agencies visited a cooperative elk winter range habitat improvement project located along the boundary of the National Forest and the Wildlife Management Area. The primary objective of this multi-year habitat improvement project is to maintain elk forage areas by removing conifer regeneration from an old burn and controlling conifer encroachment into natural grasslands. The participants also looked at recent timber harvest areas on the South Fork of the Judith River. There was general agreement that Forest Plan Standards on elk habitat and the Forest's current method of evaluating habitat effectiveness was not addressing the concern of elk vulnerability during the hunting season. It was decided that we should jointly modify the procedure for defining elk security which was recently developed for the Clark Fork River drainage in western Montana (Hillis et al. 1991) and adapt it for use on the Lewis and Clark National Forest. The process would be used to evaluate elk vulnerability on a project area during FY 1992 to determine its application for use on the Forest.

C-4 Bighorn Sheep & Mountain Goat

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Bighorn Sheep & Mountain Goat: Winter range capacity (population level), sex and age ratios	Annually	Decrease of 5% or more in winter range capacity as measured by a 3 year running mean of bighorn sheep and mountain goat population level, sex, and age ratios

METHODS

Data was obtained from MDFWP progress reports, research summaries, and contacts with knowledgeable individuals.

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FINDINGS

Four Forest Service personnel classified and counted bighorn sheep on the Sun River winter ranges in cooperation with the MDFWP.

No sheep were transplanted from the Sun River bighorn sheep herd during the winter of 1991. Removal efforts are planned to continue during the winter of 1992 to supplement other populations within the state.

Table C-4a displays the population trends of bighorn sheep on the Rocky Mountain Division for the area south of the Teton River and north of the Teton River. The Sun River population (south of Teton River) appears to be stable and is maintaining the MDFWP's objective of 800-1000 animals through their hunting seasons and transplanting efforts. The population north of the Teton River appears to be stable in overall numbers and ewes; however, recruitment is in a downward trend. The MDFWP successfully transplanted 32 bighorn sheep (ewes) from Anaconda to this area during 1991. This transplant was undertaken to increase overall sheep numbers and to increase recruitment of lambs into the population.

Table C-4b displays the population trends for the Rocky Mountain goat. The population ranges from remaining stable to increasing (see Hunting District 415). The recruitment of kids into the population remains generally stable to increasing. For example, the total population in Hunting District 414 appears stable, but recruitment into the population appears to be in a downward trend. There has been no development or major disturbing activities on National Forest System lands within this Hunting District since 1985 when the seismic operations for oil and gas exploration were concluded. Presently, the reason for the lack of recruitment in this Hunting District is unknown.

Table C-4a BIGHORN SHEEP POPULATION - Rocky Mountain Division.

MOUNTAIN RANGE	1987	1988	1989	1990	1991	1992	1993	1994
Rocky Mtn South of Teton	908	582	1000	800	900			
Ewes	392	260		400	350			
Lambs	133	134		200	250			
Rocky Mtn North of Teton	127	73	79	90	115			
Ewes	34	25	29	37	60 ¹			
Lambs	23	5	7	12	29			
Total Rocky Mtn Division	1035	655	1079	890	1015			

¹ - 32 sheep were added to the population north of the Teton River during February of 1991.

Table C-4b MOUNTAIN GOAT POPULATION - Rocky Mountain Division.

MOUNTAIN RANGE / HUNTING DISTRICT	1987	1988	1989	1990	1991	1992	1993	1994
Rocky Mtn HD 414	33	28	46	43	32			
Nannies	11	7	17	27	13			
Kids	7	2	6	5	3			

MOUNTAIN RANGE / HUNTING DISTRICT	1987	1988	1989	1990	1991	1992	1993	1994
Rocky Mtn HD 415	56	52	73	58	90			
Nannies Kids	23 13	18 19	31 11	44 7	48 17			
Total Rocky Mtn Division	89	80 ¹	119	101	122			

¹ - Incomplete survey resulted from equipment failure. Data incomplete to determine population trend.

C-5 Other Big Game Species

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORT-ING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Other Big Game Species: Mule Deer, Whitetail Deer, Black Bear, Mountain Lion, population trend, sex and age ratios	Annually	Decrease of 10% or more in habitat capacity as measured by a 3 year running mean of mule deer harvest data and hunting success

METHODS

Data were obtained from the MDFWP progress reports, research summaries, and contacts with knowledgeable individuals.

FINDINGS

In the past four years, 1987 through 1990 the MDFWP has had restricted hunting seasons for mule deer in Hunting District 441 (North part of the Rocky Mountain Front). The first three weeks allow for antlered buck only (no permit required); and the last two weeks permit hunting only for antlered (75) and antlerless (150). Sportsmen and landowners alike supported this restriction when the number of large bucks began to decline. The decrease in bucks can be attributed to a large harvest in 1984 and 1985. During those consecutive hunting seasons, early snows forced deer out of the back country and onto the winter ranges where they were readily accessible to hunters. This strategy has been successful in gradually reversing the downward trend. The present buck to doe ratio is 40:100.

The MDFWP has recommended maintaining these restrictions (Hunting District 441) for 1992. These restrictions require that, during the first three weeks of the hunting season, only antlered bucks may be removed from the entire Hunting District. During the last two weeks of the season, on National Forest any antlered buck can be hunted; and on private lands 75 antlered permits and 150 antlerless permits would be issued.

These hunting restrictions have been supported by the Lewis and Clark National Forest to reverse the downward population trend that resulted during the 1984 and 1985 hunting season.

During FY 1991, no new developments (eg. roads or timber harvest) or habitat improvement projects have been initiated on National Forest lands within Hunting District 441. Therefore, the population recovery response can be totally attributed to reduced deer harvests resulting from the regulated permit system.

Wildlife

C-6 Small Game

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Blue Grouse Harvest Level	3 Years	Decrease of 20% or more in average harvest from previous reporting period

This monitoring item was deleted from the Forest Plan by Amendment 3, dated 1989. Brood observations have been discontinued by the Montana Department Fish, Wildlife and Parks.

C-7 Furbearers

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Distribution of beaver, bobcat, lynx and wolverine based on annual sightings	3 Years	Decrease of 10% or more in the average trapper take from previous reporting period. No sightings reported for three years.

METHODS

Data was obtained from reported sightings of these species by individuals (both private and employees). Sightings are recorded in an electronic data base and used in analyzing effects of proposed projects on their distribution, concentrations and use.

FINDINGS

Table C-7a ROCKY MOUNTAIN DIVISION SIGHTINGS

Year	Furbearer Data
FY 88	1 wolverine trapped
FY 89	1 wolverine sighted and 1 track observed
FY 90	8 wolverines and 1 lynx were observed
FY 91	9 wolverines were observed (3 animal sightings, 6 track observations). 11 lynx (2 animal sightings, 9 track observations).

With both species the tracks represented individual animals because of location and time of observations.

The increase in sightings of wolverine and lynx does not indicate an increase in the numbers of species. Additional sightings are most likely the result of auxiliary observations in conjunction with wolf surveys, initiated in FY 1990.

Table C-7b JEFFERSON DIVISION SIGHTINGS

Year	Furbearer Data
FY 88	6 wolverine sightings
FY 89	0 wolverines sighted
FY 90	November 14, 1989 one wolverine observed crossing road in front of pickup truck near O'Brien Park and July 24, 1990 one wolverine observed running down a rock slide near Lucy Park.
FY 91	2 wolverine detected on the Kings Hill Ranger District. Tracks were sighted again in O'Brien Creek and a live animal was sighted in Adams Creek. One set of lynx tracks were seen in the snow on the Jefferson Division in the headwaters of Lion Creek in November 1990.

Wolverines have been detected at one general location on the Jefferson Division and the low number of animals detected appears to indicate a limited distribution of adults despite suitable habitat.

A computer wildlife sighting data base was developed which is compatible with the system in use by the Montana Natural Heritage Program. The data base is expected to be used to monitor distribution and relative abundance by selected animal species. Implementation of the data base is ongoing.

In a letter (Gorman, 1991) to the MDFWP, the Lewis and Clark National Forest recommended discontinuing the wolverine and lynx trapping seasons on the Jefferson Division. Forest Service biologists feel the meager information on population numbers does not demonstrate the species ability to withstand trapping pressure.

C-8 Old Growth Habitat for Goshawk

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Goshawk active nesting territories	Annually	Decrease of 5% or more in active nest territories as measured by a 100% annual sample of known goshawk nest territories.

METHODS

The goal is to monitor the same territories each year and establish statistical validity; and to select monitoring territories in areas where adverse environmental effects are most likely to occur.

Wildlife

A computer program has been developed to interact with the Timber Stand Data Base and identify timber stands that correlate to specified aerial photo interpretation types. The timber stands identified electronically and timber stands identified by standard aerial photo reconnaissance are mapped and ground-truthed to determine whether they meet the definition of old growth forest, as defined in the Forest Plan (Glossary, page 14). As a result of this process, more acres are examined per project area than are designated for retention as old growth stands.

Old growth stands are selected to provide distribution across different habitat types and to maintain a minimum of 5% within a timber compartment. Using the parameters defined in the draft R-1 Goshawk Habitat Suitability, lower elevation Douglas-fir stands are prioritized and selected. Higher elevation timber stands are generally dominated by lodgepole pine with mixtures of alpine fir or spruce. These mixed stands are prioritized on the basis of their proximity to meadows, seeps, springs, streams, or other environmental factors which contribute to the diversity of plant and animal life beyond that visible in surrounding stands.

FINDINGS

Old Growth Inventory and Designation

Old growth habitat field validation continued for projects in the South Fork Complex FEIS and Mill-Lion FEIS, and a preliminary review was completed for the Little Snowy Mountains. All compartments met at least the 5% minimum standard that was established in the Forest Plan.

Biologists reviewed 112,597 acres and identified 9,418 acres in the Jefferson Division as part of an ongoing Old Growth Forest designation program (this does not include acres yet to be designated in the Little Snowies). The FY 1991 distribution by Ranger District was:

Table C-8a DISTRIBUTION OF OLD GROWTH

Ranger District	Project	Timber Compartment	Acres in Compartment	Designated Old Growth Forest
Judith	Turkey Salvage	46	9,950 A.	350 A. ¹
Musselshell	Spring Creek Little Snowies	633-637 601-603	36,417 A 13,000 A	4,415 A (12%) Not Completed
Kings Hill	Small Sales	772-776	53,230 A.	4,653 A.(8.7%)

¹ Additional acres of old growth will be designated in FY 92.

Analysis of the 53,230 acres in timber compartments 772 through 776 (North Divide) on the Kings Hill Ranger District revealed that within the project area most large (> 200 A.) stands of mature forest were on relatively flat ground in the Harley Park area in Management Area B. The perched water table in these areas contributes to a mix of conifer species (lodgepole, subalpine fir, spruce) with many trees exceeding 20 inches DBH. The areas are probably a subalpine fir/blue joint (ABLA/CACA) habitat type. In the steeper areas trees tended to be small patches (<40A) and aligned linearly along riparian zones; few large stands were found in Management Area A.

Investigations

For a second year, the Forest funded a wildlife Cooperative Education position for a Masters Study student conducting research work on old growth. The thesis research work was completed and the wildlife biologist

was assigned to the Musselshell Ranger District after graduation. The following abstract summarizes this study (Whitford, 1991):

"Old-growth Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) forest stands and Douglas-fir northern goshawk (*Accipiter gentilis*) nest stands were investigated in summers 1989 and 1990. Data were collected from 21 old-growth stands and 12 goshawk nest stands. Objectives of this thesis study were threefold: 1) to recommend refinements to an old-growth forest definition used by the Lewis and Clark National Forest (LCNF); 2) to compare old-growth Douglas-fir stands with Douglas-fir goshawk nest stands in order to evaluate the appropriateness of the goshawk as a management indicator species (MIS) for old-growth Douglas-fir forests on the LCNF; and 3) to examine the applicability of the nesting habitat portion of a goshawk habitat suitability model for the LCNF. Results indicated that old-growth Douglas-fir stands could be identified with minimum age and minimum DBH descriptions. Hence, simplification of old-growth definitions and development of definitions for each forest type were recommended for the LCNF. Differences between old growth Douglas-fir stands and Douglas-fir goshawk nest stands were significant. The northern goshawk was a poor old growth forest MIS on the LCNF. Land managers must identify a valid old-growth forest MIS on the LCNF. Index values produced by the goshawk habitat suitability model for each old-growth stand and goshawk nest stand verified that the model was successful in rating the nest stands higher than the old growth stands. However, index values were virtually impossible to interpret, so further refinement is necessary if the model is to be useful."

Goshawk Nest Territories

Four new territories were detected in FY 1991 for a total of 20 known territories including 3 in the Rocky Mountain Division and 17 in the Jefferson Division. The result of the goshawk monitoring completed from FY 1987 through 1991 is summarized in the following tables:

Table C-8b GOSHAWK (Nesting Territories - Jefferson Division)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Nesting Territories	8	9	11	14	17					
Territories Monitored	3	7	7	9	10					
Territories Active	-	-	-	4	6 (60%)					
Fledged Active Territory	-	-	-	*	*					

* - Attempted to monitor, but data inconclusive.

Table C-8c GOSHAWK (Nesting Territories - Rocky Mountain Division)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Nesting Territories	0	0	0	0	3					
Territories Monitored	0	0	0	0	1					
Territories Active	0	0	0	0	1					
Fledged Active Territory	0	0	0	0	Un- known					

Wildlife

Based on five years of nest monitoring it appears that management actions may have had an effect on five goshawk territories. Abandonment or movement of nest sites within these five territories may be due to timber harvest. Population declines cannot be determined with the available data. Conclusive evidence would have required a survey of all habitat and a determination that all the habitat had been occupied. Under those circumstances, there would have been no room for additional birds and they would have left the area or attempted to nest in marginal habitat. Long term populations would have been affected. However, without conclusive data, it is impossible to determine whether the bird population has decreased due to management actions. Monitoring information can only conclude that there has been an effect on 5 of 20 (25%) known nest territories.

Five years of monitoring coupled with new old growth ideology within the Forest Service, warrants revisiting the Forest Plan direction on old growth. Tom Whitford's master research indicates that allocating old growth based on the goshawk will not result in accomplishing the old growth objective in the Forest Plan. Regional direction implies that in order to maintain diversity, old growth needs to be distributed across all habitat types and forest types. For these reasons, it may be necessary to adjust the old growth definitions and procedures for designating old growth; identify changes in management indicator species; and amend the Forest Plan.

The Forest will continue to use R-1 goshawk model to complete effects analysis for the goshawk, and will continue to record nest territories.

RECOMMENDATIONS

- An Old Growth Forest Inventory and Stand Rating Form published in "Old Growth Habitats and Associated Wildlife Species in the Northern Rocky Mountains", edited by Nancy Warren, Northern Region Wildlife Habitat Relationships Program; was modified to fit the range of conditions found on the Lewis and Clark National Forests. Beginning in FY 1991 the form was used to rank several characteristics of old growth forest stands or blocks (groups of stands). The use of this form will be adopted and incorporated into the Lewis and Clark's procedure for determining old growth timber stands. The procedure for allocating old growth on the Forest will be formally documented in a publication as part of the Forest Plan 5 year review process taking place during FY 1992. This procedure will incorporate the past procedure, regional old growth definitions, and recommendations from the Habitat Relationships Program.

C-9 Special Interest Species

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Special Interest Species: Golden Eagle & Prairie Falcon nesting territories	3 Years	Decrease of 10% or more in active nest territories as measured by a 100% annual sample of selected nest territories.

METHODS

The goal is to inventory and annually monitor a minimum effective sample size (to be determined) of nest territories for each species to detect a decrease of 10% or more in territories from the previous reporting period. The nests to be monitored would be identified in the two Divisions and be representative of the various mountain ranges. Emphasis will be given to monitoring the same territories each year to optimize statistical validity and to select territories for monitoring in areas where adverse environmental effects are most likely to occur.

Biologists recorded and mapped the location and date of sightings of golden eagle and prairie falcon in order to identify activity centers for suspected nest sites. Knowledgeable individuals were contacted for information on known nest sites. Surveys were conducted in suitable nest habitat and around existing nest sites to determine whether new nest sites had been developed. Nest territories were visited during the nesting season to determine the number of active nest sites and nest production.

FINDINGS

Monitoring of territories for golden eagle and prairie falcon did not take place in FY 1991.

An electronic nest record data base was completed for the Forest. The data base is designed to maintain nest records for occupancy and production. It also records the UTM (Universal Transverse Mercator) coordinates of the nest site. This information can be retrieved and entered into a GIS (Geographic Information System) for use in effects analysis at the project level. This data base will be used for all raptor nest sites, not just eagles and falcons.

On the Jefferson Division, a total of 6 golden eagle and 20 prairie falcon territories have been located in past years. Of this total, all of the known golden eagle territories and 17 of the known prairie falcon territories were located and inventoried prior to the development of the Forest Plan. Three additional prairie falcon territories have been located since 1988 in association with other work. All of these known territories were active at the time they were originally surveyed and recorded.

The known nest territories for these two species on the Jefferson Division are located in cliffs, primarily in limestone formations. Foraging occurs on nearby grasslands or other open vegetative types on the National Forest and adjacent private land. Very few of these territories are located in the vicinity of areas where recent timber harvest, road construction or other development activities have taken place or are planned in the near future. As a result, monitoring these territories has received low priority; and few of the territories have been checked during the last five years.

Summary of golden eagle nesting territories is as follows:

Table C-9a GOLDEN EAGLE (Nesting Territories on Rocky Mt. Division)

Description	Pre 1987	1989	1991	1992	1995
Nesting Territories	21	47	47		
Territories Monitored	-	11	0		

Table C-9b GOLDEN EAGLE (Nesting Territories on Jefferson Division)

Description	Pre 1991	1991	1992	1995
Nesting Territories ¹	-	6		
Territories Monitored	-	0		

¹ - Data is incomplete prior to 1991

Wildlife

Summary of prairie falcon nesting territories is as follows:

Table C-9c PRAIRIE FALCON (Nesting Territories on Rocky Mt. Division)

Description	Pre 1987	1989	1991	1992
Nesting Territories ¹	30	53	54	
Territories Monitored	-	6	0	

¹ - Data is incomplete prior to 1989

Table C-9d PRAIRIE FALCON (Nesting Territories on Jefferson Division)

Description	Pre 1991	1991	1992	1993
Nesting Territories ¹	-	20		
Territories Monitored	-	3		

¹ - Data is incomplete prior to 1991

C-10 Cavity Nesting Habitat

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Cavity Nesting Habitat for Northern 3-Toed Woodpecker - percent optimum habitat	5 Years	Reduction in snags to below numbers needed to maintain a viable population level of woodpeckers in any timber compartment as measured by a three year running mean compared to the existing percent optimum habitat

METHODS

An annual Forest review of selected timber sales is conducted to determine effectiveness of snag management guidelines and timber sale administrative guidelines. Monitoring efforts focus on stands where snag densities may change due to management activities.

Cavity dependent species habitat was measured by examining the gain, loss, or no change status of National Forest System acres of mature conifer stands.

Snag and nest surveys were conducted using the methods described in Morrison, et al. (1986) as modified to use monumented section corners as permanent reference points. Breeding bird plots were used to determine the presence or absence of avian species.

FINDINGS

ROCKY MOUNTAIN DIVISION

Four observations of pileated woodpeckers were recorded. These occurred in the Sun River Drainages in the Wilderness.

JEFFERSON DIVISION

The pileated woodpecker was not known to occur on the Jefferson Division at the time the Forest Plan was written. Pileated woodpeckers require 20 inch or larger DBH snags for nesting. This dimension is larger than the 10 inch or larger DBH identified for three-toed woodpeckers in Forest-wide Management Standard C-4 in the Forest Plan (page 2-35). Biologists recorded the following incidental observations of pileated woodpeckers in FY 1991:

On the Judith Ranger District on September 18, 1991, biologists observed two pileated woodpeckers feeding on a ponderosa pine snag. A fair sized cavity was present in a nearby tree, but no sign of recent excavation was evident. The location of this sighting was about 100 yards east of the main South Fork Judith Road and the edge of Smith Flats.

On the Musselshell Ranger District on July 7, 1991, biologists completed a walk-through of the Pasture Gulch area investigating primarily for nesting goshawks and secondarily for pileated woodpeckers. Fresh woodpecker scaling of bark (to access insects) was detected where pileated woodpeckers had been observed in previous years. A medium to large woodpecker was heard "drumming" to the south end of the drainage. Results of the survey were inconclusive in determining the presence or absence of pileated woodpeckers in the area.

On the Kings Hill Ranger District on September 15, 1991, biologists recorded the presence of several large woodpecker holes in a large tree in Stand 775-07-037 located on the south side of Harley Creek. It is probable that the approximately 5 inch tall by 4 inch wide cavities were excavated by a pileated woodpecker.

The retention of snags is affected by the firewood cutting policy and the timber harvesting activities on the Forest. FY 1991 figures demonstrate a continuing decline in the demand for firewood. Section E-9 of this report displays the annual sale of firewood on the Lewis and Clark National Forest. Implementation of the Forest-wide management standard for snag retention was monitored on the Kings Hill Ranger District in FY 91. An Interdisciplinary Team reviewed the degree of success in meeting Forest Plan Snag management objectives in timber sale units and areas open to permitted woodcutting (Sasse, 1991). The review focused on a mix of old and recent small and large timber sales as well as ongoing woodcutting areas.

On the Kings Hill Ranger District, snag management objectives have not been integrated with the personal use and commercial woodcutting permit program. The majority of the roaded portion of the Jefferson Division is open to firewood harvest; designated Old Growth Forest stands are included in the area open to permitted woodcutting. There is a clear conflict in management objectives for maintaining snags over time in Old Growth Forest stands and across the District while at the same time permitting the public to legally cut the same snags for firewood.

Options to reduce impacts on snags include: restricting the use of heavy equipment to selected commercial woodcutting sales open to competitive bidding; direct personal use and commercial woodcutting into areas after designated snags have been marked; and evaluating the feasibility and economics of requiring timber sale purchasers to yard unutilized material (YUM) onto decks. Limited access could then be provided to the decked firewood.

Wildlife

Forest-wide, there has been a general downward trend in the number of permits and cords sold to personal use and commercial woodcutters from FY 87 through 1991 (see Timber Section, Table E-9a). Firewood sales in FY 1991 were approximately one half of those in FY 1987. The decline in demand in 1988 was due to the extreme fire conditions which limited the number of people gathering firewood. Prices increased nationally from \$2.50/cord in 1990 to \$5.00/cord in 1991; sales continued to be a 2 cord minimum purchase 1990 to 1991. On the Kings Hill Ranger District, which sells the majority of firewood on the Forest, performance bonds were first required for commercial woodcutting in 1990; in 1991 erosion and road grading costs of about \$1.00/cord were added to the base \$5.00/cord price.

Information obtained by the ID Team in reviewing regenerating timber sale units revealed that suitable snags and green trees with the potential to replace existing snags were virtually eliminated during timber harvest. Past clearcut units were generally devoid of snags, while adjacent wild stands contained numerous suitable snags.

The Forest has initiated a change in timber sale layout to include the designation (marking) of retention snags. Prior to 1990, snags were not designated for retention in most timber sales (e.g., Central Park, Lone Tree, Corral Salvage). In recent years, snags were marked prior to sale on small (Powerline, Cross Roads, Tree Cache) and large (Moose Park, Little Moose) timber sales. These changes reflect increased awareness and concern for snag management in the planning, marking, and contracting of timber sales.

Snag management standards have been addressed in recent NEPA analyses. However, better follow up is needed to insure implementation of the snag management standards. Pre-sale crews should mark the largest snags and green trees to replace snags within the harvest unit, rather than first 10+ DBH trees encountered in the unit. Marking could be accomplished with paint or Wildlife Tree signs. Retaining snags and green trees to replace existing snags should help to avoid a "clean cut" look and address the "Looking Good" memo (Gorman, J. D. 1991). The Ranger District needs to address existing (short-term) and replacement (long-term) snag management in prescriptions, marking guides, and marking spot checks. To minimize losses due to firewood cutting, marking should be concentrated on the viable snag trees located some distance from accessible roads. To ensure snag retention during harvest and purchaser piling operations, snags should be marked by the Forest pre-sale crew.

In one case, commercial woodcutters operated outside of post-timber sale harvest units and in old growth stands. Ground disturbance occurred when skid trails were pioneered into an old growth stand. Once this activity was discovered, steps were taken by the sale administrator to correct the situation.

On the Central Park Timber sale, considerable variation existed in the post-harvest snag densities. Variation was dependent on the harvest method used. In units harvested with a mechanical faller-buncher machine, the most snags were removed. Numerous snags remained in the units cut by fallers using chainsaws.

FINDINGS SUMMARY

Forest Plan snag management standards are not being met on many of the clearcut timber harvest acres. In some cases short term (existing snags) snag management was considered in timber sales, but long-term snag management (green trees to replace snags over the rotation) was not considered. Integration of snag management standards was ineffective in most timber sales from FY 1987 through FY 1989 and generally effective in FY 1990 through FY 1991. Effective integration of snag management standards included the pre-sale timber marking of snags and green trees to insure post-sale snag densities met Forest Plan standards.

Most areas are accessed by roads constructed for removal of logs and are also accessed and prone to removal of snags by permitted personal use and commercial woodcutters. District policies to increase woodcutting utilization of snags conflict with Forest Plan snag management standards. Year-long road closures for biological diversity (elk, wolverine, fisheries, snags, etc.) have been the only demonstrated

effective way to meet Forest snag management objectives under existing woodcutting policies. Permitting unmanaged public access to allow cutting of standing snags for even one summer may be enough to eliminate habitat for cavity dependent wildlife for the next 110 years of the rotation. The Forest Plan did not consider the need to retain large diameter (+20 inch) dead-down logs for prey species and other wildlife habitat. See discussion on importance of large logs to red-backed voles (USFS, 1991 page E-6), and general dead-down wood ecology (Thomas, J. W. ed. 1980, p. 78 - 95).

RECOMMENDATIONS

- Re-examine the Forest policy on personal and commercial firewood cutting. Incorporate appropriate changes as part of the 5-year Forest Plan review to insure permitted firewood harvest does not adversely impact snags needed to meet the Forest snag management standards over the stand rotation. Revise the Forest woodcutting policy from the cutting of standing dead and dead-down logs anywhere on the Forest, to a policy of cutting only in designated areas.
- Utilize year-long vehicle restrictions and road closures to aid in maintaining snag habitat.
- * Implement an information and education program to inform the public about the value of snags. Include methods to detect rot in snags and cavity use of standing snags.

C-11 Aquatic Habitat

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Aquatic Habitat Condition/Quality (Cutthroat Trout, Brook Trout, Rainbow Trout)	3 years	Decrease of 5% or more in fish habitat capability based on predicted or actual changes in water quality or fish habitat parameters in any stream or lake

METHODS

Monitor impacts from management actions that take place on the Forest, such as timber sales, wild fire, prescribed fire, and grazing.

FINDINGS

ROCKY MOUNTAIN DIVISION

During the summer of 1991, the Rocky Mountain District monitored fish populations on a total of 148 miles of stream located within the area burned by the Canyon Creek and Gates Park Fires. Approximately 27 stream miles within the burned area were monitored for changes in population composition, fish density, habitat quality, and water chemistry. There were no detectable differences between baseline data and data collected in 1990 and 1991. To this date, the fires do not appear to have adversely affected fish populations and have affected the natural variability of fish habitat on only 2 streams.

Six streams on the Rocky Mountain District were surveyed to determine the presence of purestrain westslope cutthroat trout; and two streams were evaluated for the presence of shorthead sculpin. Cutthroat trout were

Wildlife

collected and sent to Missoula for genetic analysis, while the sculpins were sent to experts in Canada for evaluation. Results will not be available until 1992.

JEFFERSON DIVISION

The overall condition of fish habitat and the condition of streamside shrub communities were evaluated on three streams on the Kings Hill Ranger District and two streams on the Judith District. One of the five streams evaluated for riparian/fish habitat conditions was found to have streambanks and/or fish habitat damaged severely due to livestock trampling. Over-browsing of the streamside shrub community was occurring on this same stream, as well as, one of the other four streams evaluated.

Specific evaluations of spawning gravel conditions were conducted on four streams on the Kings Hill Ranger District associated with grazing and existing roads. The quality of spawning gravels were found to be in relatively poor condition on all four of the streams evaluated. Fine sediment levels ranged from 39% to 49%. Sediment levels in two of the streams were well over the 32 to 42% levels found in relatively undeveloped drainages of similar geologies. It is likely that sediment delivery from roads in combination with sediment from livestock grazing caused the elevated sediment levels in the two streams.

Summary of FY 1987 through FY 1991 number of streams sampled is as follows:

Table C-11a NUMBER OF STREAMS SAMPLED FOR AQUATIC HABITAT CONDITIONS

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Stream Intragravel Sediment	-	4	4	6	4	4					
Stream COWFISH Model	-	2	3	5	12	5					

Recommendations

- * The Forest Plan does not contain specific standards for fish habitat. See recommendations and related discussion for monitoring items F-7 and F-8, regarding water/stream quality and fish habitat and stream cover/pools in riparian areas. Consider clarifying standards for fish habitat as part of the Five-Year Review of the Forest Plan.
- * Monitoring items C-11, F-7, and F-8 contain repetitive information. Consider refining/consolidating these monitoring items (delete C-11) to better display the monitoring information.

C-12 Habitat Improvement Outputs

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
T& E Habitat Improvement Outputs	Annually	Identify a 10% decline in accomplishments in T&E habitat improvement outputs as measured over a 5-year average and compared with the level specified in the Forest Plan (p 5-11)
Wildlife & Fish Habitat Improvement Outputs	Annually	Identify a 20% decline in accomplishments in wildlife & fish habitat improvement outputs as measured over a 5-year average and compared with the level specified in the Forest Plan (p 5-11)

METHODS

Analysis of data provided in the FY 1991 Management Attainment Report (MAR) which included: MAR 37.1, 37.2, 38.1, 38.2, 39.1 and 39.2.

FINDINGS

All targets assigned to the Forest for FY 1991 were accomplished. However, target assignments for wildlife and fish structures have not met Forest Plan proposed schedules through the annual budget process.

Wildlife Habitat Improvement (Acres): A total of 450 acres of wildlife habitat improvement was accomplished. Of this total, 67 acres completed by the challenge cost share program.

Wildlife Habitat Improvement (Structures): 7 structures were accomplished.

Fish Habitat Improvement (Acres): 0 acres was accomplished.

Fish Habitat Improvement (Structures): 23 structures were accomplished with appropriated funds. 10 structures were accomplished with KV funds.

Habitat Improvement Threatened & Endangered (Acres): 634 acres was accomplished; 372 A by appropriated funds and 262 A by Challenge Cost Share.

Habitat Improvement Threatened & Endangered (Structures): 0 structures were completed for fiscal year 1991.

Table C-12a displays the accomplishment for wildlife habitat improvement for the past 5 years. The Forest has exceeded the Forest Plan level in all habitat improvement outputs except "Structural Improvements for Wildlife" and "Structural Improvements for Fisheries." A wildlife/fisheries program document has been developed that provides for a more accurate account of the potential for habitat improvement on the Forest. The program document displays that there is an increase in potential habitat improvement targets over the original Forest Plan. This program document will become an addendum to the Forest Plan during the 5 year review process and provide the guidance for the Forest's habitat improvement program. With the adoption of the program document the overall improvement targets will increase.

Wildlife

Table C-12a WILDLIFE HABITAT IMPROVEMENT

Description ¹	Forest Plan	1987	1988	1989	1990	1991	5 Year Average
Non-Structural (Wildlife Acres)	600	300	1400	900	1117	450	833
Non-Structural (Fish Acres)	5	2	0	10	16	0	5.6
Non-Structural (T&E Acres)	100	0	0	0	500	634	227
Wildlife Structures	10	0	0	3	2	7	2.4
Fish Structures	25	16	19	11	19	23	17.6
T&E Structures	0	2 *	0	0	2	0	0.8

¹ - Figures do not include KV accomplishments

* - Figure corrected from previous monitoring reports to reflect that 1987 projects were for T&E species.

RECOMMENDATIONS

- * Continue updating the habitat improvement portion of the Wildlife/Fisheries program document so that it will become at least a 10 year habitat improvement program.

C-13 Oil & Gas Activity

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORT-ING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Oil & Gas Activity/Wildlife Monitoring - Rocky Mountain Front	Annually	Display the number of guidelines applied or not applied to projects that were accomplished for the fiscal year. This data can then be used to determine the cause-of any decreases in populations that the RMF Guidelines were developed to protect.

METHODS

Examine major permitted activities in relation to the application of the Rocky Mountain Front Guidelines [(BLM, 1987) eg. gas/oil development, timber harvest, seismic operations, new road construction].

FINDINGS

No new oil and gas development projects were approved for the past year on National Forest System lands. The only resource project accomplished was the logging of units in association with the Bear Tree Challenge. All grizzly bear guidelines were applied to the project. It is anticipated that none of the permitted activities (listed in table C-13a) have had any influence on populations of wild ungulates or raptors on the Rocky Mountain District in the past 5 years.

Table C-13a summarizes the guidelines and operating windows assigned to construction projects on the Rocky Mountain Ranger District for FY 1987 through 1991:

Table C-13a Rocky Mountain Front Guidelines Applied

YEAR	PROJECT NAME	SPECIES AFFECTED	GUIDELINES APPLIED	OPERATION WINDOW
1987	Mobil Testing 1-13	raptor, grizzly	All guidelines followed	July 1-Aug 1
	Texaco Seismic	raptor, grizzly	All guidelines followed	Aug 1-Oct 15
1988	Mt Baldy powerline	grizzly, goat	All guidelines followed	July 1- Oct 15
1989	EPS pipeline 1-13	grizzly, elk, raptors	All guidelines followed except for 5 day period on elk, deer winter range which had an effect on 160 acres along an existing open road.	Oct 1-Dec 1, Dec 21-Jan 4 extension.
1990	Bear Tree Timber Harvest	grizzly	All guidelines followed	July 1-Oct 15
1991	Bear Tree Timber Harvest	grizzly	All guidelines followed	July 1-Oct 15

C-14 Sensitive Wildlife

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORT-ING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Sensitive Wildlife & Fish Species Program	Annually	Determine distribution of sensitive wildlife & fish species on the Forest. Monitor annual trends in wildlife & fish habitat and species populations.

METHODS

Although this item is not included in the monitoring items required by the Forest Plan, we felt it appropriate to conduct surveys of the habitat and to acquire population data on the species that are on the Lewis and Clark National Forest's sensitive species list.

FINDINGS

For a discussion of sensitive fish, see monitoring item C-11.

In June 1991, the Northern Region sensitive species list was updated to include the flammulated owl, fisher, lynx, and mountain plover. Of these additions, the fisher and lynx are known to occur on the Lewis and Clark National Forest, and the flammulated owl and mountain plover have the potential to occur on the Forest. Regional Conservation Strategies for Northern Region sensitive species are currently being developed.

The Rocky Mountain District personnel completed an extensive harlequin duck survey between April 3 and September 9, 1991. Over 600 stream miles on 23 different streams were surveyed. We recorded 63 observations of 235 harlequin ducks on 11 different streams. There were 11 brood observations. The Sun River and Badger Creek drainages were harlequin concentration areas. The results of this study will be documented in a report that will be completed in conjunction with the Montana Natural Heritage Program during FY 1992.

Wildlife

Rocky Mountain District personnel surveyed for boreal owls during March and April of 1991. Seven different survey routes were used. These encompassed 50 calling points and 37 survey miles. Boreal owls heard at 3 calling points represent at least 2 individuals.

On the Jefferson Division, boreal owls were detected for the first time in the Little Belt Mountains by personnel from the Montana Heritage Program and the Forest Service. As part of a Challenge-Cost share project on the Lewis and Clark National Forest, personnel spent 19 evenings on snowmachines and cross-country skis and played owl "hooting" tapes in hopes of detecting a boreal owl. Several owl species, including six boreal owls, were detected. This knowledge will allow the District to manage habitat and provide for viable populations of this Northern Region sensitive species. Boreal owl habitat (old growth/mature forest offering foraging and nest areas and connecting corridors) were evaluated in the Moose Creek Timber Sales FEIS. Adjustments were made in the proposed harvest units to minimize fragmentation of contiguous forest areas and maintain key forested corridors. Nest boxes were installed to facilitate future studies on boreal owl food habits.

Biologists documented reports of flying squirrels in several mountain ranges in the Jefferson Division. Flying squirrels were reported by Forest Service personnel (Sasse, 1990) and timber fallers (Sasse, 1991). Prior to these observations the flying squirrel was not known to exist in these mountain ranges. The flying squirrel was found to be a prey species of the boreal owl in Idaho (Hayward, 1989 page 17).

The Forest Plan snag management standards (pages 2-35 through 2-37) were developed for primary cavity excavators and gave minimum diameters for snags. There has been a tendency during the marking of timber sales to mark trees at or slightly larger than the standard 10 inch DBH minimum. The boreal owl has a habitat requirement for cavity nesting for snags 13 inches or greater. Incidental sightings of pileated woodpeckers in the Little Belt and Castle Mountains highlights the need for large diameter snags. In the Northern Rocky Mountains, pileated nest trees are generally dead or live defective, often broken-topped trees greater than 20 inches DBH and 60 feet tall (McClelland 1979, Bull 1980). Maintaining suitable nest trees would also provide suitable habitat for boreal owls. Maintaining suitable snags of a variety of diameters is also a goal in maintaining this component of biological diversity. See related discussion in C-10.

The closure of abandoned mines on the Forest and impact on habitat for bats was not considered in the Forest Plan. The closure of all abandoned mines by back-filling or installing barriers could potentially adversely impact *Plecotus townsendii* (Townsend's Big-eared bat) and other bat species. Mines used by large numbers of bats could be identified through surveys and gates installed at selected sites. Information on the distribution and location of caves is sketchy. In FY 1991 biologists continued identifying cave locations for future surveys for Townsend's big-eared bats. The Forest continued to coordinate with the Abandoned Mine Reclamation Bureau on the closure of mines.

Two nights were spent calling for flammulated owls during May 1991 in the Little Snowy Mountains. There were no flammulated owls heard; however, the calling was marginal, at best, due to excessive wind and the poor quality owl tape recordings used.

The mountain plover is not known to occur on the Jefferson Division. During the summer of 1991, surveys were conducted on BLM lands and private lands, from Two Dot, Montana east to Cameron Creek in the Little Snowy Mountains. Their survey results show that the BLM lands that have similar characteristics to National Forest System lands (have some slope, and not in a *Stipa comata-Bouteloua gracillus* habitat type) did not meet the needs of the mountain plover. Basically, Forest lands tend to be a *Festuca idahoensis-Agropyron spicatum* habitat type and are too productive and not open enough to be plover habitat.

The fisher is only known to occur on the Rocky Mountain Division. This past year there were no sightings of fisher, but one was recorded during FY 1990.

RECOMMENDATIONS

- * The Forest should consider an additional monitoring item for sensitive species and additional standards for the management of sensitive species. Consider the following when determining Forest Plan standards for sensitive species habitat:
 - Manage for live or dead Douglas-fir, spruce, or alpine fir trees greater than 20 inches DBH and over 20 feet tall at a density of up to an average of one per acre of harvest acreage within areas naturally containing trees of at least this size. Large diameter trees will provide habitat for primary cavity excavators such as pileated woodpeckers and secondary cavity users such as boreal owls, flying squirrels, bats, and song birds. These trees will eventually become large diameter down logs and provide habitat for red-backed voles and other associated wildlife.
 - Maintain suitable habitat and access for bats at caves and abandoned underground mines containing significant bat populations. Coordinate with the Abandoned Mines Reclamation Bureau, Montana Department of State Lands; evaluate the impact of all proposed underground mine closures on bat habitat within National Forest System lands.

C-15 Sensitive Plant Program

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Sensitive Plant Program	Annually	Determine distribution of sensitive plants on the Forest. Conduct demographic monitoring & taxonomic studies to assess population viability.

METHODS

Conduct surveys of the habitat to acquire population data on the species that are on the Lewis and Clark National Forest's sensitive species list.

FINDINGS

When the Forest Plan was developed in 1986 there was no sensitive plant list for the Northern Region. On March 10, 1988 the Regional Forester approved the Region's first sensitive plant list. In 1989 the Region published "Caring for Our Natural Community", a summary of the Region's program to conserve each threatened, endangered, and sensitive species. This report noted that additional information and monitoring is needed to assess the effects of management activities on many sensitive species, particularly sensitive plants. In the spring of 1991 the Region issued "Every Species Counts: Northern Region TES Action Plan." The action plan outlines program budgets and directs the Forests to develop monitoring and inventory plans, accelerate development of sensitive species conservation plans, and assess research needs. In FY 1991 the Forest established a botanist position, in part, to address the increasing workload in effects analysis for sensitive plants.

Sensitive plant species are those species "...for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population or habitat capability." The list is revised periodically by the Regional Forester based on the recommendations of conservation biologists and botanists from the Forest Service, Universities, Natural Heritage Programs in the four states in the Northern Region, and

Wildlife

the Nature Conservancy. Information is provided in table C-15a for each of the 15 sensitive plant species known to occur on the Lewis and Clark National Forest. There are 12 additional species of sensitive plants that botanists feel may occur on the Forest, and an additional five species of rare plants not yet known to occur on National Forest System lands in the Region. If any of these species are located, they will be added to the sensitive species list.

Field surveys and Status Reviews conducted in previous years demonstrated that two species, longstyle thistle and Klaus' or divide bladderpod, were apparently secure in numbers and distribution. These two species were removed from the sensitive species list in May, 1991.

Table C-15a SENSITIVE SPECIES STATUS

Species Name	Population Status & Trend	Monitoring Studies	Reports Prepared & Date
ROCKY MOUNTAIN DIVISION			
Austin's knotweed	2 occurrences, trend unknown	none	none
Dwarf saw-wort	6 occurrences, pops are small, trend unknown	none	none
Giant helleborine	1 occurrence, pop appears stable	none	none
Green-keeled cotton sedge	1 occurrence, trend unknown	none	none
Leadville milkvetch	8 occurrences, limited distribution, pops appear stable	none	Status Review 1990
Peculiar moonwort	1 occurrence, 2nd pop possibly extirpated	1 study, tracked since 1989	none
Round-leaved orchis	13 occurrences, trend unknown	1 study initiated 1989	Status Review 1988
Small yellow lady's slipper	3 occurrences, 1 pop partly vandalized, trend unknown	none	none
Sparrow's egg lady's slipper	7 occurrences, trend unknown	1 study initiated 1988, fenced in 1989	none
Stalked-pod crazyweed	4 occurrences, trend unknown	none	none
JEFFERSON DIVISION			
Fuzzyspike wild rye	1 occurrence, trend unknown	none	none
Missoula phlox	3 occurrences, pops appear stable, taxonomic questions	none	Status Review 1991
Northern rattlesnake-plantain	25 occurrences, may be reduced by past logging & wildfire, trend unknown	1 permanent plot tracked 1988-89, 2 studies initiated 1991	Status Review 1991, viability analysis in progress
Pink agoseris	22 occurrences, trend unknown	none	Status Review 1991
Short-styled columbine	8 occurrences, trend unknown	1 study in burned area	Status Review in progress

Each project on the Forest that involves ground disturbance is evaluated for potential effects on sensitive plants. Some projects occur in areas that have a very low probability of containing any sensitive plant habitat, so ground surveys are not warranted. Survey accomplishments for projects in areas with moderate or high potential habitat are reported in Table C-15b.

Table C-15b SENSITIVE PLANT PROJECT ACCOMPLISHMENTS

Year	Project Areas Surveyed	Acreage Surveyed	New Populations Located
1991	Large Timber Sales	1750	16
	Small Timber Sales	92	4
	AMPs	5	2
	Miscellaneous Projects	185	4
	Non-project Inventory	1288	14

RECOMMENDATIONS

- * The Five-Year Review of the Forest Plan should consider the addition of a monitoring item for sensitive plants. To respond to the Forest Service direction, the new reporting item should include the following information:
 1. Changes in the list of sensitive species for Forest, as it occurs,
 2. Inventory accomplishments.
 3. Progress on monitoring plant populations,
 4. Progress on developing species conservation strategies.

Range

RANGE

D-1 Range Outputs

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Range Outputs	Annually	+/- 10% of target

FINDINGS

Summary of Forest Plan 10-year average Range Management targets and actual accomplishment for FY 1987 through FY 1991 is as follows:

Table D-1a RANGE ACCOMPLISHMENTS

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Permitted Grazing Use (M AUM)	71.1	70.5	72.3	72.4	71.9	71.2					
Improvement Nonstructural (Acres)	1329	1999	2433	1607	562	402					
Improvement Structural (Structures)	40	30	18	26.2	35.4	28					
Range Plans (Plans)	10	5	4	4	0	2					
Noxious Weed-Chemical/manual (Acres)	600	772	616	636	472	1062					
Noxious Weed-Biological (Acres)		370	150	222	40	146					

M AUM = Thousand Animal Unit Month.

Permitted grazing use, Thousand Animal Unit Month (M AUM), in FY 1991 is within 1% of the Forest Plan projection and therefore requires no further evaluation. Permitted use is based on the grazing permits issued and estimates of recreation pack stock use before the grazing season begins. At the end of the grazing season the actual grazing use is gathered and reported. Actual grazing use in FY 1991 was 62.8 M AUM. The eleven-year average actual use (1980 through 1991) was 64.7 M AUM.

Nonstructural Range Improvements in FY 1991 are only 30% of the Forest Plan projected output of 1329 per year for the first decade. The reason for this low accomplishment can be attributed to lower funding levels and a shift in emphasis from non-structural improvement to noxious weed control. However, the five year average exceeds the Forest Plan projection.

Structural Range Improvements in FY 1991 are 70% of the Forest Plan projection and below the 10% variability that would require further evaluation. Again, funding below the projected Forest Plan budget, did not allow

the Forest to accomplish the projected outputs. Continued funding at this level will result in under accomplishment in structural range improvement. Without these investments in range improvement during the first decade of Forest Plan implementation, the increase in permitted grazing use, that is scheduled in the second decade of the Forest Plan, will not be possible.

Two allotment management plans (AMPs) were completed in FY 1991. In FY 1991, the Forest has again under accomplished its projected goal. However, the Forest made significant progress toward correcting the problem by completing field range analysis on nineteen allotments in the Castle Mountains area of the Forest. See monitoring item D-4 (below) for further evaluation and discussion of the new Forest schedule for range allotment planning.

D-2 Range Condition & Trend

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Range Condition	Annually	Acres of range in fair or less condition that have not shown any improvement in condition score during the monitoring interval (10 years).
Range Trend	Annually	Any acres in downward trend which were previously (at the last reading) stable or in an upward trend. Any acres in downward trend which still show a downward trend after another monitoring interval (10 years).

FINDINGS

There are 275 condition and trend studies on 239 range allotments on the Forest. None of these 275 studies was monitored in FY 1991. The last time that any significant condition and trend monitoring was conducted on the Forest was in 1988 when a contract ecologist monitored 28 plots.

There were 37 permanent vegetation trend studies monitored on 25 Forest allotments in FY 1991. However, all of these studies were Ecodata plots initiated to monitor changes in noxious weeds and non-target vegetation on noxious weed treatment projects. Most of the plots were new plots in FY 1991. Several years of subsequent re-readings of Ecodata will be required to determine trend.

Summary of FY 1987 through FY 1991 range condition and trend studies are as follows:

Table D-2a RANGE CONDITION AND TREND (Each)

Description	Existing	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Condition & Trend Studies	275	0	28	8	4	0					
Allotments Monitored	239	0	12	4	2	0					

Range

Recommendations

- * The level of range condition and trend monitoring in FY 1991 (none undertaken) does not meet the Forest Plan Standard for this activity. Monitoring of range condition and trend is needed to enable the Forest to evaluate whether livestock grazing is resulting in improvement or deterioration of the vegetation utilized or impacted by livestock. Monitoring of range condition and trend is an important element in evaluating the effectiveness of the Forest Service range management activities. A much higher level of condition and trend monitoring is needed to meet the Forest Plan objectives and to enable range managers to evaluate their programs.
- * A noxious weed monitoring item should be established.

D-3 Supply

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Supply	Annually	More than 1% reduction in suitable range acres from previous year. Cumulatively, any reduction of 3% or more in suitable range acres over a 5-year period.

FINDINGS

Suitable range reported in FY 1991 is 220,900 acres. The difference in the suitable range acres reported during FY 1991 is the result of the change in derivation of the data, rather than a real change in suitable range acres. The data this year was derived from the Forest Service Range Management Information System (FSRAMIS) Acreage and Grazing Capacity Report for FY 1991. This report is the result of querying data from all of the allotments on the Forest in the FSRAMIS data base. Previous reports had been from estimated totals from the Ranger Districts' annual range reports. This change does not indicate a need for further evaluation.

Summary of FY 1987 through FY 1991 suitable range acres reported is as follows:

Table D-3a SUITABLE RANGE (Thousand Acres)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Suitable Range	249.2	249.2	249.3	242.2	220.9					

D-4 Allotment Management Plan Status

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Allotment Management Plan Status	5-years	More than 10% of the allotment plans are outdated. On the average, plans approved more than 15 years ago (before 1977) are considered to be outdated.

FINDINGS

There are 239 range allotments on the Forest, including cattle, sheep, and horse allotments, administrative pastures, special use pastures, and commercial packer grazing areas.

A summary of the number of allotments and allotment management plans follows:

Table D-4a STATUS OF ALLOTMENT MANAGEMENT PLANS

Category	Number of Allotments	Percent of Allotments
Total allotments	239	100
Total allotment management plans	157	66
Allotments without plans	82	34
Outdated plans (approved before 1977)	79	33
Plans that will become outdated during this decade (approved 1977-81)	34	14
Total allotments outdated by the end of the decade (1996)	195	82

In FY 1991, the Forest accomplished two AMPs, one for the Haymaker Allotment on the Musselshell Ranger District and one for the South Fork Allotment on the Judith Ranger District.

There are 82 allotments on the Forest without an AMP and another 79 allotments that have outdated AMPs, approved before 1977. Within the balance of the first decade of the Forest Plan another 34 AMPs (approved 1977-1981) will become outdated. A total of 195 allotments would have outdated plans by the end of the decade, if no further allotment planning were done.

This data shows a major departure from the Forest Plan monitoring variability of "less than 10 percent of AMPs outdated." To correct this situation within the first decade of Forest Plan implementation would require 39 AMPs per year (1992 through 1996).

The projected outputs for AMPs in the Forest Plan are only 10 AMPs per year. At this level of allotment planning, the Forest will remain behind the Forest Plan monitoring variability of less than 10% of AMPs outdated. At 10 per year, 50 allotments would receive allotment planning by the end of the decade, but 145 allotments (74%) would remain unplanned or have outdated AMPs.

Range

It is apparent from this finding that to meet the Forest Plan monitoring item will require a higher output of allotment planning. To resolve this situation, a Range Task Force was assembled in September, 1990. The objectives of the Task Force included: (1) prioritization of the allotments on the Forest for allotment analysis and planning purposes, (2) development of a schedule and budget for completing allotment management plans according to Forest Plan direction.

In January 1991 the task force recommended a schedule for accelerating allotment management planning on the Forest to bring livestock grazing into compliance with the Forest Plan. Their recommended schedule provides for conducting allotment planning on groups of contiguous allotments, about twelve per group, rather than individual allotments scattered over the Forest. This schedule provides for completing new allotment management plans on all 239 allotments on the Forest by the year 2010, which is a 20 year schedule.

During the spring of 1991, the recommendations of the task force were implemented when a range analysis team was assembled to initiate allotment planning on all nineteen allotments in the Castle Mountains. This team consisted of two permanent range conservationists and four seasonal range technicians. Support to the team was provided by the Forest ecologist, soil scientist, botanist, fishery biologist and others.

The Range Analysis Team completed field range analysis work on the nineteen allotments in the Castle Mountains in October, 1991. Vegetation types, habitat types and suitability for livestock grazing were mapped on 68,000 acres. Written descriptions of vegetation and physiographic features were made for 717 individual polygons (map delineations). The condition and location of range improvements on the allotments were inventoried. The percentage of forage utilized by livestock this season was measured, and 347 ocular ecodata plots were sampled. These plots included full plant species lists, soil descriptions and production clipped plots. In addition, 55 soil profiles were described by the Forest soil scientist.

This information will be entered in the Forest data base for use in environmental analysis and planning leading toward the completion of allotment management plans for all nineteen allotments in the Castle Mountains by FY 1994.

Summary of FY 1987 through FY 1991 range allotment management plan accomplishment and AMPs scheduled for completion (*) are as follows:

Table D-4b ALLOTMENT MANAGEMENT PLANS (Each)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
New Plans	10 ¹	2	0	0	0	0	0*	1*	4*	3*	5*
Revision of Existing Plans		3	4	4	0	2	4*	2*	15*	12*	9*

¹ - Includes both new and revision of existing Allotment Management Plans.

RECOMMENDATIONS

- * Continue the schedule for range analysis and revision of the Allotment Management Plans with the use of the Forest Range Analysis team.

TIMBER

E-1 Silvicultural Prescriptions Meet MA Goals

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure silvicultural management prescriptions are best suited to management area goals with all resources considered	Annually	A departure from management prescription

METHODS

One timber sale is reviewed on-the-ground annually by an interdisciplinary team.

FINDINGS

An interdisciplinary team reviewed the Yogo Creek Timber Sale on the Judith District in October, 1991. The Environmental Assessment for the sale was completed prior to the approval of the Forest Plan (June, 1986). The Decision Notice approving the timber sale was signed on July 3, 1984 and the sale was sold on March 27, 1986.

Silviculture prescriptions for the Yogo Creek Timber Sale specified shelterwood and clearcut treatments. The review group felt that the prescriptions were appropriate to meet Management Area B goals, although there had been a fair amount of blowdown during the past two years and other silvicultural prescriptions might have reduced the potential for windthrow. Best management practices were met on the project area for activities done in conjunction with the timber sale; and elk habitat and elk travel corridors were maintained.

E-2 Prescription Selections

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure prescription not primarily chosen on basis of greatest dollar return or greatest timber output	5-years	Test management area outputs against those predicted

METHODS

Review of a large timber sale sold during the fiscal year.

Timber

FINDINGS

Silvicultural prescriptions for the South Fork, Mill-Lion, and Turkey Salvage Timber Sales specified selection, overstory removal, seedtree, salvage, and clearcutting with dozer piling of most logging slash and mechanical scarification for natural regeneration. The prescription chosen for each stand was based on the type and condition of the timber stands recognizing the risk of windthrow. Economics and volume realized were not the principle reasons for selecting the silviculture method.

The predicted acres and volumes for the South Fork (Dead Horse-Bluff), Mill-Lion, and Turkey Salvage Timber Sales were 814 acres/6.8 MMBF, 455 acres/4.4 MMBF, 272 acres/1.7 MMBF respectively. The actual acres and volumes sold were 791 acres/6.4 MMBF, 391 acres/4.6 MMBF, 252 acres/1.7 MMBF.

Additional analysis on timber values and outputs will be a part of the 5-year Forest Plan Review.

E-3 Timber Openings

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure openings comply with size limits and are periodically evaluated for appropriateness	Annually	Unacceptable results of an ID Team Review

METHODS

One timber sale is reviewed on-the-ground annually by an interdisciplinary team. All other FY 1991 sales were reviewed to determine the planned sizes of the cutting units.

FINDINGS

There was only one 40-acre cutting unit in the Yogo Creek Timber Sale, the remaining units were less than 40 acres in size. A review of all timber sales sold during FY 1991 shows that no cutting units exceeded the 40 acre limitation.

E-4 Timber Offered/ASQ for Decade

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure timber offered does not differ from allowable sale quantity (ASQ) for 10-year period	Annually	+/- 20% annually or +/- 10% over a five year period

METHODS

The ASQ is compiled in an annual Regional Report. The volume figures are obtained from the Timber Cut and Sold Reports.

FINDINGS

The allowable sale quantity (ASQ) is the amount of timber that may be sold from suitable forest lands over a ten-year period. The figure is often expressed on an average annual basis. While the Forest is not required to meet the average annual ASQ figure, it cannot exceed the ASQ over the decade. A summary of the ASQ sold for FYs 1987-FY 1991 is as follows:

Table E-4a ASQ (Million Board Feet)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995
Allowable Sale Quantity (ASQ)	12.1	7.2	9.1	6.3	8.3	15.9				

During the first five years of the Forest Plan, the Forest has sold about 77% of the average annual ASQ. Not included in this figure are several prepared timber sales which will not be sold until FY 1992. While 77% does not meet the five year variability of 10%, we predict that the ASQ for the Forest will meet acceptable variability by FY92, when these additional sales are sold and become part of the ASQ sale record.

In addition to the ASQ, the Forest monitors its yearly timber program (Target). The yearly timber program is an agreement between the Forest Supervisor and the Regional Forester based on Congressional targets and appropriations. The total timber program for the Forest includes all timber products such as sawlogs, poles, posts, houselogs, and firewood. Credit for meeting the yearly timber program includes the volume sold, volume offered for sale, and volume delayed because of appeals. In FY 1991, the Forest had a target of 28.0 MMBF. During FY 1991, the Forest sold or offered for sale 18.5 million board feet (MMBF). Of this amount, 15.9 MMBF was current year sell, and 2.6 MMBF was offered in FY 1991 but will actually sell in FY 1992. An additional 9.5 MMBF of the FY 1991 program was delayed because of appeals. Credit is not given for volume sold from other FYs. In FY 1991, the Forest sold 2.0 MMBF from previous years. The following table shows the chargeable (ASQ) and non-chargeable volumes of the timber actually sold in FY 1991 (FY 1991 volume + volume from previous years) and the volume not sold.

Table E-4b FY91 TIMBER VOLUMES SOLD/NOT SOLD

Timber Volume Description	Forest Plan(MMBF) ¹	1991 Target (MMBF)	1991 Actual (MMBF)
VOLUME SOLD			
Live Timber			
A. Chargeable	11.0	15.0	13.4
B. Nonchargeable	1.0	1.5	0.1
Mortality Timber			
A. Chargeable	1.0	0.5	0.6
B. Nonchargeable	1.0	1.0	1.8
Total Volume Sold	14.0	28.0	15.9
VOLUME SOLD IN FY91, CREDITED TO PREVIOUS YEARS ²			
A. Chargeable			1.9
B. Nonchargeable			0.1
Total Volume Sold credited to previous years			2.0

Timber

Table E-4b FY91 TIMBER VOLUMES SOLD/NOT SOLD (continued)

Timber Volume Description	Forest Plan(MMBF) ¹	1991 Target (MMBF)	1991 Actual (MMBF)
VOLUME NOT SOLD			
Offered But Not Sold			2.6
Appealed			9.5
Total Volume Not Sold			12.1

¹ - (MMBF) = million board feet

² - Volumes prepared for sale and credited to timber target from previous years, but actually sold in FY 1991.

A summary of FY 1987 through FY 1991 timber sold or offered is as follows:

Table E-4c TIMBER PROGRAM (Million Board Feet)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995
Annual Forest Sell Program (Target)	14.0	11.6	14.8	15.1	14.2	28.0				
Volume Sold	NA ¹	7.9	8.8	4.5	5.0	15.9				
Volume Offered but not sold	NA	1.3	-	0.1	0.6	2.6				
Volume Appealed	NA	2.5	7.2	5.1	0.0	9.5				
Volume Sold From Previous FYs	NA		(1.9)	(2.4)	(5.5)	(2.0)				

¹ - NA = Not Applicable

Timber sale appeals have prevented the Forest from meeting its annual Timber Sale Program Target. In FY 1991, appeals delayed the sale of 9.5 MMBF of timber. The Forest continues to strive to have the analyses and documentation required by the National Environmental Policy Act completed and approved two years in advance of project implementation. The reorganization of our workforce has helped us prepare more thorough analyses on our proposed timber sale projects. However, the thoroughness of our analyses has not reduced the number of appeals received.

E-5 Restocking

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure restocking is in progress within 5 years	Annually	Unacceptable results of an ID Team Review

METHODS

Stocking surveys are conducted on each Ranger District.

FINDINGS

Stocking surveys indicate that 92% of the stands planted within the past five years and 96% of the stands where natural regeneration has been initiated within the past five years are either certified as being adequately stocked or are on a trajectory to meet adequate stocking within the desired time frame. Planted stands that are not meeting the desired results have been rescheduled for supplemental treatment and will be replanted as soon as planting stock is available.

Stocking surveys taken during the first year, and occasionally during the second year after site preparation, often do not have adequate numbers of seedlings to indicate whether or not the stand is proceeding toward the desired level of stocking. If the stand is still below desired levels at the time of the third year examination, then it will be evaluated to determine if treatment is needed to bring it to that level.

In general, the Lewis and Clark National Forest has a high ratio of successful seedling establishment on the harvested lands.

E-6 Acres Harvested

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure timber acres harvested are as projected	5 years	+/- 10% deviation over a five year period

METHODS

Data on acres harvested are excerpted from the Timber Stand Management Record System and from the Timber Cut and Sold Reports.

FINDINGS

The Forest Plan projected that annual harvest would average about 1,800 acres. In FY 1991, about 914 acres were harvested. The average harvest is lower than projected. Harvested timber volume in FY 1991 is 10.3 MMBF. FY 1991 volume under contract is 26.8 MMBF.

Timber

Summary of FY 1987 through FY 1991 timber volume under contract, acres, and volume harvested is as follows:

Table E-6a TIMBER UNDER CONTRACT AND VOLUME & ACRES HARVESTED

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995
Volume Under Contract (MMBF) ¹	-	29.1	26.4	21.9	22.7	26.8				
Acres Harvested ²	1,800	1,144	775	786	1051	914				
Volume Harvested (MMBF) ³	-	16.8	11.1	11.7	10.5	10.3				

¹ Data for Volume Under Contract for 1987 through 1990 has been adjusted to include estimates for per acre material (PAM).

² Data for Acres Harvested for 1987 and 1988 have been adjusted based on updated Timber Stand Management Record System output.

³ Does not include personal firewood volume.

E-7 Thinning & Silvicultural Accomplishments

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure accomplishment of thinning and other silvicultural treatments as projected in plan	5 years	+/- 10% deviation over a five year period

METHODS

Data for this monitoring item is obtained from the Regional Report from the Timber Stand Management Record System.

FINDINGS

The following table illustrates the accomplishment of timber stand improvement (TSI) and other silvicultural treatments:

Table E-7a TIMBER STAND IMPROVEMENT

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995
Silvicultural Exams (Thousand Acres)	28.0 ¹	45.3 ²	34.0	28.2 ²	37.3	35.4				
Reforestation (Appropriation \$) Acres	54	0	195	67	25	28				
Reforestation (K-V) Acres	270	0	0	0	0	0				
Site Prep. Natural (Appropriation \$) Acres	-	217	30	25	92	10				

Table E-7a TIMBER STAND IMPROVEMENT (continued)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995
Site Prep. Natural (K-V) Acres	-	1064	490	590	190	0				
Site Prep. (Trust Funds)	-	44	39	84	144	284				
Site Prep. (Purchaser)	-	0	300	253	269	203				
Thinning (TSI) (Appropriation \$) Acres	200	443	441	307	268	329				
Thinning (TSI) (K-V) Acres	0	40	0	0	0	0				
Release Acres (Appropriation)	-	120	127	195	72	5				
Release Acres (KV)	-	85	12	0	0	0				

¹ - The Forest in FY 1988, in conjunction with Regional Objectives and Forest Plan Amendment Number 3, accelerated the stand examination program from 15.5 thousand acres to 28.0 thousand acres in order to complete the timber data base for use in Forest planning.

Numbers in this table are generated from the TSMRS information

² - Figures revised from previous M&E Reports from the R-1 Silvicultural Accomplishments - TSI & Exams - 5-Year Average, 11/25/91

Most reforestation on the Forest is accomplished by natural regeneration. Projections in the Forest Plan include an annual reforestation program with 1420 acres of natural regeneration and 324 acres planted. Five years of implementation indicates that the Forest averages 599 acres of natural regeneration and 63 acres of planting. The total acres ready for reforestation is less than predicted.

Thinning accomplishment have exceeded Forest Plan outputs. The Cross Creek burn (1970) and many of the young stands created by harvest in the late 1960s and early 1970s are showing evidence of reduced growth and are being thinned. Evidence from unthinned fire originated stands indicates that they become suppressed and require an extended period of time to produce merchantable products. It is anticipated that the regeneration in some of the harvest areas will also become suppressed and require future thinning.

Fuel treatments with brush disposal funds are tied closely to the acreage harvested in the past two years. Although there will be large fluctuations in individual years, average acreages should be achieved over the five year period (Refer to P-5 Fuel Treatment-Outputs).

E-8 Even-Age Harvest

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Ensure harvest by even-age management is compatible with resource values	Annually	Unacceptable results of an ID Team review

Timber

METHODS

One timber sale is reviewed each year by an interdisciplinary team.

FINDINGS

The presale analysis of the Yogo Creek Timber Sale indicated that the proposed treatments would meet the goals and standards of Forest Plan Management Area B. The Interdisciplinary Review Team on the post-sale review agreed that even-aged silvicultural systems were appropriate to meet Forest Plan Management Area B objectives and the needs of these particular sites. They also agreed that, in a number of cases, retention of reserve trees, individually and in groups and patches can better achieve resource values and help maintain biodiversity.

Even-aged silvicultural systems will provide greater forage production than uneven-aged systems and will provide more volume per acre for less cost. The standards for wildlife cover and water quality are still being met in the area. The gentle terrain and past harvest patterns permit openings that meet the visual management objectives of modification.

E-9 Firewood Removal

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Firewood Removal	Annually	Use increase exceeds 10% per year

METHODS

Data is compiled annually for the Timber Sale Cut and Sold Reports.

FINDINGS

In FY 1991, 1.8 million board feet of personal use firewood was removed from the Forest.

Summary of FY 1987 through FY 1990 commercial and personal use firewood removal is as follows:

Table E-9a COMMERCIAL & PERSONAL USE FIREWOOD REMOVAL

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995
Commercial Firewood Permits Issued	78	44	73	57	40				
Commercial Firewood Sold (Cords)	3046	1410	2337	1914	1237				
Personal Use Firewood Permits Issued	1487	1023	1401	1205	1193				
Personal Use Firewood Sold (Cords)	6937	4611	6416	4324	3591				
Personal Use Firewood Removal (MMBF)	3.5	2.3	3.2	2.2	1.8				

There has been a leveling-off in the demand for firewood from the Forest. It is expected that the use will probably continue at or near the current amount.

E-10 Suitable/Nonsuitable Lands

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Evaluate availability of lands classified as suitable/unsuitable	5 years	+/- 5% change in acreage

METHODS

The evaluation of land suitability for timber harvest (suitable forest land) is ongoing through project analyses and timber stand examinations. Data is being entered into the Timber Stand Management Record System (TSMRS) data base to provide information for future Forest Plan revisions.

FINDINGS

Project analysis has resulted in a change in suitable forest acres (those available for scheduled timber harvest) from 282,307 to 276,406 acres, about a 2% reduction. These changes were made through Forest Plan amendments.

The timber stand examination process on suitable forest land is about 90% complete. With the current level of funding, it is anticipated that it will be finished by FY 1994. At that time, the Forest will re-analyze its suitable forest lands based on the updated timber inventory.

E-11 Projected Yields

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Projected yields	Annually	Standard error of 10% at 1 standard deviation

METHODS

The Forest established two new permanent growth plots and remeasured three existing plots during FY 1991.

FINDINGS

Efforts during the planning period (10-15 years) will be to continue the establishment and remeasurement of permanent growth plots. Growth plots are remeasured on a 5-year interval to monitor the growth and yield received from timber treatments and/or conditions existing on the Forest.

Timber

Summary of growth plot establishment and remeasurement is as follows:

Table E-11a GROWTH PLOTS (Number)

Description	1979 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Plots Estab- lished	27	2	0	1	2	2	2				
Plots Remea- sured	7	2	2	0	4	6	3				

At this time there is insufficient data available to run any type of comparison between the Growth Plot data and the projected yields of the Forest Plan.

When these Growth Plots were established, they were to be installed in stands that were scheduled for a timber activity within the next five years (other than a regeneration harvest - ie. precommercial or commercial thinning). Therefore, Growth Plots that have had their planned timber activity accomplished and remeasurement completed have data only from one remeasurement.

Evaluation will be done in FY 1993.

WATER & SOIL

The Forest manages watersheds and soil resources to maintain and/or improve water quality to meet State water quality standards. The Forest's goal is to manage both sediment and water yield to allow less than 1% over current levels as a result of Forest management activities.

The goals set forth by the Lewis and Clark National Forest Plan for soil and water are accomplished through several avenues. Watershed analysis and direction is included during the planning and implementation of management activities. Soil and water conservation practices are prescribed as necessary to protect soil productivity and control non-point source water pollution. Best Management Practices (BMPs) are monitored to assure their application and effectiveness during and after project implementation. Restoration efforts work towards eliminating a backlog of soil and water restoration needs. Water quality sampling is used to monitor stream quality for comparison to State water quality standards as well as to assess the effectiveness of BMPs on Forest management activities.

In FY 1991, the Forest acquired the expertise of a soil scientist under a three-year interagency agreement between the Lewis and Clark National Forest and the USDA Soil Conservation Service. During FY 1991, soil inventory collection and analysis was completed on 25,000 acres of National Forest lands primarily in the Castle Mountains. This soil work was done as part of the Range Task Force analysis for the grazing allotment management plan revisions. Under this three-year agreement, data collection and soil analysis will assist the Forest in making decisions related to vegetation production and soil productivity.

F-1 Adequacy & Cumulative Effects of BMPs

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Adequacy and Cumulative Effects of Project BMPs	Annually - 100% Sample	Projected deterioration of soil productivity or water useability

METHODS

All proposed projects which have potential for impact on soil or water quality are monitored through review of the project environmental documentation. This review ensures that adequate BMPs have been prescribed to maintain and protect existing soil productivity and water quality conditions. In the case of significant vegetation removal, a cumulative effects analysis is also evaluated to predict increases in water and sediment yield as a result of the project.

FINDINGS

Table F-1a delineates the proposed projects which required review for adequate BMPs and possibly a cumulative effects analysis during FY91.

Water & Soil

Table F-1a - FY91 PROJECT LIST REQUIRING REVIEW OF BMPs

Project Title	Scheduled Project to Date	Review Completed	Comments
Rocky Mtn District 1. Beartree Timber Sale 2. Clary Coulee Burn 3. Hannan Burn 4. Ford Basin Burn	1991 1992 1992 1992	YES YES YES YES	
Judith District 1. Turkey Salvage Timber Sale	1992	YES	Cumulative Effect Analysis Done
Musselshell District 1. Spring Ck Timber Sale 2. Lion Corral Timber Sale 3. S. Bench Salvage Timber Sale 4. Near Cross Timber Sale	1992 1992 1992 1991	YES YES YES YES	Cumulative Effects Analysis Done
Kings Hill District 1. Moose Ck Timber Sale 2. Slide Rock Timber Sale EA 3. Johnston Ck Timber Sale 4. Tillinghast Ck Timber Sale	1992 1992 1992 1992	YES YES YES YES	Cumulative Effect Analysis Done

In each project reviewed, adequate BMPs were prescribed to meet water quality goals and State Water quality standards. A cumulative effects analysis was conducted on two of the large timber sale projects. This analysis indicated, in each case, that reasonable land, soil, and water conservation practices, as required by the State, would prevent deterioration of the soil and water.

These monitoring results indicate that projects with a potential for impact on soil or water quality are being successfully reviewed assuring adequate protection of soil productivity and water useability.

F-2 Revegetation

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Revegetation of temporarily disturbed areas & roads within five years	Annually - 75% sample 2 years after termination	Unacceptable results of an ID Team Review

METHODS

Revegetation efforts on temporarily disturbed areas and roads are monitored through Interdisciplinary Team reviews. These reviews are to be carried out on 75% of the revegetation projects for the purpose of evaluating revegetation success and the need for additional revegetation efforts. The reviews occur within two years after project termination.

FINDINGS

Table F-2a delineates the projects on each district which were reviewed during FY 1991 or require a future review for revegetation efforts. One project was reviewed on the Rocky Mountain Ranger District; three on the Judith Ranger District; and 14 projects on the Musselshell Ranger District. No revegetation projects were reviewed on the Kings Hill Ranger District in FY 1991. A majority of these reviews were made by individuals from the Interdisciplinary Team who conducted the NEPA analysis for the project, or by the Timber Sale Administrator responsible for implementation of the project.

Table F-2a - FY91 PROJECT LIST FOR REVEGETATION

Project Title	Year Completed	Review Date	Comments
Rocky Mtn District 1. Elk Ck Gravel Pit 2. 13-Mile Timber Sale	1991	9/91 1991	Reveg OK Scheduled review in FY93
Judith District 1. Iron Claims Fire Rehab 2. Lower Dry Wolf Resale 3. Yogo Timber Sale 4. Iron Claims Salvage Timber Sale 5. Harrison Ck Fire Rehab 6. High Springs Small Sale	1988 1989 1990 1990 1991 1990	10/11/90 7/12/91 10-17-91	Reveg OK Reveg OK Reveg OK Scheduled review in FY92 Scheduled review in FY93 Scheduled review in FY92
Musselshell District 1. Kents Gulch Timber Sale 2. Pasture Gulch Timber Sale 3. Greasewood PK Timber Sale 4. Basin-Whitetail Timber Sale 5. S/U Stockwater line - Big Snowies 6. S/U Irrigation Ditch - Spring Ck 7. Daisy Dean/Nevada Capital Inv. Trail 8. Haymaker/Daisy Capital Inv. Trail 9. Ashbridge Springs Timber Sale 10. Robinson Checkerbd Timber Sale 11. Mill Ck Salvage Timber Sale 12. Guard Station Timber Sale 13. Mount High Capital Inv. Road 14. Checkerboard Capital Inv. Road 15. Galloway Blowdown Timber Sale 16. Neil Creek Timber Sale	1990 1989 1989 1990 1989 1989 1990 1989 1989 1989 1989 1989 1990 1990 1991 1991	7/15/91 10/15/91 9/20/91 10/25/90 6/20/91 9/20/91 8/23/91 8/22/91 6/30/91 10/15/91 6/13/91 7/15/91 8/14/91 8/23/91	Seed and Rd. Maintenance OK Seed and Ditch Reveg OK Seed and Waterbars OK Seed and Road Reveg OK Reveg OK Reveg and Rehab OK Rehab OK Rehab OK Rehab OK Rehab OK Rehab OK Rehab OK Rehab OK Rehab OK Rehab OK Scheduled review in FY93 Scheduled review in FY93
Kings Hill District 1. Geis Ck Core Drilling 2. Adams Ck Core Drilling 3. Newlen Ck Core Drilling 4. North Fork Deadman Timber Sale 5. Kinney Ck Timber Sale	1991 1991 1991 1988 1986		Scheduled review in FY93 Scheduled review in FY93 Scheduled review in FY93

Of the projects reviewed, the revegetation was described as successful and complete. The Rocky Mountain, Judith, and Musselshell Ranger Districts are meeting the Forest Plan requirements to monitor at least 75% of the revegetation projects. The Kings Hill Ranger District is falling short of this monitoring requirement as projects scheduled for review have not been inspected.

Water & Soil

RECOMMENDATIONS

- * These monitoring results indicate that additional efforts need to be directed towards reviewing revegetation projects on the Kings Hill District. Results from the remaining Districts indicate that revegetation efforts are being successfully carried out and that the Forest Plan is being met as temporarily disturbed areas and roads are being revegetated within 5 years.

F-3 Water Quality in Municipal Watersheds

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Water quality effects of activities in municipal watersheds	Annually - all projects	Adverse water quality effects or violates water quality standards

METHODS

Activities which take place in municipal watersheds are monitored through water quality predictions, administrative reviews, and water quality sampling. The purpose of these monitoring efforts is to assure that reasonable land, soil, and water conservation practices were prescribed, the Best Management Practices (BMPs) were implemented and effective, and that no water quality impacts were incurred as a result of these activities.

FINDINGS

O'Brien Creek and Willow Creek are the two municipal drainages within the Forest. The only active project requiring review was the Powerline Timber Sale in the O'Brien Creek drainage. This project was not reviewed during FY 1991 largely due to the absence of the Forest Hydrologist during the field season. Without adequate monitoring, the Forest was unable to evaluate the water quality impacts to the municipal watershed.

At this time no Forest Service water quality sampling is taking place within these two drainages.

RECOMMENDATIONS

- * Serious consideration should be given to establishing water quality monitoring stations within both the O'Brien Creek and Willow Creek drainages as well as assuring adequate review of on-going projects during FY 1992.

F-4 Riparian Areas, Flood Plains, and Wetlands

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Activities in riparian areas, flood plains, and wetlands	Annually - 50% of all projects	Unacceptable results of an ID Team review

METHODS

Activities in riparian areas, flood plains, and wetlands are monitored through administrative reviews. The purpose of these reviews is to verify that the contract and Best Management Practices are implemented as prescribed, and that BMPs are effective.

FINDING

Table F-4a delineates projects or activities implemented in riparian areas, flood plains, and/or wetlands. In FY 1991, projects were reviewed on all four Ranger Districts:

- Rocky Mountain Ranger District reviewed four projects
- Judith Ranger District reviewed two projects
- Musselshell Ranger District reviewed one project
- Kings Hill Ranger District reviewed two projects

The majority of these reviews were conducted by ID Team members who had prepared the NEPA analysis, or by the Contracting Officer Representative responsible for the project's implementation.

Table F-4a FY91 ACTIVITIES IN RIPARIAN, FLOOD PLAINS, & WETLANDS

Project Title	Review Date	Comments
Rocky Mtn. Ranger District		
1. Wilcox Special Use Road	7/91	Reveg OK, including cuts and fills. Road is draining adequately to prevent runoff into stream
2. Cyanide Salvage Timber Sale	7/91	Reveg on temporary road and landings OK. Bridge site rehab OK.
3. Elk Ck Road Reconstruction	7/91	Reveg OK including cuts and fills.
4. Elk Ck Gravel Pit	9/91	Planted brush seedlings are doing fair. Being browsed heavily. Entire pit area reclaimed and reveg is OK
Judith District		
1. Bear Park Timber Sale	11/16/90	Contract operation/BMPs OK. Sale complete in FY91. Requires review in FY92.
2. Smith Flat Timber Sale	8/14/91	Contract operation/BMPs OK.
3. Smith Timber Sale		No Activity in riparian units in FY91
4. South Fork Timber Sale		No Activity in riparian units in FY91
Musselshell District		
1. Crazies Sec. 12 Road Permit Construction		Seeded in 1990. Scheduled review in FY 92
2. East Fork II Timber Sale	7/20/91	Seeded in 1990. Reveg OK
3. Odilver Timber Sale		Seeded in 1991. Scheduled review in FY 93.

Water & Soil

Table F-4a FY91 ACTIVITIES IN RIPARIAN, FLOOD PLAINS, & WETLANDS (continued)

Project Title	Review Date	Comments
Kings Hill District		
1. Central Park Timber Sale		No Review Scheduled
2. Divide Road Reconstruction	9/91	BMP and contract practices are adequate
3. Moose Mtn. Road Resurfacing		No Review Scheduled
4. Lick Ck New Road	8/91	Seeded in 1989. Reveg OK
5. Elk C&H Allotment		No Review Scheduled

Of the projects reviewed, the results indicate that activities within riparian zones are being mitigated successfully to prevent impacts to soil and water resources. The Rocky Mountain, Judith, and Musselshell Ranger Districts are meeting the Forest Plan guidelines of monitoring at least 50% of their projects in riparian zones. Monitoring of projects on the Kings Hill Ranger District are below this guideline, as two of the five listed projects were reviewed during FY91.

F-5 Other Effects

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Effects of other activities on watershed conditions	Annually - 20% of all projects	Unacceptable management practices or land productivity

METHODS

Projects which are not located in a riparian zone or located within a municipal watershed, but still have potential to impact soil and water resources, are monitored through administrative reviews. The purpose of these reviews is to verify that the contract and BMPs are being implemented as specified, and that BMPs are effective.

FINDINGS

Table F-5a delineates projects which required an administrative review. One project was reviewed on both the Judith and Kings Hill Ranger Districts; and two projects were reviewed on the Musselshell Ranger District. The Rocky Mountain Ranger District did not have any active projects within this category.

Table F-5a FY91 PROJECTS FOR BMPS REVIEW

Project Title	Review Date	Comments
Judith District		
1. Amax Drill Sites	7/91, 9/91	Operation practices acceptable. Minimal disturbance occurring.
2. Plantation Timber Sale		Not active during FY 91
3. South Fork Timber Sale		Reseeding associated with new roads completed in FY88. Sale not active during FY 91
4. Placer Snow Timber Sale		Not active during FY 91

Table F-5a FY91 PROJECTS FOR BMPS REVIEW (continued)

Project Title	Review Date	Comments
Musselshell District 1. Cyclone Timber Sale 2. L. Park Mineral Exploration 3. Mill-Lion Ck Timber Sale	10/25/90 6/19/91	Contract Complete; Rehabilitation good; Review in FY 92 for firewood cutting effects Drill sites need additional Rehabilitation Work Not active during FY 91
Kings Hill District 1. Link Park Timber Sale 2. Studhorse Timber Sale 3. Tree Cache Timber Sale 4. Cross Roads Timber Sale 5. Last Chance Salvage Sale 6. Junction Salvage Sale 7. Newlan Ck Overstory Removal 8. Logging Ck Fire	8/91	No Review Scheduled No Review Scheduled Installed waterbars along fire lines; Natural revegetation taking place; Requires review in FY 92.

Results from three of the projects reviewed indicated that the contract and BMPs were implemented as planned, and potential impacts to soil and water resources were being successfully mitigated. Results from the L. Park Mineral Exploration project on the Musselshell District indicated that additional rehabilitation work was needed to successfully mitigate the project.

These monitoring results indicate that projects are being carried out with acceptable management practices. The Rocky Mountain, Judith, and Musselshell Ranger Districts are meeting the Forest Plan requirements to monitor at least 20% of their projects not listed under categories F-3 or F-4. The Kings Hill Ranger District is falling short of this requirement, as only one of eight projects were reviewed.

RECOMMENDATIONS

- * Additional attention should be placed on monitoring these projects on the Kings Hill Ranger District in FY 92.

F-6 Water & Soil Backlog

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Elimination of soil and water restoration backlog	Five Years	Less than 50% by 1990; less than 100% by 1995

METHODS

Progress in reducing the soil and water restoration backlog is monitored by tracking the number of acres restored by each Ranger District at the end of each fiscal year.

Water & Soil

FINDINGS

Table F-6a delineates the restoration projects that were accomplished on each Ranger District during FY 1991. Total acreage restored totals 50 acres for FY 91 and 273 acres over the past 7 years. This accomplishment represents 73% of the total 373 acres requiring restoration identified in the Forest Plan. This level of accomplishment indicates that the Forest Plan goal of 100% accomplishment by 1995 should be met.

Table F-6a RESTORATION PROJECTS ACCOMPLISHED IN FY91

Project Title	# of Acres	Comments
Rocky Mtn District		
1. North Fork Ford Ck Rehab Project	15 Acres	Routed flow away from gully; Constructed sediment traps along gully. Project still requires fencing and reseeding.
2. South Fork Dupuyer/Cow Ck Rehab Project	6 Acres	Constructed drainage dip sand sediment traps to route flow off road and trap transported soil. Disturbed areas require reseeding.
3. Old Beaver Ck Rd	3 Acres	Constructed drainage dips and sediment traps to route flow off road and trap transported soil. Disturbed areas require reseeding.
Judith District		
1. Middle Peak Road	2 Acres	Closed road; Constructed waterbars; Seeded
2. Turkey Fire	6 Acres	Constructed check dams and riprapped eroding draws; rerouted flow into original streambed.
Musselshell District		
1. Daisy Dean Ck Erosional Cut	1 Acre	Installed waterbars; reseeded
2. Mount High Road	1 Acre	Reseeded
3. Roginson-Check Rd	5 Acres	Installed waterbars; reseeded
4. Daisy Dean Trail	1 Acre	Installed waterbars; reseeded
5. Upper Haymaker Trail	2 Acres	Closed abandoned trail segments; installed waterbars; reseeded
Kings Hill District		
1. Lick Ck Gravel Source	5 Acres	Installed waterbars to control runoff
2. Jefferson Ck (two-track road)	3 Acres	Installed waterbars to control runoff

Summary of the soil and water restoration accomplishments from before 1987 through FY 1991 is as follows:

Table F-6b SOIL & WATER RESTORATION ACCOMPLISHMENTS (acres)

Description	Total Backlog	Pre 1987	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Soil/Water Restoration	373	21	26	10	109	57	50					

F-7 Water & Stream Quality

OUTPUT, MANAGEMENT PRE-SCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Water and stream quality as affecting fish habitat and other uses: validation of estimations of sediment	Annually	Not meeting State or Federal water quality standards or significant (90% confidence) deterioration, by best available indexes

METHODS

Water quality as affecting fish habitat and other uses is to be monitored through water quality sampling of representative streams and intra-gravel sediment. This monitoring allows comparison of stream water quality to that required by State standards, identification of deterioration in water quality, assurance of effectiveness of BMPs, as well as validation of estimates on sediment yield.

FINDINGS

Water Quality Sampling

Table F-7a lists the stations that were monitored during FY 91, the period of record, the number of samples collected during FY 91, and the variables sampled.

Table F-7a - WATER QUALITY MONITORING FY91

Station	Date Initiated	Yrs of Record	# of Samples	Variables Sampled	Comments
Comb Creek	1986	6	418	Sed, Flow, Sp.Cond, Temp	
South Fork Two Medicine	1987	5	39	Sed, Flow, Sp.Cond, Temp	
N. Fk. Sun River	1989	3	387	Sed	Coop w/ Greenfield Irrig. Dist, Bur of Rec, USGS
Upper Spring Ck	1991	1	3	Sed, Flow, Sp.Cond, Temp	
Mill Ck	1991	1	4	Sed, Flow, Sp.Cond, Temp	
Whitetail Ck	1991	1	4	Sed, Flow, Sp.Cond, Temp	

The Comb Creek, South Fork of the Two Medicine Creek, and North Fork of the Sun River stations were sampled with automatic ISCO suspended sediment samplers and flow level recorders. These stations were also sampled manually through width and depth integrated samples with a DH-48 and discharge measurements with a vertical axis current meter. The sampling devices on the South Fork of the Two Medicine Creek were washed out by flood level flows resulting from a rain on snow event during May and were not replaced. Thus only 39 samples were collected at this station during FY 91.

Water & Soil

The Upper Spring Creek, Mill Creek, and Whitetail Creek stations were initiated during FY 91 for the purpose of collecting pre-project data for scheduled timber sales in the area. These stations are currently sampled manually through width and depth integrated suspended sediment samples with a DH-48 and vertical axis current meters. Serious consideration will be given towards establishing automatic suspended sampling equipment at these stations during FY 92.

The Comb Creek station was established in 1986 to acquire baseline water quality data. The drainage to this station is relatively undisturbed. Because of past time constraints and work loads, water quality data has not been analyzed in terms of annual sediment load. For the purpose of making comparisons in water quality over the period of record, Table F-7b presents the mean suspended sediment and discharge values collected at the Comb Creek station during June of each year. June is the month when the peak flows occurred and the highest sediment concentrations are expected.

Table F-7b - Comb Creek - Mean Suspended Sediment and Discharge Values for the Month of Peak Flow over the Period of Record

Station	1986	1987	1988	1989	1990	1991
Suspended Sediment, mg/l	6.5	5.5	4.0	7.2	3.6	39
Discharge cfs	23	10	8.8	19	23	32

Between 1986 and 1990 the mean suspended sediment concentrations during the month of June fluctuated between 3 mg/l and 7 mg/l with mean discharge ranging from 8.8 cfs and 23 cfs. Mean suspended sediment concentrations during this peak flow month appeared to be decreasing through these years with the exception of 1989. Discharge values also decreased between 1986 and 1988 but then increased in both 1989 and 1990. In 1991, the mean suspended sediment value and mean discharge were the highest over the period of record at 39 mg/l and 32 cfs, respectively. These high results were due to a large snowpack and warm temperatures causing a large amount of snowmelt to occur quickly. The resulting large 1991 flows had an increased capacity to pick up and carry sediment thus resulting in the large 1991 sediment concentrations.

The South Fork of the Two Medicine Creek station was established to acquire pre-project data in anticipation of Fina/Chevron Oil Exploration activities. Data collected at this station may also reflect impacts to soil and water resources from past land management activities within this watershed. Table F-7c presents the mean suspended sediment and discharge values for May of 1987 and 1988 and June of 1989 and 1990. It is during these months that the peak flow occurred and the highest sediment concentrations are expected. Because the sampling devices were washed out in May of 1991, not enough data was collected at this station during the month of peak flow to make a valid comparison to the data from previous years.

Table F-7c South Fork Two Medicine - Mean Suspended Sediment and Discharge Values for the Month of Peak Flow over the Period of Record

Station	1987	1988	1989	1990
Suspended Sediment, mg/l	88	46	92	38

Table F-7c South Fork Two Medicine - Mean Suspended Sediment and Discharge Values for the Month of Peak Flow over the Period of Record (continued)

Station	1987	1988	1989	1990
Discharge cfs	208	181	257	245

The 1987 through 1990 results from this station are similar to that of Comb Creek. The mean suspended sediment concentrations for the month of peak flow decreased between 1987 and 1990 with the exception of 1989. These values ranged from 38 mg/l in 1990 to 92 mg/l in 1989. Discharge values ranged from 181 cfs in 1988 to 257 cfs in 1989.

While not technically valid for comparison to mean values from previous years, the small amount of data collected during May, 1991, the month of peak flow, were compiled and computed to mean values. These values, computed from the one week of automatic sampling and three manual samples, were 14 mg/l for suspended sediment and 234 cfs for discharge. It appears from the few samples collected that no deterioration in water quality is occurring. The 1991 mean May discharge remained comparable to those of previous years, and the mean suspended sediment concentration decreased.

The North Fork of the Sun River Station was established in FY 89 to evaluate potential impacts to water quality resulting from the Gates Park Fire. Operation of this station is a cooperative effort between the United States Forest Service (USFS), United States Geological Survey (USGS), Greenfield Irrigation District, and Bureau of Reclamation. The USFS and Bureau of Reclamation financially support the USGS to maintain the gauging station. The Greenfield Irrigation District services the automatic suspended sediment sampler. The USFS is ultimately responsible for analyzing the resulting data.

Table F-7d represents the mean suspended sediment and discharge values for June of 1989, 1990, and 1991 at the North Fork of the Sun River station. June is when the peak flows occur and the highest sediment concentrations are expected.

Table F-7d - North Fork Sun River - Mean Suspended Sediment and Discharge Values for the Month of Peak Flow over the Period of Record

Station	1989	1990	1991
Suspended Sediment, mg/l	31	50	260
Discharge cfs	1086	1469	2012

As shown in Table F-7d, mean suspended sediment values ranged from 31 mg/l in 1989 to 260 mg/l in 1991. Mean discharge values ranged from 1086 cfs in 1989 to 2012 cfs in 1991. Results from the North Fork of the Sun River are similar to those at Comb Creek in that 1991 values are noticeably greater than those of previous years. Each year of record at this station demonstrated increases in peak month mean suspended sediment concentrations as well as discharge. While increased suspended sediment concentrations are expected with increased flows, it is possible that these results are still reflecting effects from the Gates Park Fire.

Water & Soil

The 1991 results from the North Fork Sun River station show that suspended sediment concentrations increased noticeably in the watershed impacted by fire. Noticeable increases in suspended sediment concentrations were also measured in the undisturbed watershed of Comb Creek. As a result, it is unclear as to whether the increase in suspended sediments is natural due to increased flows through the system or is accelerated soil erosion as a result of the fire. This station will be maintained under a cooperative agreement between the Bureau of Reclamation, Greenfield Irrigation District, Forest Service, and USGS. Stream and sediment discharge measurements can be compared to baseline information.

Results from the Spring Creek, Upper Mill Creek, and Whitetail Creek stations is too limited at this stage to draw any conclusions.

Intra-gravel Sediment Sampling

In FY 1991 fisheries monitoring was limited to spawning substrate evaluations on four streams. Spawning substrates on all four streams evaluated (not post-fire evaluations) in the Jefferson Division were found to contain relatively high levels of fine sediments, ranging from 39 to 49%. Sediment levels in relatively unmanaged drainages of similar geologies have been found to range from 32 to 42%. Ranch and Mizpah Creeks fall within the 32 to 42% range with fine sediment levels of 39% and 42%, respectively. The South Fork of Deadman and Jumping Creeks contained sediment levels of 45% and 49%, respectively.

F-8 Stream Cover & Pools

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Riparian areas and streams: stream cover and pools	Annually	Significant (90% confidence) decline in condition

METHODS

Inventory of the condition of riparian areas and streams is presently conducted using the COWFISH model and shrub condition. Five streams were evaluated in FY 1991 by these methods. Extensive post-fire monitoring was conducted by seasonal fishery technicians on 27 miles of streams on the Rocky Mountain Ranger District. An additional 120 miles of stream on the Rocky Mountain Ranger District were evaluated to determine baseline fish population and habitat conditions.

FINDINGS

The post-fire monitoring generally indicated that fish populations were not measurably affected by the 1988 fires. Detailed findings for the streams evaluated are located in District files and in the files of the zone fishery biologist.

Riparian evaluations indicated that high levels of bank damage have occurred on Smith Creek. Overbanking of the streamside shrubs had occurred on Smith Creek and Jumping Creek. Habitat evaluations on the South Fork of the Judith River, Jefferson Creek, and the South Fork of Deadman Creek indicated that fish habitat was in fair condition and the streamside shrub community was improving.

Work continued on a Forest-level riparian classification project started in 1990. In FY 1991 an additional 23 stream reaches were sampled, and map unit delineation was started. Information on soils, vegetation, and stream characteristics from the sample sites will be used to describe and classify the current and potential condition of riparian areas. The classification will provide a means to compare existing and desired condition in riparian areas, and prioritize areas for improvement. This classification will be used as a basis for riparian monitoring and in development of range allotment management plans. The riparian reach sampling also serves to document baseline conditions of riparian sites.

Population evaluations on cutthroat trout, to determine the genetic purity, were accomplished on Badger, South Badger, Lonesome, North Fork Little Badger, Little Willow, and the South Fork of Dupuyer Creeks; all on the Rocky Mountain District. Sculpins collections were completed on the South Fork of the Two Medicine River and Summit Creek for the purpose of determining if the sculpins present are shorthead sculpins. The sculpins have been sent to specialists in Canada for electrophoretic evaluation while the cutthroat trout have been sent to the University of Montana. Results for both the cutthroat and sculpin evaluations will not be available until 1992.

RECOMMENDATIONS

- Although monitoring of fish habitats throughout the Forest has not been extensive over the last five years, enough information has been collected to demonstrate a need to amend the forest plan to include more specific standards for fish habitat. These standards could vary as a function of the value of the fishery and the existing condition of the habitat. Development of more specific standards would help ensure less risk for important fish habitats to be negatively affected and allow both individuals within and outside the agency to understand the boundaries within which fish habitats will be managed on the Forest.

F-9 Public Health

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Public Health - Water Systems	Annually - Monthly when in use	Violates State or Federal drinking water standards

METHODS

During FY 1991, 34 Forest systems and seven Special Use systems were opened for use. Twenty-three of the Forest Service systems and three of the special use systems were tested and operated in accordance with State and Federal Safe Drinking Water Acts. For the remaining systems, required bacteriological tests were occasionally not accomplished.

FINDINGS

An evaluation of the testing program revealed that the sampling and testing omissions were not confined to any one District for the Forest Service systems. Further analysis indicated that some of the Special Use sites failed to meet the established testing requirements. The matter will be discussed with Forest managers and Special Use permittees in an effort to redeem this management and public safety responsibility.

Failure to conduct the testing as prescribed by Federal and State regulations could result in closure of the systems. Closure of Forest Service systems would result in loss of revenue from pay campgrounds and the ability of the public to enjoy their recreation facilities.

MINERALS

The FY 91 target for minerals management was 95 cases. A total of 94 cases were processed.

The Forest Plan outlines monitoring requirements for minerals management. It addresses minerals related items to be monitored, the frequency at which such monitoring should occur, and the type of variance which would initiate further evaluation. Deviations from Forest Plan goals and standards may result in either referring problems to the appropriate line officer for improvement of management practice application; modifying a management practice as an amendment to the Plan; revising the schedule of outputs, or the cost/unit of outputs; or initiating revision of the Plan.

For Minerals, 5 items have been identified for monitoring. These and the results of monitoring for FY 91 (October 1, 1990 - September 30, 1991) are provided below:

G-1 Effect of Mining Activities

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Effect of Mining Activity	Annually - 100% of active operations on a monthly basis	Adverse effect of Forest Service project on mineral activities or revision or departure from approved operating plan

METHODS

This item includes monitoring effects of minerals activities resulting from the approval of Notices of Intent or Operating Plans for mineral activities that were conducted during FY 91. According to the Forest plan monitoring requirements, 100% of all active operations are to be monitored on a monthly basis for either adverse effects of Forest Service projects on mineral activities or revisions or departures from an approved operating plan.

FINDINGS

No Forest Service projects were determined to have an adverse effect on mineral operations.

Prior to initiating ground disturbing activities, a mining proponent is required to submit a Notice of Intent, or in some cases, a Plan of Operation. These instruments specify the nature of the proposed activities, the location and timing of any surface disturbing activities, and any necessary reclamation measures. During FY 1991, five new Plans of Operation (POO's) were reviewed for mineral activities. Separate environmental analyses were conducted for each proposal. All proposals were analyzed for compliance and consistency with Forest Plan goals, objectives, and management standards. Modifications or additions were made, if necessary, to ensure compliance with Forest Plan standards and to mitigate issues and concerns. Some activities took place under Plans of Operation that were approved in a previous year during which the proposal was not completed. One project required an amendment to a previously approved POO.

Four drilling programs were conducted in the Little Belt Mountains on the Jefferson Division. A total of 18 core holes were drilled. In all but one case, drill pads were located along existing roads. The exception was in the Newlan Creek area where 100 feet of new road was approved for construction in order to access several drill sites. This short segment of road was constructed in an open grassland area and was seeded and closed to vehicle use following completion of the drilling.

Table G-1a - FY91 PROJECT LIST FOR MINING ACTIVITIES

Project Title	Status	Comments
Rocky Mtn District No Mining Activities		
Judith District 1. Vortex Mining -Yogo Crk. 2. Amax Gold-Bandbox Mtn. 3. Whittaker-Running Wolf 4. Laya Claims 5. Gamble Claims-Placer Creek 6. Bliss claims 7. Davis claims	Active under approved POO ¹ Active under approved POO Not active Not active Approved POO Not active Active under approved POO	Reviewed monthly during summer operations - in compliance with POO Drilling activity reviewed 7 times during operations - minimal impacts & within approved POO Checked 4 times during summer season Checked once during summer season Inspected 3 times-activity consisted of opening caved adit and installing steel door POO approved for excavation of one trench, no roading necessary, checked 4 times during summer, but no activity Inspected 4 times during operating season-activity consisted of pick & shovel work with minimal disturbance
Musselshell District 1. Kennecott drillsites-Mill/Trail Creek	Not active	POO approved for core drilling, but project was not conducted
Kings Hill District 1. Cominco Cooks Corner drilling 2. BHP-Utah Adams Ck Core Drilling 3. Cominco Newlan Ck Core Drilling	Active under amendment to previously approved POO Active under approved POO Active under approved POO	2 additional drill sites conducted in compliance with approved POO Drilled 5 core holes in compliance with approved plan Inspected during operations-core drilling within approved plan

¹ POO = Plan of Operation

G-2 Geophysical Prospecting

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Effect of Prospecting	Annually - 100 % of active operations on a biweekly basis	Adverse effect upon surface resources or departure from conditions of the approved permit

Minerals

This monitoring item includes effects from the issuance of prospecting permits (geophysical exploration). There were no geophysical prospecting permits requested or issued during FY 1991.

G-3 Drilling Effects

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Effect of Drilling	Annually - 100% of active operations on a weekly basis	Adverse effect upon surface resources or departure from conditions of the approved permit

FINDINGS

The Final EIS on two exploratory drilling proposals (by Chevron USA and Fina Oil and Chemical Company) on the Rocky Mountain Ranger District was completed in December, 1990. Following a public review period, a Record of Decision was jointly signed by the Lewis and Clark Forest Supervisor and the Bureau of Land Management, Great Falls Resource Area Manager approving, with conditions, Fina's Application for Permit to Drill (APD). A separate decision on Chevron's application will not be issued until evaluations and consultations necessary to fulfill our responsibilities under the American Indian Religious Freedom Act and Section 106 of the National Historic Preservation Act have been completed. This analysis continued through FY 1991.

Fifty-two appeals were received on the decision to approve Fina's APD. The Regional Forester upheld the decision to allow drilling on Fina's lease. Appeals filed with the Bureau of Land Management (BLM) prompted them to vacate their decision to allow the drilling and they are presently conducting their own review of the effects of drilling.

Forest specialists continued to provide input to the BLM interdisciplinary team conducting the analysis of the Blackleaf Canyon Field Development. The BLM has the lead role in this EIS, the Forest Service is providing surface resource information and review upon request.

G-4 Rehabilitation

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Rehabilitation of Disturbed Areas	Annually - 100% of activity on a weekly basis during rehabilitation. A final inspections will be made within 5 years after rehabilitation has been completed	Rehabilitation less than 90% of disturbed areas

Requirements for reclamation were established for each mining proposal and made part of the approved operating plan. Reclamation bonds were established for proposal, based on the costs which would be incurred to rehabilitate the area of proposed activity. These bond amounts are collected prior to allowing any activity to take place, and retained until final reclamation standards are met.

Mineral operations inspected for rehabilitation are listed in the following table:

Table G-4a - FY91 PROJECT LIST FOR REHABILITATION

Project Title	Year Completed	Review Date	Comments
Rocky Mtn District 1. Blackleaf Pipeline Installation	1990	9/91	Scheduled review in 1995
Judith District 1. Amax Gold Drilling	1991	11/91	Rehabilitation requirements met; scheduled review in 1996
Musselshell District 1. Kennecott Checkerboard project 2. Kennecott Checkerboard project	1989 1990	10/16/90 and 6/13/91 10/16/90 and 6/13/91	One (of three) drillsite required plugging; portion of bond retained; scheduled review in 1994 Two (of 7) drillsites required contouring and reseeding; portion of bond retained; scheduled review in 1995
Kings Hill District 1. Geis Ck Core Drilling 2. Adams Ck Core Drilling 3. Newlan Ck Core Drilling 4. Black Butte Core Drilling	1991 1991 1991 1990	6/91	Rehabilitation completed: bond released; scheduled review in 1996 Scheduled review in 1996 Access road required additional seeding and water-barring; scheduled review in 1996 Scheduled review in 1995

G-5 Mineral Availability

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Mineral Availability	Annually - 100% sample	Denial of more than 10% of proposed projects

METHODS

This item addresses the effect of renewable resource prescriptions and management direction on mineral resources and activities, including exploration and development.

Minerals

FINDINGS

Statutory rights conferred with the General Mining Laws provide for access to mining claims for exploration and development. In some cases, proposals were modified to provide for better protection of Forest surface resources. All mineral proposals complied with established Forest Plan standards and guidelines; therefore, none were denied.

Conditions for approval, and mitigation and monitoring needs were adopted in the decision to approve Fina's Application for Permit to Drill. These conditions were necessary in order that the project be compatible with Forest Plan direction.

A mineral report for the Givens land exchange involving several parcels on the Musselshell Ranger District was completed in FY 1991. The mineral report recommended that the oil and gas estate on one of the Federal parcels remain in federal ownership upon exchange, as the parcel was presently leased for oil and gas. This action continues to provide an opportunity for the lessee to explore for and develop leasable mineral resources. The recommendation was adopted in the final exchange.

LANDS

J-1 Compliance With Use Permits

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Compliance with use permits	Annually	Unacceptable results or deviation from permits

METHODS

The computerized Forest Land Use Report (FLUR) is used to prepare billing and gather information about the Forest's special use permits. Inspections of the recreations residences, ski areas, camps, special events, and resorts are conducted to ensure compliance.

FINDINGS

The Forest Supervisor has delegated authority for issuance and administration of special use permits to the District Rangers to the extent allowed in the Forest Service Manual.

The condition of facilities authorized through special use permits is generally satisfactory. Annually, the Rocky Mountain Ranger District inspects 25 percent of its recreation residences. Ski area permits are regularly inspected before and during the ski season. For other special use permits, on-the-ground inspections are done primarily for health and safety issues and whenever specific problems arise.

Special use permits are generally current and in conformance with federal policy. The automated Forest Land Use Report (FLUR) program is working well. Most of the bills are prepared through the FLUR program, then mailed to the districts for review and issuance.

The Lewis and Clark National Forest administers the following special use permits:

Table J-1a SPECIAL USE PERMITS

#	Description
1	Organization Camp
1	Isolated cabin
167	Recreation Residences
5	Resorts
1	Target Range
59	Outfitter Guides
2	Ski Areas
3	Cultivation
34	Livestock Area (Pastures)
11	Corrals
1	Sign
1	Solid Waste Disposal Site
1	Research Study

Lands

Table J-1a SPECIAL USE PERMITS (continued)

#	Description
1	Weather Stations
1	Military Training Areas
3	Cultural Resources
1	Construction Camp/Residence
1	Mineral Material Sales
1	Oil and Gas Pipeline
3	REA Powerlines
3	Powerlines
1	Railroad Right-of-Way
4	Department of Transportation Highway Easements
1	Road Easement
16	Road Permits
6	Multiple User Electronic Sites
4	Single User Electronic Sites
2	Telephone Lines
15	Irrigation Ditches
14	Water Transmission Lines

The Forest administers four Master Permits (one permit issued to one holder authorizing similar uses forest-wide) for telephone and powerlines. Permit holders are Fergus Electric, Sun River Electric, US West, and Montana Power Company. Prior to consolidation into master permits, these uses were issued as 29 separate permits.

During this fiscal year 15 recreation residence permits have been issued. These permits were a combination of permit renewals and new permit issues for cabins that changed ownership. This was the third year of the four-year phased-in fees for recreation residence permits, and the increased fees may have some bearing on permit holders selling their summer homes.

Also re-issued or newly issued were: electronic site permits to the Choteau County Sheriff, Mobile Communications, and the Montana Power Company; two road permits, one livestock use permit, one irrigation ditch and one target range permit.

The Forest is working with Montana Department of Fish, Wildlife and Parks to jointly manage the use of the Smith River. The number of river rafting permits issued on the Smith River appears to have stabilized. Over the last three years, about 20 permits have been issued annually. In FY 1991, 18 commercial outfitter-guide permits were issued on the Smith River. The Smith River Management Plan will be reviewed during fiscal years 1992 and 1993. This Plan was developed jointly by the MDFWP, Forest Service, landowners, recreational floaters, and commercial river outfitters.

The Forest administered 39 outfitter guide permits for hunting and/or fishing in FY 1991. Two appeals were filed by outfitters: one appeal concerned a permit transfer, and the other concerned a request for additional hunting use.

There were five permits issued for short-term recreation use: an archery contest, cross-country ski racing, military maneuvers, black powder shooting contest, and camping for paleontologic studies. A permit was prepared for a commercial photography shoot, but was not used by the requesting party.

The minimum fee for special use permits was increased from \$25 to \$45, and all permits that have been at the minimum fee were amended to increase the annual fee to \$45. A national fee study for communication authorizations is underway and may result in increased fees for all communication uses.

J-2 Right-of-Way Easements

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Right-of-Way Easements Accomplishment	Annually - 100% Sample	Less than 75% accomplishment of 5-Year Program

The Forest Plan does not specify a level of accomplishment for the acquisition of rights-of-way easements. However, the Monitoring Section does refer to the Forest's 5-year program. The program for FYs 1989-93 was transmitted to the Forest Leadership Team on March 27, 1990 by the Forest Supervisor. The program for FY 1991 contained four road easements and one trail easement. All four road easements were to "perfect" title to existing easements. Only one road easement was acquired. One is tied up in a divorce settlement, another in probate, and the third is still in negotiation.

In addition to the programmed cases, considerable work was done on five other trail easement cases that unexpectedly presented themselves. Three of these are expected to be completed in FY 1992.

Consequences of not meeting Rights-of-Way targets result in inadequate or deferred public access to the National Forest and the backlogging of cases. Case accomplishment tends to become more difficult as real estate prices rise and land is subdivided.

Table J-2a EASEMENT ACQUISITIONS

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Road R-O-W Program	4	7	4	4	4					
Road R-O-W Acquisition	3	1	2	2	1					
Trail R-O-W Program	1	1	0	0	1					
Trail R-O-W Acquisition	1	0	1	0	0					

J-3 Land Ownership Adjustment

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Land Ownership Adjustment Accomplishment	Annually - 100% Sample	Less than 75% accomplishment of 5-Year Program

The Forest does not have an established Land Exchange Program but rather relies on opportunities that are forwarded by proponents. Other opportunities to acquire tracts which are desirable for National Forest System ownership are pursued as they develop.

Lands

The Forest Plan specifically states that, "----it is not the intent of the Forest Service to pursue this direction (land exchange) except on a willing grantor basis." For this reason, it would be very difficult to "lock-in" on targets for accomplishments. In FY 1991, the Forest completed the Givens Land Exchange: 158 acres were acquired by the National Forest in the Little Belt Mountains, northeast of the Haymaker Wildlife Management Area in exchange for eight scattered parcels of National Forest land totalling 313.05 acres. The National Forest parcels disposed in the exchange were scattered along the edge of the Forest boundary or within large blocks of private land in the Big Snowies, Little Belt, and Castle Mountains.

Table J-3a LAND EXCHANGE (Acres)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Federal Lands Disposed	0	492.5 ¹	0	0	313.05					
Federal Lands Acquired	0	399 ¹	0	0	158					

¹ - Corrects an omission in previous Monitoring and Evaluation Reports - Cady Land Exchange in the Little Belt Mountains

J-4 Landline Location

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Landline Location Accomplishment	Annually - 100% Sample	Less than 75% of the Forest Plan Target

The Forest Plan target for landline location is 26 miles/year. In FY 1991, the Forest was funded for and accomplished 23 miles or about 88% of the Forest Plan target. For FYs 1987-91, the Forest accomplished about 78% of the Forest Plan target.

The Forest has a total of 1636 miles of property boundary. Of this, 264 miles has been posted to standard leaving 1372 miles not posted. If 26 miles per year were to be achieved until the entire boundary was posted, it would take 54 years to complete the job. In the interim many miles would need maintenance.

The Forest and Rangeland Renewable Resource Planning Act of 1974 (RPA) set the year 2010 as a goal for completing the posting of all National Forest boundaries. For this to be achieved on the Lewis and Clark National Forest, about 70 miles annually would have to be posted for the period 1991-2010.

Consequences of failing to achieve Property Boundary targets create trespass problems for the recreating public and the abutting landowners. In addition, management decisions may at times be compromised for lack of a posted National Forest boundary. Also, by deferring the property boundary job, valuable physical evidence attesting to the original corner location is being obliterated or lost to the forces of man and nature.

Table J-4a LANDLINE LOCATION ACCOMPLISHMENT (miles)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Landline Location	26	14	18*	25	21.5	23					

* - Corrections made to data reported in previous Annual M&E Reports

FACILITIES

L-1 Road & Trail Construction/Reconstruction

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Road and Trail Construction; local roads; trails; arterial/collector roads	Annually - 100% Sample	+/- 20% of programmed construction/reconstruction accomplished

FINDINGS - Roads

The Forest Plan Road Program, as amended, provides for 9 miles of road construction and 24 miles of reconstruction yearly. This figure is further divided into 20 miles for Capital Investment Program and 13 miles for the Timber Management Program (Purchaser Credit).

In FY 1991 under the Capital Investment Program, the Forest reconstructed 5.1 miles of road and did not construct any road. Under the Purchaser Credit Program, 17.4 miles were constructed and 8.3 miles were reconstructed for a total of 17.4 miles of construction and 13.4 miles of reconstruction under both programs.

When considering the total miles constructed and reconstructed in both programs during FY 1991 the output was 93% of that projected by the Forest Plan. This is within the variability tolerance.

Table L-1a MILES OF ROAD CONSTRUCTED/RECONSTRUCTED

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Capital Investment Construction	5.0	3.7	0.6	0	0	0					
Capital Investment Re-construction	15.0	29.7	16.1	13.6	9.8	5.1					
Timber Purchaser Construction	4.0	0	2.3	0	3.1	17.4					
Timber Purchaser Re-construction	9.0	0	4.2	4.3	0	8.3					

When considering the average accomplishment for the five year period (FY 87 - FY 91) the Forest accomplishment in the Capital Investment Program is 79%; the accomplishment for the Purchaser Credit Program is 61% and the combined programs is 72%. Shortfalls in the Capital Investment Program are the result of Regional prioritization and reduced road construction budgets at the National and Regional levels. The reasons for the accomplishment shortfall in the Purchaser Credit Program is the backlog of timber sales (see monitoring item E-4).

Facilities

Consequences of not meeting targets for the five-year planning period are twofold. First, the shortfall in the Purchaser Credit Program is directly related to the shortfall and backlog in the Timber Management Program. The Purchaser Credit Program targets and the Timber Management Program targets are dependant upon the other. It is expected that both targets accomplishments will be at the Forest Plan level in FY 1992.

The other program area, the Capital Investment Program, is totally dependent upon Congressional appropriation and National and Regional prioritization. Consequences of not meeting Forest Plan targets in this program primarily result in our inability to improve inadequate roads with relocation or reconstruction. Inadequacies include unsafe road segments, road segments that contribute to water quality problems, and roads that provide a service level inconsistent with planned or existing use.

FINDINGS - Trails

The Forest Plan, as amended, programs an average of 14.0 miles of trail construction and reconstruction annually. In FY 1991, the Forest replaced one trail bridge and accomplished 12.0 miles of reconstruction/Right-of-Way work.

Table L-1b TRAIL ACCOMPLISHMENTS FOR FY 1991

Description	Miles
Rocky Mountain Ranger District Headquarters Tr. 165 Route Creek Tr. 108 Lick Creek Tr. 151	3.5 miles 1.0 1.0
Judith Ranger District Steiner Tr. 442	3.0 miles (volunteer labor)
Musselshell Ranger District Daisy Tr. 612	1.5 miles
Kings Hill Ranger District Memorial Falls Trail Bridge replacement Sheep Creek Tr. ROW	NA 2.0 miles (ROW not finalized)

Table L-1c TOTAL TRAIL RECONSTRUCTION/CONSTRUCTION (miles)

Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
14.0	8.5	13.3	12.8	14.1	12.0					

L-2 Mile of Roads Open

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Miles of Roads Open to Public Use	Annually - 100% Sample	+/- 20% of target miles to be left open to public

FINDINGS

The Forest Travel Plan resulted in the following summation of road restrictions and closures. On the Jefferson Division, approximately 267 miles are restricted either yearlong or seasonally to some forms of motorized public use. On the Rocky Mountain Division, approximately 46 miles are restricted either yearlong or seasonally to some forms of motorized public use.

It is estimated that there are approximately 2,029 miles of roads open to use by some form of motorized vehicle on either a seasonal or yearlong basis. The Forest Plan does not establish any target miles to be open to public motorized traffic.

PROTECTION

P-1 High Risk Stands

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure harvest emphasizes the removal of high risk stands for mountain pine beetle attack and that timber sales are located to break-up continuous natural fuel accumulations	5 Years	Unacceptable results of an ID Team review, or if less than 70% of timber volume is programmed from high risk mountain pine beetle stands

FINDINGS

In FY 1991, 64% of the sawtimber sold on the Lewis and Clark National Forest was high risk lodgepole pine. Reviews of timber sale locations showed the Forest is continuing to breakup large concentrations of natural fuels. Future planning is also emphasizing removal of high risk lodgepole pine.

Summary of FY 1987 through FY 1991 removal of high risk lodgepole pine stands is as follows:

Table P-1a REMOVAL OF HIGH RISK LODGEPOLE PINE (percent)

Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
70	90+	80	90	67	64					

Over the first five years of the Forest Plan, lodgepole pine has made up about 75% of the volume sold on the Forest, within the acceptable range for the Forest Plan. This percentage is slightly above the 70% level envisioned in the Forest Plan. There is a continuing need to convert the very old, decadent lodgepole stands on suitable forest lands to younger, more productive stands.

P-2 Acres/Volume of Insect & Disease

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Acres and volume of insect and disease infestations	5 Years	Introduction of new insect or disease or spread of an existing insect or disease

FINDINGS

Insect and disease surveys conducted during the summer of 1991 showed no significant change in insect and disease infestations on the Forest. Insects and diseases continue at endemic levels. The planned yearly surveys are adequate to monitor insect conditions on the Forest.

P-3 Management Practices

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Management practices to ensure activities do not promote an increase in insect or disease organisms	Annually	Significant increase in insect and disease

FINDINGS

No significant increase in insect and disease organisms has been observed. Post timber sale reviews showed that the Forest is meeting regional standards for slash disposal.

P-4 Prescribed Fire & Air Quality

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure prescribed fire meets air quality standards	Annually	+/- 10% beyond standard guidelines

FINDINGS

In FY 1991, the Forest burned about 2,500 acres for slash disposal, natural fuel treatment, wildlife habitat improvement, and range land improvement. There were no known complaints about any prescribed burning project affecting air quality.

Burning conditions and coordination, under a State of Montana permit, play a major role in meeting air quality standards.

P-5 Fuel Treatment Outputs

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Fuel Treatment Outputs	Annually - 100% sample	+/- 25% of programmed targets

FINDINGS

In FY 1991, the Forest treated 573 acres of activity fuels and 507 acres of natural fuels. The Forest Plan shows a target of 1,470 acres of activity fuels and 700 acres of natural fuels per year. The under accomplishment in treating activity fuels is related to the backlog of timber sales not being offered (see item E-6). The under treatment of natural fuels was due to dry fall and spring burning conditions.

Protection

Summary of FY 1987 through FY 1991 natural and activity fuels reduction is as follows:

Table P-5a ACTIVITY & NATURAL FUEL ACCOMPLISHMENT (acres)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Activity Fuels	1,470	1,713	1,201	1,053	737	533					
Natural Fuels	700	665	863	1,025	675	860					

During the first five years of the Forest Plan, the Forest treated about 4,100 acres of natural fuels. This is slightly above the 700 acre yearly level envisioned in the Forest Plan. During this time, about 5,200 acres of activity fuels were treated. This is about 400 acres less per year than projected by the Plan. This shortfall is a result of harvesting less timber than envisioned in the Plan. Because the backlog of timber to be sold on the Forest has been largely eliminated, it is anticipated that during the next five years of the Plan, the acres of activity fuels treated will be near the Forest Plan level.

P-6 Wildfire

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Wildfire Acres Burned	100% Sample Annually	+/- 25% above projected average annual wildfire burned acres

FINDINGS

The 1991 Fire Season can best be described as volatile. A very dry fall, winter, and early spring was followed by above normal moisture in May and June. Moisture in July and August was spotty and coupled with the lingering effects of the dry years (1984, 85, 87, and 88), by mid-August fuels were explosive. Six fires (20 to 60 acres) required extended initial attack, and one fire, Harrison Creek, escaped initial attack. The Harrison Creek Fire burned 554 acres and required 600 people and \$1.5 million dollars to suppress. The timely availability of retardant, smokejumpers, and initial attack forces boosted by severity funding, enabled the Forest to control other fires which had the potential of becoming project fires. In 1991, the Forest had 41 wildfires which burned 795 acres.

Summary of 1987 through 1991 total wildfire acres burned is as follows:

Table P-6a WILDFIRE AREA BURNED (acres)

10-year average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
497	37	174,162	13	32,013	795					

P-7 Suppression & Protection Costs

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Cost of Suppression and Protection Organization	5 Years	+/- 5% increase in real costs

FINDINGS

The total cost of fire suppression and protection in 1991 was \$2,648,000. This figure is well above the 10-year average of \$590,000. Sixty percent of the suppression cost is attributed to the Harrison Creek Fire.

Summary of 1987 through 1991 suppression and protection costs is as follows:

Table P-7a SUPPRESSION & PROTECTION COSTS (Thousand Dollars)

10-year average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
590	379	6,361	273	1,684	2,648					

During the first five years of the Forest Plan, acreages lost to wildfires and fire suppression and protection cost were substantially above those projected by the Forest Plan. This situation resulted from very dry weather conditions in 1988, 1990, and 1991 and the changing fuel conditions. About 90% of the acres burned and 75% of the costs come from those fires which escaped initial attack and required the commitment of project resources.

WILD & SCENIC RIVERS

W-1 Effects on Eligible Rivers

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Project-level effects on eligible rivers qualifications (free-flowing and "outstandingly remarkable" resource values) and assigned potential classification (wild, scenic, recreational)	100% Sample Annually	Any action that would adversely impact or degrade an eligible rivers qualification and/or potential classification

FINDINGS

No project-level activities occurred along any of the nine eligible rivers or river segments which adversely impacted or degraded a river's qualifications and/or potential classification. This determination was made by comparing project-level projects that were implemented in or along eligible rivers with Forest Plan goal #11 and Forest Plan Management Standards W-1 (wild potential classification), W-2 (scenic potential classification), and W-3 (recreational classification). The rivers monitored for project-level activities were: Smith River, North Badger Creek, North and South Forks Sun River, Dearborn River, North Fork Birch Creek, Green Fork of Straight Creek, Tenderfoot Creek, and Middle Fork Judith River.

Only two activities changed the existing condition along two eligible rivers this past year. On February 4-5, 1991, one recreation residence under permit (#295) along the North Fork Sun River was permanently removed. This residence was visible from the river. This activity was consistent with Forest Plan management standards assigned under a recreational potential classification. This activity had a positive effect on the river's "outstandingly remarkable" recreation resource value by releasing an approximately half-acre area for public use.

A second activity involved the reconstruction of Lick Creek Trail No. 151 which intersects the west side of the North Fork Sun River. This trail was reconstructed as a result of the Gates Park fire. The project consisted of reconstructing the tread on the trail and only affected a very short (.25 mile) segment within the river corridor that is perpendicular to the North Fork Sun River. Forest Plan management standards for a river assigned under a wild river potential classification do not specifically address trail reconstruction. However, wild river potential classification allows accessibility by trail to and along rivers. Trail reconstruction improved recreational access which included a short segment within the river corridor. This improvement enhanced the river's "outstandingly remarkable" recreation resource value.

A couple other activities occurred which would affect some of the nine eligible rivers and could result in the addition of other Forest rivers meeting the eligibility requirements under the Wild and Scenic Rivers Act. One activity involved a field inventory of harlequin ducks on the Rocky Mountain Ranger District. This inventory gathered data related to harlequin duck habitat, population structure and numbers, and reproduction. Two years of inventory results indicate the presence of harlequin ducks, a Northern Region Sensitive Species, on some Forest rivers. This data would be used in conjunction with the wild and scenic river eligibility criteria for an "outstandingly remarkable" wildlife resource value. Existing eligible rivers which may be determined to contain an "outstandingly remarkable" wildlife value include the North Fork Sun River, North Badger Creek, North Fork Birch Creek, and South Fork Sun River. Adding this resource value to existing eligible rivers would not change their potential classification but recognize another value of the river emphasized under the Wild

Wild & Scenic Rivers

and Scenic Rivers Act. Other rivers which contain harlequin ducks and need to be analyzed under the Wild and Scenic River's Act eligibility requirements are: South Fork Two Medicine River, Badger Creek, South Badger Creek, West Fork Sun River, Middle Fork Birch Creek, and South Fork Birch Creek.

Fish population estimates collected by the Montana Department of Fish, Wildlife, and Parks tentatively indicate that two eligible rivers, the North and South Forks of the Sun River, meet the "outstandingly remarkable" fish criteria. This resource data would be analyzed and could result in these two rivers being recognized for their fishery value.

The presence of the Shorthead Sculpin and Westslope Cutthroat Trout, both Northern Region Sensitive Species, in rivers on the Rocky Mountain Ranger District are being tested for genetic purity on the South Fork Two Medicine River, Badger Creek, South Badger Creek, and South Fork Dupuyer. The results of this testing, along with habitat quality and fish population numbers, could result in these rivers being recognized and/or added as eligible for their fishery value.

The Forest's Wild and Scenic Rivers Interdisciplinary team has reconvened to analyze the above resource data in relationship to the eligibility requirements specified under the Wild and Scenic Rivers Act. This analysis will be conducted during FY 1993 and will request input from the public. The analysis may result in a decision that adds additional "outstandingly remarkable" resource values to existing eligible rivers and/or identifies new eligible rivers and their assigned potential classification.

GENERAL

I-1 Costs & Values

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Validation of costs and values used in Forest Plan	5 Years - 100% Annual Sample	In general, +/- 25%; however, very large cost items such as stump-truck costs would have a smaller degree of acceptable variability.

FINDINGS

As part of the Five-Year Review Process, the timber values, costs, and associated analysis will be reviewed. This review is in response to Forest Plan appeals submitted by the Montana Wilderness Association and National Wildlife Federation. The Forest intends only to validate costs and values relating to the timber resource.

RECOMMENDATIONS

- The Forest recommends deleting this monitoring item, since the only available tracking system for validating costs/values is designed solely for the timber resource.

I-2 Emerging Issues

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Effects of emerging issues or changing social values	Continuous	If issue cannot be dealt with under the Forest Information and Involvement Plan

FINDINGS

Public interest in the management of the Lewis and Clark National Forest continues to play a major role in the implementation of the Forest Plan. In addition to new projects and issues, several ongoing projects carried into fiscal year 1991. While each Ranger District was involved with several smaller scale projects requiring public involvement, the key projects necessitating more extensive efforts because of the sensitivity of the issues involved were: Chevron/Fina Environmental Impact Statement (EIS) on Exploratory Oil and Gas Wells, Galt Land Purchase, Prescribed Fire Program in the Bob Marshall Wilderness Complex, and as always, the Timber Sale Program.

Chevron/Fina EIS:

The Final Environmental Impact Statement for the Fina (Hall Creek) and the Chevron (Badger Creek) Exploratory Oil and Gas Wells was released in November, 1990. More than 1200 people were mailed summaries or complete Final Environmental Impact Statements.

The Record of Decision approving the Fina project was signed on February 19, 1991 by the Lewis and Clark Forest Supervisor and the Bureau of Land Management (BLM), Great Falls Resource Area Manager. Access to the Fina site would be from U.S. Highway 2 beginning in the NW 1/4 of Section 15, T30N, R13W, proceeding through sections 14 and 23, then, joining an existing jeep road to the well site.

The Forest Service received 53 appeals on the Fina decision. Two of the appeals were not timely, one was dismissed for lack of information, and the Regional Forester sustained the Forest decision to approve a drilling permit after review of the other 50 appeals.

The BLM also received several appeals of the decision. One of the issues raised with the BLM was their responsibility for evaluating impacts on surface resources associated with drilling on public lands. The BLM asked the Interior Board of Land Appeals (IBLA) to delay their appeal process until the agency could review its responsibility for evaluating potential impacts of the drilling. As a result of the BIM request, the IBLA remanded the decision to the BLM to establish jurisdictional responsibilities. The BLM determined that it must also review surface environmental effects and has started an interdisciplinary review of the Fina project. The BLM has withdrawn approval of the permit.

A final decision on the Chevron application has not been made. Currently, the Lewis and Clark National Forest is conducting an ethnographic study with Native Americans to gather data on historical use of the RM-1 Management Unit.

Galt Land Purchase:

The Galt Land Purchase was divided into three phases with the first purchase being completed in FY 1991. The first purchase included 3,560 acres on the Gallatin National Forest. Louise Galt has recorded a "Notice to Purchase Options" for the remaining acquisitions. The next purchase is scheduled for FY 1992 and includes more than 20,000 acres. The last purchase of 14,531 acres will be in FY 1993.

Lewis and Clark National Historic Trail Interpretive Center:

The Lewis and Clark National Historic Trail Interpretive Center was established by Public Law 100-552 on October 28, 1988. Congress specifically determined that the "historic significance of the travels of Lewis and Clark on the high Plains and their portage around the Great Falls of the Missouri requires....recognition and interpretation."

In December 1990, a supplemental environmental analysis was completed and a decision signed by the Regional Director of the MDFWP and the Forest Supervisor approving associated developments for the Interpretive Center. This decision addressed outdoor developments including interpretive trails, overlooks, living history sites, and outdoor storage. No appeals were received on this supplemental decision. The A&E contractor incorporated the decisions made in the original Environmental Assessment/FONSI and this supplemental EA/FONSI in developing the conceptual designs for the project.

The Conceptual Design (first of three design phases) for the Center was completed in late Fall 1990 and presented for congressional review in February, 1991. Congress did not fund the project for Fiscal Year 1991; so the two remaining design phases were postponed pending future financing.

General

Recognition of the potential economic impact to Montana's tourism industry translated into financial support making funding for the project a mix of state, federal and private dollars. The 1991 State Legislature committed \$700,000 (reduced to \$644,000 in Special Legislative Session) for the Center. Appropriation of these state funds is contingent upon a \$300,000 match in other funds and a minimum federal match of \$5.6 million.

The Great Falls community established a nonprofit organization to meet the challenge of raising the \$300,000 of "other" funding. With former Governors Ted Schwinden and Tim Babcock as honorary co-chairmen of the fund raising effort, the Lewis and Clark Interpretive Fund, Inc., has organized into a three-prong approach (grants, corporate support and special projects) to collecting the matching funds to meet the state deadline of December 31, 1992.

Timber Sale Program:

South Fork Complex Timber Sales - Environmental Impact Statement

The Final Environmental Impact Statement was released in January, 1991, and included responses to the substantive comments received on the Draft EIS. Two appeals were received on the South Fork Timber Sales decision. Upon review, the Regional Forester affirmed the Forest Supervisor's decision. The first of three timber sales analyzed in the EIS, Deadhorse, was sold on August 19, 1991.

Mill-Lion Timber Sale - Environmental Impact Statement

The Final Environmental Impact Statement was released in March, 1991, and included responses to the substantive comments received on the Draft EIS. Two appeals were received on the Mill-Lion Timber Sale. Upon review, the Regional Forester affirmed the Forest Supervisor's decision. The Mill-Lion Timber Sale was sold on August 30, 1991.

Moose Creek Timber Sales - Environmental Impact Statement

A Draft Environmental Impact Statement was released in March, 1991. Copies were mailed to more than 150 individuals, groups, businesses, and governmental agencies. Included in the Draft was a cover letter listing the review and comment period closing date, and dates of the two open houses where Forest Service officials were available to answer questions.

Eighty-five individuals, groups, and agencies responded in writing to the Draft EIS. In April, 1991, the ID Team who developed the Draft EIS analyzed all comments received on the document.

The Final Environmental Impact Statement was released in June, 1991, and included responses to substantive comments received on the Draft EIS. Two appeals were submitted on the Moose Creek Timber Sales decision. Upon review, the Regional Forester affirmed the Forest Supervisor's decision. The three timber sales analyzed in the EIS, Moose Park, Little Moose, and Coyote, are scheduled to be sold in FY 1992.

Turkey Salvage Timber Sale - Environmental Impact Statement

The formal scoping process for the Turkey Salvage project began in January, 1991. On January 25, 1991 letters were sent to over fifty interested parties including landowners, potential timber purchasers, outdoor clubs, and representatives from the Montana Department of Fish, Wildlife and Parks. News articles were published in the Stanford, Lewistown, and Great Falls newspapers the following week. A Notice of Intent to prepare an EIS was published in the Federal Register, Volume 56, No. 22, February 1, 1991. Public comment was requested by March 4, 1991. Written responses were received from one

timber purchaser, one timber organization, and two conservation organizations. One telephone comment was received.

The Turkey Salvage Timber Sale Draft EIS was released in April of 1991. Copies were mailed to over 130 individuals, groups, businesses, and Government agencies. Included in the Draft EIS was a cover letter listing the review and comment periods, closing date, and the date of the open house where Forest Service Officials would be available to answer questions on the Draft EIS.

Public comments received by the Forest Service on the Draft EIS totaled 10 by the June 10, 1991 deadline. Three people attended the open house at Stanford. In June of 1991, the Interdisciplinary Team (ID Team) who developed the Draft EIS, began analyzing all comments on the Draft EIS, and preparing the Final EIS.

The Final EIS was released in July, 1991, and included responses to substantive comments received on the Draft EIS. Because of the need to salvage the material before it deteriorates, the Regional Forester exempted the decision from appeal. The timber sale was sold in September, 1991.

Spring Creek Timber Sales - Environmental Impact Statement

By February, 1990, the ID Team had developed five significant environmental issues and seven alternative courses of action for implementation of timber management practices in the Spring Creek project area. Public scoping was conducted through a mail-out package to approximately 225 parties and through three public open houses scheduled to receive comments on the range of alternatives and whether the alternatives addressed the significant issues. Comments were received from nine individuals and two organizations. These comments were reviewed by the ID Team and were used to add to the issues and to modify the alternatives.

The Draft EIS Statement for Spring Creek Timber Sales was released June, 1991, with the comments on the document being requested by July 29, 1991. Sixty-six individuals, groups and agencies responded in writing to the Draft EIS. In July, 1991, the ID Team who developed the Draft EIS analyzed the comments on the document.

The Final Environmental Impact Statement will be released in FY 1992.

Natural Prescribed Fire Program:

An updated Lewis and Clark Fire Management Action Plan was approved by the Forest Supervisor on August 21, 1991. The Plan describes the process to be followed in evaluating prescribed natural fire in the Bob Marshall and Scapegoat Wildernesses. The three most notable changes in the Plan include:

- 1) Drought information will be used when evaluating the risk of a fire exceeding the wilderness boundaries. Other factors used to determine risk include: time of year, location, forest fuel type, distance from the wilderness boundary and estimated size the fire could attain under normal or extreme weather.
- 2) A maximum allowable perimeter, a boundary which the fire should not exceed, will be established for each fire. If the fire burns beyond the maximum allowable perimeter, it will be declared a wildfire and appropriate suppression actions will be taken.
- 3) Decisions about the fire will be re-evaluated daily to consider current conditions and availability of equipment and people to keep the natural fire within prescription.

General

The overriding goal of the Plan is to preserve the ecological integrity of the Wilderness by allowing lightning-caused fires, which do not appear to place life and property in jeopardy, to burn.

Other Issues:

With the completion of this FY 1991 Monitoring and Evaluation Report, officials of the Lewis and Clark will begin the five year evaluation of the Forest Plan. The review will determine if conditions or demands on the Forest have changed significantly since the Forest Plan was approved in 1986. In response to Forest Plan appeals, a review of the demand for timber and timber costs and values used in the Plan will be done during this five year evaluation.

Reissuance of oil and gas leases on the Forest is an upcoming issue for managers. Many of the previously issued leases expired beginning in 1991. Currently, no requests for reissuance of expired leases have been received by the Forest. Requests are anticipated over the next several years. A decision on the future status of leasing will be made after further NEPA analysis.

The Forest is continuing its analysis of public access needs in the Highwood, Big Snowy, and Little Snowy Mountains.

An updated sensitive species list was approved by the Regional Forester on May 17, 1991. Thirteen wildlife and fish species occurring on the Lewis and Clark National Forest are on this list. Currently, surveys of populations and habitat are underway using the updated listing.

As a result of the November 23-24, 1990, Turkey Fire where private property was destroyed, the Lewis and Clark National Forest is involved in litigation. An investigation into the cause and origin of the Turkey Fire was conducted by fire investigators of the Forest Service, California Department of Forestry, and Montana State Fire Marshal Bureau. All investigators concurred that the fire originated from slash piles which appeared purposely set, by person or persons unknown. There appears to be no evidence of negligence on the part of the Forest Service.

Working under a joint management plan for the Smith River, the Forest Service and Montana Department of Fish, Wildlife and Parks are currently working on proposals for allocating commercial outfitter activity as the result of the final rule adopted by the Fish, Wildlife and Parks Commission on November 8, 1991. A memorandum of Understanding currently is being developed between Fish, Wildlife, and Parks and the Forest Service to facilitate management activities on the river.

I-3 Land Allocations

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORT-ING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Evaluate lands identified as not meeting physical or biological characteristics used in initial allocations	Continuous	All changes will be evaluated annually

FINDINGS

Ground truthing and site-specific analyses conducted during implementation of the Forest Plan has resulted in land allocations adjustments totalling 36,254 acres. This figure represents a 2% change in land allocations and is considered a minor modification.

The following table shows the management area changes made as a result of project implementation analysis. Our analyses examine the findings of consistency for timber management activities decisions made in the Forest Plan.

Table I-3a ALLOCATIONS OF MANAGEMENT AREAS AND ACRES
(Forest Plan, page 3-2)

Management Area	1987 Acres	Change	1991 Acres
Management Area A	16,261	+367	16,628
Management Area B	330,838	-8,988	321,850
Management Area C	111,664	-8,847	102,817
Management Area D	24,486	No change	24,456
Management Area E	116,519	+8,765	125,284
Management Area F	352,746	+474	353,220
Management Area G	247,644	+8,425	256,069
Management Area H	31,778	-292	31,486
Management Area I	37,867	No change	37,867
Management Area J	11,100	No change	11,100
Management Area K	9,125	No change	9,125
Management Area L	16,112	No change	16,112
Management Area M	3,281	No change	3,281
Management Area N	41,838	No change	41,838
Management Area O	22,702	No change	22,702
Management Area P	384,407	No change	384,407
Management Area Q	51,834	No change	51,834
Management Area R	33,225	+96	33,321
Total Acres Modified		36,254	
Total Forest Acres	1,843,397		1,843,397

I-4 Employment/Income Projections

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Validation of employment and income projections	5 Years	+/- 20% of predicted changes

FINDINGS

Currently, the Forest only has the ability to validate employment and income projections for the timber resource. The following table shows the employment and income projections used in the Forest Plan and the actual situation in FY 1991 (Table 3, TSPIRS)

General

Table I-4a EMPLOYMENT & INCOME COMPARISONS

Forest Plan	1987	1988	1989	1990	1991	Five Year Average
JOBS - 192	367	150	200	110	170	199
INCOME ¹ - 6,676	14,473	6,327	6,918	3,878	5,830	7,485

¹ - Income in thousands and in FY-1991 dollars

The income and job projections are within the variability predicted in the Forest Plan.

Comparison of Outputs, Activities, and Budgets

IV. COMPARISON OF OUTPUTS, ACTIVITIES, AND BUDGETS

The following two tables compare the outputs, activities, and budgets with those projected in the Forest Plan.

Table I - COMPARISON OF PROJECTED OUTPUTS/ACTIVITIES BY TIME PERIOD (Average Annual Units)

Output or Activity	Unit of Measure	FP 1st Decade	1987	1988	1989	1990	1991	1992
Developed Use	M RVD	169	145	179*	205	241	271	
Dispersed Use	M RVD	86	54	42	60	64	63	
Wilderness	M RVD	614	581*	384*	450	416*	535	
Non-wilderness	M RVD							
Wildlife Habitat Imp	Acres	600	300	1400	1392 ¹	1262 ¹	450	
Fish Habitat Imp	Acres	5	2	0	10	16	0	
T&E Habitat Imp	Acres	100	0	0	0	500	634	
Wildlife Structures	Structures	10	0*	0	6* ¹	4* ¹	7	
Fish Structures	Structures	25	16	19	11	34 ¹	33 ¹	
Permit Grazing Use	M AUM	71.1	70.5*	72.3	72.4	71.9	71.2	
Range Improvement								
• Nonstructural	Acres	1329	1999	2433	1607	562	402	
• Structural	Structures	40	30*	18	26	35	28	
AMPs	Plans	10	5	4	4	0	2	
Nox. Weed Control	Acres	600	772	616	636	472	1062	
Soil Inventory	Acres	2000	0	0	0	0	25000	
Soil & Water Imprv.	Acres	45	29	10	109	71	50	
Minerals Mgmt	Cases	160	154*	134	250	108	94	
Total Vol. Sold	MM BF	14	7.9	10.7	6.9	10.5	17.9	
Silvicultural Exams	M Acres	28.0	45.3 ²	33.9	28.2 ²	37.3	35.4	
Reforest-Approp ³	Acres	54	217*	225	92*	117*	38	
Reforest-Other ⁴	Acres	270	1108	829	927	603	487	
TSI-Appropriation ⁵	Acres	200	563*	568	502	340	334	
TSI-KV ⁶	Acres	0	125	12	0	0	0	
Landline Location	Miles	26	14	18*	25	21.5	23	
Land Exchange	Acres	60	0	0	153	0	150	
Fuels Mgmt-BD	Acres	1470	1713*	1201	1053	737	533	
Fuels Mgmt-FFP	Acres	700	665	863	1025*	675	860	
Road Construction	Miles	9.0	3.7	2.9	0	3.1	17.4	
Road Reconstruct	Miles	24.0	29.7	20.3	17.9	9.8	13.4	
TOTAL ROAD	Miles	33.0	33.4	23.2	17.9	12.9	30.8	
Trail Construction/ Reconstruction	Miles	14.0	8.5	13.3	12.8	14.1	12.0	

* Corrections made to data reported in previous Annual Monitoring and Evaluation Reports.

¹ - Numbers differ from Table C-12a because KV accomplishments included in this table's total

² - Figure rev. from previous M&E Reports to reflect corrections in Annual R-1 Silvicultural Accomplishments - TSI & Exams - 5-Year Average, 11/25/91

³ - Total of Reforestation and Site Prep. Natural Appropriated, see Table E-7a

⁴ - Reforest-Other is the sum of Reforestation and Site Prep. from KV, Trust Funds, and Purchaser Work, see Table E-7a

⁵ - Total of Release Acres and Thinning TSI Appropriated, see Table E-7a

⁶ - Total of Release Acres and Thinning TSI KV, see Table E-7a

Comparison of Outputs, Activities, and Budgets

Table II - COMPARISON OF FY 1991 EXPENDITURES/ACCOMPLISHMENTS vs FOREST PLAN PROJECTIONS vs REQUESTED OUTYEAR BUDGET

Activity	Unit of Measure	¹ Budget in Forest Plan	² Outyear Request FP Level	³ Outyear Request Constrained	⁴ Actual Allocation
General Administration	\$\$\$	1171	1153	1153	990
Fire and Fuels	\$\$\$	401	416	416	373
Fuels Mgt-FFP	Acres	700	700	700	1088
Timber	\$\$\$	710	1378	891	1681
Tot Vol Offered	MMBF	14	13	14.5	28
Silv Exams	M Acres	28	50	33	35.4
Range	\$\$\$	490	797	671	506
Permitted Graz Use	M AUM	71.1	71.1	71.1	71.1
Range Imp Non-Struc	Acres	1329	1600	1200	1467
Range Imp Structure	Structures	40	50	50	20
Range Res Plans	Plans	10	21	21	2
Noxious Weed Control	Acres	600	1700	1300	1180
Minerals	\$\$\$	538	444	316	157
Minerals Mgt	Cases	160	55	39	95
Recreation	\$\$\$	622	617	471	378
Rec Developed Use	M RVD	169	N/A*	N/A*	N/A*
Rec Disp Use Wilderness	M RVD	86	N/A*	N/A*	N/A*
Rec Disp Use Non-Wild	M RVD	614	N/A*	N/A*	N/A*
Wildlife and Fish	\$\$\$	563	621	494	402
Wildlife Hab Imp	Acres	600	1000	800	450
Fish Hab Imp	Acres	5	0	0	0
T&E Hab Imp	Acres	100	600	480	634
Wildlife Hab Struc	Structures	10	20	16	7
Fish Hab Struc	Structures	25	27	22	20
Soil, Air, Water	\$\$\$	194	184	141	181
Soil Inventory	Acres	2000	2000	2000	25000
Soils Improvement	Acres	45	40	45	50
Facility Maintenance	\$\$\$	136	57	44	37
Lands/Land Management	\$\$\$	132	137	105	75
Land Exchange	Acres	60	50	50	48
Land Status/Acq Admin	\$\$\$	234	226	57	9
Landline Location	\$\$\$	109	136	109	99
Landline Location	Miles	26	26	21	23
Road Maintenance	\$\$\$	465	398	360	330
Trail Maintenance	\$\$\$	340	358	283	298
Co-op Law Enforcement	\$\$\$	50	82	55	39
Reforestation-Approp	\$\$\$	69	102	68	79
Reforest-Approp	Acres	54	100	66	38
TSI-Appropriated	\$\$\$	35	105	77	57
Tbr Std Imp-Approp	Acres	200	500	370	370
Tree Improvement	\$\$\$	10	11	9	21
KV (Trust Fund)	\$\$\$	123	53	53	51
Reforest-KV	Acres	270	50	50	4
Tbr Std Imp-KV	Acres	0	0	0	0
CWFS-Other (Trust Fund)	\$\$\$	29	34	35	33
Timber Salv.Sale (Perm)	\$\$\$	38	122	122	70
Brush Disposal (Perm)	\$\$\$	29	34	35	26
Fuels Mgt-BD	Acres	1470	875	875	520

Comparison of Outputs, Activities, and Budgets

Table II - COMPARISON OF FY 1991 EXPENDITURES/ACCOMPLISHMENTS vs FOREST PLAN PROJECTIONS vs REQUESTED OUTYEAR BUDGET (continued)

Activity	Unit of Measure	¹ Budget in Forest Plan	² Outyear Request FP Level	³ Outyear Request Constrained	⁴ Actual Allocation
Range Improvement	\$\$\$	60	112	88	41
Recreation Construction	\$\$\$	56	40	40	33
Facility Construction	\$\$\$	0	0	0	0
Engineering Const Support	\$\$\$	547	564	480	440
Const-Capital Inv Roads	\$\$\$	630	641	641	400
Road Const/Reconst	Miles	33.0	30.0	30	30.8
Trail Const/Reconst	\$\$\$	159	114	114	118
Trail Const/Reconst	Miles	14.0	13.3	13.3	7.0
Total Budget	\$\$\$	7940	8936	7328	6924

All dollar figures are expressed in 1991 dollars (thousands).

*Outyear targets for Recreation are requested using a different unit of measure (MPAOTs).

The budget in the Lewis and Clark National Forest Plan ¹ (June, 1986) was an estimate of the funds needed to implement the activities proposed in the Plan. Since that time many of the costs used in the Plan have changed. New activities and/or emphasis items, although authorized by the plan, have changed or expanded. Since the development of the Forest Plan we have additional and more accurate information on the real costs of resource support to timber, for example.

Each fall the Forest submits two outyear program requests (dollars and outputs) for the fiscal year two years in advance. One program outlines our budget needs to implement the Forest Plan ², and the other requests a program for the forest within an assigned budget constraint ³. The constraint is assigned by a higher organizational level and forces the forest to prioritize work within a limited budget. These program requests are combined with other forests in the country and are eventually submitted to Congress as the President's Budget.

When Congress passes the Appropriation Bill, the dollars and targets are disaggregated to the forest level and the forest is left with a budget allocation ⁴ and targets to execute. In all cases this "Actual" allocation may or may not resemble our outyear request. There are several reasons why the budget allocation we receive differs from the program we requested in the outyear process. The main reason for the difference is that Congress' decision on budgets and targets is influenced by more than just the President's budget submission. The following are examples of influences on Congress; committee members' interests, successful lobbying efforts, the overall size of the budget (and deficit), and the popularity or unpopularity of certain items in the budget. When this budget comes to us in the form of an Appropriation Act (a law) we are required to execute it as Congress has specified.

V. LIST OF PREPARERS

The following individuals contributed to the development of the Monitoring and Evaluation Report for the Lewis and Clark National Forest for Fiscal Year 1991.

FY 1991 Monitoring & Evaluation Team

NAME	FUNCTIONAL RESOURCE AREA
Ron Brohman	Zone Timber
Bonnie Dearing	Public Information Officer
William Duryee	Staff Officer - Engineering/Lands
Dana Field	Botanist
Sam Gilbert	Zone Timber (Silviculturist)
Donald Godtel	Wildlife Biologist
Karen Hoffman	Hydrologist
Arlyss Hagen	Resource Specialist
Lynn Johnson	Program Analyst
Bernie Lea	Realty Specialist
Terri Marceron	Assistant Ranger - Rocky Mt Ranger District
Ron Meyers	Civil Engineer (Roads & Facilities)
Richard Newton	Archaeologist
Wayne Phillips	Ecologist
Don Sasse	Wildlife Biologist
Dick Smith	Staff Officer Land Management Planning
Robin Strathy	Geologist
Len Walch	Zone Fisheries Biologist
Ronald Yates	Landscape Architect/Recreation

In addition, the report was reviewed by the following individuals:

NAME	TITLE
John D. Gorman	Forest Supervisor
John Greer	Forest Plan Implementation Group Leader
David Fischer	Zone Staff Officer (Timber)
Jerry Dombrowske	District Ranger, Rocky Mountain Ranger District
Larry Timchak	District Ranger, Judith Ranger District
William Fortune	District Ranger, Musselshell Ranger District
Victor Standa	District Ranger, Kings Hill Ranger District

VI. APPROVAL

I have reviewed the annual Forest Plan Monitoring and Evaluation Report for Fiscal Year 1991 for the Lewis and Clark National Forest that was prepared by the Forest Interdisciplinary Team. I am satisfied that the Monitoring and Evaluation effort meets the intent of the Forest Plan (Chapter V), Forest Service Handbook 1909.12, and 36 CFR 219.

This report is approved:



JOHN D. GORMAN
Forest Supervisor

8/31/92
DATE

List of Preparers/Approval

APPENDIX A

ANNUAL WILDERNESS REPORT

Bob Marshall Wilderness
Rocky Mountain Ranger District

Fiscal Year 1991

I. **ACREAGE CHANGES:** Unchanged from last year.

II. **SIGNIFICANT MANAGEMENT ACTIVITIES:**

A. **Resource Management**

- **Wildlife.** Harlequin Duck surveys conducted to determine population density and geographic habitat. Grizzly bear and gray wolf transect monitoring was conducted for population determination.
- **Fisheries.** Fish shocking was conducted to determine population, species composition and possible effect of 1988 fires on fisheries.
- **Threatened and Endangered Species.** Grizzly bear and gray wolf monitoring was conducted for population determination.
- **Cultural Resources.** Survey was completed on one trail project within the Wilderness and a known cultural area adjacent to Wilderness has followup inspection and mapping completed.
- **Range.** Visual inspections were taken in key grazing areas.
- **Minerals.** None.
- **Water.** Water quality and sedimentation study continued on North Fork Sun River draining area of 1988 Gates Creek Fire. Three annual snow surveys were completed on four sites to determine amount of run-off and predict when to fill down stream reservoirs.
- **Soil.** None.
- **Air.** None.
- **Noxious Weeds.** Continued monitoring to determine location of knapweed, leafy spurge and hounds tongue infestations.
- **Boundary Surveying.** None.

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B. Ongoing Research and Resource Monitoring

- **Wildlife.** Harlequin Duck Study ongoing. Mountain Lion Study adjacent to Wilderness will be expanded into Wilderness next year.
- **Fisheries.** Results of fish shocking study are not complete, but indications are that populations have not declined significantly.
- **Threatened Endangered and Sensitive Species.** Several confirmed grizzly bear sightings have been documented.
- **Cultural Resources.** Survey results on Trail #151. No sites were identified, therefore, a cultural resource clearance was recommended.
- **Range.** In OC I & II no more than 20% utilization of key forage species. No known locations exceeded standard. In OC III & IV no more than 40% utilization of key forage species: Areas exceeding standard were Grouse Creek (N. Fk. Sun River) 55% key species fescue, Bear Creek (S. Fk. Sun River) 50% key species fescue, Glenn Creek (N. Fk. Sun River) 45% key species fescue/Timothy. Areas approaching standard: Reef Creek (W. Fk. Sun River), Black Bear Cr. to Burnt Cr. OC III (W. Fk. Sun River), Upper Moose Cr. snow slides OC III.
- **Minerals.** None.
- **Water.** Study is not completed but appears to be a moderate increase in sedimentation.
- **Soil.** None.
- **Air.** None.
- **Noxious Weeds.** So far, noxious weeds have been limited to single plants which were identified, pulled and removed from Wilderness.
- **Boundary Surveying.** None.

C. Recreation Management

- **Special Use permit administration.** Twelve outfitter-guide permits were authorized involving 5400 authorized days.
- **Trail management and status.** Accomplishments included 5.5 miles of trail reconstruction due to fire and excessive run-off damage on three trails #108, #151 and #165. Maintenance was accomplished on 290 miles of trail. Trail encounters exceeded standards on the following trails:

OC I - None.

OC II - Bear Cr. Trail #222, once.

OC III -

Upper W. Fk. Sun #203, twice.

OC IV -

N. Fk. Sun #201, twice.

S. Fk. Sun #202, twice.

Lower W. Fk. Sun #203, twice.

Moose Furman #261, once.

N. Fk. Sun #110, once.

- **Campsite management and status.** Rehabilitation work was completed on two sites near Glenn Creek on North Fork Sun and on three sites at Pretty Prairie, S. Fk. of Sun.
- **Campsite density:** OC I - None exceeded.
OC II - None exceeded.
OC III -
Moose Cr. equalled once.
Upper W. Fk. Sun equalled twice.
OC IV -
S. Fk. Sun Pretty Prairie exceeded twice.
W. Fk. Sun equalled.
- **Wilderness education programs.** Leave no trace training was given to hunter safety class of 28, 12 year olds.
- **Signing.** White oak trail directional signs were installed at 22 trail junctions.
- **Volunteers.** Lookout on Prairie Reef Lookout for 38 days. Lookouts man and wife on Beartop Lookout for 42 days. Lookout's duties were to track lightning storms, report fire starts, visit with and give "leave no trace" talks to visitors and crew communication relay.

Volunteer Guard at Gates Park for 45 days, trail and building maintenance, campsite rehabilitation and visitor information.

D. Administration

- **Administrative use of motorized equipment.** None by Forest Service. Search & Rescue - seriously injured Forest Service volunteer evacuated by helicopter. Two helicopter landings were made looking for a lost hiker. Official permission had not been issued on the lost hiker landing (military).
- **Violations and law enforcement actions.** Four cases of unattended or escaped campfires reported.
- **Research Projects.** Whitebark Pine inventory and disease study was conducted summer of 1991. Results are due in February 1992.
- **Status of Wilderness Implementation Schedule.** Complex managers are progressing on implementation schedule.
- **Fire Management Plan.** Lewis & Clark went into effect in August 1991.
- **Regulations in Effect.** 14 day camp occupancy restriction enforced camp closures around Lake Levale, Bear Lake, Upper Moose Creek, Indian Point Meadows and Elk Hill (fall season only) were enforced.

E. Effective Management Limitations

Lack of funding and adequate field presence results in continuation of illegal outfitters operating and are contributing heavily to degradation of the Wilderness resource.

Lack of funding has limited rehabilitating fire lines and noticeable impacts by man associated in fighting large "let burn" natural fires. This problem includes windrowed down timber caused by fire along trail corridors.

Scapegoat Wilderness
Rocky Mountain Ranger District

Fiscal Year 1991

I. **ACREAGE CHANGES:** Unchanged from last year.

II. **SIGNIFICANT MANAGEMENT ACTIVITIES:**

A. **Resource Management**

- **Wildlife.** Mountain Lion population study adjacent to Wilderness that may include Wilderness next year.
- **Fisheries.** Fish shocking was conducted to determine population, species composition and possible effect of 1988 fires on fisheries. Monitored creel census with registration boxes at trail-head. Special bull trout regulation in effect.
- **Threatened & Endangered Species.** Documentation of grizzly bear and gray wolf observations were conducted. Trail crews and Wilderness guards used bear-proof storage containers and no grizzly/human conflicts reported.
- **Cultural Resources.** Surveys were completed on two trail projects within and adjacent to Wilderness.
- **Range.** Visual transects taken on key grazing areas. Isolated instances of forage utilization based on LAC being excluded.
- **Minerals.** Hand assessment work with ore removed by backpack on one mining claim.
- **Water.** None.
- **Soil.** Sedimentation continues to be deposited into streams as an aftermath of 1988 Canyon Creek Fire. Stabilization of soils is improving and no serious hydrophobic actions were noted as in 1988-89.
- **Air.** None.
- **Noxious Weeds.** Sites were inventoried and mapped. Public education of noxious weeds with posters at trail heads.
- **Boundary Survey.** None.

B. Ongoing Research & Resource Monitoring:

- **Wildlife.** Wildlife observations are being recorded, particularly on Threatened & Endangered Species.
- **Fisheries.** Results of fish shocking study are not complete but indications are that populations have not declined significantly.
- **Threatened & Endangered & Sensitive Species.** Confirmed grizzly bear sightings and tracks have been documented. Other species sightings being documented.
- **Cultural Resources.** Surveys on trail projects for trails #205 and #207 were completed and no sites were identified. The projects would not have an effect on cultural resources, therefore, a cultural resource clearance was recommended.
- **Range.** Areas of OC I & II allow no more than 20% utilization of key forage species. Areas of OC III & IV allow up to 40% utilization of key forage species. There were only isolated areas in any Opportunity Class that exceeded standards. Range conditions are generally in an upward trend since the fire of 1988. Eco-data plots established in 1988 were reread.
- **Minerals.** None.
- **Water.** None.
- **Soil.** None.
- **Air.** None.
- **Noxious Weeds.** Small areas of infestation of leafy spurge were hand pulled and removed from Wilderness particularly on the Dearborn River, Welcome Cr. to Forest boundary. Musk thistle concentrations continue to exist despite annual efforts to eradicate.
- **Boundary Survey.** None.

C. Recreation Management

- **Special Use Permit Administration.** 15 outfitter guide permits were issued authorizing 2260 service days of use in the entire Scapegoat Wilderness. The Rocky Mountain Ranger District - 4 permits.
- **Trail Management & Status**

a. *Trail Maintenance:*

Rocky Mountain Ranger District - 120 Miles.

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b. *Sign Replacement (white oak):*

Rocky Mountain Ranger District - 18 fire damaged, trail directional.

c. *Reconstruction:*

Rocky Mountain Ranger District - .5 miles on trail #206, water & fire damage. Replaced three fire damaged native bridges.

d. *Trail & Campsite Encounters Exceeded by LAC Standards:*

OC I - Rocky Mountain Ranger District - 2 Trails, #217 & #225.

OC II, III & IV - No standards were exceed.

● **Campsite Management:**

a. *Rocky Mountain Ranger District:*

Wilderness guard - 45 days.

Camps inventoried and rehabilitated - 6.

User contacts - 120.

Volunteers - 1 lookout = 55 days, - 1 Wilderness - 15 days.

D. Administration

- **Administrative Use of Motorized Equipment.** None.
- **Non-Forest Service Use of Motorized Equipment.** None.
- **Search and Rescue.** None.
- **Violations & Law Enforcement Actions.** One illegal outfitter case investigated with no violation notice issued. Two violations issued for unsanitary camps. One private party issued a warning notice for exceeding 14 day camp limit.
- **Administrative Structures.** Welcome Creek Work Center - 2 buildings. Green-Fork Station - 2 buildings.
- **Ongoing Research.** White Bark Pine Inventory and Disease Study was conducted summer of 1991 on Rocky Mountain Ranger District. Results are due in late February, 1992.
- **Status of Wilderness Implementation Schedule.** Complex managers are progressing on WIS and a Draft Wilderness Implementation Schedule was presented to Wilderness Council on 8/15/90.
- **Status of Fire Management Plan.** Lewis & Clark Fire Management Action Plan went into effect August, 1991.
- **Regulations In Effect.** 14 day camp occupancy restriction enforced. Pack in, Pack out and Leave no Trace as well. CFR Wilderness regulations.

- **Staffing.**

Rocky Mountain Ranger District:

GS-11 Resource Assistant - 4 pay periods.

GS-9 Wilderness/Trail Manager - 6 pay periods.

GS-4 Seasonal Wilderness Guard - 6 pay periods.

GS-4 (3) Trail Crew - 8 pay periods.

- **Education.** Leave No Trace training was given to Hunter Safety class of 28, 11-12 year olds. 50 Boy Scouts were given two classes on Leave No Trace. Leave No Trace given at two campsite fire talks.

E. Effective Management Limitations:

Lack of funding and adequate field personnel results in continuation of illegal outfitter operations which are contributing to degradation of the Wilderness resource.

Lack of funding and interest has limited ability to rehabilitate firelines and other noticeable impacts by man, associated in fire fighting large natural fires. This problem includes the windrow effect along trail corridors of extensive amount of fire killed downfall.

S.O. and R.O. level have not acknowledged significant impact of large fires on Wilderness camp areas, trails and watershed. The impacts of shifting use from burned to unburned areas cannot be effectively managed until this challenge is acknowledged.

Appendix A