Forest Plan Monitoring Report

for Fiscal Years 1988 and 1989

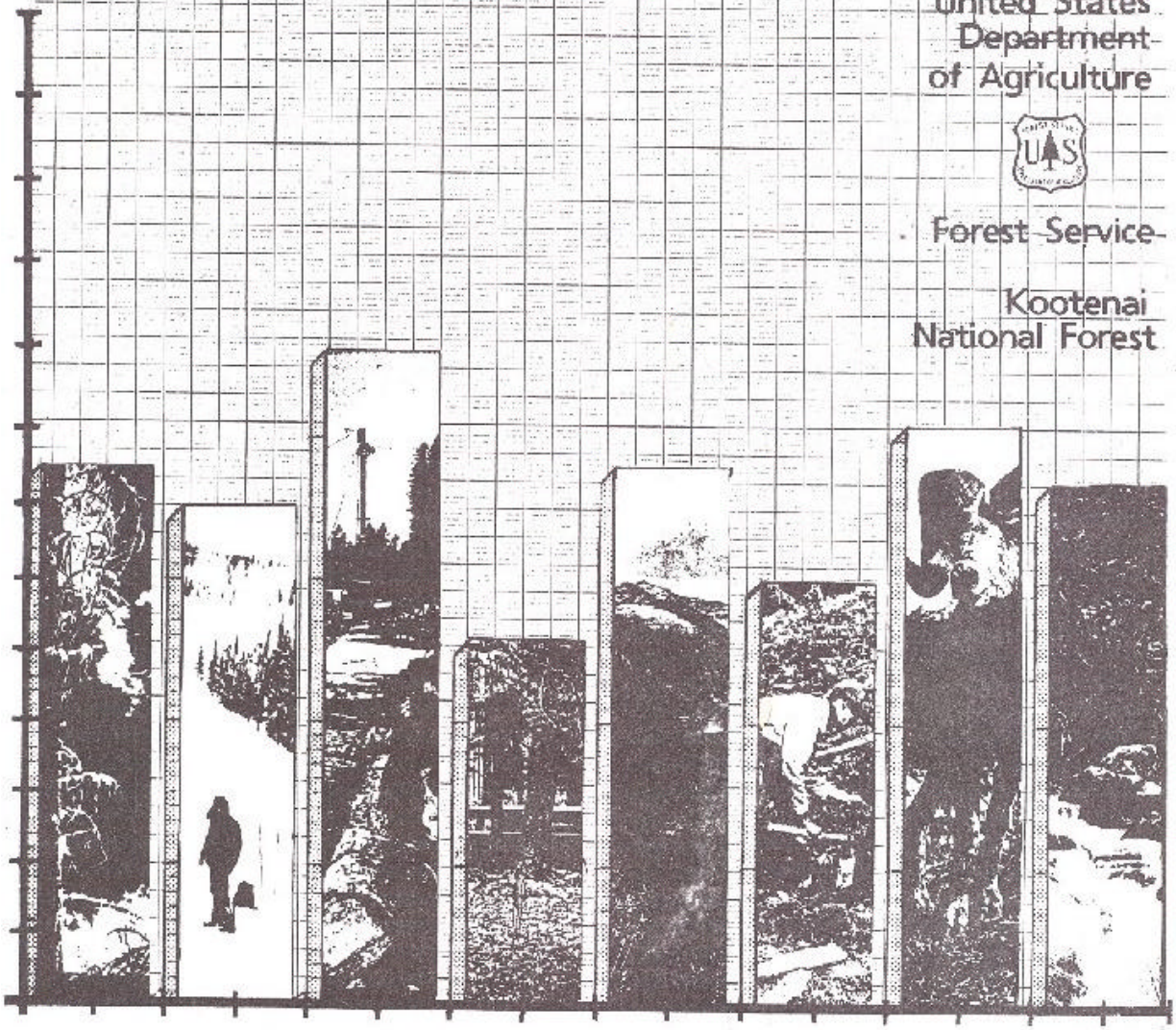
May 1990

Kootenai National Forest Plan

United States
Department
of Agriculture

Forest Service

Kootenai
National Forest



United States Department of Agriculture | Forest Service | Kootenai National Forest | 506 US Highway 2 West Libby, Montana 59923 (406) 293-6211

Reply to: 1920

Date: April 23,1990

Dear Forest Planning Participant:

Here is the Kootenai National Forest Monitoring and Evaluation Report for fiscal years 1988 and 1989. It was prepared to show where we are with the implementation of our Forest Plan, which was approved in September, 1987. It covers the progression of management of all major Forest resources and compares them to limits contained in the Plan. It also displays our strategy for fiscal year 1990 and beyond.

If you have any questions about this report, please contact the Ranger Station office nearest you (listed in Appendix D) or Paul Leimbach, Forest Planner, at the Forest Supervisor's Office in Libby (406-293-6211).

Robert F. Schrenk

ROBERT F. SCHRENK
Acting Forest Supervisor

Forest Plan Monitoring Report for Fiscal Years 1988 & 1989

Kootenai National Forest
April, 1990

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Kootenai National Forest

INTRODUCTION

The Forest Plan for the Kootenai National Forest was approved on September 14, 1987. It guides all resource management activities and establishes management direction for the Forest during a 10-year period. This direction resulted from a comprehensive analysis of Forest capabilities along with analysis of issues and environmental effects. Monitoring allows us to periodically check to determine if we're proceeding within the Plan's direction. It includes checks for implementation, effectiveness, and validation. Implementation monitoring can be summarized as "did we do what we said we would do?" Effectiveness monitoring is summarized as "did the management practices do what we wanted them to do?" Validation monitoring is a process used to determine if the Plan's assumptions and data coefficients are correct.

At this early point in implementation of our Plan, we're mostly concerned with implementation monitoring. The guidance for this process is found in Chapter 4 of the Forest Plan (see Appendix C of this report). It lists specific items which we're tracking during implementation monitoring. It also provides guidance to help determine if implementation is within desired limits. If an item is not within the desired limits, an evaluation is undertaken to ascertain the reason for the deviation. Then, as appropriate, the Forest can take steps to bring the implementation to within desired limits.

The Forest has monitored Plan implementation for the fiscal years 1988 and 1989, which include October 1, 1987 to September 30, 1989. Monitoring is considered a part of our normal operations for most resource management programs. In others, the monitoring process is new, and requires techniques we've not normally used in the past. As a result, some of the items we'll report here have detailed results and analyses, while for others, we have limited results. The information we gain from monitoring will be used for our 5-year formal review of the Plan in late 1992. As indicated in Chapter IV of the Plan (see Appendix C), there are 39 items to be measured on a yearly basis. Of the 39 items, 13 need to be reported on an annual basis and 4 need to be reported every other year. The remaining 22 items are reported on a 5-year basis. This report will discuss both the annual and biannual items.

For each monitoring item, we first checked to see if it was within the prescribed variability limits. If it was, then we concluded there was compliance with the Plan. In some cases, we found that we could be within limits at present, but indications are that the allowable variation will be exceeded by the end of the 5-year review period. For these items, we're working to achieve the allowable variation during the next 3 years, and will continue to carefully monitor these items in preparation for the formal 5-year review. Finally, there are monitoring items we found in which we're not within the desired limits. For these items, we'll continue to work to improve in order to reach the desired limits.

SUMMARY

When we answer the question "Did we do what the Plan said we should do?", we find sufficient information to determine that we can say YES for eight (8) items because we're within the Plan's stated range, and NO for two (2) items because we're outside the stated range. For those remaining monitoring items, one (1) is ON-TRACK and two (2) are OFF-TRACK. Three (3) others have INADEQUATE RESULTS to draw conclusions. One (1) item DOESN'T FIT into any of these five categories.

So what does all this mean? It means that on some areas we're in compliance with the Plan, and on others we need some improvement. It means that there are some areas where we'll meet the Plan's direction by the 5-year reporting date if current trends continue. It also means there are some items where we won't meet the Plan's intention if we don't take some corrective action.

The monitoring items where we can say "YES, we're in compliance with the Plan" include: Old Growth Timber Habitat, Threatened and Endangered Species Habitat, Range Use, Timber Harvest Deferrals, Harvest Area Size, Water Yield Increases and Affect on Stream Channels, Forest Plan Costs, and Insect and Disease Status as a Result of Activities. We're in compliance on these items because we're within the Plan's stated limits of variability. Specifically here's what we found for these items:

Old-Growth Timber Habitat (C-5): The Forest Plan requires that old-growth timber habitat necessary to support viable populations of dependent species should not fall below 10% in any 3rd-order drainage. This requirement has been further confirmed in a policy letter issued by the Forest Supervisor in June 1988. As we proceed with project planning, we're checking the quantity and quality of old-growth timber. Through FY 1989, we've completed this process on almost 155,000 acres. Within this acreage, 9.4% has been designated for old-growth timber. The additional 0.6% has been designated within adjacent areas, but not yet reported.

Threatened and Endangered Species Habitat (C-7): Through this item we're monitoring the quantity and quality of habitat for the recovery of peregrine falcons, gray wolves, bald eagles and grizzly bears. We've observed that the number of bald eagles are definitely increasing. For peregrine falcons, gray wolves and grizzly bears, we're unable to make a conclusive determination about population trends. This is due to the short monitoring period (two years) and the difficulty of making accurate population counts. Monitoring and evaluation in future years should provide more conclusive information. Right now, the amount of habitat for these species hasn't decreased and the Forest is within the recovery goals stated in the Plan.

Range Use (D-1): Monitoring range use helps determine whether or not we're within the stated range for domestic livestock grazing, which is measured in animal unit months (AUM's). During the monitoring period, grazing use has declined but still remains within the range stated in the Plan. Continued monitoring should indicate the reasons for the decline in AUM's.

Timber Harvest Deferrals (E-7): Acres of suitable timber can be deferred from timber sales due to economics, resource conflicts or other unforeseen reasons. During the monitoring period, several events or situations caused deferrals but not enough to initiate further action (10,000 acres net change in the size of any management area). The events and situations that deferred suitable timber acreage from sale include poor timber sale economics, adjacent cutting units not regenerated adequately to provide big game hiding cover, significant timber harvest on intermingled private land, and the impact of the injunction imposed by the Ninth Circuit Court in the Upper Yaak area. Indications are that if the current trend of timber harvest acreage deferrals continues, the Plan's limits could be exceeded by the end of fiscal year 1990.

Harvest Area Size (E-8): The Forest Plan provides standards for the maximum size of regeneration harvest units using the clearcut, seedtree, or the shelterwood cutting method. Monitoring indicates no deviations from the planned size limits except where catastrophic results of insect or fire damage occurred. Where the catastrophic situations occurred, procedures to deviate from the prescribed cutting unit size-limits were followed, including interdisciplinary review and notification of the public.

Water Yield Increases and Affect on Stream Channels (F-3): The Forest water-yield model is used to analyze the potential effect of vegetative disturbance in a watershed before any timber sales are sold. The watershed analysis includes both National Forest and private land. About 40% of this combined private and National Forest land has been analyzed, primarily in watersheds which include significant amounts of private land. Several of the watersheds exceed peak flow standards, but conditions are generally much better throughout the rest of the Forest area. Whenever the standards are exceeded in an area, planned activities on the National Forest lands have been deferred until watershed recovery occurs. This has been necessary to meet the Forest Plan standards and protect downstream beneficial uses as required by the Montana State water quality goals.

Forest Plan Costs (H-3): Here we evaluated whether the costs of producing Forest Plan outputs continue to be valid. Of the items evaluated, reforestation and precommercial thinning costs have

exceeded the 10% deviation, but these two variables are not a significant part of the overall costs considered in the Forest Plan. As a result, we do not expect any invalidation of the Plan.

Insect and Disease Status as a Result of Activities (P-1): We used aerial reconnaissance and intensive analysis of individual timber stands to determine the level of insect and disease organisms found in residual and surrounding timber following management activities. The management activities were timber harvest, thinning, road construction, etc. Although significant acreage on the Forest is affected by insects and disease, no evidence suggests that any of the management activies are contributing to this situation. Rather, the management activities have most often produced beneficial results in terms of managing forest health.

The monitoring items where we answered "NO, we're not in compliance with the Plan" are: Soil and Water Conservation Practices, and Forest Plan Budget Levels. These items are not in compliance with the Plan because the results are outside of the Plan's stated limits. Specifically, here's what we found for these items:

Soil and Water Conservation Practices (F-1): Monitoring of soil and water quality conservation practices showed that we did not meet the State Water Quality guidelines of 100% compliance (96%). The use of Best Management Practices (BMP's) is a new practice for the Forest, and we're still learning how to stay within the state standards. Continued familiarity with BMP's and a better understanding of how certain practices affect water quality should bring the level of implementation success up to 100%.

Forest Plan Budget Levels (H-4): For fiscal years 1988-89, the Forest budget has been less than stated in the Forest Plan (65% of the planned level). Most of this difference is the result of budget trends in-place prior to the approval of the Forest Plan. Since the Forest Plan has been initiated, we've been working to achieve budgets more in line with the Plan's requirements.

Several monitoring items are not being formally evaluated until 5-years have elapsed. However, for these items the data was evaluated as to whether the quantitative limits were being met. If the data indicated that the results were within the Plan's limits, then the item was determined to be ON-TRACK. If the data indicated that the limits were being exceeded, then the item was determined to be OFF-TRACK. The monitoring item that's ON-TRACK for the 5-year evaluation period is Suitable Timber Management Area Boundary Changes. The items that are OFF-TRACK for the 5-year evaluation period are: Timber Sell Volume and Acres Sold for Timber Harvest.

Monitoring items that are ON-TRACK:

Suitable Timber Management Area Changes (E-3): The Forest Plan allows for changes in the boundaries of management areas based upon site specific analysis and interdisciplinary review. However, large changes could impact the ability of the Forest to produce particular outputs. One nonsignificant amendment of the Forest Plan has already been filed (Amendment #2 - February, 1989) to account for such a change. In addition, there are smaller changes which can accumulate. After two years, the total of such changes in all management areas are within the Plan limits. The net change of suitable timberland has been two-tenths of one percent.

Monitoring items that are OFF-TRACK:

Timber Sell Volume (E-1): The Forest sell volume has not matched the planned allowable sale quantity (ASQ) during the last two years. This is a result of a Ninth Circuit Court injunction in the upper Yaak River area, deferrals for watershed concerns, delayed implementation of new utilization standards, and limitations in budgets. Due to continuing impacts from these factors, sell volumes are expected to remain lower than the ASQ for several more years.

Acres Sold for Timber Harvest (E-2): The total acres sold for regeneration harvest is below the planned level. This deficit results from the same factors affecting timber sell volume (see above).

The monitoring items where we have INADEQUATE RESULTS include: Fisheries (C-10), Noxious Weed Infestations (D-2), and Sediment Impacts to Fisheries (F-2). These items weren't monitored to a sufficient level to make firm determinations of whether or not they're within the variability limits. (See the next section "Strategy for Fiscal Year 1990" for plans to increase monitoring efforts.)

The monitoring item that DOESN'T FIT into any of the five categories was Emerging Issues (H-2). This item focuses on issues that appear to be developing since the Plan was initiated, and also monitors the Forest Plan issues that appear to be changing. Emerging or potential issues identified include: air quality management, biodiversity, impacts to Forest Service activities from adjacent private lands, non-system road management, nutrient recycling, and sensitive plants. The Forest Plan issues that are changing are: grizzly bear management, potential mineral development, state water quality standards, and timber supply.

STRATEGY FOR FISCAL YEAR 1990

As seen above, there are several items in which we need further improvement in order to reach full compliance with the Forest Plan. We've initiated action to move in this direction during fiscal year 1990 and intend to have good foundations for change in place when we next report on the Forest Plan. Specific improvements are listed below:

Fisheries (C-10): A plan for complying with this monitoring item is being prepared. Significant fisheries monitoring will be done in the Upper Yaak River and Swamp and Edna Creeks during 1990. Results from these efforts should be available in two years.

Noxious Weed Infestations(D-2): A plan will be prepared to establish baseline information and monitor changes in noxious weed populations.

Timber Sell Volume (E-1): Plans have been prepared to increase timber harvest levels closer to the total Plan ASQ by the end of the Plan period (1997). Continuing evaluations will be made as a part of regular Forest Plan monitoring, with continuing detailed analysis of the timber monitoring items. At the formal 5-year review period (1992) there will be a more intensive assessment of the need for any possible changes in the Forest Plan.

Acres Sold for Timber Harvest (E-2): The total acres of regeneration harvest are below the level projected by the Plan. This deficit is a manifestation of the same factors which have decreased the timber sale volume amount (see item E-1). No further analysis is proposed for this monitoring item except continued tracking as required.

Soil and Water Conservation Practices (F-1): Starting in Spring, 1990, the Forest will conduct additional training for field personnel in implementation of Best Management Practices (BMP's). In addition, a process will be started to track BMP implementation for applicable projects. This will include early review by the Forest Hydrologist so that potential problems are corrected before state standards are exceeded.

Sediment Impacts on Fisheries Habitat (F-2): In practical terms, this monitoring item is closely allied to the Fisheries item C-10. We'll be undertaking the monitoring for it as we start the basic fisheries monitoring.

Forest Plan Budget Levels (H-4): Most all the budget items are outside the specified range in the monitoring plan, but this is the result of budgets trends in-place prior to the start of the Forest Plan. Changes in budget requests have been submitted to be more in line with the Forest Plan in some areas. However, because substantial changes are needed in certain areas, such as recreation, it may be several more years before significant changes are made and programs are built to utilize such funding. Recent changes in budget strategies, such as challenge cost-share projects, should also help us reach higher effective budget levels.

WILDLIFE AND FISHERIES

Old-Growth Timber Habitat: Monitoring Item C-5

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Maintain habitat capable of supporting viable populations of old-growth dependent species (10% old-growth in each drainage).
REPORTING FREQUENCY:	Every 2 years (1989, '91, '93, '95, '97)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Reduction below 10% in a drainage which was previously over minimum; or any reduction in a drainage previously under minimum.

Background: The Forest Plan specified that 10% of the Forest below 5,500 feet elevation would be managed for old-growth dependant wildlife. This area amounts to 186,500 acres and would ideally be equally distributed in all drainages of the Forest. Sixty-six percent, or 124,000 acres, of the desired amount was designated as Management Area 13 (Old-Growth Timber) and is managed as unsuitable for timber management. The remaining acreage needed to reach 10% (62,500 acres) is largely found in other areas that are also unsuitable for timber management. However, in many 3rd-order drainages, land from the suitable timber management areas is needed to contribute to reach the prescribed 10% level.

The current policy of management of old-growth in all management areas was implemented with the approval of the Forest Plan and confirmed in a Forest Supervisor policy letter in June, 1988 (file 1920/1570, dated 6/28/88). The letter gave specific standards for old-growth timber analysis and designation for each 3rd-order drainage. It required that old-growth timber be maintained at the 10% level in each 3rd-order drainage. However, if a drainage consisted of mostly younger timber stands, then part of the 10% requirement should be designated in high-quality old-growth timber stands in adjacent drainages, if available. As a result, based on the vegetative conditions of an area, an individual drainage could actually contain more or less than the desired 10% level. However, over a Forest-wide basis, a minimum of 10% has to be designated as old-growth timber. All verification of Forest Plan designations and the status of individual 3rd-order drainages is proceeding concurrently with site-specific project planning, using an interdisciplinary process. Since the verification and interdisciplinary designation of old-growth timber is occurring simultaneously, the process can be considered a combination of both implementation and effectiveness monitoring.

Results: Specific designations of land for old-growth timber is approved in a formal decision notice or memo. Such designations are then reported for evaluation and effectiveness monitoring. As a part of this process, the habitat effectiveness is rated using several factors. The Forest Plan Glossary and Appendix 17 of the Forest Plan provide examples of these old-growth timber attributes. If there is a deficiency in one or more factors, the identified stand can still be designated as old-growth timber when no other stands of higher effectiveness are present. As a result, designated old-growth timber stands are classified as EFFECTIVE or NOT EFFECTIVE at this time. Table C-5-1 displays the results of effectiveness monitoring for fiscal years 1988-89. Forestwide, 154,461 acres have been surveyed as of FY 1989. As can be seen, 14,493 acres have been validated and specifically designated as old-growth timber. This amounts to 9.4% of the total area analysed. The total shown is less than the required 10% because, in some 3rd-order drainages, more effective old-growth timber has been identified outside the surveyed area, but as yet, hasn't been reported. Therefore, the reported amount in any fiscal year can vary somewhat from the required 10%, but over a longer time period, will show an accurate reflection of the on-the-ground condition of 10%. In time, a greater sample of areas of the Forest will help provide more reliable estimations. Information-to-date indicates that an additional 350,000 acres has been surveyed as of Spring, 1990, and the old-growth timber designations should be finalized for the bulk of these acres during Fiscal Year 1990. Since this amount is a much larger

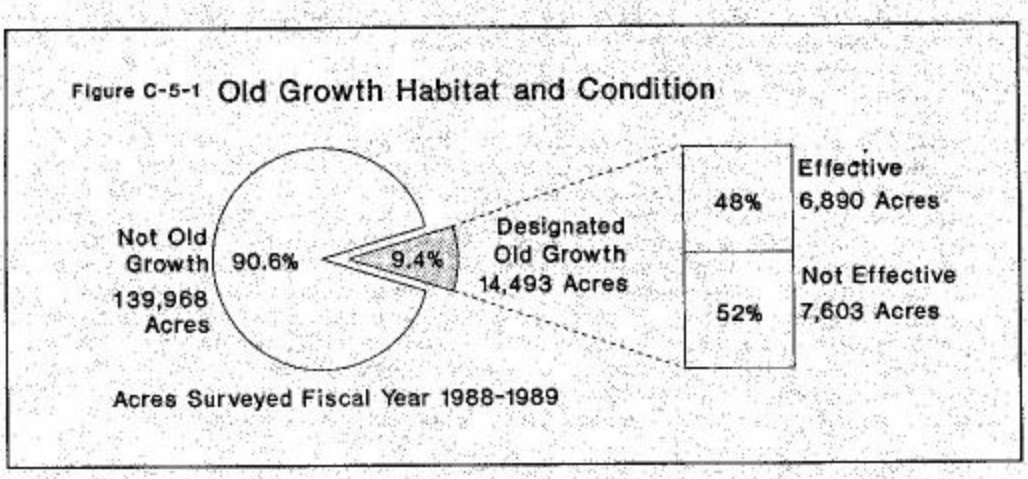
sample than reported for Fiscal Years 1988-89, a more complete evaluation of old-growth timber is expected for the next reporting period (1992).

Effectiveness Evaluation: Effectiveness monitoring indicates that, at the present time, 48% of the designated old-growth timber has been verified as "fully effective" (see Figure C-5-1). Most of the verification work has taken place in lodgepole pine areas, the Dry Fork Fire area, and in the 1910 burn. None of these areas provide significant amounts of high-quality old-growth timber. As the effectiveness is evaluated in more mixed-conifer areas, the relative amount of effective old-growth timber will increase.

Table C-5-1 Old-Growth Timber Habitat and Condition

Fiscal Years	Acres Surveyed	Acres Designated as Old-Growth Timber	Percent Designated as Old-Growth Timber	Old-Growth Timber Acres Currently Judged Effective	Percent of Old-Growth Timber that's Currently Judged Effective
1988-89	154,461	14,493	9.4	6,890	48

Figure C-5-1 Old Growth Habitat and Condition



WILDLIFE AND FISHERIES

Habitat for T & E Species: Monitoring Item C-7

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Ensure adequate habitat is provided for recovery of T & E Species including: Peregrine Falcon, Gray Wolf, Bald Eagle and Grizzly Bear.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Any downward population trend. Any forestwide decrease in habitat quantity or quality. Failure to meet Kootenai N.F. recovery plan goals.

Results and Evaluation:

Peregrine Falcon: There are no specific recovery goals for the Forest, but the goal for Montana is 20 nesting pairs (USFWS, 1984). There is little historic presence of peregrine falcons on the Forest. If the frequency of sightings becomes greater, a full assessment of potential will be undertaken.

There was one sighting of a peregrine falcon on the Forest in 1988. It was in the Eureka area, and is believed to have been migrating. Observations of this species are low, being limited to birds migrating between nesting and overwintering territories. Limited quality habitat for nesting is found on the Forest.

Gray Wolf: The gray wolf recovery area lies within the northeast corner of the Forest, on the Murphy Lake Ranger District. Hiding cover is abundant and well dispersed throughout much of the area. Security values are generally high due to limited road access and, currently, no other resource management projects are occurring in the area. Prey availability is generally good. In general terms, overall habitat quality is good, and is remaining steady. Recovery is underway in Montana and populations are trending upwards.

In 1988, two live gray wolves were seen and confirmed in the Eureka area. Indirect sighting reports by hunters have also been made in the Ten Lakes area. There was one known wolf pack of at least ten wolves in the Wigwam drainage just across the border in Canada. Monitoring of a radio-collared wolf in the Wigwam pack and observation of wolf sign have shown that this pack periodically occupies the north end of the Forest from the Yaak River drainage east to the Murphy Lake area. Recent research along the North Fork of the Flathead River and Glacier Park points to expanding use by packs along the Canadian border area. One radio-collared wolf from the Wigwam pack was poached in 1988 when it moved over to the Yaak River drainage.

There were seven confirmed and one unconfirmed sighting of live wolves on the Forest in 1989. Several sets of tracks were also confirmed. The Wigwam pack was active along the Canadian border, and one member was radio-collared. Five of the seven sightings were in the Wolf Creek area bordering the Fortine and Fisher River Districts. These sightings are suspected to be a single breeding pair that wintered in the area and eventually mated and denned on a private ranch in the Marion area west of Kalispell. The U.S. Fish and Wildlife Service attempted to relocate this pack of four to Glacier Park. Only the radio-collared female is known to survive and was last located west of Missoula in March, 1990. A male wolf not included in the sightings above was killed by a rancher on private land in the Marion area prior to the re-location effort.

Bald Eagle: Guidance for bald eagle recovery comes from the Montana Bald Eagle Management Plan (1986). This plan calls for establishment of 52 nesting pairs within the Montana section of the upper Columbia River Basin, on both public and private land. Most of the Forest's efforts centers on coordination efforts to integrated bald eagle needs with other land management, such as recreation, wildlife habitat improvement, land exchange, minerals, and timber. Biological evaluations were made for all applicable projects--14 in 1988 and 20 in 1989--and all concluded that no negative effects were present in proposed projects. Within the Forest, bald eagle populations are expanding along major watercourses. In 1988, a total of 77 bald eagles were sighted during the annual mid-winter survey, 65 matures and 12 immatures. The Kootenai River corridor, Koocanusa Reservoir, Fisher River, Wolf Creek, Noxon and Cabinet Gorge Reservoirs and the Clark Fork River were primary sighting areas for the population. Observers found a total of 3 active nests with a total of 6 fledged young. The total number of bald eagles and active nests increased sharply in 1989. A total of 110 bald eagles, 65 matures and 35 immatures and 10 unknown were surveyed in mid-winter. Six active nests with a total of 9 fledged young were found in 1989.

Grizzly Bear: The Forest's primary effort in grizzly bear recovery is in habitat management. Recovery goals are based on the Grizzly Bear Recovery Plan (USFWS, 1982). Table C-7-1 shows habitat effectiveness values for each of the Grizzly Bear Management Units (GBMU) evaluated during fiscal years 1988-89. Effectiveness is based on security, and the desired level is 70% or greater. Of the eighteen units, nine were above the desired level (70%). Fourteen of the GBMU's were maintained or improved in habitat effectiveness, while five declined from 1988 to 1989. As the Forest's habitat management program continues, more GBMU's are expected to improve and reach the desired level of effectiveness.

In 1988, there were two confirmed sightings of female grizzly bears with cubs on the Three Rivers District. In 1989, there were two confirmed sightings of female grizzlies with cubs on the Fortine District, and a third on the Three Rivers District. There were also unconfirmed sightings on the Fisher River and Cabinet Districts. Females with cubs are important indicators of potential population growth.

Mortality rates are another key indicator of potential population trends. In the Cabinet-Yaak Ecosystem (CYE) during 1988, an adult female was killed by a hunter in self-defense. Also in the CYE during 1989, a sub-adult female caught in a trap was killed by another grizzly. No other known mortality occurred in 1988 or 1989.

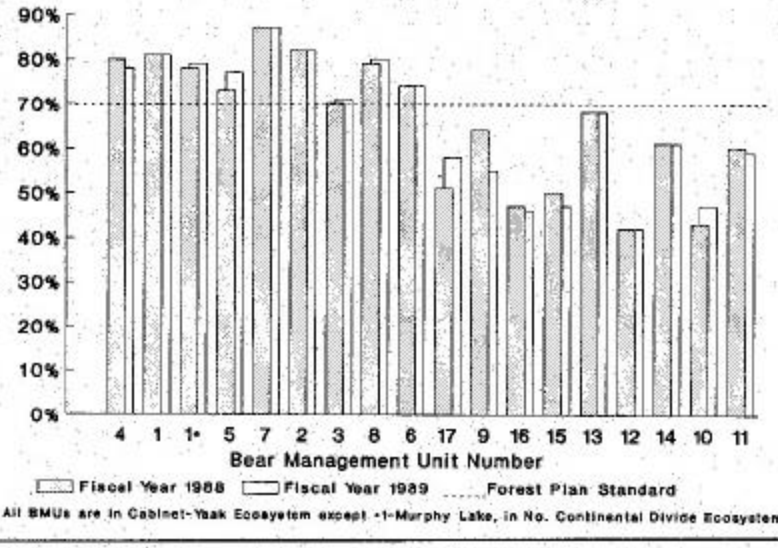
At this point, it's unknown if grizzly bear populations are increasing, decreasing, or remaining static. Populations may be below the minimum viable levels, making population dynamics especially sensitive to birth rate and mortality. Current plans by the US Fish and Wildlife Service include augmentation of the Cabinet Mountain population with a two sub-adult females during 1990. Continued research and monitoring of the population is important in determining success of this project. Monitoring and evaluation made in future years should provide more conclusive information.

Table C-7-1 Grizzly Bear Habitat Effectiveness

Grizzly Bear Management Unit (GBMU)	Habitat Effectiveness Fiscal Year 1988 (percent)	Habitat Effectiveness Fiscal Year 1989 (percent)
Above 70 percent:		
Bull #4	80	78
Cedar #1	81	81
Murphy Lake #1[1]	78	79
Saint Paul #5	73	77
Silver Butte-Fisher #7	87	87
Snowshoe #2	82	82
Spar #3	70	71
Vermillion #8	79	80
Wanless #6	74	74
Below 70 percent:		
Big Creek #17	51	58
Callahan #9	64	55
East Fork Yaak #16	47	46
Garver #15	50	47
Keno #13	68	68
Newton #12	42	42
Northwest Peak #14	61	61
Pulpit #10	43	47
Roderick #11	60	59

[1]MURPHY LAKE #1 is located in the North Continental Divide Ecosystem. All others are in the Cabinet Yaak Ecosystem.

Figure C-7-1 Grizzly Bear Habitat Effectiveness



All BMUs are in Cabinet-Yaak Ecosystem except *1-Murphy Lake, in No. Continental Divide Ecosystem

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WILDLIFE AND FISHERIES

Fisheries Habitat: Monitoring Item C-10

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine changes in fish habitat and populations.
REPORTING FREQUENCY:	Every 2 years (1989, '91, '93, '95, '97)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 10% change in Redd's, +/- 2 degrees change in stream temperature, +/- 10% change in sediment, +/- 10% change in embeddedness, +/- 20% change in debris accumulations.

Background: Fish habitat and population concerns overlap with the Kootenai's responsibility for protecting beneficial uses as required by State of Montana and Federal laws and regulations. To resolve the fish habitat and population concerns, the Forest Plan committed to aggressive water quality protection measures and special streamside management provisions in riparian areas as the means for protecting fish habitat (see the Forest Plan, Appendix 25, and Chapter II, respectively). The Forest Plan also schedules fish habitat improvement projects.

Spawning redd surveys address concerns over the actual beneficial uses in streams, with fish spawning activity used as an indicator of the general biological health of a stream. Temperature monitoring addresses the concerns over riparian vegetation changes that, in turn, influence the productivity and use of the habitat by fish and insects. Streambed core samples and embeddedness surveys address concerns over the sedimentation of stream habitat that, in turn, influences the survival of incubating fish eggs, emerging fish fry, and aquatic insects. Stream and woody debris accumulation surveys address concerns over the morphology of stream habitat that, in turn, influences the suitability of habitat for a particular species or size of fish.

Results: Data was obtained from three watersheds during 1988-89 (Bristow, Rock, and Big Creeks) but the results aren't conclusive. Fish habitat improvements are being done as scheduled in the Forest Plan (see Appendix A at the end of this report).

RANGE

Range Use: Monitoring Item D-1

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine is the projected grazing use measured in Animal Unit Months (AUM's) meets Forest Plan projections.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 20% of anticipated AUM's.

Background: The projected availability of forage for livestock grazing, measured in AUM's is 12,600. This activity is concentrated primarily in the northeastern portion of the Forest on the Rexford and Fortine Districts.

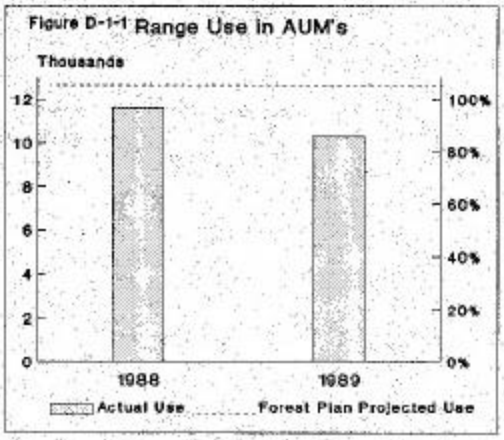
Results: During the last two years, actual use has been less than projected but not to the extent which would initiate further evaluation.

Evaluation: Some concerns have been expressed about the deteriorating quality of range condition in some locations. This may be in part due to drought conditions which has reduced forage production during the past two years. Overstocking or distribution problems may also be a factor. Continued allotment inspections and production utilization studies will determine the extent of these problems.

Table D-1-1 Range AUM'S

Fiscal Year	1988	1989
Forest Plan Projected Use (AUM's)	12,600	12,600
Actual Use (AUM's)	11,600	10,300
Percent Use as a Percent of Projected Use	92	82

Figure D-1-1 Range Use in AUM's



RANGE

Noxious Weed Infestations: Monitoring Item D-2

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine acreage infested with noxious weeds
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	10% increase in number of acres infested, density of existing infestations and a change in the diversity of noxious weed species.

Background: Forest Plan requirements state that noxious weed infestations will be monitored for increases in total acreage, increases in weed density and the introduction of new weed species on the Forest. There is no baseline inventory available for noxious weed infestations.

Results: Few precise measurements of noxious weeds have been completed to date but, there is general agreement that the acres of noxious weeds of the KNF are continuing to increase. The rate of increase is uncertain but thought to be below the 10% increase stated in the Plan. Spotted knapweed, dalmatian toadflax and thistles infestations are the primary noxious weed species found. These infestations will probably continue to increase in roaded areas where the soil has been disturbed such as log landings, ditches and fill-slopes.

TIMBER

Timber Sell Volume: Monitoring Item E-1

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine if the annual timber sell volume meets the projections of the Forest Plan (allowable sale quantity plus other permissible sale volumes).
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 5% deviation after 5 years for the regulated timber sell volume, and +/- 10% deviation after 5 years for the unregulated volume.

Background: The maximum projected average annual timber sale volume is 227 million board feet (MMBF) per year (see Forest Plan Appendix 11). This projection is from the suitable (regulated) timberland and is known as the Allowable Sale Quantity (ASQ). In addition to the ASQ, 6 MMBF per year is estimated from the unsuitable (un-regulated) timberlands. These two timberland areas are estimated to provide an average annual Timber Sale Program of 233 MMBF per year. (Suitable timberlands are located on management areas (MA's) 11, 12, 14, 15, 16, and 17. Unsuitable timberlands are MA's 3, 5, 6, 10, 18, 19, 20, 23 and 24.)

Results: Timber sell volumes from the suitable (regulated) lands are 21% lower than the projected maximum. Timber sell volumes on the unsuitable (unregulated) lands are 50% below the estimate. The total planned Timber Sell Program is 23% lower than the Forest Plan estimate (see Table E-1-1).

Evaluation: The regulated and unregulated timber sell volumes are currently outside the quantitative range prescribed in the Forest Plan (5% and 10%, respectively), but are still within the time frame allowed (5 years). Plans are being prepared to achieve the allowable sale quantity by the end of the Forest Plan period which is 10 years. This item will be assessed each year until the end of 5 years (1992) when a determination will be made on whether any changes are needed in the Forest Plan.

Some of the principle reasons for the lower volumes are:

The Ninth Circuit Court injunction on timber sales and road construction in the Upper Yaak River. This resulted in the postponement of 59 MMBF of timber sales scheduled for fiscal year 1988.

The new Region 1 Utilization Standards weren't implemented until late in fiscal year 1989. Use of these new standards result in higher volume measure for a given timber stand and are reflective of actual manufactured yield of wood products using current mill technology. The Forest Plan used these new standards, but they were not actually used to prepare and sell timber stands until 1969. This resulted in an estimated 21-34 MMBF deficit in measured volume.

Higher than planned timber harvesting on intermingled private lands. This resulted in delays of Kootenai Forest timber sales because of hydrologic concerns (see Timber Harvest Deferrals).

Timber sale preparation budgets were less than projected in the Forest Plan (see Forest Plan Budget Levels, Item H-4).

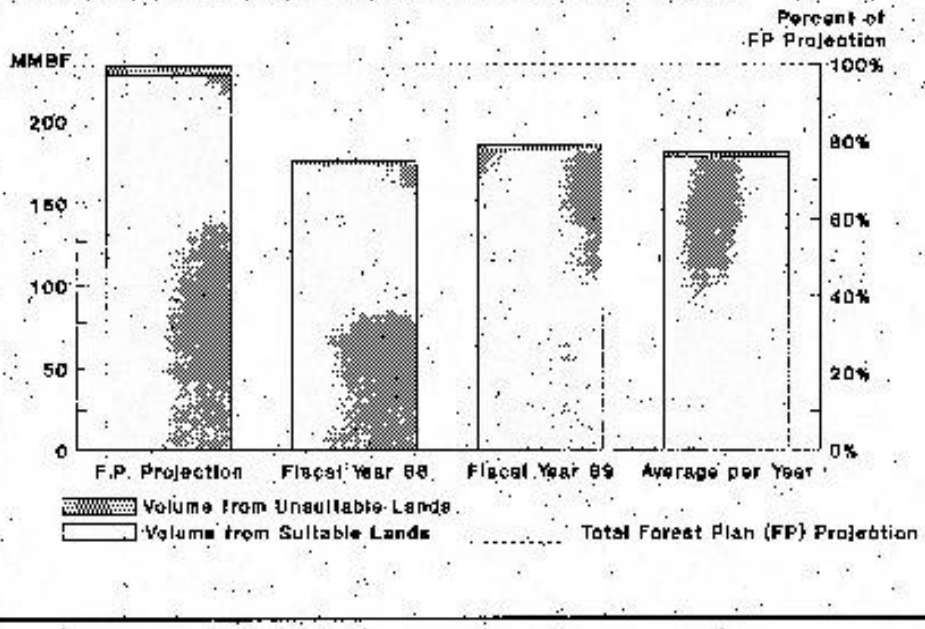
For more more detailed information concerning the Timber Sell Program, see Appendix B.

Table E-1-1 Timber Sell Volumes (MMBF per year)

Timber Land Classification	Forest Plan Projection	Fiscal Year 1988	Fiscal Year 1989	Total Timber Sell for 1988-89	Average Timber Sell per Year	Percent of Forest Plan Projection
Suitable Lands (ASQ) (regulated*)	227	173	181	354	177	79
Unsuitable Lands (unregulated*)	6	2	4	6	3	50
Total Timber Sell Program	233	175	185	360	180	77

* These terms were used in Chapter IV of the Forest Plan and in Appendix 11. They are displayed here only for continuity and are no longer used.

Figure E-1-1 Timber Sell Volumes (MMBF per year)



TIMBER

Acres Sold for Timber Harvest: Monitoring Item E-2

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine if total acres sold for harvest meet Forest Plan projections by management area.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 10% by management area after 5 years.

Background: The Forest Plan projects 15,740 acres of annual regeneration harvests to achieve the allowable sale quantity (ASQ). (See Timber Sell Volume, monitoring item E-1.) Regeneration harvests include clearcut, seedtree, and shelterwood cutting methods

The acres to be harvested to meet the ASQ are located in six different management areas (MA's). Since each MA has different objectives and management standards, the expected costs of timber harvest will vary. Any significant deviation from the expected harvest acreage for each MA could indicate possible changes in costs, benefits, or budget requirements. (For more information on the Forest Plan MA requirements, see Chapters II and III of the Forest Plan.)

Table E-2-1 shows the acres sold for timber harvest in fiscal years 1988-1989 and compares them to the Forest Plan projections by MA.

Results: The total acreage sold for regeneration harvest is below the Forest Plan projection (11,256 acres compared to 15,740 acres or 72% of the projected level). In contrast, the acreage sold in MA 15 is above the projected level.

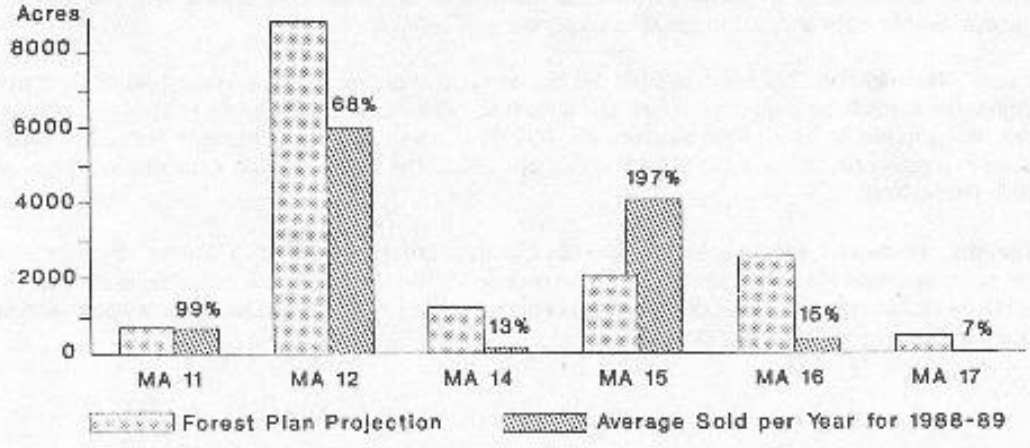
Evaluation: MA 15 is primarily oriented to timber production and has the least conflict with other resources such as big-game, visual quality, threatened and endangered (T & E) species, etc. Because of the Forest goal to harvest as much dead and dying lodgepole pine as quickly as possible, timber sales have been emphasized in MA 15. MA 15 also contains an extensive road network which allows immediate access to the insect-infested timber. This combination of existing access and low resource conflict has allowed the highest possible timber sale program for the existing budget level (see Budget Levels, monitoring item H-4).

The acreage of timber sold in MA's 12 and 14 would have been higher in fiscal years 1988-89 if the Ninth Circuit Court injunction in the Yaak River area had not been implemented (see monitoring item E-7, Timber Harvest Deferrals).

Table E-2-1 **Acres Sold for Timber Harvest** (regeneration harvest methods only)

Management Areas (MA's)	Forest Plan Projected Acres	Fiscal Year 1988	Fiscal Year 1989	Average Sold per Year	Percent of Forest Plan Projection
11	690	696	665	681	99
12	8,800	6,518	5,431	5,975	68
14	1,220	170	139	155	13
15	2,050	3,513	4,574	4,044	197
16	2,520	325	416	371	15
17	460	55	10	33	7
Total	15,740	11,277	11,235	11,256	72

Figure E-2-1 Average Annual Acres Sold for Timber Harvest (regeneration harvest methods only)



TIMBER

Suitable Timber Management Area Boundary Changes: Monitoring Item E-3

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine if significant cumulative changes are occurring in suitable timber base by tracking management area boundary changes.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 5,000 acre cumulative total change in any suitable timber management area after 5 years.

Background: The allowable sale quantity (ASQ) calculated for the Plan is partially dependent on the amount of suitable timber acreage. This acreage is located within management areas (MA) 11, 12, 14, 15, 16, and 17. These MA's are validated during site-specific project analysis. When errors are found, a MA boundary change is made to keep the Forest Plan MA Map and acreage current. MA boundary changes can result in gains or losses in MA acreage, depending on the conditions found on-the-ground. The important items to track are the total changes by MA and the net gains or losses in suitable timber acreage.

The most commonly found conditions that cause a MA map change are: mapping and drafting errors found on the original maps; non-productive forest land located within a MA that is mapped as productive (the reverse situation is also found); big-game winter range habitat non-existing where originally mapped (the reverse is also found); grizzly bear habitat existing where previously unmapped; the absence of old-growth timber habitat and the need to designate additonal acreage.

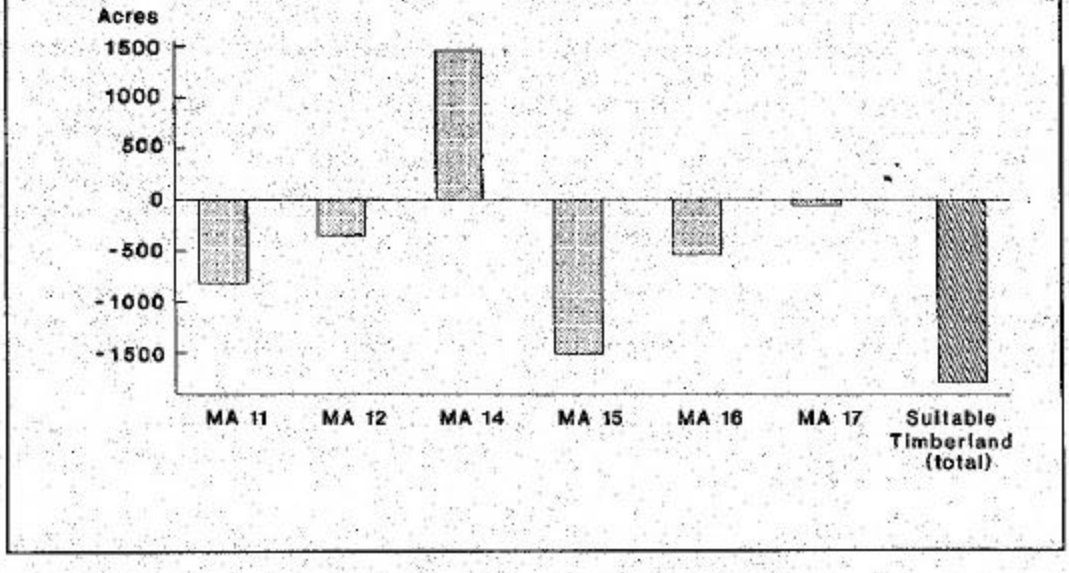
Results: The following Table displays the net MA acreage changes for fiscal years 1988-89 and the net change in the suitable timber base. The totals shown do not include the MA acreage changes which have already been made in Forest Plan Modification #2. That amendment was made in February, 1989 and resulted in a gain of 4,650 acres in MA 11, a loss of 4,750 acres in MA 14, with a net loss of 466 acres of suitable timberland.

Evaluation: As can be seen, the cumulative MA changes are within the +/- 5,000 acres range allowed before another Forest Plan amendment would be required. The total cumulative change in suitable timber base is now -2,254 acres or a loss of two-tenths of one percent (-1,788 acres shown below plus -466 acres included in Forest Plan Modification #2).

Table E-3-1 Net Acreage Changes by Management Areas (MA) in Suitable Timberland

Fiscal Year	MA 11	MA 12	MA 14	MA 15	MA 16	MA 17	Total Changes in Suitable Timberland
1988	+330	0	+1,070	-1,760	-510	0	-870
1989	-1,142	-345	+386	+253	-22	-48	-918
Total Net MA Change	-812	-345	+1,456	-1,507	-532	-48	-1,788

Figure E-3-1 Net Acreage Changes by MA in Suitable Timberland



Timber Harvest Deferrals: Monitoring Item E-7

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine the suitable timber acreage deferred from timber sales because of economics, resource conflicts, or other unforeseen reasons.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	More than 10,000 acres cumulative change in any suitable management area (MA).

Background: Changes in acreage available for timber management could affect the allowable sale quantity (ASQ). The Forest Plan ASQ was determined by calculating the maximum amount of acreage available in the first decade while meeting all required standards and conditions.

To determine the effect of deferrals on the timber sale program, deferred harvest acres were monitored by two categories: A and B. Category A areas are deferred because of our project-specific conclusions regarding resource or economic conflicts not adequately accounted for in the Forest Plan. Examples are: road construction that was too expensive, or a threatened or endangered species found during project planning which was unknown during Forest Planning. Category B areas are deferred because of an externally-imposed situation. Examples include: appeals and court injunctions, or significant timber harvest on adjacent private land which could result in cumulative watershed damage if the National Forest timber was also harvested before adequate watershed recovery occurred on the private land.

Results: Table E-7-1 displays deferred harvest acres by category for each suitable timber management area on the Forest. Suitable timber acres rescheduled from one year to a later year within the Forest Plan period (fiscal years 1988-1997) are not considered deferred. The evaluation was conducted for the cumulative combined-category acres for each suitable management area.

Evaluation: In Category A, poor timber sale economics accounted for most of the deferrals. Adjacent cutting units not adequately regenerated yet to provide hiding cover for wildlife was another frequent reason harvest was deferred.

The large acreage in Category B for 1988-89 is due primarily to meeting the Forest Plan Standards in the Upper Yaak River Decision Area. That Decision Area was a result of an injunction imposed by the Ninth Circuit Court. Timber harvest on adjacent private land accounted for most of the remaining acres that were deferred.

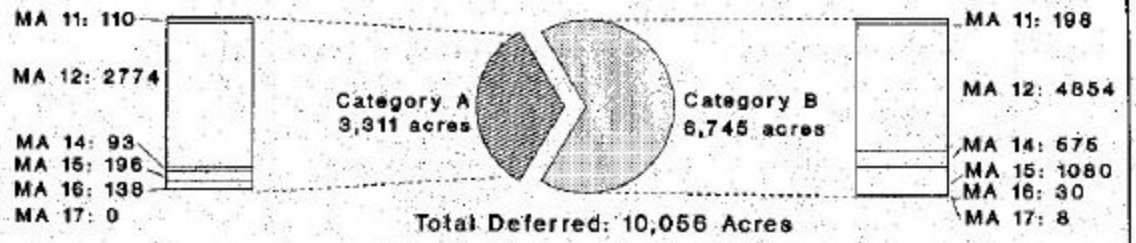
Management Area 12 shows the largest number of acres deferred with 7,628 acres. 4,854 acres (64%) are in Category B, and almost all of this acreage is located within the Upper Yaak River Decision Area (4,704 acres).

The combined individual MA totals display that the Forest is within the permissible range. The total cumulative MA acreage of 10,056 acres is equivalent to eight-tenths of one percent of the suitable timber base (see monitoring item E-3, Suitable Timber MA Boundary Changes).

Table E-7-1 Harvest Acres Deferred in Suitable Timber Management Areas (MA's)

CATEGORY AND FISCAL YEAR	MA 11	MA 12	MA 14	MA 15	MA 16	MA 17	Total
Category A							
Fiscal Year 1988	15	340	25	0	0	0	380
Fiscal Year 1989	95	2,434	68	196	138	0	2,931
Subtotal for Category A	110	2,774	93	196	138	0	3,311
Category B							
Fiscal Year 1988	0	2,580	274	314	0	0	3,168
Fiscal Year 1989	198	2,274	301	766	30	8	3,577
Subtotal for Category B	198	4,854	575	1,080	30	8	6,745
Totals for A and B							
Fiscal Year 1988	15	2,920	299	314	0	0	3,548
Fiscal Year 1989	293	4,708	369	962	168	8	6,508
Totals for Fiscal Years 1988-89	308	7,628	668	1,276	168	8	10,056

Figure E-7-1 Harvest Acres Deferred in Suitable Timber MAs
Total Acres for Fiscal Years 1988-1989



Category A: Harvest deferred due to project-specific conclusions regarding resource conflicts not adequately accounted for in Forest Plan.

Category B: Harvest deferred due to externally-imposed situations, such as court injunctions or timber harvest on adjacent private land.

Harvest Area Size: Monitoring Item E-8

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Cutting unit size by forest type, management area, and District.
REPORTING FREQUENCY:	Every 2 years (1989, '91, '93, '95, '97)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Variation in trends of other resources beyond the natural variation that can be determined.

Background: The Forest Plan provides standards and guidelines for harvest unit size for individual management areas (MA's). The purpose of these is to provide for integrated management of the major resources emphasized for the MA involved. In MA's 11 and 12, regeneration unit size is specified to generally approach 40 acres for elk and mule deer, and 20 acres for moose and whitetail deer. In other management areas, no specific guides are given, but opening sizes should be consistent with the other management objectives for the area. During environmental analyses, location-specific land attributes and issues are considered and size of openings are planned to best meet the management objectives of the area.

Forestwide trends in harvest unit size is most readily shown by the average unit size across all Ranger Districts. In addition, since the normal opening size has been limited to 40 acres by the Forest Plan and the National Forest Management Act, data also needs to be collected to monitor the occurrence of approved openings greater than 40 acres. Openings greater than 40 acres may have non-desirable effects on resources such as wildlife and recreation. However, the Forest Supervisor may approve openings greater than 40 acres when natural catastrophic events such as fire, windstorms, insect attacks, or disease have damaged forest stands. Such action is required to be analysed in an environmental analysis and then given 60 days of public review.

Results: Data on harvest unit sizes was collected from the Sales Tracking and Reporting System (STARS) for timber sales sold in FY 88 and 89. Because several different cutting types are in use on the Forest, the data was separated into categories of harvest method: clearcuts, seedtree cuts, shelterwood cuts, and all other harvest cuts. Typically, clearcuts would leave a few scattered live trees for cavity-nester use, seedtree cuts would leave 4-8 trees per acre for natural seeding, and shelterwood cuts would leave 9-15 trees per acre for natural seeding and visual or environmental protection. The other harvest methods include overstory removal, salvage, sanitation, thinning, preparatory cuts, and other intermediate silvicultural treatments that do not significantly open the forest canopy. These other harvest methods do not have the above-mentioned restrictions for harvest unit size. Also, they typically would be expected to readily meet objectives for visual quality in management areas 16 and 17. Table E-8-1 and Figure E-8-1 show the average unit size for suitable management areas and harvest methods.

In fiscal year 1988, three openings greater than 40 acres were approved, while in fiscal year 1989, sixteen were approved. All were in response to catastrophic results of mountain pine beetle activity in either lodgepole pine or western white pine. In some cases, the openings were isolated and non-contiguous with existing older openings. In others, they were made up of both the current planned activity and a complex of older openings created by past activities. Where openings are isolated, it is expected that 15 years will be necessary to provide vegetation old enough that the stand will no longer be an opening. In cases of combined openings from historical activities, less time (probably only 10-12 years) will be needed to allow vegetation to once again close. Appendix B-2 lists the openings approved during FY 1988-89

along with an estimate of when the vegetation is expected to grow sufficiently so there is no longer an opening.

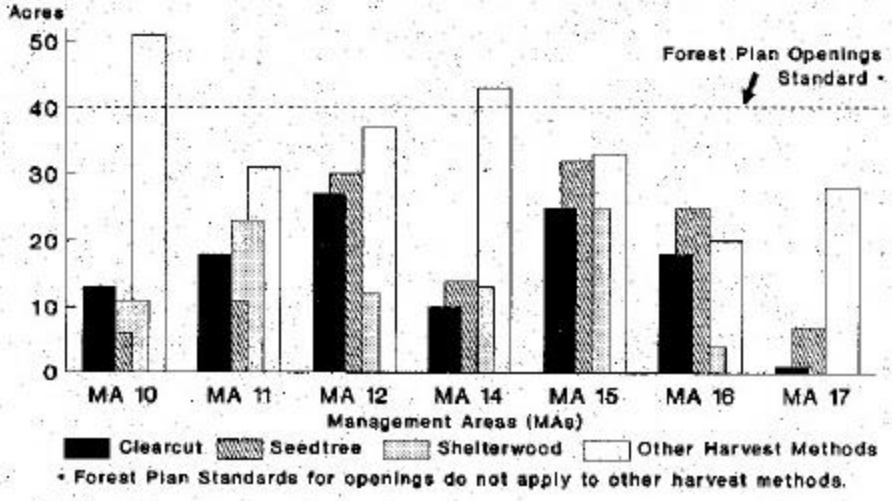
Evaluation: Average harvest area size shows trends anticipated during Forest planning. At this time, the average unit size is below 40 acres in all MA's. It is typically higher in MA's 12 and 15, which have an emphasis on timber production, and lower in other MA's which emphasize wildlife or visual quality.

The number of areas approved for openings in excess of 40 acres were higher in fiscal year 1989, as more stands affected by mountain pine beetle were treated. The effects of each of these were analysed on a site specific basis during environmental analysis to ensure effects were insignificant or could be appropriately mitigated. Monitoring of such approvals will continue in order to provide information to the Forest Supervisor on efficiency of salvage of beetle-infected timber and potential cumulative effects of openings greater than 40 acres. As more monitoring information becomes available, analyses will be made to correlate variations on other resources with various mixes of harvest unit or opening sizes.

Table E-8-1 Average Harvest Area Size in Acres by Harvest Method and MA
(fiscal years 1988-1989)

Harvest Method	MA 10	MA 11	MA 12	MA 14	MA 15	MA 16	MA 17
Clearcut	13	18	27	10	25	18	1
Seedtree	6	11	30	14	32	25	7
Shelter-wood	11	23	12	13	25	4	0
Other	51	31	37	43	33	20	28

Figure E-8-1 Average Harvest Area Size (fiscal years 1988-1989)



SOIL AND WATER

Soil and Water Conservation Practices: Monitoring Item F-1

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine if Regional and Project Soil and Water practices meet state Water Standards.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Failure to meet State Standards

Background: Starting in October, 1988, the Forest began monitoring of the Soil and Water Conservation Best Management Practices (BMP's) implementation and effectiveness. These practices are required Forest-wide and, if properly undertaken, should provide documentation of two major aspects of meeting State Standards: documentation of BMP application, and documentation of their implementation and effectiveness. Collection and analyses of water samples near project sites should document protection of beneficial uses, the third major element in meeting State Standards.

Projects that are evaluated include timber sale road construction, timber harvest, planting site preparation, campground construction, and any other activity which disturbs soil. Monitoring activities include documentation of activities in project records, spot checks, and on-the-ground reviews with Forest Line and Staff Officials.

Results: Since formal monitoring began in FY 89, few references were found in project documentation reports in FY 88. However, in FY 89, 51 formal reports were made in reference to BMP's. In addition, 41 timber sale inspection reports or Contracting Officer's Representative daily diaries included BMP-related references. For the 51 formal reports, there were 179 implementation evaluations and 140 effectiveness evaluations completed. For implementation evaluation, 96% of documented projects were acceptable. For effectiveness evaluation, 91% were were acceptable.

Spot monitoring was undertaken in 12 separate timber sale projects in FY 88. The projects were visually checked for stream turbidity and sediment and all standards appeared to have been met. Spot monitoring on 7 projects in FY 89 also indicated compliance, with the exception of the Camp Everett timber sale. In that project, effectiveness monitoring of road construction and mitigation BMPs revealed a sediment problem (turbidity and total suspended solids) related to cutslope slumping. The problem was reported to the State Water Quality Bureau, and both temporary and permanent solutions were jointly prepared and then implemented by the Forest. Follow-up effectiveness monitoring of the site will be undertaken by the Forest and the State in the summer of 1990.

Evaluation: The BMP evaluations undertaken to date showed better than 90% of the projects requiring use of BMP's were adequately undertaken. For those projects with inadequate implementation, it is unknown if unacceptable effects to water quality occurred. In other areas, such as the Camp Everett Timber Sale, where water quality standards were clearly exceeded, mitigations solutions were undertaken immediately to solve the problem. As the Forest personnel become more familiar with BMP's and understand how certain practices affect water quality, the level of implementation success is expected to increase to 100%.

SOIL AND WATER

Stream Sedimentation: Monitoring Item F-2

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine sediment impacts on fishery habitat.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	20% increase in bedload and suspended solids.

Background: The Forest Plan identified seven streams to install monitoring stations to measure bedload and suspended solids. Upon further evaluation, it was realized that the streams selected were too large and would not provide meaningful data for the purposes of sedimentation monitoring. Smaller tributaries within the Big, Sunday and Bristow Creek drainages were then selected for monitoring purposes.

Results: Initial data collection is underway at Red Top and Granite Creeks. Turbidity and suspended solids information is being collected at both locations, and bedload sampling is also occurring at Red Top Creek. In addition to Forest Service monitoring, both Asarco and Noranda Corporations are collecting baseline data in conjunction with mining proposals and operations.

Evaluation: At this time, there is not enough data available for evaluation.

Water Yield: Monitoring Item F-3

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine the cumulative level of water-yield increases and the effects on stream channels.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	20% increase in channel stability rating, or if 20% of watersheds exceed hydrologic guidelines

Background: Water-yield estimations for project planning utilize the Kootenai National Forest water-yield model. The model calculates the existing peak-flow increase on a percentage basis from past (and proposed) activities, for a watershed or sub-watershed. If peak flows exceed acceptable limits in a specific watershed, stream channel characteristics are likely to be modified. The purpose of monitoring this item are to: identify those watersheds where calculated peak-flow increases exceed limits, study effects on steam channel geometry and stability, and ensure that Forest Plan standards are met. Channel geometry studies measure stream channel characteristics before and after activities and compare them with nearby control sites (no activity). From this data, stream stability may be correlated with calculated water-yield increases. A study designed to do this will begin in 1990 under the direction of the Assistant Forest Hydrologist as a Master's Project at the University of Montana.

Results: A total of 17 channel geometry stations were installed in 1988-89. Six were in the West Branch of the South Fork of Big Creek, and eleven were in the Upper Yaak River area. Eight others will be installed in the Upper Yaak area in fiscal year 1990. Two of the established sites in the Upper Yaak area are control sites where all harvest and roadbuilding will be precluded until the conclusion of this study segment. No comparison or after-activity measurements have been made yet, but some will be completed in 1990. Seventeen crest gages were installed at the same sites being monitored for channel geometry. Comparisons will be made for differences in peak-flows between sites (including controls), to yield information relating peak-flow increases to various harvest levels and geographic factors. Additionally, eight crest gages are in place elsewhere on the Forest from installations occurring in prior years. Lastly, daily-flow recording stream gages are in place on Red Top Creek and Lower Granite Creek. A third year-round gage is to be installed on Basin Creek. These gages will be used to evaluate flow-related problems throughout the Forest.

In FY 1988-89, the Kootenai water-yield model was used to estimate the peak-flow increase for 1,210,000 acres in 337 watersheds which included both National Forest and private land (see Table F-3-1 and Figure F-3-1). Of the 337 watersheds, 86 exceeded the Forest water-yield guidelines. These 86 watersheds, located on 330,155 acres, account for eleven percent of the total 3,000,000 combined National Forest and private acres within the Kootenai Forest.

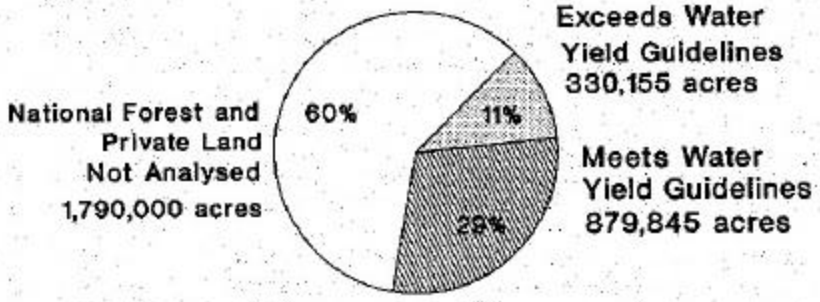
Evaluation: With 1,210,000 acres (40%) of the total Kootenai Forest area (including private land) analysed for peak-flow increases, 86 of the 337 analzsed watersheds (26%) exceed limits in water-yield increase (see Table F-3-1). Most (144) of the analysed watersheds occur on the Canoe Gulch Ranger District, which contains large segments of intermingled private land. Significant amounts of timber harvest have recently occurred on this private land. Water yield calculations were done for these drainages as a part of project planning for potential timber sales, and the private land characteristics were included. Most of these drainages were found to exceed allowable peak flow levels, even though there are few recent or planned activities on National Forest lands within these drainages. As a result of the predominance of such drainages in the watersheds studied in fiscal years 1988-89, the figure of 26% probably overstates the actual Forestwide situation. It's believed that the Forestwide percent tally of drainages exceeding 20%

peak-flow guidelines will decrease as watersheds with fewer inclusions of private land are added to the list of watersheds studied. Also, more precise information on the correlation of stream stability with the water-yield model will be available when channel geometry and stability studies move further toward completion. In the meantime, project planning for activities which affect hydrologic characteristics includes a water-yield analysis and more detailed study as necessary in order to avoid adverse effects on watersheds. When peak-flow limits are exceeded for any watershed, projects will be deferred until the watershed characteristics are within prescribed limits. As shown in detail in Harvest Deferrals (section E-7 of this report), the Forest has deferred harvest for this reason during 1988 and 1989.

Table F-3-1 Watersheds Analysed Using Water-Yield Guidelines

Ranger District	Number of Watersheds Analysed	Number of Watersheds Exceeding Water-Yield Guidelines	Total Acres of Watersheds Analysed (includes private land)	Acres of Watersheds Exceeding Water-Yield Guidelines (includes private land)
Rexford	8	1	73,500	7,700
Fortine	13	0	42,000	0
Three Rivers	107	6	491,000	58,500
Libby	49	9	30,000	755
Canoe Gulch	144	68	543,000	261,500
Cabinet	16	2	31,000	2,300
Totals	337	86	1,210,000	330,155

Figure F-3-1 Watersheds Analysed Using Water Yield Guidelines



HUMAN AND COMMUNITY DEVELOPMENT

Emerging Issues: Monitoring Item H-2

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Emerging issues
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Issues surfaced that were not included in or analysed for effect by the Plan.

BACKGROUND: Newly emerging issues could affect the Forest's ability to implement the Forest Plan as intended. As a part of monitoring, such potential issues will be identified. At the 5-year review, an analysis will be made to determine if these potential issues could significantly affect programmed output levels or the full implementation of Forest Plan standards and guidelines. In addition to monitoring emerging issues, the Forest is monitoring the original Forest Plan issues to understand how they may be changing and to determine if the Plan is resolving them in the intended fashion.

Emerging or Potential Forest Issues Not Addressed in the Forest Plan:

Air Quality Management - Air quality is addressed in the Forest Plan but the profile of the issue is increasing. It appears that the most recent concerns focus on the smoke from timber harvest slash burning in the Spring and Fall.

Biodiversity - Management of biodiversity is an issue which is increasing nationally. The Forest Plan considered vegetative and wildlife diversity, but there are new concepts of biodiversity which appear to be more complex. The scientific background for this emerging issue is still not well understood.

Impacts to Forest Service Activities from Adjacent Private Lands - In watersheds which contain mixed ownership of Forest Service and private lands, intensive harvest on the private lands has brought estimated water yields to threshold levels of Forest Plan standards. As a result, planned timber sales are no longer possible during the Forest Plan period for certain drainages.

Non-system Road Management - On gentle terrain, the use of off-road vehicles can create travelway corridors. These unplanned corridors can result in vehicular traffic in areas which were not anticipated. Some of this traffic can have negative implications for wildlife management.

Nutrient Recycling - This emerging issue concerns how much woody material should be left on the ground following timber harvest operations. As a result of whole-tree yarding techniques and utilization of smaller diameter trees, the amount of organic material left on-site appears to be diminishing. The long-term effects are unknown.

Sensitive Plants - There is increasing concern for sensitive plant management to ensure that such plants will not become threatened or endangered. Inventory and management of these plants is becoming more encompassing as more plants are listed and awareness increases.

Continuing Forest Issues that may Affect the Forest Plan:

Grizzly Bear Management - Standards for grizzly bear habitat management are continuing to evolve, and some aspects were not well clarified during Forest planning activities. Clarification items have included

habitat delineation, displacement areas, recovery time between activities, and road restrictions. These have had significant effects on timber sale scheduling and have also affected other resource use such as recreation and mining.

Potential Mineral Development - The proposed development of major mines on the Forest and the possibility of additional mine developments will have implications for the management of non-mineral resources on the Forest and for the community as well. The scope of these developments may exceed the expectations of the Forest Plan.

State Water Quality Management - Clarification of State Water Quality Standards and Best Management Standards (BMP's) has resulted in stricter compliance than anticipated when dealing with catastrophic events such as the harvest of insect-infested timber. As a result, timber outputs have been more difficult to achieve than anticipated.

Timber Supply - Continuing concern with timber supply is the cumulative effect of: 1.) a court injunction and appeals on timber sales and their delaying effect on the timber sale schedule; 2.) deterioration and resultant volume loss of the dead and dying lodgepole pine timber due to timber sale delays; 3.) delays resulting from the increased time needed to complete environmental impact statements for timber sales in inventoried roadless areas; 4.) the clarification concerning the miles of open roads permitted within management areas 12 and 14 and the result on the planned timber sale schedule; 5.) the clarification of timber harvest guidelines for riparian areas; 6.) greater than anticipated loss of ponderosa pine volume because of pine beetle infestation.

Forest Plan Costs: Monitoring Item H-3

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine if the costs of producing outputs that were used in the Plan continue to be valid.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	A deviation of more than 10% from the cost data used to calculate present net value in the Plan.

Background: During the development of the Plan, cost data were broken down into fixed, other, and variable costs. Fixed costs consisted of 45 categories of costs, and these items were the same for all alternatives considered. Other costs include 16 categories of cost items which were lumped but varied by alternative. Variable costs consisted of certain recreation costs, wildlife habitat improvement costs, range management and improvement costs, and all timber-related costs. These breakdowns were consistent with analytical techniques used for the Plan, but do not compare directly with accounting classifications now in use. As a result, only certain of the variable costs can be readily used to determine changes in unit costs. However, these are the variable cost items which influenced land allocation and activity scheduling in the Plan and indicate trends in unit cost change for monitoring purposes.

Results: Cost analysis was undertaken for timber sale preparation and administration, roads constructed primarily for timber harvest, site preparation, reforestation, and precommercial thinning. Baseline unit cost figures, or those used to calculate present net value (PNV) in the Plan, were extracted from the planning record, and inflated to fiscal year 1989 dollars, in order to provide comparability. Unit cost values for fiscal years 1988 and 1989 were obtained from Forest accounting reports and the Forest management attainment reports. FY 1988 dollars were also adjusted to account for inflation. Timber sale preparation costs include all planning, sale preparation, and sale administration expenditures for the fiscal year. Timber output is based on the amount sold in the fiscal year. Timber road costs are based on purchaser credit established and associated engineering support costs. Reforestation costs include all reforestation related costs including cooperative work. All acres with reforestation work are represented in the output level. Table H-3-1 shows the baseline, FY 1988, and FY 1989 unit cost data for these items.

Evaluation: Care should be exercised while interpreting unit cost information on a yearly basis. Exceptional one-time events can skew single year figures and provide mis-leading impressions. As more data is collected, figures should become more reflective of actual unit costs as effects of variation are averaged out. As can be seen on Table H-3-1, timber sale preparation unit costs have remained stable at a level close to that used in the Plan. Timber road costs, however, have dropped, and appear to be a downward trend. A brief analysis of these costs indicates that proportionally more areas which were already roaded have contributed to timber harvest during FY 1988-89. This is partially a result of accelerated lodgepole pine timber salvage harvesting in the most economically attractive areas. As treatments of such areas are completed, the trend in decreasing road costs is expect to steady or reverse.

Reforestation unit costs for FY 1988 are 18% greater than the baseline unit cost, which is beyond the prescribed 10% threshold value. However, as mentioned earlier, it's difficult to make conclusions with limited data because work programs are affected by swings in actual harvest levels, scheduling of District work programs, and seedling availability and costs. It's likely that unit costs have risen slightly as a result of more planting associated with the increased harvest in the lodgepole pine forest type. As emphasis in harvesting this forest type declines in coming years, reforestation unit costs are expected to decrease and overall averages will be closer to planned unit costs.

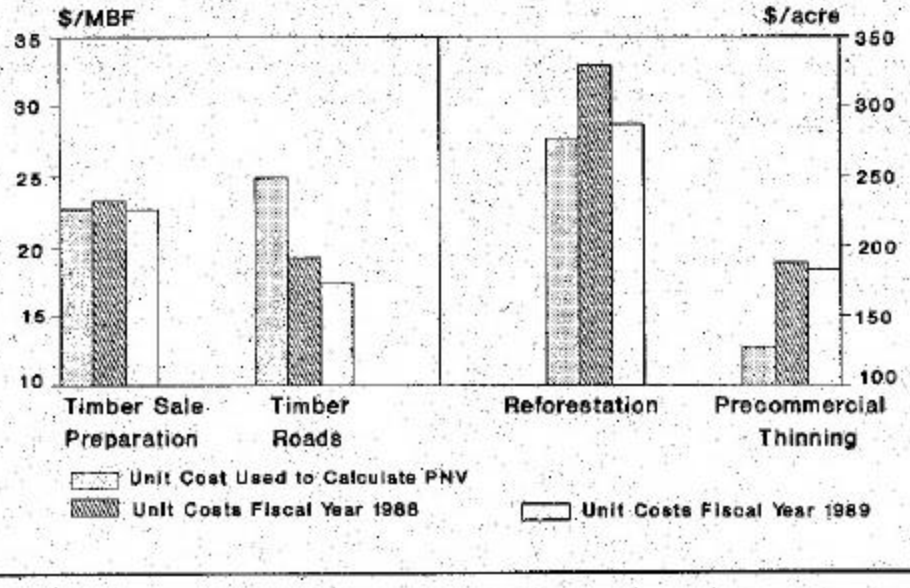
Precommercial thinning costs show an elevation in unit costs beyond the 10% level. Examination of data used to calculate the baseline cost indicated that these figures had originally been underestimated somewhat. In addition, costs for this work have risen due to increased fixed costs incurred by private contractors, who provide this service for the Forest. However, precommercial thinning accounts for only about two-tenths of one percent of the total contribution to PNV costs. As a result, changes in these unit costs would not be expected to have any impact on economic calculations used in the Forest Plan.

At this time, it appears that while some individual unit costs have changed more than 10%, overall the calcualated PNV has remained as expected. Road costs are less than expected, but are likely to increase during the later part of the plan period. Reforestation costs are slightly high, but with the variability involved, are inconclusive at this time. Finally, precommercial thinning costs have increased, but have a negligible effect on the Forest PNV. At this time, then, the overall situation with regard for Forest PNV is within appropriate limits, even though there's some higher than desired variability.

Table H-3-1 Forest Plan Costs

Cost Item	Units	Unit Cost used to Calculate PNV	Unit Costs Fiscal Year 1988	Unit Costs Fiscal Year 1989
Timber Sale Preparation	$/MBF	22.68	23.28	22.65
Timber Roads	$/MBF	24.93	19.22	17.37
Reforestation	$/acre	277	329	287
Precommercial Thinning	$/acre	127	188	183

Figure H-3-1 Forest Plan Costs



Forest Plan Budget Levels: Monitoring Item H-4:

ACTION OR EFFECT TO BE MEASURED:	Assess Forest budget levels and their effects on Forest Plan implementation.
REPORTING FREQUENCY:	Annually (1988-1992)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	10% deviation by funding item from the predicted levels in the Plan.

Background: The budget process is directly related to the Plan, but also influenced by other factors. Changes in programs implemented with the Plan could not be readily initiated because budgets for FY 88 and to an extent, FY 89, were already defined and submitted. Therefore, deviations from the Plan are likely to be greater in the first few years of implementation. Also, program targets vary from year to year to meet certain needs and such changes are reflected in the budget figures. As a result, budget levels for any year should be interpreted with care.

Results: Table H-4-1-1 (next page) shows the planned budgets, FY 88 and 89 actual budgets, and the percentage difference between the Forest Plan amount and the budgeted amount. When averaged over both years, only the Knudson-Vandenburg and the Brush Disposal Funds stayed within the 10% level. Other budget items varied from 19 to 197% percent of planned.

Evaluation: In order to evaluate this information, the major Forest programs were considered. For these major items, all applicable budget items were grouped and added together. Other budget items, which reflect small, highly variable programs, can be more accurately evaluated when more years of data become available. Data for fiscal years 1988 and 1989 were then averaged to smooth out year-to-year variation. Output levels for each major resource area were obtained from Appendix A (in this report) and are based on the Forest's Management Attainment Report for fiscal years 1988-1989. All outputs for the applicable budget items were included. To some extent, some misrepresentation was introduced by adding some outputs together (for instance, developed recreation and dispersed recreation) but overall results do show the major trends. Table H-4-2, on a following page, shows the results of this analysis. An evaluation of each budget area follows Table H-4-2.

Table H-4-1 Kootenai National Forest, Projected and Actual Budget Used to Implement the Forest Plan (in thousands of dollars, rounded -- taken from Appendix 7 in the Forest Plan)

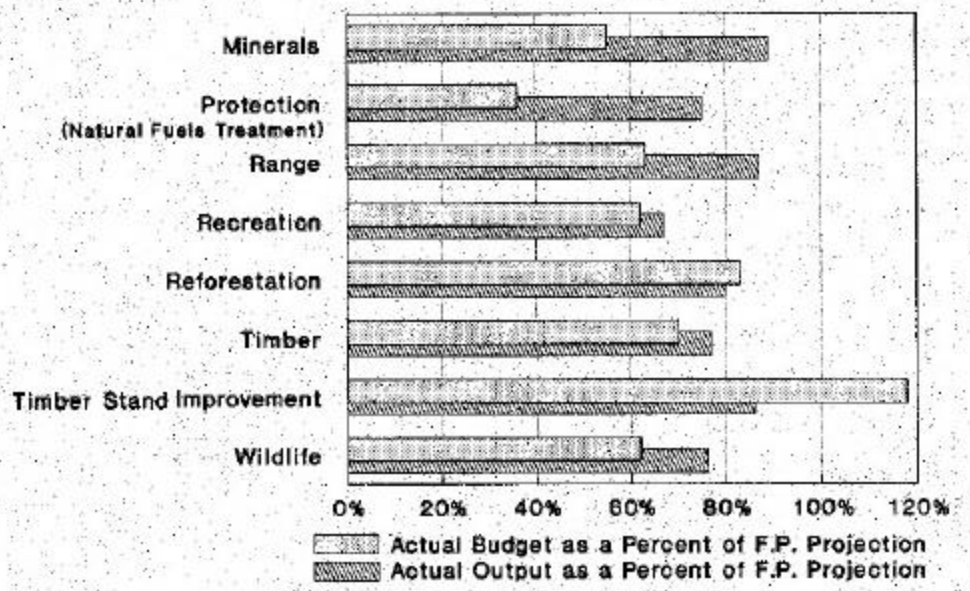
Funding Item	Budget Activity	FY 78* Dollars	Planned FY 88** Dollars	Actual FY88 Dollars	FY 88 % of Planned Dollars	Planned FY 89*** Dollars	Actual FY89 Dollars	FY 89 % of Planned Dollars	Ave. of FY 88 + FY 89 % of Planned Dollars
00	General Administration (approp.)	1,465	2,417	2,019	84	2,552	1,967	77	80
01	Fire	530	875	681	78	923	683	74	76
02	Fuels	59	97	46	47	103	26	25	36
03-05	Timber	2,648	4,369	3,296	75	4,613	3,028	66	71
06-07	Range	59	97	66	68	103	59	57	63
08	Minerals	287	474	279	59	500	256	51	55
09	Recreation	561	926	613	66	977	514	53	59
10	Wildlife and Fish	648	1,069	387	36	1,129	556	49	43
11	Soil, Air, Water	269	444	247	56	469	249	53	54
12	Facility Maintenance	145	239	172	72	253	161	64	68
13-15	Lands/Land Management	156	257	105	41	272	104	38	40
42-43	Lands-Status/Acquisition	96	158	32	20	167	30	18	19
16	Landline Location	285	470	326	69	496	371	75	72
17	Road Maintenance	764	1,261	979	78	1,331	953	72	75
18	Trail Maintenance	115	190	145	76	200	84	42	59
19	Co-op Law Enforcement	12	20	45	227	21	35	167	197
20	Reforestation-Appropriated	871	1,437	833	58	1,517	1,012	67	62
21	TSI-Appropriated	562	927	578	62	979	756	77	70
23	Tree Improvement	20	33	31	94	35	47	135	114
26-26	KV (Trust Fund)	1,427	2,355	2,312	98	2,486	2,704	109	103
29	CWFS-Other (Trust Fund)	348	574	586	102	606	773	128	115
30	Timber Salv.Sales (Perm. Fund)	275	454	538	119	479	981	205	162
31	Brush Disposal (Perm. Fund)	694	1,145	1,060	93	1,209	1,215	101	97
32	Range Improvement	6	10	8	81	10	5	48	64
33	Recreation Construction	99	163	126	77	172	142	82	80
34	Facility Construction-FA&O	111	183	19	10	193	0	0	5
35	Engineering Constr.Support	2,360	3,894	2,734	70	4,111	2,315	56	63
36	Constr.-Capital Invest. Roads	1,801	2,972	,113	4	3,137	355	11	8
37	Trail Construction/Reconstr.	32	53	26	49	56	32	57	53
24, 38	Timber Rd.Constr.-PC or Elect.	2,399	3,958	2,500	63	4,179	1,916	46	55
	TOTALS	19,104	31,522	20,902	66	33,278	21,331	64	65

* FY 78 is the base year for costs used in Forest Planning.
** FY 88 is 1.65 times FY 1978 to account for inflation.
*** FY 89 is 1.742 times FY 1978 to account for inflation.

Table H-4-2 Forest Plan Budget Levels

Activity or Outputs	Actual Budget as a Percent of Forest Plan Projection	Actual Output as a Percent of Forest Plan Projection
Minerals	55	89
Protection, Natural Fuels Treatment	36	75
Range	63	87
Recreation	62	67
Reforestation	83	80
Timber	70	77
Timber Stand Improvement	118	86
Wildlife	62	76

Figure H-4-2 Forest Plan Budget Levels



Minerals: The number of minerals cases arising is not a controllable item, because the Forest is required to respond to cases as they arise. Although a significant number of cases have been completed, many of them have been less complicated than the longer-term average. Also, the restrained budgets have decreased the quality of the case workload.

Protection (natural fuels reduction): Budgets have been quite low in this area, and outputs have also lagged over Forest Plan amounts. Proportionately, however, targets have maintained closer to planned amounts. This results from the selection of lower-than-average-cost projects and deferral of higher-than-average-cost projects. As deferred projects resurface, it's expected that budget levels will need to increase to maintain attainment levels.

Range: Both range budgets and production amounts are below that shown in the Plan, but relatively less so for production. Several years may be necessary to determine if this apparent trend continues. It is expected that negative impacts on range conditions could occur if production levels stay relatively higher and budget levels remain low. Range quality is monitored as a part of regular program management.

Recreation: Compared to the Plan, recreation budgets and outputs are 30-40% low. The low level of this program results from budgetary processes in place prior to the issuance of the Forest Plan. Budgets are expected to improve in this area over the next few years, and output levels are expected to follow in response to increased service. In addition, increase in demand for recreation products should show steady increase through the 1990's.

Reforestation: Reforestation levels are slightly below those indicated in the plan. Budgets and targets are of about the same proportion. Reforestation work would be expected to lag behind the sale program by 2 or more years, so the reforestation program really reflects activities underway prior to the issue of the Forest Plan. As time goes on, it will be based on the amount of acreage harvested using regeneration cutting prescriptions. As seen for Monitoring item E-2 (Acres Sold for Harvest by Management Area) these types of cutting practices are not reaching Forest Plan levels. As a result, it is expected that reforestation work will not reach the Forest Plan levels in the near future.

Timber: Both timber budgets and outputs are less than planned. Timber budgets are slightly lower than targets on a proportional basis, but indicate a strong direct relation. Current plans anticipate two more years of lower output levels, then increases in the second half of the planning period.

Precommercial Thinning: Budget costs are higher than planned and outputs levels are lower. As discussed in section H-4 (Unit Costs) the cost of precommercial thinning is greater than anticipated. This change accounts for the higher budget levels. The output level is quite close to planned levels. Some variation is expected depending on accessibility and timing of acres suitable for thinning.

Wildlife and Fish: Budgets and output levels have been quite low, with output levels showing relatively less deviation. Both of these items have been low as a result of constrained budgets. However, a trend of increasing budget has been established, as local and national emphasis is changing to increase wildlife and fish programs. Also, programs such as Challenge Cost Share are expected to add to both budget and output levels. During FY 88 and FY 89, emphasis was given to habitat improvement work, while support to other resource programs, wildlife inventory, monitoring, and other aspects of program management was given less emphasis. Increased budgets will allow for these other aspects of program management to be emphasized.

PROTECTION

Insect & Disease Status as a Result of Activities: Monitoring Item P-1

ACTION OR EFFECT TO BE MEASURED AND PURPOSE:	Determine the level of insect and disease organisms following management activities to insure the health of residual and surrounding stands.
REPORTING FREQUENCY:	Every two years (1990, '92, '94, '96, '98)
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Insect and disease levels increase beyond normal levels.

Background: The mountain pine beetle (Dendroctonus ponderosa Hopkins) throughout the Forest, and root-rot on the Cabinet Ranger District were the significant insect and disease concerns on the Forest during 1988-89. All other insects and diseases have stayed at endemic (low) levels during this period.

The mountain pine beetle (MPB) was first observed at an epidemic population level in 1972 in the Upper Yaak River drainage primarily in lodgepole pine (LPP). Since then, MPB has spread Forestwide and has attacked stands of ponderosa pine, whitebark pine and white pine, in addition to LPP.

Results: The MPB continues to spread into susceptible stands, primarily LPP, causing high mortality rates in mature trees. It does appear that the MPB population peaked in 1985 with approximately 377,000 acres infested, and is in a state of slow decline with an estimated 312,000 acres attacked in 1988 and 279,000 acres in 1989 (data source: aerial detection surveys). The average number of trees being attacked has also declined to an estimated four trees per acre. Based on results of past MPB epidemics, the indicators are leaning towards an end to the MPB epidemic in the next three to five years.

Since live LPP, the preferred MPB food source, has been substantially reduced, the beetle has shifted some of its recent attacks to ponderosa pine stands (pole and mature sawtimber). While significant in relation to the individual ponderosa pine stands, only 6,000 acres were attacked in 1988 and 12,000 acres in 1989. Regional Entomologists state that the ponderosa pine stands will not support the epidemic MPB populations experienced in LPP stands.

The Cabinet Ranger District has significant acreage of root-rot scattered through the majority of its stands (estimated 60 to 70 percent) with tree mortality common in the less-resistant species (grand fir, Douglas-fir, etc.). The Forest has started to quantify these timber stand conditions with growth plots, benchmark stand exams and operational stand exams, but it will take two more years before enough information is available to analyze the impact of this disease.

Evaluation: Although significant acreage on the Forest is affected by insects and disease, management activities such as timber harvest and road construction, are not contributing to any abnormal insect or disease situations. Emphasis for fiscal years 1988-89 has been on harvesting, within the standards and guidelines of the Forest Plan, timber stands that have been attacked by the MPB or are at high risk for attack. Over the next few years, it's anticipated that this emphasis will decline as available stands are treated and the activity of MPB decreases.

APPENDIX A

KOOTENAI NATIONAL FOREST
PLANNED OUTPUTS or ACTIVITIES, and ACCOMPLISHMENTS by FISCAL YEAR (FY)
(Reference Used: Table II-1, page II-13 in Forest Plan.)

			PLANNED UNITS [1]	ACTUAL UNITS ACCOMPLISHED BY FISCAL YEAR			
TARGET ITEM	OUTPUT or ACTIVITY	UNIT of MEASURE	FY 88-92	FY 88	FY 89	Average Units Per Year	Percent of Planned Units
RECREATION	Developed Use	M RVD	297	318	273	296	99
	Dispersed Use -						
	Wilderness	M RVD	18	35	17	26	144
	Non-wilderness	M RVD	559	797	900	849	152
WILDLIFE & FISH	Wildlife Habitat Improvement	M Acres	5.6	3.0	5.1	4.1	72
	T & E Habitat Improvement	Acres	150	405	0	203	135
	Fish Habitat Improvement	Acres	120	276	137	207	172
RANGE	Permitted Grazing Use	M AUM	12.6	11.6	10.3	11.0	87
SOIL	Soil Inventory	M Acres	15.7	1.0	1.0	1.0	6
LANDS	Land Exchange	M Acres	1.7	5.8	3.3	4.6	268
MINERALS	Minerals Management	Cases	300	220	312	266	89
PROTECTION	Fuels Treatment, Natural	Acres	800	621	583	602	75
TIMBER	Total Volume Offered	MMBF	233 [2]	175	185	180	77
	Reforestation - Approp.	M Acres	7.0 [3]	2.3	3.1	2.7	39
	Reforestation - KV	M Acres	7.1 [3]	5.0	6.4	5.7	80
	Timber Stand Impr. - Approp.	M Acres	4.0 [4]	3.4	4.0	3.7	93
	Timber Stand Impr. - KV	M Acres	1.0 [4]	0.5	0.7	0.6	60
	Stand Examination	M Acres	139	171	208	190	136
	Fuel Treatment - BD/KV	M Acres	11.7	11.7	14.5	13.1	112
FACILITIES	Roads -						
	Arterial/Collector:						
	Construction	Miles	5	29	46	38	760
	Reconstruction	Miles	7	62 [5]	50 [5]	56	800
	Local:						
	Construction	Miles	232	65	61	63	27
	Reconstruction	Miles	46 [6]	11 [5]	20 [5]	16	34
	Total Road Construction	Miles	237	94	107	101	43
	Total Road Reconstr.	Miles	53	73	70	72	136
	Trail Construction/Reconstr.	Miles	7.5	6.0	6.0	6.0	80

[1] Average Annual Units.
[2] Includes 25 MMBF/year of non-interchangeable volume (primarily dead lodgepole pine) plus 202 MMBF of live green timber for an ASQ of 227 MMBF/year. In addition to the ASQ, 6 MMBF/year of unregulated volume is expected to be offered.
[3] Includes Timber Purchaser obligations for natural regeneration site preparation.
[4] Includes precommercial thinning and release.
[5] Includes major reconstruction (15%) and minor reconstruction (85%).
[6] Includes only major reconstruction. It does not include resurfacing, reclearing, etc. which are also included in normal road reconstruction contracts.

APPENDIX B

Timber Sell Volume: Monitoring Item E-1

The following Table shows actual accomplishments in relationship to the Forest Plan:

Table APP.-B-1

SUITABLE LANDS

	FOREST PLAN	FY 88	FY 89	TOTAL FY 88-89	AVG. PER YEAR	2-YEAR VOLUME DEVIATION	PER-CENT DEVIATION
UNIT OF MEASURE >>	MMBF/YR	MMBF	MMBF	MMBF	MMBF	MMBF	
ASQ:							
Regulated	202	152.4	152.8	305.2	152.6	<98.8>	<24.5%>
Non-interchangeable							
Dead LPP	20	19.2	25.9	45.1	22.6	5.1	12.8%
Other Dead	5	1.7	2.3	4.0	2.0	<6.0>	<60.0%>
Total Non-interchange.	25	20.9	28.2	49.1	24.6	<0.9>	<1.8%>
Total ASQ	227	173.3	181.0	354.3	177.2	<99.7>	<22.0%>
Non-chargeable *							
Roundwood	0	0.8	0.7	1.6	0.8	N/A	N/A
Fuelwood	0	2.4	3.2	5.6	2.8	N/A	N/A
Total Non-charge.	0	3.3	3.9	7.2	3.6		

UNSUITABLE LANDS

All Unregulated	6	2.4	3.4	5.8	2.9	<6.2>	<51.7%>

* Woody material that is sold, but not accounted for in Appendix 11 of the Forest Plan. Roundwood is small material not meeting Region 1 forest planning sawlog specifications and usually removed as post, pole, or rail products.

NOTE: Due to rounding, sums may not total exactly. Figures shown with brackets are negative values, e.g., <98.8> indicates a deficit of 98.8.

APPENDIX B

Harvest Area Size: Monitoring Item E-8

Table APP.-B-2

Harvest Openings of Over 40 Acres

Fiscal Year	Management Area	Timber Sale Name	Individual Opening Size (acres)	Time Needed Until No Longer Considered to be an Opening (years)
1988	11	Rifle Range Bug	46	15
1988	12	Rocky Tweed	46 49	15 15
1989	11	Snowshoe Road	115	15
1989	12	Luau Pest Control	44 85 831	10-12 10-12 10-12
1989	12	Lost Street	56 130	15 15
1989	14	Bear Poorman	55	10
1989	15	Freckled Horse	88 95 96 100 104 105 173 190	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15
1989	16	Freckled Horse	121	10-15

APPENDIX C

FOREST PLAN - CHAPTER IV, IMPLEMENTATION

A. Introduction

Implementation of the Kootenai National Forest Plan requires moving from an existing management program, with a budget and "targets" for accomplishment, to a new management program with a budget, goals, and objectives that provide a different way of addressing the issues and concerns people have voiced about Forest management. This Forest Plan establishes the direction for the Kootenai National Forest for the next 10 to 15 years, when used in conjunction with Forest Service Manuals and Handbooks and the Northern Region Guide.

The remainder of this chapter explains how management of the Kootenai National Forest moves from the Current Direction and Existing Situation to the Forest Plan, all described in the EIS. The following sections describe aspects of implementation that are influenced by previous management activities and objectives; the relationship between project planning and this Forest Plan; the goals of, and requirements for monitoring and evaluation; and the circumstances which could require the plan to be amended or revised.

B. Influence of Past Management on Future Options

Chapter III defines management direction for specific areas of the Forest. In some instances, this direction represents a change from current management direction. Where no previous management activities have occurred, the prescriptions of this Forest Plan can be put into effect from a neutral point. However, in areas where management activities have occurred to meet objectives other than those now specified, a transition period may be required to bring management fully into line with this Plan.

In addition to specifying management direction for areas of the Forest, this Plan schedules management activities. In some situations, previous management activities influence the scheduling of future activities.

C. Project Planning

The Forest Plan serves as the single land management plan for the Kootenai National Forest. All other land management plans are replaced by the direction in this Forest Plan.

Similarly, this Forest Plan directs the management of all resources on the Kootenai National Forest. All previous resource management plans are replaced by this document. Resource management objectives are displayed in Chapter II, and schedules of resource management practices for each management area are displayed in Chapter III.

Several documents designed to give further guidance to management activities have been or will be developed "under the umbrella" of this Forest Plan. They are:

- Annual Forest Travel Plan
- Area Transportation Development Plans
- Landownership Adjustment Plan (Appendix 9)
- Cabinet Mountains Wilderness Action Plan
- Fire Management Action Plans

The management direction provided by this Forest Plan comprises the sideboards within which project planning and activities take place. It defines management area goals and management standards that guide project activities toward achieving a desired future condition for the management areas and, collectively, for the Forest. It specifies a schedule for project activities (management practices). It provides guidance

concerning potential land type and habitat type constraints, including assumptions about the appropriate vegetation management practices for timber sale projects. On-the-ground project analysis validates or invalidates the appropriateness of those assumptions.

Within this guidance, the projects are developed to most efficiently and effectively accomplish the management goals and objectives. All NEPA requirements will be complied with in all projects.

Project environmental analyses provide an essential source of information for Forest Plan monitoring. First, as project analyses are completed, new or emerging public issues or management concerns may be identified. Second, the management direction designed to facilitate achievement of the management area goals are validated by the project analyses. Third, the site specific data collected for project environmental analyses serve as a check on the correctness of the land designation. All of the information included in the project environmental analysis is used in the monitoring process to determine when changes should be made in the Forest Plan.

As part of project planning, site-specific water quality effects will be evaluated and control measures designed to ensure that the project will meet Forest water quality goals; projects that will not meet State water quality standards will be redesigned, rescheduled, or dropped.

If it is determined during project design that the best way to meet the management area goals of the Forest Plan conflicts with the Forest Plan standards, the Forest Supervisor may approve a variance to that standard for the project; such variances and the rationale for the changes must be described in the project's documentation and effected by means of a project specific amendment to the Forest Plan. There will be no deviation from standards established for threatened and endangered species conservation and protection unless a biological evaluation concludes that such a deviation would have no effect on the recovery of the species and there has been consultation with the Fish and Wildlife Service.

D. Monitoring and Evaluation

Monitoring and evaluation comprises the management control system for the Forest Plan. It will provide the decisionmaker and the public with information on the progress and results of implementing the Forest Plan.

Monitoring and evaluation entails comparing the end-results being achieved to those projected in the Plan. Outputs, and environmental effects, both experienced and projected, will be considered. In other words, are we doing what we said we were going to do and is what's happening what we expected to happen?

To do this, a comparison will be made, on a sample basis, of overall progress in implementing the Plan as well as whether the overall relationships on which the Plan is based have changed over time. When changes occur, they will be evaluated as to their significance, and appropriate amendments or revisions made if needed.

The goals for monitoring and evaluating this Forest Plan are to determine:

- How well the Forest is meeting its planned goals and objectives;

- If existing and emerging public issues and management concerns are being adequately addressed;

- How closely the Forest Plan's management standards are being followed;

- If outputs and services are being provided as projected;

- If the effects of implementing the Forest Plan are occurring as predicted, including significant changes in the productivity of the land;

- If the dollar and manpower costs of implementing the Forest Plan are as predicted;

- If implementing the Forest Plan is affecting the land, resources, and communities adjacent to or near the Forest;

- If activities on nearby lands managed by other Federal or other governmental agencies, or under the jurisdiction of local governments, is affecting management of the Forest;

- If research is needed to support the management of the Forest, beyond that identified in Chapter II of the Forest Plan; and

- If there is a need to amend or revise the Forest Plan.

The monitoring requirements for this Forest Plan are outlined in Table IV-1, Forest Plan Monitoring Requirements. These requirements address the items to be monitored, the data sources, expected precision and reliability, frequency of measurements, reporting period, and the acceptable variability. Most of the monitoring items are applicable to specific Management Areas; a listing of applicable monitoring items is included in the direction for each Management Area (Chapter II). Other monitoring items are more applicable to broad areas or are Forest-wide in nature and will be evaluated from such sources as the data base, Forest Attainment Reports, public involvement processes, and non-Forest Service sources.

Evaluation of data gathered during monitoring will be guided by the Decision Flow Diagram detailed in Figure IV-2. As indicated in the diagram, the results of this evaluation lead to decisions on further action of the following types:

- continuing the management practice;

- referring the problem to the appropriate line officer for improvement of the application of the management practice;

- modifying the management prescription as a Plan amendment;

- modifying the land designation as a Plan amendment;

- revising the schedule of outputs;

- revising the cost/unit output; or

- initiating revision of the Plan.

The document resulting from the use of the Decision Flow Diagram constitutes the evaluation report. As applicable, the following will be included in each evaluation report:

- A quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan;

- Documentation of measured effects, including any change in productivity of the land;

- Unit costs associated with carrying out the planned activities as compared with unit costs estimated during Forest Plan development;

- Recommendations for changes;

- A list of needs for continuing evaluation of management systems and for alternative methods of management;

- A list of additional research needed to support the management of the Forest; and

- Identification of additional monitoring needs to facilitate achievement of the monitoring goals.

E. Amendment and Revision

The Forest Supervisor may amend the Forest Plan. Based on an analysis of the objectives, standards, and other contents of the Forest Plan, the Forest Supervisor shall determine whether a proposed amendment would result in a significant change in the Plan. If the change resulting from the proposed amendment is determined to be significant, the Forest Supervisor shall follow the same procedure as that required for development and approval of a Forest Plan. If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, the Forest Supervisor may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures.

A Forest Plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the Plan have changed significantly or when changes in RPA policies, goals, or objectives would have a significant effect on Forest level programs. In the monitoring and evaluation process the interdisciplinary team may recommend a revision of the Forest Plan at any time. Revisions are not effective until considered and approved in accordance with the requirements for the development and approval of the Forest Plan. The Forest Supervisor shall review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have changed significantly.

TABLE IV-1 MONITORING AND EVALUATION REQUIREMENTS

MONITORING ITEM MIH (1)	SUBJECT AND REGULATION (2)	MONITORING OBJECTIVE	ACTIONS, EFFECTS, OR RESOURCES TO BE MEASURED	DATA SOURCE	EXPECTED PRECISION (3)	EXPECTED RELIABILITY (4)	FREQUENCY MEASUREMENT (5)	REPORTING PERIOD (6)	VARIABILITY WHICH WILL INITIATE FURTHER ACTION
A - 1	RECREATION 36 CFR 219 .12 (K) (1)	Measure trends in roadless area use	Dispersed use in wilderness or non wilderness areas	1. RIM data 2. Interviews	Moderate	Low	Sample four times a year; once in each season	5 years	+/- 20% from the predicted trends of RVD's by type of use (motorized or roadless)
A - 2	RECREATION 36 CFR 219 .12 (K) (2)	Determine whether areas are being overused	Site conditions in roadless and semi-primitive motorized recreation areas and trails	LAC/Code-a-site (Or similar form), and photos	Moderate	Moderate	Biannual	5 years	Site deterioration sufficient to damage soil & water resource, permanently affect the sites' ability to recover, become a safety hazard, or detract from the recreation experience
A - 3	RECREATION 36 CFR 219 .12 (K) (1)	Measure the effectiveness of visual resource management program	VQO acres where treatment meet objectives	Project EA's	Moderate	Moderate	Annual	5 years	Over 10% of acres do not meet VQO category
A - 4	RECREATION 36 CFR 219 .12 (K) (1)	Measure trends in Developed site use	Developed recreation	1. Occupancy data kept by Hosts 2. Fee collection data 3. Spot checks of sites	High	High	Annual	5 years	+ 20% from predicted RVD's

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(6) Period for which data is collected prior to analysis.

MONITORING ITEM MIH (1)	SUBJECT AND REGULATION (2)	MONITORING OBJECTIVE	ACTIONS, EFFECTS, OR RESOURCES TO BE MEASURED	DATA SOURCE	EXPECTED PRECISION (3)	EXPECTED RELIABILITY (4)	FREQUENCY MEASUREMENT (5)	REPORTING PERIOD (6)	VARIABILITY WHICH WILL INITIATE FURTHER ACTION
A - 5	RECREATION 36 CFR 219 .12 (K) (2)	Affects of ORV use	1. Environmental effects of ORV use to: a. soil & water b.wildlife 2. Amount of ORV use 3. Conflict, if any, with other users.	1. Observation 2. Interviews 3. Surveys	Moderate	Low	Annual	5 years	Same as A-2
A - 6	RECREATION 36 CFR 219 .12 (K) (1)	Acres and distribution of the roadless resource.	1. Location of activities. (usually timber sales).	1. Project EA 2. District staff.	High	High	Annual	5 years	1. +/- 5% of acres 2. +/- 5% distribution by district.
A - 7	ARCHEOLOGY 26 CFR 219 .12 (K) (1) AND 36 CFR 800	Monitor compliance with 36 CFR 800	Management impacts on cultural resources	1 Surveys/ inventories 2. Nomination 1. Enhancement 4. Evaluation 5. Site stabilization 6. Performance standards	High	High	Annual	5 years	More than 10% variability from standards
C - 1	WILDLIFE 36 CFR 219 .12 (K) (1)	Maintain habitat capable of supporting 68% of max potential elk population: 5500 End Dec 1 6550 End Dec 2 8000 End Dec 3	Elk habitat capability as % of potential	1. Stand Exams 2. Annual travel plan 3. Elk habitat guidelines 4. Project EA's 5. Habitat transects for sample projects	Moderate	Moderate	Annual	5 Years	Any Downward Trend
C - 2	WILDLIFE 36 CFR 219 .12 (K) (1)	Maintain the trend of achieving 8000 elk after 30 years	Numbers of elk as a big game indicator	1. Habitat transects 2. MDFW&P census and harvest results	Moderate	Low	Annual	5 Years	Any Downward Trend

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MONITORING ITEM MIH (1)	SUBJECT AND REGULATION (2)	MONITORING OBJECTIVE	ACTIONS, EFFECTS, OR RESOURCES TO BE MEASURED	DATA SOURCE	EXPECTED PRECISION (3)	EXPECTED RELIABILITY (4)	FREQUENCY MEASURE-MENT (5)	REPORTING PERIOD (6)	VARIABILITY WHICH WILL INITIATE FURTHER ACTION
C - 3	WILDLIFE	Provide habitat capable of maintaining or enhancing other big game populations	Habitat capability for big game other than elk (bighorn sheep, mtn goat, moose, whitetail deer, black bear, and mtn lion)	1. Project EA's 2. MDFW&P reports, surveys, & harvest results 3. Personal observations	Moderate	Low	Annual	5 Years	Downward population trend, or noticeable decrease in habitat capability
C - 4	WILDLIFE 36 CFR 219 .12 (K) (1)	Maintain viable population of old growth dependent species (>/- 40% of potential	Population levels of old growth dependent species	1. Population transects 2. Personal observations	Moderate	Low	Annual	5-years	Any reduction approaching minimum viable population levels (40% of potential population)
C - 5	WILDLIFE 36 CFR 219 .12 (K) (2)	Maintain habitat capable of supporting viable populations of old growth dependent species (10% old growth in each drainage)	Old growth habitat amount and condition	1. Timber stand data base 2. Old growth data base 3. Spot surveys 4. Project EA's	High	Moderate	Annual	2 Years	Reduction below 10% in a drainage which was previously over minimum; or any reduction in a drainage previously under minimum
C - 6	WILDLIFE 36 CFR 219 .12 (K) (2)	Maintain habitat capable of supporting viable populations of cavity nestors (>/- 40% of potential)	Cavity habitat condition and amount	1. Stand exams 2. Spot surveys 3. EA's for a sample of projects	Moderate *	Moderate	Annual	5 Years	Any reduction in habitat capability approaching 40% of potential

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C - 7	WILDLIFE 36 CFR 219 .12 (K) (2)	Provide habitat capable of supporting recovered populations of T&E species, and cooperate in recovery operations	Kootenai N.F. contribution to T&E species recovery (grizzly bear, bald eagle, and gray wolf)	1.Habitat maps 2. Cumulative effects analysis 3. Habitat improvement accomplishment reports 4. Recovery plans 5. Population and habitat research	High	Moderate	Annual	Annual	Any downward population trend. Any forest wide decrease in habitat quantity or quality. Failure to meet Kootenai N.F. recovery plan goals
C - 8	WILDLIFE 36 CFR 219 .12 (K) (1)	Maintain indicator species above minimum viable populations levels for the Forest as a whole (see Appendix 12)	Habitat for indicator species & population trends	1. Spot surveys 2. Stand exams 3. Timber stand data base	Moderate	Moderate	Annual	5 years	Any reduction approaching minimum habitat needed for viable population levels (40% of potential populations)
C - 9	RIPARIAN 36 CFR 219 .12 (K) (1)	Insure that the intent of riparian management goals are met	Riparian habitat condition	1. Mapping from project EA's 2. Information gathered from: M&E items C-10, F-1, & F-2	High	High	Annual	5 years	Variability limits listed in M&E items C-10, F-1, And F-2

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C - 10	FISHERIES 36 CFR 219 .12 (K) (1)	To assure changes in fish habitat and numbers do not exceed those predicted	Fish habitat and spawning habitat (on the following representative streams in conjunction with M&E items F-1, & F-2: Bristow Crk MA 15 Sunday Crk MA 12, 13 Red Top Crk MA 12, 13 Rock Crk MA 2 Granite Crk MA 2, 8 Flower Crk MA 8 Big Crk MA 3	1. Stream surveys 2. Core samples 3. Stream temperature samples 4. Debris recruitment analysis 5. Redd counts 6. Embeddedness samples	High	Moderate	Annual	2 years	+/- 10% change in Redd #'s +/- 2 degrees stream temp from normal +/- 10% change in sediment +/- 10% change in embeddedness +/- 20% change in debris accumulation
D - 1	RANGE	To see if Plan objectives are being met	AUM's permitted	1. Range allotment permits 2. FRAMIS reports 3. Allotment plans 4. Spot checks	High	High	Annual	Annual	+/- 20% of anticipated AUM's
D - 2	RANGE 36 CFR 219 .12 (K) (2))	To identify changes in noxious weed infestations	Acres infested with noxious weeds	1. Spot surveys 2. Public input 3. County survey data	Moderate	High	Annual	Annual	10% increase in number of acres infested; 10% increase in density of exisiting infestations. A change in the diversity of noxious weed species
E - 1	TIMBER 36 CFR 219 .12 (K) (1)	To see if Plan objectives are being met	Regulated and unregulated sell volume	1. Cut and sold report 2. Chief's report	High	High	Quarterly	Annual	+/- 5% deviation after 5 years (Regulated Vol) 10% deviation after 5 years (unregulated Vol)

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E - 2	TIMBER 36 CFR 219 .12 (K) (1)	To see if Plan objectives are being met	Acres harvested by Management Area	Timber stand data base	High	High	Annual	Annual	10% by MA after 5 years
E - 3	TIMBER 36 CFR 219 .12 (K) (5i)	To track ground verification of MA boundaries	Documented adjustments to MA boundaries	EA's for timber sales	High	High	Annual	Annual	+/- 5000 acre cumulative total change in any MA with programmed timber harvest after 5 years
E - 4	TIMBER 36 CFR 219 .12 (K) (1)	To validate Plan yield tables	Growth trends by productivity class (MIXCON I, MIXCON II and LPP)	1. Timber stand data base 2. Permanent growth plots 3. Stand exams for thinning	High	Moderate	Annual	5 years	+/- 10% of predicted volume by productivity class
E - 5	TIMBER 36 CFR 219 .12 (K) (5i)	To track Plan targets and to insure NFMA requirements are met	Acres of reforestation and survival	Timber stand data base	High	High	Annual	5 years	+/- 10% deviation from predicted regeneration acres 10% of stands are not certified regenerated within 5 years of regeneration
E - 6	TIMBER 36 CFR 219 .12 (K) (2)	To see if Plan targets are being met	Acres of timber stand improvement	Timber stand data base	High	High	Annual	5 years	+/- 20% of predicted acres accomplished

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E - 7	TIMBER 36 CFR 219 .12 (K) (2) .12 (K) (3)	To track acres with programmed harvest where entry has been deferred because of economics or other resource conflicts such as Water Quality, Grizzly Bear, Mining, etc	Programmed harvest acres deferred from entry because of economics or other resource conflicts by MA	Project EA's	Moderate	Moderate	Annual	Annual	>10,000 acres cumulative change by MA after 5 years
E - 8	TIMBER 36 CFR 219 .12 (K) (5iii)	Evaluation of Maximum size limits for harvest areas	1. Cutting unit size by forest type, MA, & District	Project EA's	High	High	Annual	2 years	Variation in trends of other resources beyond the natural variation that can be determined.
F - 1	SOIL & WATER 36 CFR 219 .12 (K) (1) .12 (K) (2) .7(f)	To determine if Regional and project Soil & Water Conservation Practices are adequate to meet State Standards	1. Turbidity 2. Stream temperature 3. Total suspended solids 4. Streamflow	One sale/ District/year, or 5% to 10% of Forest sales	High	High	Quarterly	Annual	Failure to meet State standards
F - 2	SOIL & WATER 36 CFR 219 .12 (K) (1) .7(f)	Sediment impacts on fishery habitat	1. Bedload movement 2. Suspended solids 3. Streamflow	Monitoring of the 7 sample streams listed in M&E Item C-10	Moderate	Moderate	Annual	Annual	20% increase in bedload and suspended solids

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F - 3	SOIL & WATER 36 CFR 219 .12 (K) (2) .7(f)	To determine the cumulative level of water yield increases and the resultant affect on stream channels	Water yield	1. Recording gauges 2. Crest gauges 3. Channel surveys 4. Kootenai Water Yield Analysis Procedure	High	Moderate	Annual	Annual	20% increase in channel stability rating 20% of watersheds exceed hydrologic guidelines
F - 4	SOIL & WATER 36 CFR 219 .12 (K) (2)	To determine changes in site quality (especially on soils with a loess surface)	Soil compaction; surface displacement; and site quality	Transects in sample harvest units on one sale/District/year	Moderate	Moderate	Annual	5 years	15% decrease in site productivity
G - 1	MINERALS 36 CFR 219 .12 (K) (2) .7(f)	To monitor the effects of mineral activity on other resource suitabilities	Acres of MA changed because of mineral activity	1. EA's 2. Mineral Operating Plan 3. Lease applications	High	High	Annual	5 years	>10,000 acres cumulative change in any MA after 5 years
H - 1	HUMAN AND COMMUNITY DEVELOPMENT, EMPLOYMENT, AND BUDGET 36 CFR 219 .7 (F) .12 (K) (1)	To determine the effect of Plan implementation on the local economy	Change in local economy	1. Chamber of Commerce surveys 2. Industry reports 3. Employment statistics 4. 25% fund distribution 5. Census data	Moderate	Low	Annual	5 years	Further action will depend on the significance of Forest activities and will most likely be reflected in changes after the first planning period (10 to 15 years)

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H - 2	HUMAN AND COMMUNITY DEVELOP-MENT, EM-PLOYMENT, AND BUDGET 36 CFR 219 .7(f)	To determine if there are local or Forest wide issues that were not considered in the Forest Plan, and if data is sufficient to assess the new issues	Emerging issues	1. Inform and involve efforts 2. EA responses	Moderate	Moderate	Annual	Annual	Issues surfaced that were not included in, or analyzed for affect by the Plan
H - 3	HUMAN AND COMMUNITY DEVELOP-MENT, EM-PLOYMENT, AND BUDGET 36 CFR 219 .12 (K) (3)	To determine if the costs of producing outputs that were used in the Plan continue to be valid	Cost of producing outputs	1. MAR's 2. MAT reports	High	Moderate	Annual	Annual	+/- 10% deviation from the cost data used to calculate PNV in this Plan
H - 4	HUMAN AND COMMUNITY DEVELOP-MENT, EM-PLOYMENT, AND BUDGET 36 CFR 219 .7 (f)	To determine the effect of deviations in budget levels	Budget levels and their effects on Plan implementation	Final Budget Advice	High	High	Annual	Annual	+/- 10% deviation, by funding item, from the predicted levels in this Plan
L - 1	FACILITIES 36 CFR 219 .12 (K) (1)	To determine if the road closure objectives of this Plan are being met	Miles of road closed	1. Transportation Information System (TIS)[3] . 2. Annual travel plan 3. Spot checks	High	High	Annual	5 years	+/- 20% of the proportion of open to closed roads, as described in this plan, by the end of the first decade

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H - 2	HUMAN AND COMMUNITY DEVELOPMENT, EMPLOYMENT, AND BUDGET 36 CFR 219 .7(f)	To determine if there are local or Forest wide issues that were not considered in the Forest Plan, and if data is sufficient to assess the new issues	Emerging issues	1. Inform and involve efforts 2. EA responses	Moderate	Moderate	Annual	Annual	Issues surfaced that were not included in, or analyzed for effect by the Plan
H - 3	HUMAN AND COMMUNITY DEVELOPMENT, EMPLOYMENT, AND BUDGET 36 CFR 219 .12 (K) (3)	To determine if the costs of producing outputs that were used in the Plan continue to be valid	Cost of producing outputs	1. MAR's 2. MAT reports	High	Moderate	Annual	Annual	+/- 10% deviation from the cost data used to calculate PNV in this Plan
H - 4	HUMAN AND COMMUNITY DEVELOPMENT, EMPLOYMENT, AND BUDGET 36 CFR 219 .7 (f)	To determine the effect of deviations in budget levels	Budget levels and their effects on Plan implementation	Final Budget Advice	High	High	Annual	Annual	+/- 10% deviation, by funding item, from the predicted levels in this Plan
L - 1	FACILITIES 36 CFR 219 .12 (K) (1)	To determine if the road closure objectives of this Plan are being met	Miles of road closed	1. Transportation Information System (TIS)* 2. Annual travel plan 3. Spot checks	High	High	Annual	5 years	+/- 20% of the proportion of open to closed roads, as described in this plan, by the end of the first decade

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L - 2	FACILITIES 36 CFR 219 .12 (K) (1)	To determine if road densities predicted in the Plan continue to be valid	Road density	EA's	High	High	Annual	5 years	Any increase in road density over that predicted in this Plan
P - 1	PROTECTION 36 CFR 219 .12 (K) (5iv)	Determine level of insect and disease organisms following mgmt. activities	Health of residual stand and surrounding stands	Stand exam and annual aerial detection surveys	Moderate	Moderate	Annual	2 years	Insect and disease levels increase beyond normal levels

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APPENDIX D

SOURCES FOR INFORMATION

For more information about the Forest Plan and this monitoring report, contact the following offices:

Kootenai National Forest
Supervisor's Office
1101 U.S. Hwy 2 West
Libby, MT 59923
406-293-6211

Kootenai National Forest
Rexford Ranger District
1299 Hwy 93 N
Eureka, MT 59917
406-296-2536

Kootenai National Forest
Fortine Ranger District
PO Box 116
Fortine, MT 59918
406-882-4451

Kootenai National Forest
Three Rivers Ranger District
1437 North Highway 2
Troy, MT 59935
406-295-4693

Kootenai National Forest
Libby Ranger District
12557 Highway 37
Libby, MT 59923
406-293-7773

Kootenai National Forest
Fisher River Ranger District
12557 Highway 37
Libby, MT 59923
406-293-7773

Kootenai National Forest
Cabinet Ranger District
2693 Highway 200
Trout Creek, MT 59874
406-827-3533